

# Costs and Benefits of Dual Vocational Training

Good Reasons and Arguments  
for the Introduction of Dual Vocational Training  
in Other Countries based on the Experiences in Germany



**DIHK**

Deutscher  
Industrie- und Handelskammertag

## Editorial Information

Copyright	All rights reserved by the publisher. A reproduction – also for excerpts – is only allowed with the permission of the publisher.
Publisher	© German Chambers of Commerce and Industry/Deutscher Industrie- und Handelskammertag e. V.  DIHK Berlin-Mitte: Breite Straße 29 11052 Berlin Telephone (030) 20 308-0   Telefax (030) 20 308 1000 <a href="http://www.dihk.de">www.dihk.de</a>
Verfasser	DIHK – Yorck Sievers: Director AHK Projects in Vocational Education and Training  DIHK – RA Steffen G. Bayer, Atty: Director German Vocational Education and Training Abroad  <i>With editorial assistance by: Shana Kennedy (Robert Bosch Fellow at DIHK) and Sabine Jürschik (Trainee at DIHK)</i>  <i>Translated into English by: Shana Kennedy (Robert Bosch Fellow at DIHK)</i>
Front picture	monkeybusinessimages February 2016



# Contents

1. Introduction .....	2
2. Cost Factors of Dual Vocational Training .....	3
3. Advantages of Dual Vocational Training .....	7
3.1. Benefits during the Apprenticeship .....	7
3.2. Benefits after the Apprenticeship .....	9
4. Opportunity Costs .....	12
5. Good Arguments for Dual Vocational Training Abroad .....	13
6. AHKs as Partners in Dual Vocational Training .....	15

# 1. Introduction

- Dual vocational training – an export hit?** It has become clear that dual vocational training “Made in Germany” is more popular than ever. This stems from German firms abroad, which are actively seeking qualified and skilled employees for their production plants. At the same time, many governments in Europe and elsewhere hope to create dual vocational training programs similar to those in Germany to improve their youth unemployment rates and the competitiveness of their economies.
- Qualification by German standards** In the last few years member companies of the IHK-AHK networks have asked the IHKs, AHKs, and the DIHK to play a stronger role in preparing and certifying employees abroad by creating programs based on the German dual vocational training system. This is a fast growing trend!
- On behalf of the IHKs and AHKs the DIHK has taken responsibility for the coordination of the relevant actors and activities. Accordingly in 2012 the DIHK General Assembly adopted an IHK-AHK-DIHK strategy concept for dual vocational training activities abroad. This publication is one result of this comprehensive and multiyear action plan for this concept.
- Effective support from IHKs and AHKs** In the process of implementing the concept, the DIHK, IHKs, and AHKs have been meeting with many companies and other actors in and outside of Germany to exchange information about how best to create dual vocational training abroad. In these exchanges it was often asked if the costs and benefits of dual vocational training for companies could be explained.
- Costs and benefits of dual vocational training** This publication focuses on the company relevant aspects of dual vocational training based on the experiences in Germany. The vocational schools and the costs associated with them are not included. The publication makes a contribution to the cost-benefit analyses associated with vocational training in other countries.
- The estimated accuracy of the costs is based on the current situation in Germany. The data in this report come from the publication of the Federal Institute for Vocational Education and Training (BIBB): Report 1/2015 based on data from 2012-2013.
- For companies skeptical to undertake dual vocational training due to the relatively high costs, this publication aims to convince them that it is worth it.
- Investment in the future** Specifically, it will show the fundamental, long-term, and strategic advantages of dual vocational training.



## 2. Cost Factors of Dual Vocational Training

### **Clearly quantifiable costs**

The gross costs for an apprentice are clearly quantifiable costs. At the same time they differ significantly by industry, job profile, regional wages, size of the company, and whether a training workshop is re-quired on site. BIBB regularly assesses the costs and benefits of dual vocational training, making valid average values readily available.

### **Largest portion of costs: personnel costs**

Over the entire time of training, an apprentice results in an average gross cost of 17,933 Euro. On average the personnel costs of the trainee account for 62 percent of the total costs and consist of the following:

- Gross yearly wages
- Legally required social benefit contributions
- Voluntary social benefit contributions

Additional cost factors include:

- Personnel costs for trainers for both firm-based and external trainers (about 23 percent of gross costs)
- Equipment and material costs for necessary materials for the workplace and workshops and for the work-based practice and instruction (about 5 percent of the gross costs)
- Other costs such as chamber fees, costs for external courses, administrative costs etc. (about 10 percent of gross costs)

## Distribution of Average Gross Costs of an Apprentice

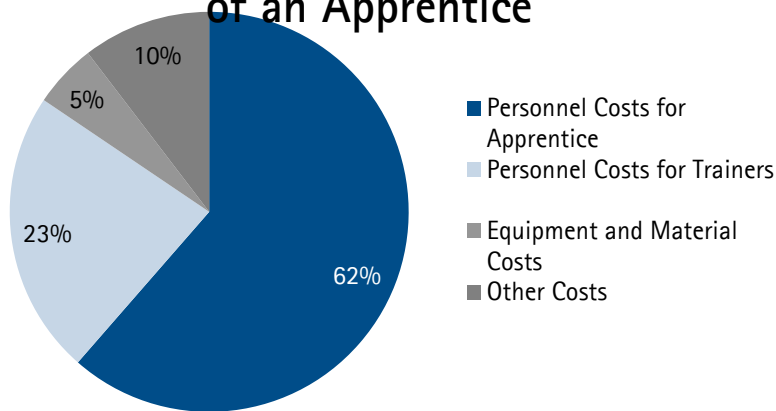


Figure 1: DIHK representation based on BiBB data (2015)

### Cost factors of compensation

For companies that are bound by collective wages, the wages paid to apprentices increase annually during the time of their training. The amount paid to apprentices monthly in 2014 averaged 769,50 Euro. Even the companies that are not bound by collectively-bargained wages often align themselves with the collectively agreed upon wages.

### Differences between Jobs

Looking closer at apprentice compensation reveals differences in compensation between job types. These differences result from a combination of factors over the time of training and in relation to the professions themselves. They include factors such as the specific work situation, the qualification requirements, the interest and demand for this type of training among youth.



## Average Monthly Wages for Apprentices in Selected Jobs

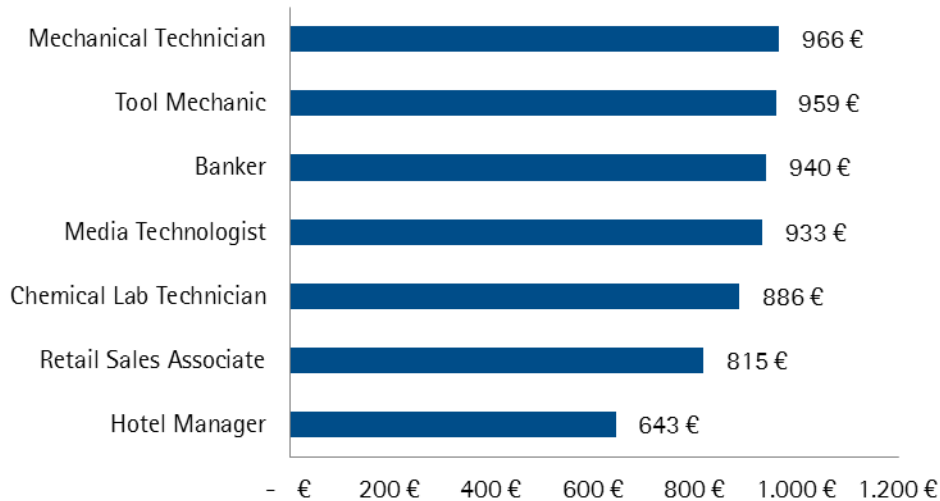


Figure 2: DIHK representation based on data by Bundesagentur für Arbeit: Beruf Aktuell 2015/16

### Costs and revenue structures

In this context the different costs and revenue structures of dual vocational training should be noted. There is a significant difference in costs between industrial and technical apprenticeships and commercial apprenticeships.

The costs for industrial and technical apprenticeships are usually higher than those in the commercial areas. The difference is partially a result of the need for their own workshops where the apprentices can learn and practice in their first year. These workshops also require additional personnel and higher material costs while the productivity of the apprentices during this time is fairly low. The net costs for companies with their own workshops are about 6,000 Euros more per apprentice than for companies without their own workshops.

Commercial apprenticeships on the other hand are not so cost intensive. From the beginning on, about 30 percent of the commercial apprentices not only result in zero costs to the company, they actually result in revenue.

## Gross Costs Divided Into Net Costs and Revenue

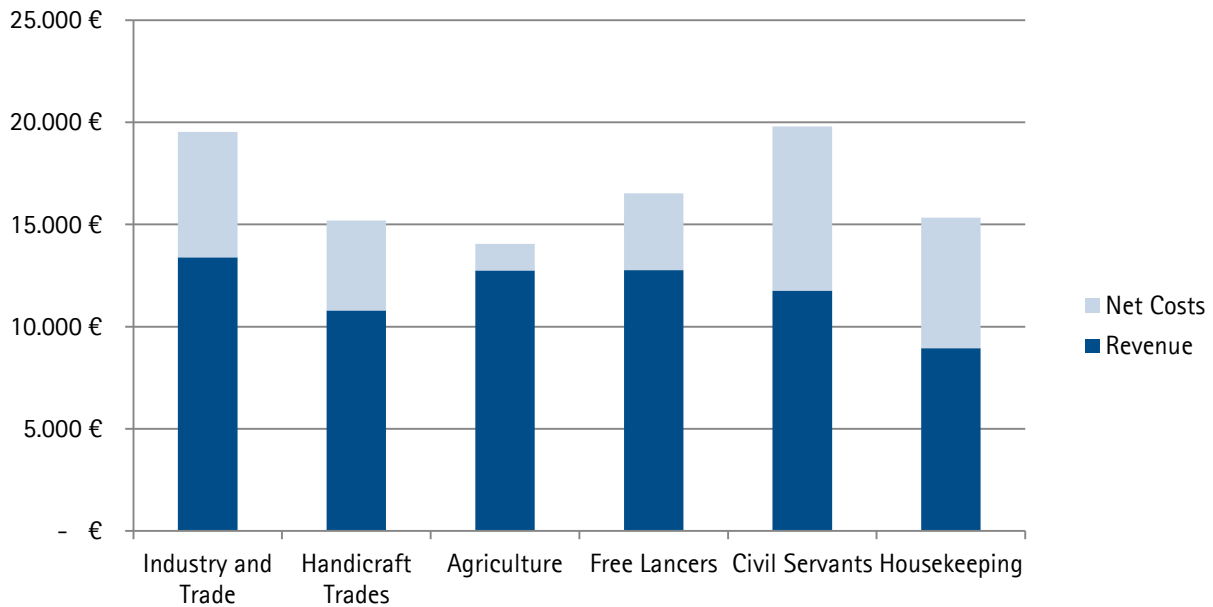


Figure 3: DIHK representation based on BiBB data (2015)

### Cost structures by sector

The cost structures also differ by economic sector. The gross costs in the industrial sector are for example very high, while the gross costs in the handicraft trades and agriculture are relatively low.

Further relevant criteria include the size of the company, the regional wage level, and the length of the apprenticeship.





# 3. Advantages of Dual Vocational Training

The advantage of dual vocational training is obvious both during and after the apprenticeship training. If apprentices remain with the company beyond the training period, then there is an even larger advantage. The hiring of an apprentice at the company where s/he completed the apprenticeship is for all partners involved an ideal situation and a big win.

## 3.1. Benefits during the Apprenticeship

### Two-thirds of costs covered by productivity

The productivity and resulting revenues of an apprentice is quantifiable. The revenue generated by the productivity of an apprentice is on average 12,535 Euros per year. Productivity is measured in relation to personnel savings. The tasks of the apprentice run the gamut from relatively easy tasks that can be performed by someone with little experience to demanding tasks that are usually performed by a fully-skilled employee. In the case of the latter the high productivity is a significant advantage.

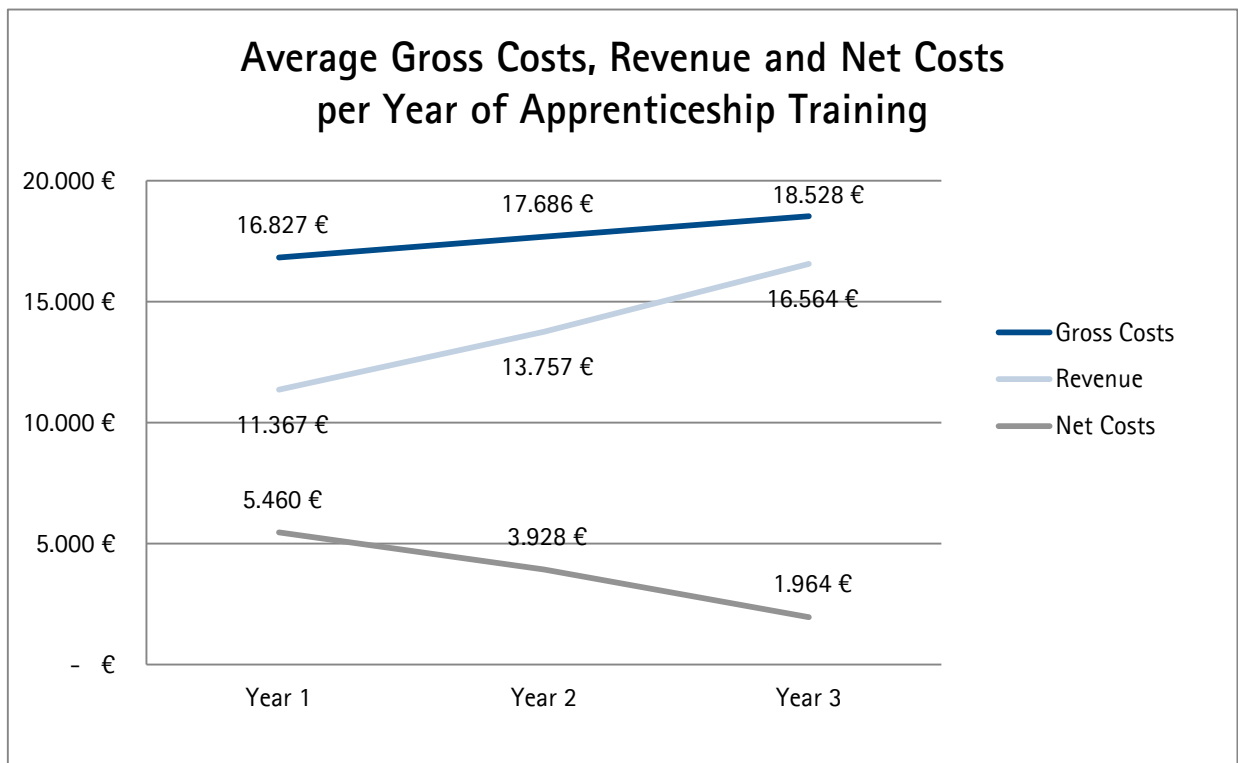


Figure 4: DIHK representation based on BiBB data (2015)

**Costs outweigh the revenue**

The productive output of the apprentice at the beginning of the apprenticeship is usually less than the cumulative gross costs. The productivity of the apprentice increases over the course of the training period so that the net costs decrease or depending on the industry and economic sector, are completely covered. For example Figure 4 shows the gross costs, revenue, and net costs per apprentice for each year over three years. The gross costs increase about five percent each year largely because of the annual increase in wages. The revenue, however, with an increase of about 20 percent each year, increases much faster. This is mostly explained by the growth in learning and the related productivity increase of the apprentices.

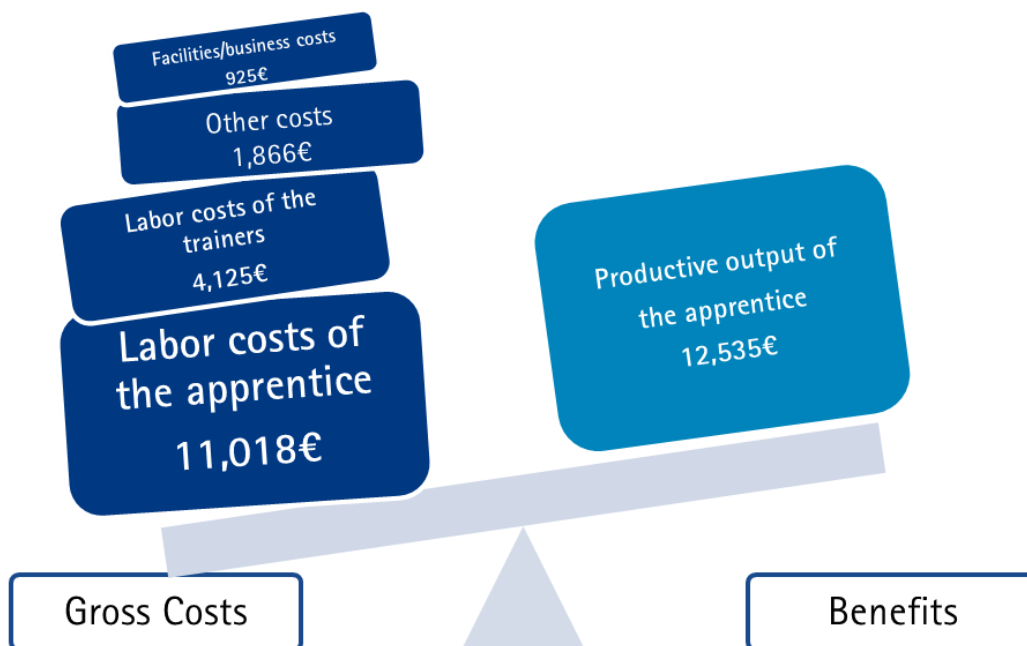


Figure 5: DIHK representation based on BiBB data (2015)



## 3.2. Benefits after the Apprenticeship

### Long-term considerations

The gross costs during the apprenticeship are covered to some extent during the training through the productive output of the apprentice. This is however just a short-term consideration. In the long term there are many additional benefits to a company that has trained its own skilled employees including:

- **Protecting business operations** with skilled employees
- **Optimizing the organization of the company**, e.g. cooperation, pay structure, identification with the company, and better control of the age distribution
- **Having employees with the exact training and skills necessary**, e.g. companies are in the position to train apprentices with the skills and knowledge that are especially important for their operations
- **Maintaining and improving the image of the company** through the perception of corporate responsibility
- **Increasing employee retention**
- **Improving competitiveness**

### High portion stays in the company

After the successful completion of a dual vocational training, the apprentice can stay with the company if desired by both parties. On average this is the case for 60 percent of those who complete and apprenticeship. While large companies continue with about 82 percent of the apprentices they trained, at smaller companies the rate is about half of that. On average in industry and trade about two-thirds of all apprentices stay with the company after completion. The apprentices that continue on in the company have a direct effect on the product quality and cost structure and are an important factor for a competitive advantage. Maintaining effective and efficient processes with qualified employees are highly relevant for every employer.

### Higher resource efficiency

There are many opportunities for increasing resource efficiency throughout the value chain of a company. Starting with the procurement, followed by production and assembly, through to distribution, as well as through technical, organizational and behavioral changes, companies have the possibility to affect their resource efficiency. To achieve this, it is necessary that employees are made aware of these possibilities and are adequately trained. Those who have completed dual vocational training are well prepared for such scenarios.

The use of apprentices trained by the company may result in following potential savings:

- **Lower rate of error** due to knowledge of the materials and the production process
- **Less wear and tear** through the correct approaches to machines and tools
- **Increased productivity** through competent and professional employees.

### Fewer interruptions in the production process

Dual vocationally trained employees know the production process exactly and can use their activities to network with other divisions and facilities. Thankfully, because of their training, they use holistic problem solving skills in their approach to their work. Frequently the employees have already experienced the

beginning and end of the production process as apprentices, which give them a solid understanding of how the value chain operates. Such employees benefit the production process and the core business of the company because they can:

- Be flexible in their work assignments
- Inspect and repair the causes of error quickly
- Think through process and identify and recommend potential synergies

### Skilled employees ensure product quality

High-quality products are crucial for maintaining and improving competitiveness. To ensure continuous quality, highly-skilled employees are important. The dual vocational training system is important in realizing high quality throughout all departments of the company, which directly affects the success of the company. The awareness of high quality among the employees leads to:

- Fewer complaints
- Higher customer satisfaction
- Less quality-related supply shortages

### Further training

Production processes and technology are constantly changing. In order to be able to succeed and thrive in this changing environment it is necessary for employees to regularly upgrade their skills and knowledge through further professional development and training. Dual vocationally-trained employees have an optimal foundation of knowledge, skills, and capacities from which they can further their professional training based on the needs of the company.

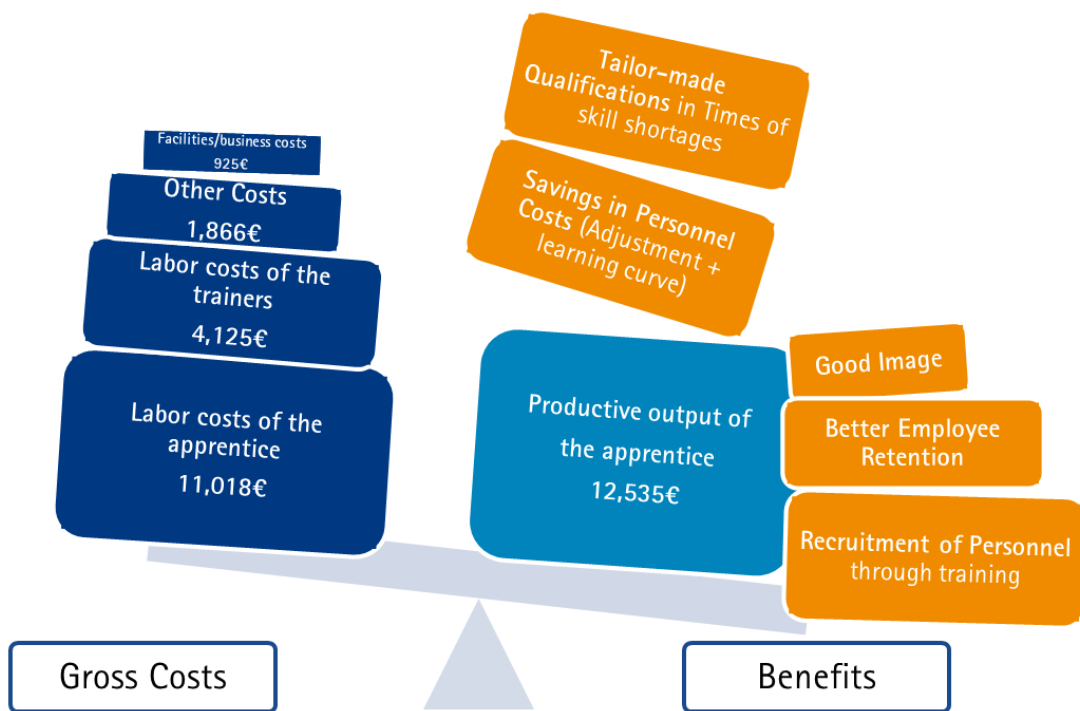


Figure 6: DIHK representation based on BiBB data (2015)

**Benefits outweigh the costs**

Also when the benefits are more difficult to quantify than the costs: it is worth it for a company to train its own workers through dual vocational training. When all of the advantages are placed on the scale, it is clear that that the benefits of dual vocational training far outweigh the costs. These benefits increase even more the longer the trained employees stay with the firm.

## 4. Opportunity Costs

### Considerable potential costs

Opportunity costs play a role in the decision to offer dual vocational training. The costs however for companies not offering dual vocational training may also be considerable. Examples of these potential costs are:

- **Costs for recruitment** of external employees (Application process, personnel costs etc.)
- **Downtime and induction costs** (for vacancies and for training the new employees)
- **Costs resulting from hiring errors** (mismatch of skills and responsibilities)
- **Productivity deficit of newly hired skilled workers** (learning curve)

For example: for small companies with up to 9 employees the total personnel recruitment costs are on average 7,605 Euro. For large companies with 500 or more employees, this more than doubles to about 16,500 Euro. On average among all companies the cost of recruitment is 8,715 Euro. The personnel costs alone of training the new employee account for nearly half of the average cost. The costs for just the application process with an average cost of 930 Euro make up about ten percent of the costs of recruiting a new but already skilled employee.

### Training and process optimization

Poorly-trained employees who are not familiar with the daily operations of the company or do not have the technical abilities necessary to optimize the production process impair the efficiency and quality of the products or services through:

- **Longer lead times**
- **Larger error rates**
- **More downtimes**
- **More defective goods**
- **Lower efficiency of machines**
- **Longer set-up and repair times**
- **Inefficient workflows**

### Summary

Company-based dual vocational training costs money but not doing it costs more money! Strategic and long-term considerations, however point to the benefits of dual vocational training. It is an investment in the future of the company itself which regularly pays dividends.



## 5. Good Arguments for Dual Vocational Training Abroad

<b>Competitive advantage</b>	<p>The cost-benefit argumentation is of central importance for convincing companies to collaborate in the many vocational training activities of the IHK-AHK-DIHK network in international markets.</p> <p>Caused by globalization, the investment and location decisions of companies are to a large extent influenced by the qualifications of the workforce in a country. The technology used in production will become ever more complex and the half-life of knowledge always shorter.</p> <p>Dual vocational training links the theoretical knowledge taught at the vocational school with the company specific Know-How of the apprenticeship training. This has the advantage that the graduates of this training have a high level of occupational competence. The dual vocationally trained employees know the company-specific production processes very well and can therefore be flexibly assigned throughout the company. This has additional beneficial effects.</p> <p>In countries with purely school-based vocational education the graduates do not have the applicable job skills necessary. Their ability to be assigned flexibly within the company is often not a given. Targeted company-based training and further training and education of the employees are the methods of choice to address the long-term demand for skills and key factors in securing competitiveness.</p>
<b>Main motive: skills shortage</b>	<p>This argumentation is supported by the results of the DIHK Survey "Vocational Education Abroad." AHKs and IHKs stated that the main motive driving their vocational education activities abroad is the concrete skills shortage their member companies are facing.</p> <p>56 percent of the IHKs and 33 percent of the AHKs that participated in the survey stated they are active in vocational training abroad because of requests from member companies.</p>

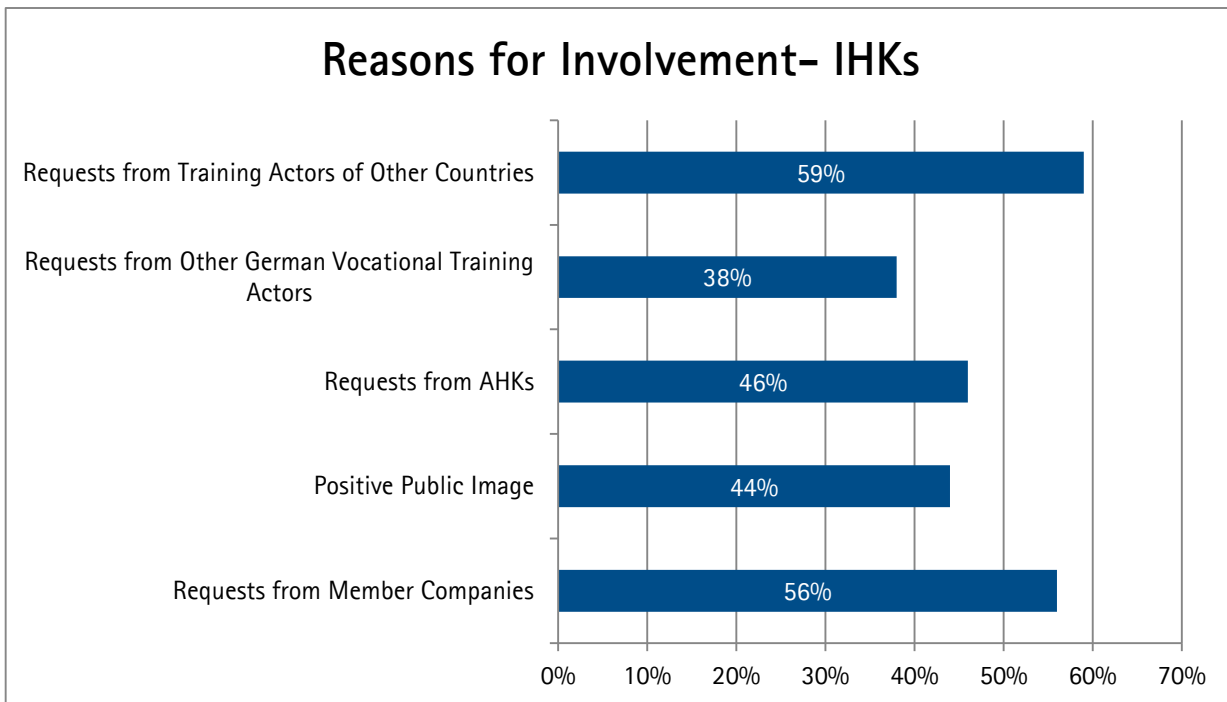


Figure 7: DIHK, Berufliche Bildung im Ausland 2014 (Vocational Education Abroad 2014)

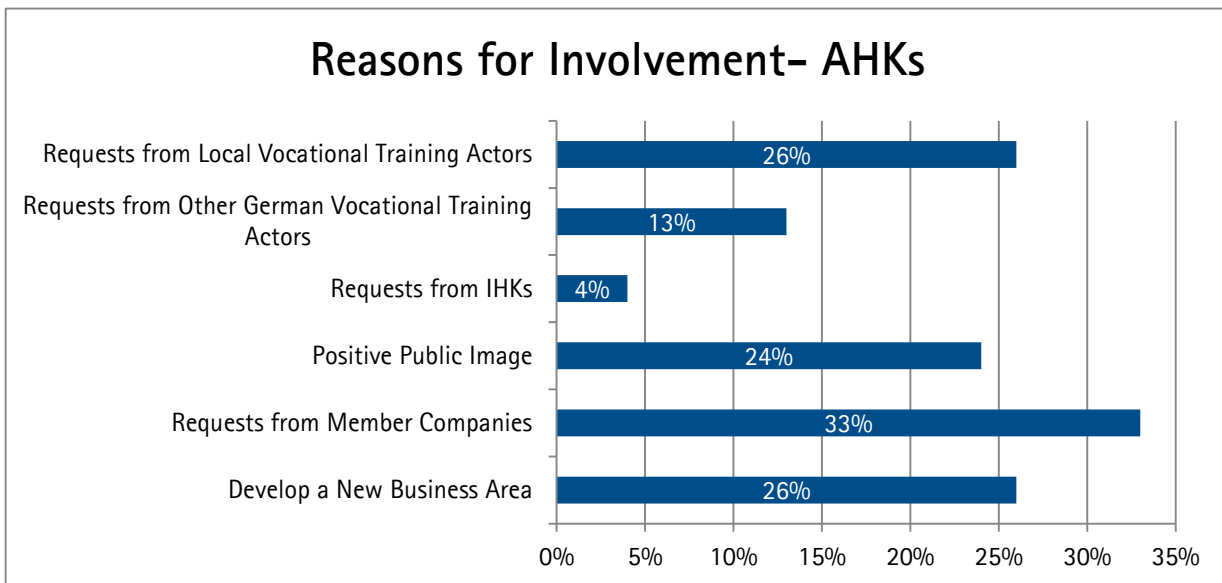


Figure 8: DIHK, Berufliche Bildung im Ausland 2014 (Vocational Education Abroad 2014)



## 6. AHKs as Partners in Dual Vocational Training

AHKs see themselves as platforms of cooperation in the field of dual vocational education. They assume responsibility for:

- Initiating and implementing vocational training for companies based on their needs
- Establishing the content of vocational training and engaging additional companies
- Cooperating with German and local institutions and working with key experts
- Identifying vocational school partners for the companies
- Advising and guiding companies during vocational training
- Initiating and organizing vocational training associations
- Promoting and maintaining the quality of vocational training in accordance with established standards
- Organizing and administering assessments
- Awarding quality-assured AHK-DIHK certificates to graduates who have passed the assessments and completed the training
- Achieving state recognition for dual vocational training and the AHK-DIHK certificates in the partner country.

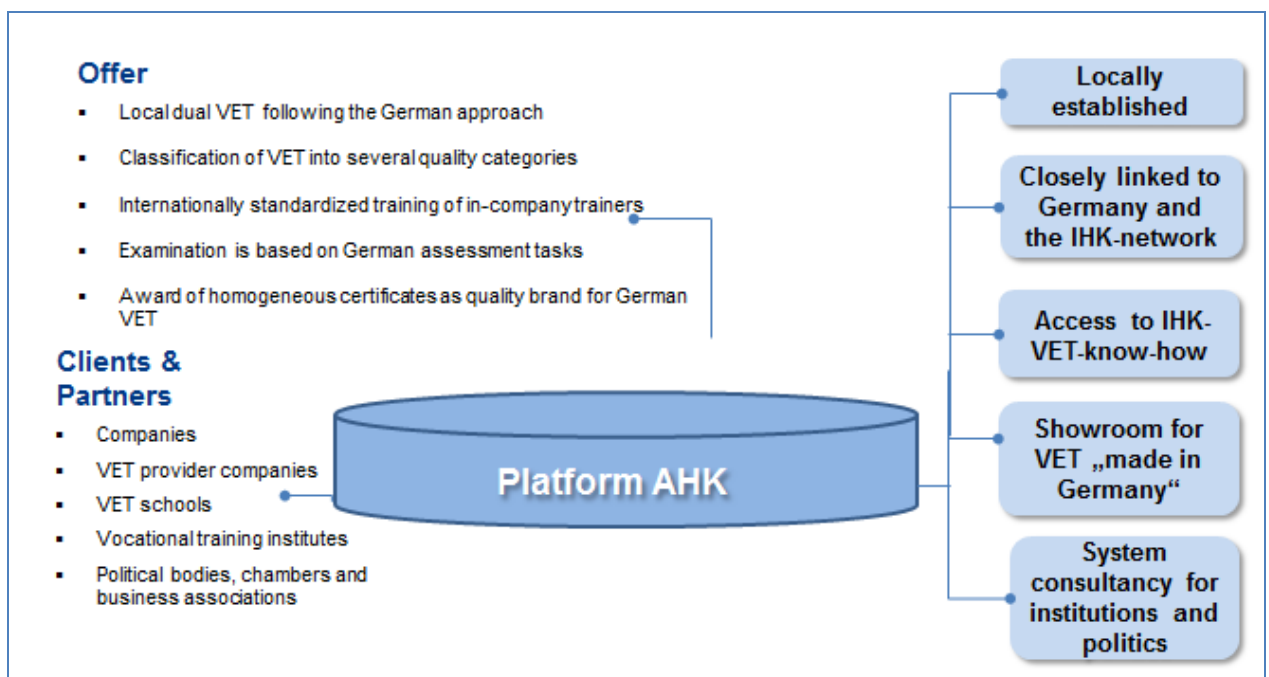


Figure 9: DIHK





