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HESSE REGIONAL REPORT OF LABOUR MARKET'S CHARACTERISTICS AND SUMMARY OF CHALLENGES AND OPPORTUNITIES.

REPLAY-VET - *Strengthening key competencies of low-skilled people in VET to cover future replacement positions*

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INTRODUCTION

Labour markets are dynamic institutions that are gradually but permanently changing their demand for skills. The main challenges labour markets in Europe currently face are an ageing workforce and expected changes in skills and work profiles due to automation and digitalisation. As the skills demand changes, skills are becoming more and more important in labour markets.

The inclusion of people from disadvantaged backgrounds and people with low skill levels is an important challenge in the implementation of European policies for growth, jobs and social inclusion. Combating rising levels of unemployment in adults and young people has become one of the most urgent tasks for European governments. Additionally, disadvantaged and low-skilled people are likely to find themselves in a rather vulnerable situation, since the current technological changes make an increasing part of their work susceptible to substitution by technology. Supporting and upskilling low-skilled people through the vocational education and training (VET) system can help to tackle these challenges and equip people with the skills required by the labour market and the economy.

Our project seeks to better align future labour market demands with opportunities for low-skilled people by analysing the present and future labour market needs. We will identify the sectors and occupations in which low-skilled people are more concentrated. We seek to identify the replacement needs, trends and skills changes required in those sectors and occupations.

The present study comprises the findings of our labour market analysis with focus on the low-skilled people in the Hesse labour market. In addition to a comprehensive analysis of the labour force statistics (Section 1), we consider the future replacement demand in Hesse. Based on the *regio pro* report from 2015, which provides an employment demand projection for Hesse between 2015 and 2020, we determined in which areas large replacement needs are expected (Section 2). With regard to the replacement opportunities that arise for low-skilled people in Hesse, the focus is set on the logistics sector (Section 3). Section 4 contains insights gained during interviews with experts in the employment services, business associations, vocational education and training centres as well as companies in the logistics industry in Hesse. The report ends with conclusions about the identified opportunities of low-skilled people in the logistics labour market in Hesse (Section 6).

SECTION 1. CHARACTERISATION OF THE LOW-SKILLED LABOUR MARKET IN HESSE

Section 1 focuses on the characterisation of the low-skilled labour market in Hesse in comparison to the EU 28[1] labour market. Therefore we analyse basic labour market indicators such as (un-)employment and occupation rates of different age groups as well as the sectorial distribution. At the end of the first section of the report we compile the conclusions from the statistical analysis

1.1. Social and labour characterisation of the population with low qualification

In the following chapter we first analyse the labour market situation in Hesse and the EU28 by comparing basic labour market indicators. In the second part of the chapter, we turn our attention to the labour market situation of low-skilled people in Hesse, comparing their employment as well as their occupation rate with the overall population and differentiating the data by sex and age group. Furthermore, we analyse the rates of low-skilled people working under certain job conditions.

Analysis of the Hesse labour market in comparison to EU 28

Hesse is a state of the Federal Republic of Germany, which had 6.094 million inhabitants as of January 2015 (Fig. 1), representing 7.5% of the German population. Hesse is densely populated, particularly in the southern region, which includes the Rhine-Main region, one of the most economically strong regions in Germany.

Fig. 1: LABOUR MARKET BASIC INDICATORS	EU 28		HESSE	
	2015	Δ 08-15	2015	Δ 08-15
Population on 1 January (000)	508,504	2%	6,094	0.3%
Population between the ages of 15-64 (%)	66	-1%	66	0.1%
Total occupation rate (%)	43	-1%	50	6%
Employment rate (% population age group 20-64)	70	0%	78	4%
Employment rate (% population age group 15-64)	65.6	0%	74	5%
Employment rate (% population age group 15-24)	33	-12%	44	-2.2%
Employment rate (% population age group 25-54)	78.0	-2%	83.3	3%
Employment rate (% population age group 55-64)	53.3	17%	66.4	23%
Full time employment rate (% population age group 20-64)	56.0	-4%	73**	n.a.
Self-employment rate (% total occupation)	13.8	-12%	11	n.a.
Part-time employment rate (% total occupation)	19.6	8%*	27**	n.a.
Employment in services (% total occupation)	71.0	1%	80.6	3%
Employment in manufacturing industry (% total occupation)	24.2	-1%	18.4	-11%
Employment in agriculture (% total occupation)	4,2	-22%	1	-17%

[1] The European Union (EU) includes 28 member states: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Fig. 1: LABOUR MARKET BASIC INDICATORS	EU 28		HESSE	
	2015	Δ 08-15	2015	Δ 08-15
Economic activity rate (% population 15-64 age group)	72.5	3%	76.8	2%
Economic activity rate (% population 15-24 age group)	41.5	-6%	47.3	-5%
Total Unemployment (000)	22,898	36%	126	-36.4%
Unemployment rate (% active)	9.4	34%	4	-42.9%
Youth Unemployment rate (% active 15-24 age group)	20.4	28%	6.8	-35.8%
Long-term Unemployment rate (% active)	4.5	73%	2	-20%
Long-term Unemployment rate (% total unemployment)	48.3	30%	38.3	-18.5%
Youth Unemployment rate (% population 15-24 age group)	8.2	19%	3.2	-36%

(*) Variation 2008 - 2014.
(**) Statistik der Bundesagentur für Arbeit 2016

Source: EUROSTAT (Regional Statistics by NUTS), Statistisches Bundesamt (2016a), Bundesagentur für Arbeit, own calculations.

As of 2015, 66% of the population of Hesse was between 15 and 64 years of age, making up the working-age population, as in the rest of the EU28. The working-age population in Hesse grew slightly between 2008 and 2015, while the working-age population of the EU28 declined by one percent. Likewise, the occupation rate in Hesse (50%) was slightly higher than the occupation rate in the EU28 (43%). Between 2008 and 2015, the total occupation rate grew by six percent in Hesse, while the EU28 suffered a loss of one percent.

In the federal state of Hesse, 78% of the population aged between 20 to 64 years was employed in 2015, while in the EU28 70% of the same age group was employed. This employment rate did not change in the EU28 between the years 2008 and 2015, while it increased by four percent in Hesse during the same time span.

Focussing on the youngest age group in the Hesse labour market (15 to 24 years old), the data shows that only 44% of this population and age group were employed in 2015, a decline of almost two percent since 2008. EU28-wide, the employment rate for this youngest age group was even lower: only one third of the population aged 15 to 24 years was registered as working, a decrease of twelve percent since 2008.

One of the main reasons that young people are not (yet) employed is that many are still studying and being trained. As more and more young people stay in school longer and as more people choose an academic education, they enter the labour market at an older age (Statistisches Bundesamt 2016b). In Germany, however, most of the young people who are opting for a vocational training, attend vocational schooling combined with on-the-job structured learning (Eichhorst 2015). Furthermore, the trainees face rather good chances of immediate employment at their training company after successfully finishing their VET education. About two thirds of the trainees who finished their VET education in 2013 and 2014 were directly employed by their training company (Seibert/ Wydra-Somaggio 2017). Likewise, four out of five VET graduates did not experience any period of unemployment in the transition from school to work (ibid.). Since vocational education and training at the secondary level

allows for a rather smooth transition from school to work, it is considered to be crucial for avoiding high youth unemployment rates (Eichhorst 2015).

The economic activity rate, which measures the proportion of the economically active population in comparison to the total population (by age group), is about 30% lower among 15 to 24 years olds (47%) compared to the whole working-age population (15 to 64 years old) (77%) in Hesse. This also applies to the EU28 countries. In the last few years, the economic activity rate among the youngest working-age population dropped by around five percent in Hesse and six percent in the EU28. Nevertheless, the employment rate among 20 to 24 year olds was 64% in Germany while it reached only 48% in the EU28 in 2014 (Statistisches Bundesamt 2016b). While in some of the EU28 countries youth unemployment dramatically increased during the financial crisis, the unemployment rate of 20 to 24 years old in Germany dropped from 15% in 2006 to 9% in 2016 (eurostat 2016).

People aged 25 to 54 generally have the highest employment rate (*Haupterwerbsgruppe*). In 2015, they achieved an employment rate of 78% across the EU28 countries. This rate was even higher in Hesse, with 83% of the people in this age group employed. In Hesse, the employment rate increased by about three percent over the last seven years, while in the EU28 as a whole it decreased about two percent. The overall rising employment rate in Germany over the last ten years (Bundesagentur für Arbeit 2016a) – despite the financial crisis – might explain why the employment situation in Hesse improved while it declined in the EU28 countries on average.

The biggest growth in employment between 2008 and 2015, however, took place among the age group of the 55 to 64 years old. In Hesse, 66% of this population group worked in 2015, representing an increase of 23% since 2008. Growth also took place in the EU28 countries; 53% of the population aged 55 to 64 was working in 2015, amounting to an increase of 17% since 2008. Labour market policies, such as the gradual increase of the retirement age (DRV 2017), as well as the ageing active population have led to increasing employment rates among older age groups in Germany (IAB 2012).

In order to get a more detailed picture about the employment situation in Hesse and the EU28, we also studied the different developments in full-time and part-time employment.[2] The EU28-wide employment rate in full-time jobs was 56% among people aged 20 to 64 in 2015. While this rate decreased by four percentage points since 2008, the proportion of part-time workers rose by eight percentage points to almost 20%. Although the age group is not defined for part-time workers, it is nevertheless clear that growth in employment in the EU28 is mainly due to the growth of part-time work. In Hesse, the employment rate in full-time jobs was 73%, while the proportion of part-time workers was 27% in 2015. Data from the Federal Employment Agency (*Bundesagentur für Arbeit (BA)*) show that in Hesse the employment rate[3] of women aged 15 to 64 has risen steadily since 2005, reaching 52% in 2015 (Bundesagentur für Arbeit 2016b). The employment rate of men of the same age group also grew, exceeding 60%.

[2] Full-time employment in Germany means that the employee works 36 to 40 hours per week, depending on the industry and their respective collective agreement. Part-time employment means that the employee is not working in a full-time job.

[3] Following the Federal Employment Agency (2017a), the employment rate is defined as the percentage of employees subject to social insurance (at place of residence) concerning the population aged 15 to 64 years of age.

Almost every second woman worked part-time, while the share of men working part-time was 11% (ibid.).

At the EU level, the self-employment rate was 14% in 2015. It has fallen by twelve percentage points since 2008. In Hesse, the self-employment rate was just ten percent in 2015. Overall, Germany's share of self-employed people has fallen by ten percent since 2005 (Statistisches Bundesamt 2016a). The Federal Statistical Bureau (*Statistisches Bundesamt*, 2017) estimates that the share of self-employed people in Hesse as well as in Germany was on average ten percent in 2016.

Concerning the sectorial distribution, the percentage of the population employed in services, 81%, was ten percent higher in Hesse than in Europe. This sector also showed a higher growth rate over the last seven years in Hesse than across the EU28 countries on average. While Hesse is poor in natural resources, the strong service sector has traditionally been a key characteristic of the Hesse economy. Hesse has consistently fewer people working in the manufacturing industry and the agricultural sector compared to the EU28. Furthermore, the decline of employment in the manufacturing industry was ten times higher in Hesse than in the EU28, where it lost on average one percent. The losses in the agricultural sector were even larger: Hesse had very few people working in this sector – one percent of the total occupation – decreasing 17% over the last seven years. Across the EU28, where four percent of total employment is concentrated in the agricultural sector, employment decreased 22%% since 2008.

Significant differences between the EU28 and Hesse also exist with regard to the unemployment rate. In Hesse only four percent of the active population[4] was not employed in 2015, while the EU28 showed an unemployment rate of nine percent at the same date. While this rate did decrease over the last seven years when looking at the youngest age group in Hesse, it increased EU28-wide: 20% among the active population aged 15 to 24 years old were unemployed in 2015. This rate increased by 28 percent over the last seven years. When compared to the total population of this age-group, we see that in the EU28 countries, only eight percent of the youngest working-age population were unemployed. In Hesse, this rate is even lower.

In 2015, almost half of the unemployed people in the EU28 countries have been unemployed for more than one year (long-term unemployed). In Hesse, this rate amounted to 38%. In contrast, the rate of long-term unemployed among the so-called active population was almost five percent EU28-wide and almost two percent in Hesse.

[4] The active population, also called labour force, is the population that is either employed or unemployed. The so called inactive population consists of the people who are neither employed nor unemployed. Part of the inactive population are for example school children, students and retirees. Since the German labour force statistics do not contain data on the inactive population on regional level, we cannot include differentiations between the active and inactive population in our analyses.

Low-skilled labour market characterization in Hesse

In the following section, we take a closer look at the situation of the low-skilled people in the Hesse labour market. Low-skilled people are generally characterized in labour market statistics as people with an educational attainment level of pre-primary, primary and lower secondary education (ISCED 0-2) or as people working in so-called low-skilled jobs (elementary occupations, sub-group 9 in ISCO classification).

The labour force statistics produced by the Federal Employment Agency are the most accurate data describing the labour market situation in Germany on a national as well as on a regional level. The administrative data include information on people who are contributing to the social insurance fund and data from registered unemployed people. The data used in this study are those of June 2016. Since people with an ISCED level below primary education (ISCED 0) do not show up in the labour force statistics conducted by the Federal Employment Agency, the detailed characterisation of the low-skilled labour market in Hessen will cover ISCED levels 1 and 2 only.

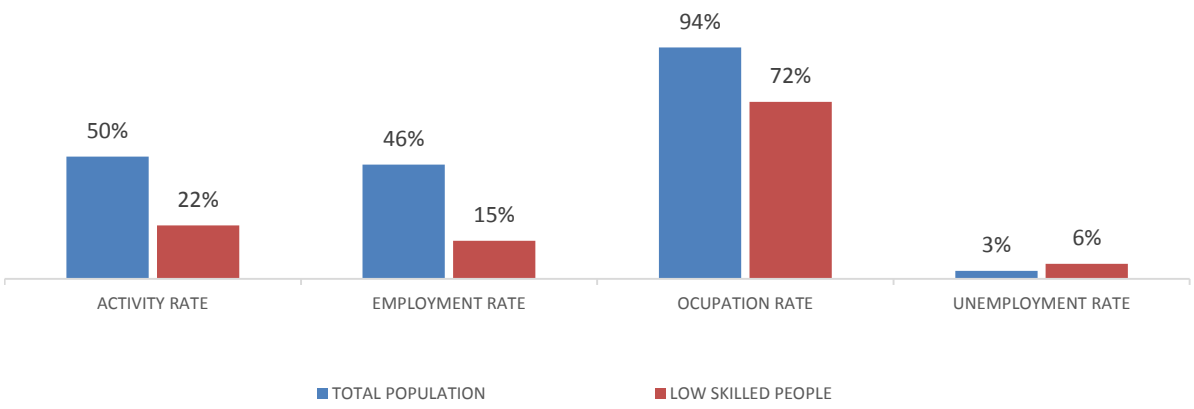
Concerning the German and the Hesse labour market, the following peculiarities have to be taken into account when comparing the data with other EU countries. Since compulsory education takes at least nine years in Germany, young people can enter the labour market at 15 at the earliest. In Hesse, compulsory education requires children to enter school before the age of seven, and ends with the successful completion of grade 9 (lower secondary education).[5] If the child does not graduate during these nine years, compulsory education is extended by at least one additional year. After finishing lower secondary education successfully, young people are obliged to attend further schooling or to start their vocational education and training (VET education) immediately. If not, compulsory schooling is extended by another year. There are no formal access requirements for admittance to training in the dual system.[6] Nevertheless, the majority of apprentices holds a high-school diploma or a university entrance certificate and are at least 16 years old.

Activity and occupation

In June 2016, almost 23% of the population in Hesse aged 16 years and older were considered to be low-skilled (see definition above) – in absolute numbers 5,307,200 people. Compared to the total population, they showed a lower activity rate, employment rate and occupation rate (Fig. 2), and their unemployment rate was twice as high as among the total population.

[5] For more information see for example https://schulaemter.hessen.de/schulbesuch/schulpflicht (accessed July 10, 2017).
[6] For more information see for example Kultusministerkonferenz, https://www.kmk.org/themen/ berufliche-schulen/duale-berufsausbildung. html (accessed July 10, 2017).

Fig. 2: Comparison of the labour market ratios of the low-skilled people in relation to the total population



Source: Bundesagentur für Arbeit, June 2016

Employment rate

Compared to the total population, it is less likely that low-skilled people have or seek a job: Their activity rate is almost 30 percentage points lower than the activity rate among the total population (Fig. 3). Likewise, the employment rate in Hesse was 31 percentage points lower for low-skilled people (15%) than it was in the general public (46%). Low-skilled people also had a slightly lower occupation rate (72%) than the general population (94%).

Regarding differences between the sexes, we can see that low-skilled women have a significantly lower employment rate than low-skilled men, while their occupation rate fell just slightly below the occupation rate of low-skilled men (Fig. 4).

Fig. 3 & Fig. 4: Employment and occupation rate among the total population and the low-skilled population according to sex

Fig. 3

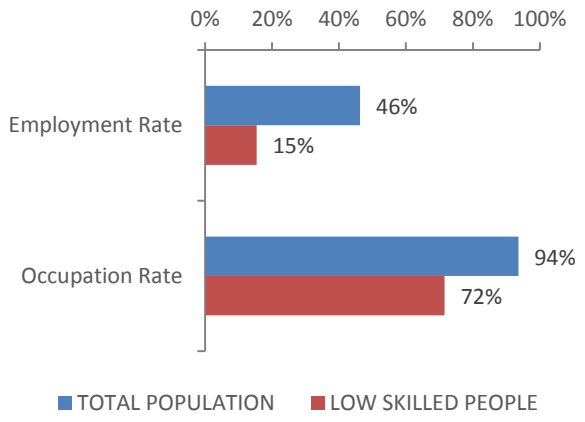
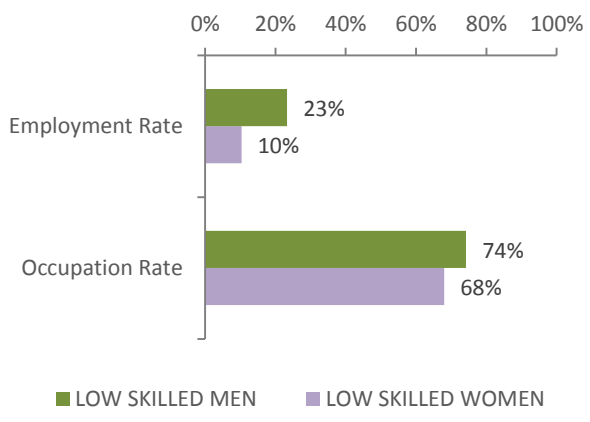


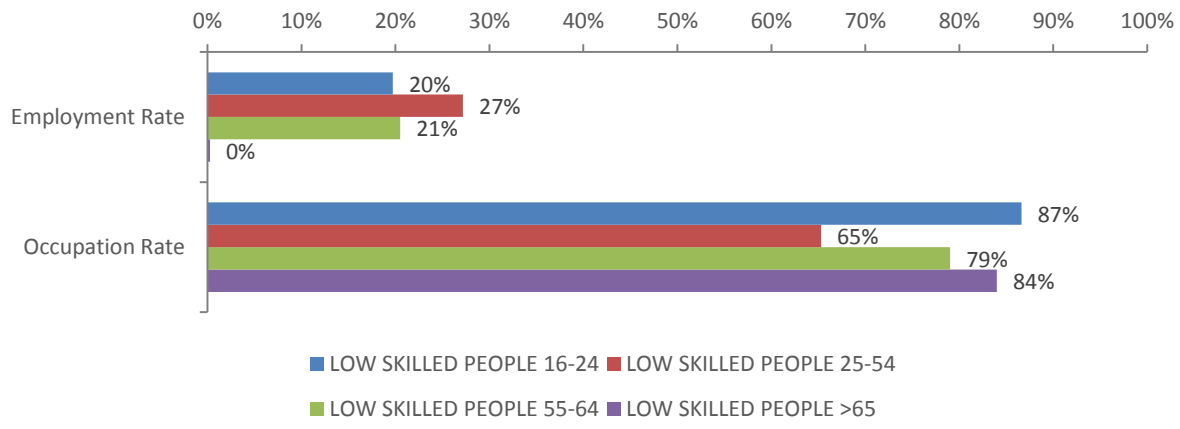
Fig. 4



Source: Bundesagentur für Arbeit, June 2016

We are also interested in differences according to age groups (Fig. 5). The data once more shows that even among low-skilled workers, 25 to 54 year olds stand out as the group with the highest employment rate (*Haupterwerbsgruppe*). The employment rate among low-skilled 16 to 24 year olds as well as among low-skilled 55 to 64 year olds is a bit lower, while the employment rate among low-skilled people aged 65 and above is nearly zero percent.

Fig. 5: Employment and occupation rate among the total population and the low-skilled population according to age



Source: Bundesagentur für Arbeit, June 2016

However, the youngsters between 16 and 24 years of age as well as the elderly above 65 show the highest occupation rates, whereas the age group 25 to 64, contrary to its employment rate, has the lowest occupation rate. The reason for this might be that among the age group of 25 to 54 we see a relatively high active population, i.e. more people are employed or are looking for a job. By contrast, the active population is comparatively small among the youngest group and the elderly, hence both groups show a high occupation rate. Therefore, low-skilled people between the ages of 16 and 24 as well as low-skilled people aged 65 or older can apparently find a job more easily when they are actively looking for one or, in case of the older population, maintain their jobs.

Labour conditions

We have also analysed the participation in part-time or full-time employment in Hesse among low-skilled people. The data reveal that there is almost no difference between the share of full-time and part-time jobs for total employment or the low-skilled population (Fig. 6). However, once low-skilled people are filtered by sex and age, the differences grow significantly. 44% of low-skilled women have a part-time job, while only 15% of equally low-skilled men work part-time (Fig. 7). Considering that other studies show similar rates of part-time work among women and men in Hesse, this might be a more general topic among the participation rates under certain working and life conditions according to sex than a peculiarity of the low-skilled labour force (Fischer/Larsen 2017). Nevertheless, a gender-sensitive analysis of the findings seems appropriate.

Fig.6 & Fig. 7: Type of workday of the employed low-skilled population. Comparison according to sex

Fig. 6

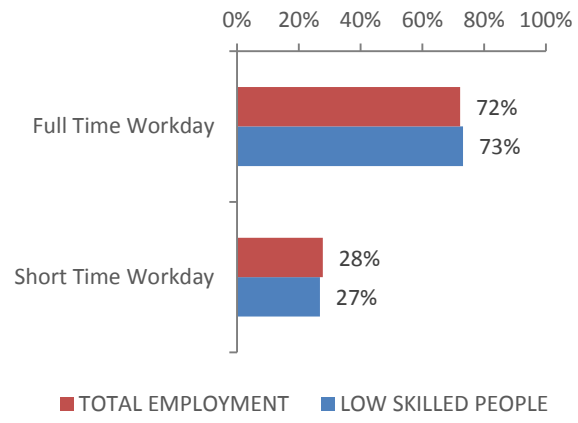
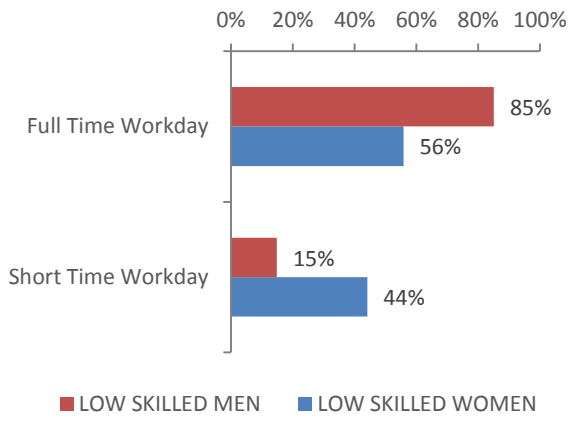


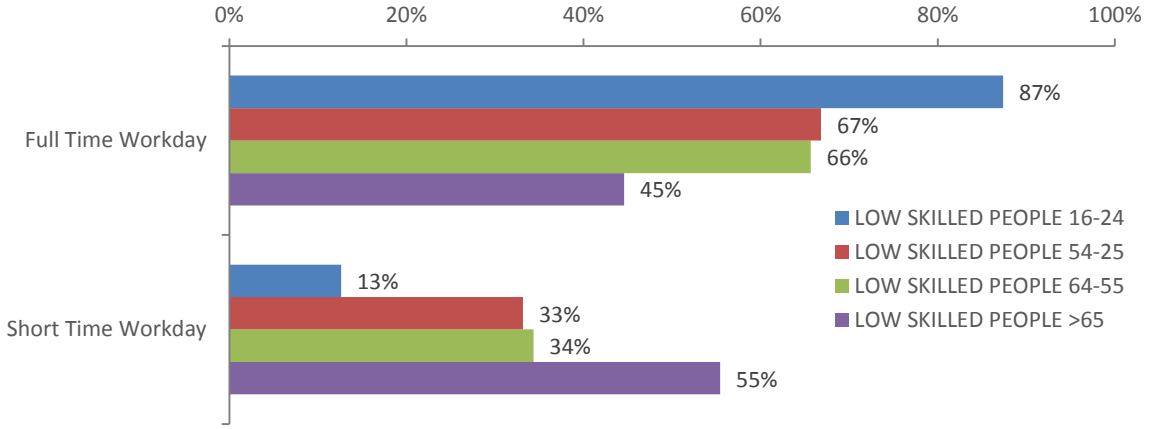
Fig. 7



Source: Bundesagentur für Arbeit, June 2016

In terms of age groups, the data reveal that young, low-skilled people can find a full-time job more easily than other age groups that are also low-skilled (Fig. 8): 87% of young people between 16 and 24 are working in a full-time job, whereas only about two-thirds of low-skilled people between 25 and 64 have a full-time contract. Part-time jobs are more common among the low-skilled elderly, with 55% of them are working short-time.

Fig. 8: Type of workday of the employed low-skilled population. Comparison according to age



Source: Bundesagentur für Arbeit, June 2016

1.2. Participation of low-skilled people by sector and occupation in Hesse

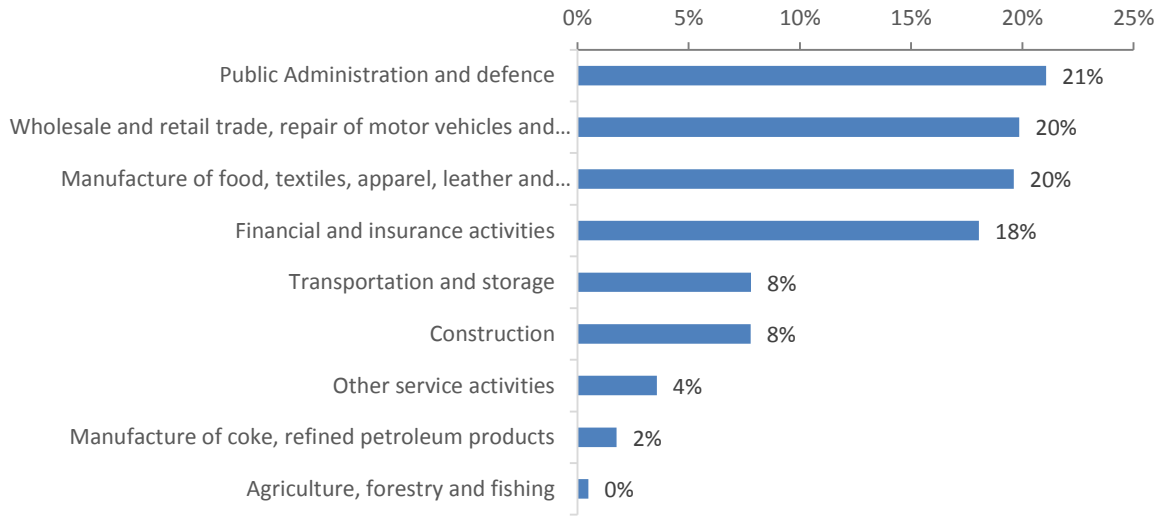
In the following chapter we investigate in which activity sectors and professional occupations low-skilled people most commonly work. We compare their shares with the shares of the total employment and differentiate our findings by sex and age group.

Activity sectors

Four sectors appear most appealing to low-skilled people in Hesse. Approximately one-fifth work in either public administration and defence, wholesale and retail trade, repair of motor vehicles and motorcycles, manufacturing of food, textiles, leathers and related products; machinery and equipment or financial and insurance activities (Fig. 9). Public administration and defence represent a slightly larger share, while financial and insurance activities represent a slightly less than one-fifth of all low-skilled employment.

The remaining fifth of low-skilled people are occupied in transportation and storage, construction, other service activities, manufacture of coke, refined petroleum products or agriculture, forestry and fishing. The latter represents only 0.5 percent of low-skilled employment and, thus, has the lowest share, whereas transportation and storage as well as construction each employ almost eight percent of low-skilled people.

Fig.9: Sectors of occupation of low-skilled employment



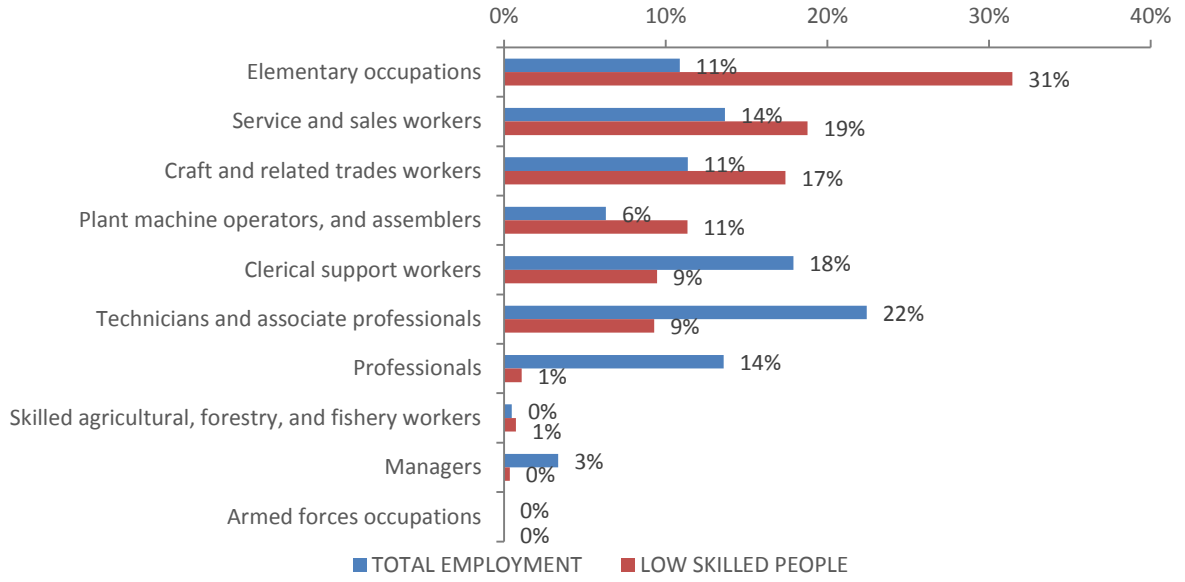
Source: Bundesagentur für Arbeit, June 2016

Professional categories

When it comes to occupations, two-thirds of low-skilled people work in just three occupational categories (Fig. 10): elementary occupations, service and sales work and craft and related trades work. Elementary occupations, which employs about 31% of low-skilled people, is the occupational category with the greatest importance for low-skilled employment.

Furthermore, we can see significant divergence when we compare the occupational categories for the full population compared to the low-skilled population. Low-skilled people are often employed in the aforementioned three occupational categories as well as plant machine operators and assemblers. Among the total population, representing a higher average skill level, the dominant occupational categories are clerical support workers, technicians and associate professionals as well as professionals, occupational categories that generally require higher qualifications than elementary occupations, service and sales work and craft and related trades work. The difference in elementary occupations employment among the general population and the low-skilled population is remarkable; the share of employment for this occupational category among low-skilled people is almost three times as high as for the general population. Shares of technicians and associate professionals as well as of professionals in the total population are each 13 percentage points higher than among the low-skilled population alone.

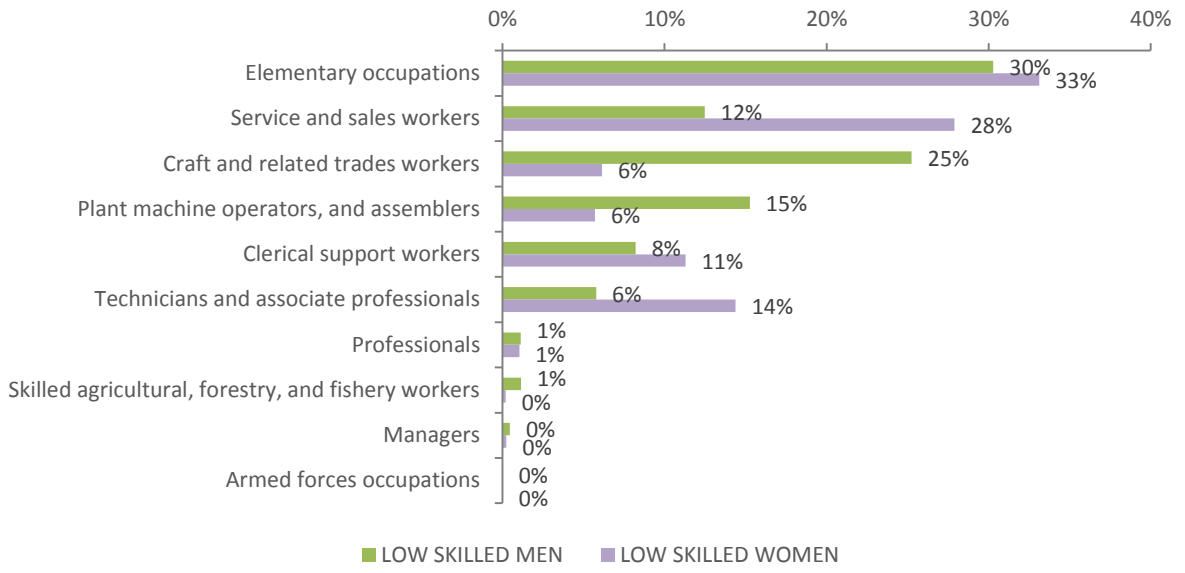
Fig. 10: Professional categories of the low-skilled employment in comparison to total employment



Source: Bundesagentur für Arbeit, June 2016

There are some differences between the professional categories of low-skilled women compared to low-skilled men (Fig. 11). However, the highest share of low-skilled women and low-skilled men work in elementary occupations. The share is similar for both sexes: 30% for men and 33% for women. However, whereas one quarter of the low-skilled men are occupied as craft and related trades workers, 28% of the low-skilled women are occupied as service and sales workers. Low-skilled women are more likely than low-skilled men to work in occupational categories that require higher qualification levels; 11% of women work as clerical support workers and 14% work as technicians and associate professionals.

Fig. 11: Professional categories of the low-skilled population. Comparison according to sex



Source: Bundesagentur für Arbeit, June 2016

We also observe differences between the youngest age group, 16 to 24 year olds, compared to people above 25 years of age (Fig. 12). The latter actually encompasses three age groups, but all display similar shares of employment in each occupational category. People above 25 years of age work mostly in elementary occupations (38-40%), whereas this occupational category only employs 13% of young people between 16 and 24 years of age. The most important occupational categories for the youngest age group are craft and related trades workers (29%) and service and sales workers (23%). This could reflect that it is easier for young people to access vocational training and education, so they can achieve the necessary qualifications that more sophisticated occupations require (see for example Eichhorst 2015). In general, the distribution of young people is more even among the six most relevant occupational categories than it is for people aged 25 and older. The span for the former goes from five percent, in the category of plant machine operators and assemblers, to 29% for craft and related trades workers. People above the age of 25 show a larger span, from six percent of people between 25 and 54 working as technicians and associate professionals to 40% working in the occupational category of elementary occupations.

Fig. 12: Professional categories of the low-skilled population. Comparison according to age

	16-24	25-54	55-64	>65
Elementary occupations	13%	40%	40%	38%
Service and sales workers	23%	18%	14%	18%
Craft and related trades workers	29%	12%	12%	10%
Plant machine operators, and assemblers	5%	14%	16%	13%
Clerical support workers	12%	8%	10%	10%
Technicians and associate professionals	16%	6%	7%	9%
Professionals	1%	1%	1%	1%
Skilled agricultural, forestry, and fishery workers	1%	1%	0%	0%
Managers	0%	1%	0%	1%
Armed forces occupations	0%	0%	0%	0%

Source: Bundesagentur für Arbeit, June 2016

1.3. Unemployed low-skilled people in Hesse

People experience different durations of unemployment. We distinguish here between short-term unemployment – less than one year – and long-term unemployment – more than one year. Figure 13 points out that the duration of unemployment is linked, to some extent, to the skill level. Low-skilled people are more likely to be unemployed for the long term, although slightly more than half are only unemployed for the short-term. In general, unemployment in Hesse tends to be short term (62%) rather than long term (38%). According to the Federal Employment Agency (2016c), long-term unemployment in Hesse has decreased by nine percent between 2014 and 2015. Nevertheless, the share of long-term unemployment among the labour force was two percent in Hesse in 2016, the same as the German average (Bundesagentur für Arbeit 2017). Moreover, among low-skilled people we can identify differences according to sex. Figure 14 suggests that low-skilled men can find new work more quickly than low-skilled women, since the short-term unemployment rate for these men is about 57%, while less than half of low-skilled and unemployed women find a new job in less than one year.

Fig. 13 & Fig. 14: Comparison of the unemployment rate of the low-skilled population in relation to the total population and according to sex

Fig. 13

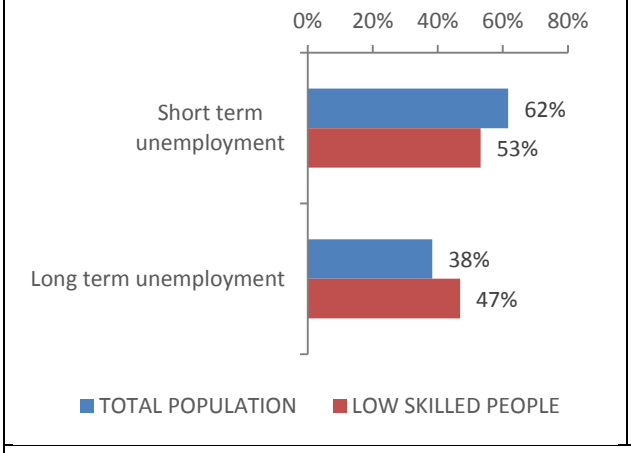
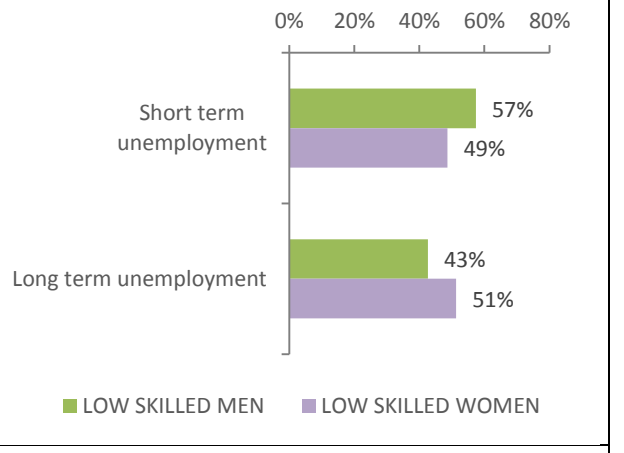


Fig. 14



Source: Bundesagentur für Arbeit, June 2016

With regard to unemployment, the vast majority (83 %) of young people between 16 and 24 years of age are unemployed for less than one year. Figure 15 points out that the share of low-skilled people who spend more than one year unemployed increases with age. Therefore, older low-skilled people are more likely to be long-term unemployed than younger low-skilled people.

Comparing the situation of unemployed people with low skills to the total population by age and sex, we can see that there is a relatively large gap (nine percentage points) between men and women in the age group of 25 to 54 year olds (Fig. 15). In all other age groups, women and men show approximately the same shares in long-term as well as in short-term unemployment.

Fig. 15: Comparison of the unemployment rate of the low-skilled population in relation to the total population, according to age and sex

	16-24	25-54	55-64	>65
Short term unemployment	83%	51%	40%	34%
Long term unemployment	17%	49%	60%	66%
Short term unemployed men	84%	55%	41%	34%
Long term unemployed men	16%	45%	59%	66%
Short term unemployed women	81%	46%	38%	34%
Long term unemployed women	19%	54%	62%	66%

Source: Bundesagentur für Arbeit, June 2016

1.4. Statistical analysis conclusions

- Low-skilled people in Hesse represent about 23% of the total population. In comparison to the total population, which displays an average activity rate of almost 50%, the low-skilled population shows a lower activity rate (22%). Low-skilled people are generally in a weaker position on the labour market than the general population, as shown by the employment rate, occupation rate and unemployment rate.

- We could not identify differences regarding low-skilled peoples' participation rates in full-time or part-time jobs. Both the general population and the low-skilled population tend to work full-time (approximately 72%).

- Around 21% of low-skilled people work in public administration and defence, but three other industry sectors are also of great importance for low-skilled workers: wholesale and retail trade; repair of motor vehicles and motorcycles, manufacturing of food, textiles, apparel, leather and related products and financial and insurance activities.

- Nearly one third of low-skilled people are employed in elementary occupations, while the occupation groups of service and sales workers (19%) and craft and related trade workers (17%) are also of relative importance for this population.

- Low-skilled people are more likely to be long-term unemployed than the general population. About 47% of low-skilled unemployed people suffer from unemployment lasting one year or longer, while the share of long-term unemployed people among the total population is nine percentage points lower.

- Differences exist between the sexes among low-skilled people :

    - Low-skilled women appear to be in a structurally weaker position than men, since they display a lower employment and occupation rate, have a reduced work day and are, on average, unemployed for longer. All these factors give women lower income opportunities and make them more prone to precarious employment and living conditions.

    - However, low-skilled women are more likely to be employed in occupations that are, on average, occupied by higher-skilled people.

- Differences among age groups:

    - Low-skilled individuals below the age of 25 perform better in most indicators than older age groups. Moreover, the younger age category differs in their distribution across occupational categories compared to the older age groups. While the latter mostly work in elementary occupations (approximately 40%), the younger group shows higher shares in craft and related trades workers (29%) and services and sale workers (23%).

    - While low-skilled people between the ages of 25 and 54 show the highest employment rate (27%), they display the lowest occupation rate (65%). This

might be due to a relatively high active population in this age group (Haupterwerbsgruppe).

- Two thirds of low-skilled people between 25 and 64 years of age have a full-time workday, while 87% of individuals below 25 years of age work full-time as well, whereas more than the half of the population 65 years of age or older work in part-time positions.

SECTION 2. OPPORTUNITIES OF THE REPLACEMENT DEMAND FOR HESSE

Section 2 summarizes the opportunities for low-skilled people that arise of the replacement demand in Hesse within the next years. Based on the *regio pro* report from 2015, which provides an employment demand projection for Hesse between 2015 and 2020, we determine in which areas large replacement needs are expected.

2.1. Projections for total employment by sector and occupations in Hesse

The employment demand projections for Hesse between 2015 and 2020 rely on IWAK's *regio pro* report from 2015.[7] The *regio pro* report is based on the labour demand projection method developed by the *Gesellschaft für Wirtschaftliche Strukturforschung (GWS)* and on the labour supply projection method developed by *Hessen Agentur*. Since pure quantitative methods have some limitations in their explanatory power, the *regio pro* report added a qualitative instrument in order to make the results more reliable. Expert interviews with regional and local political and business stakeholders were conducted. Quantitative employment projections were created by combining future labour supply and future labour demand projections. Figure 16 shows the employment projections for the 20 main economic activities and seven subcategories according to International Standard Industrial Classification of All Economic Activities Rev. 4 (ISIC Rev. 4).

According to the *regio pro* report, the economy will face a shortage of about 123,000 workers. The principal cause for this deficit is the approximately 250,000 workers who are expected to retire by 2020. However, since labour demand will also diminish by 25,000 workers, and the predicted additional labour supply will increase by about 105,000 workers, the overall employment projections concerning the labour deficit are expected to be less severe.

The projections show that growth and decline of employment until 2020 is very unevenly distributed across industry sectors and economic activities (Fig. 16). Employment in manufacturing industries and wholesale and retail will probably decline by about 44,000 people; motor vehicle and motorcycle repair will have a labour demand that is reduced by 18,000. These two industry sectors indicate the largest decline in employment in Hesse, but the construction industry and transportation and storage contribute significantly to the total decline in employment as well. Reasons for the decline in manufacturing as well as in wholesale and retail might be connected to the ongoing technological changes that make more and more routine tasks in both industries susceptible to automation and computerization (Acemoglu and Autor 2011). The predicted decline in transportation and storage employment attracted our attention, because transportation and storage is an important industry sector in Hesse, as chapter 3 will show.

[7] For more information see also the website of *regio pro*: http://www.regio-pro.eu/ (accessed July 10, 2017).

Fig. 16: Variation of Employment in Hesse 2013-2020, by industry sectors and economic activities

	Employment 2013	Employment 2020	Variation 2013-2020
A.- Agriculture, forestry and fishing	11,377	10,850	-527
B.- Mining and quarrying	7,679	7,680	1
C.- Manufacturing	461,003	416,830	-44,173
10-12.- Manufacture of food products, beverages and tobacco products	49,510	49,040	-470
20-23.- Manufacture of chemicals and chemical products, pharmaceutical products and pharmaceutical preparations, rubber and plastics products and other non-metallic mineral products	99,895	90,790	-9,105
24-25.- Manufacture of basic metals, fabricated metal products, except machinery and equipment	67,045	60,880	-6,165
28-30.- Manufacture of machinery and equipment n.e.c., motor vehicles, trailers and semi-trailers and other transport equipment	114,999	103,310	-11,689
Other Manufacturing Industries	129,554	112,810	-16,744
D; E.- Electric energy, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities	32,164	28,810	-3,354
F.- Construction	122,474	113,130	-9,344
G.- Wholesale and retail; reparation of motored vehicles and motorcycles	395,391	377,170	-18,221
45.- Wholesale and retail trade and repair of motor vehicles and motorcycles	50,975	49,780	-1,195
46.- Wholesale trade, except of motor vehicles and motorcycles	129,322	118,050	-11,272
47.- Retail trade, except of motor vehicles and motorcycles	215,094	209,340	-5,754
H.- Transportation and storage	178,261	172,190	-6,071
I.- Accommodation and food service activities	110,879	119,830	8,951
J.- Information and communication	95,587	95,610	23
K.- Financial and insurance activities	142,681	139,600	-3,081
L.- Real Estate activities	32,780	30,430	-2,350
M.- Professional, scientific and technical activities	199,893	209,360	9,467
N.- Administrative and support service activities	205,263	221,410	16,147
O.- Public administration and defence	139,990	139,950	-40
P.- Education	100,460	102,400	1,940
Q.- Health activities and social work activities	297,780	321,560	23,780
R.- Arts, entertainment and recreation	25,981	27,570	1,589
S.- Other service activities	82,052	83,820	1,768
T.- Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	15,956	15,570	-386

Source: IWAK (2015) based on Statistische Ämter des Bundes und der Länder (VGRdL) and Bundesagentur für Arbeit (BA)

Contrary to the aforementioned industry sectors and economic activities, employment is expected to grow remarkably in health activities and social work activities (+23,780), administrative activities and auxiliary services (+16,147), professional, scientific and technical activities (+9,467) as well as in accommodation and food service activities (+8,951). Trends in additional industry sectors are displayed by Figure 16.

Although the figures indicate that overall employment levels in Hesse are declining, we predict neither a significant growth in unemployment nor a lack of employment opportunities. The decline is not only related to employment losses, but also to an increasing replacement demand. This issue is broadly discussed throughout Germany using the term *Fachkräftemangel*, i.e. the shortage of skilled workers needed to cover a growing replacement demand. Nevertheless, Figure 17 shows that labour demand and supply vary across economic activities. While some industry sectors face challenges finding workers to hire, others may accumulate a labour surplus. The additional supply refers to people joining the labour market and people who are living outside of Hesse but commuting to work there. Likewise, the latter indicator also subtracts people living in Hesse but commuting to another state.

Since employment in manufacturing industries will decline by nearly 10%, replacement demand is quantitatively offset. However, additional labour supply is increasing and, hence, we can predict a labour surplus, a positive mismatch, in this industry sector. This is also the case, but to a lesser extent, in construction, electric energy, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities as well as in real estate activities. These industry sectors do not require the same amount of labour as they did in the past and, hence, are less affected by replacement demands. Interestingly, wholesale and retail and motor vehicle and motorcycle repair display a deficit of labour and, thus, a negative mismatch by 2020 due to a large replacement demand and a lower decline of labour demand. However, this is not true for the entire industry sector, because wholesale trade, except for motor vehicles and motorcycles, faces a relatively high reduction of labour demand and, therefore, will display a labour surplus.

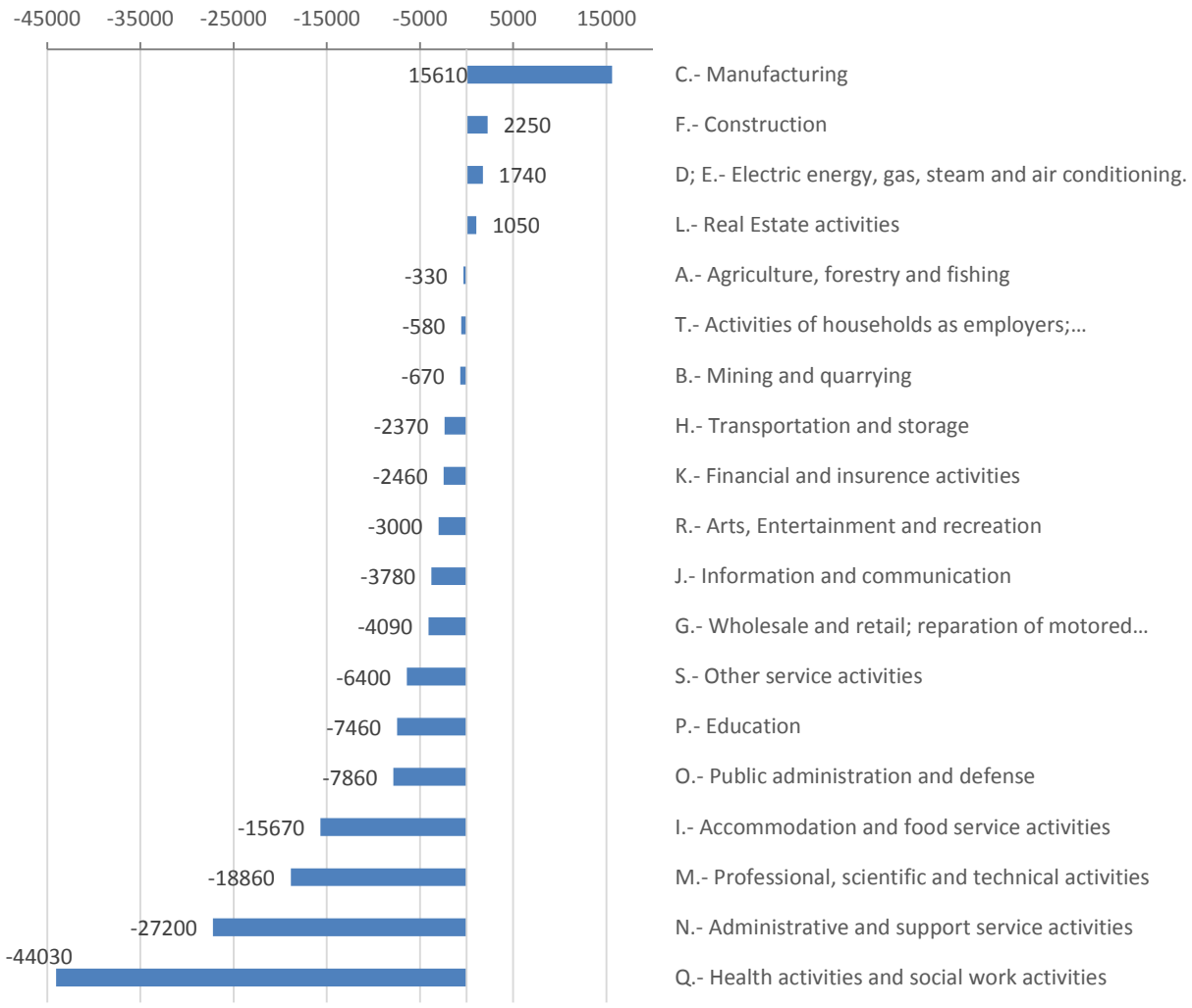
Fig. 17: Estimated changes in labour demand and supply in Hesse 2013-2020, by industry sectors and economic activities

	Change of Demand	Replacement Demand by 2020	Additional Supply	Mismatch
A.- Agriculture, forestry and fishing	-520	1,070	220	-330
B.- Mining and quarrying	-30	760	60	-670
C.- Manufacturing	-44,140	40,910	12,380	15,610
10-12.- Manufacture of food products, beverages and tobacco products	-440	4,780	1,440	-2,900
20-23.- Manufacture of chemicals and chemical products, pharmaceutical products and pharmaceutical preparations, rubber and plastics products and other non-metallic mineral products	-9,120	8,890	3,190	3,420
24-25.- Manufacture of basic metals, fabricated metal products, except machinery and equipment	-6,150	5,970	1,130	1,310
28-30.- Manufacture of machinery and equipment n.e.c., motor vehicles, trailers and semi-trailers and other transport equipment	-11,670	10,220	3,450	4,900
Other Manufacturing Industries	-16,760	11,050	3,170	8,880
D; E.- Electric energy, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities	-3,360	2,800	1,180	1,740
F.- Construction	-9,400	11,020	3,870	2,250
G.- Wholesale and retail; reparation of motored vehicles and motorcycles	-18,230	36,730	14,410	-4,090
45.- Wholesale and retail trade and repair of motor vehicles and motorcycles	-1,210	4,860	1,890	-1,760
46.- Wholesale trade, except of motor vehicles and motorcycles	-11,300	11,490	4,890	4,700
47.- Retail trade, except of motor vehicles and motorcycles	-5,720	20,380	7,630	-7,030
H.- Transportation and storage	-6,130	16,190	7,690	-2,370
I.- Accommodation and food service activities	9,010	11,550	4,890	-15,670
J.- Information and communication	60	9,010	5,290	-3,780
K.- Financial and insurance activities	-3,100	12,980	7,420	-2,460
L.- Real Estate activities	-2,350	2,860	1,560	1,050
M.- Professional, scientific and technical activities	9,460	19,890	10,490	-18,860
N.- Administrative and support service activities	16,150	21,130	10,080	-27,200
O.- Public administration and defence	-70	13,700	5,770	-7,860
P.- Education	1,950	9,890	4,380	-7,460
Q.- Health activities and social work activities	23,780	31,470	11,220	-44,030
R.- Arts, entertainment and recreation	1,570	2,660	1,230	-3,000
S.- Other service activities	1,790	8,060	3,450	-6,400
T.- Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	-410	1,530	540	-580
Total	-23,970	254,210	106,130	-124,110

Source: IWAK (2015) based on Statistische Ämter des Bundes und der Länder (VGRdL) and Bundesagentur für Arbeit (BA)

Figure 18 helps to estimate the different changes in labour demand and supply by industry sector and economic activity and, hence, employment mismatches throughout Hesse. Notably, health activities and social work activities (-44,030), administrative and support service activities (-27,200), professional, scientific and technical activities (-18,860) as well as accommodation and food service activities (-15,670) show the highest labour deficits. This coincides with the comparatively strong growing labour demand and the high replacement demand predicted by 2020 in these sectors (Fig. 17).

Fig. 18: Changes in labour demand and supply in Hesse 2013-2020, by main industry sectors

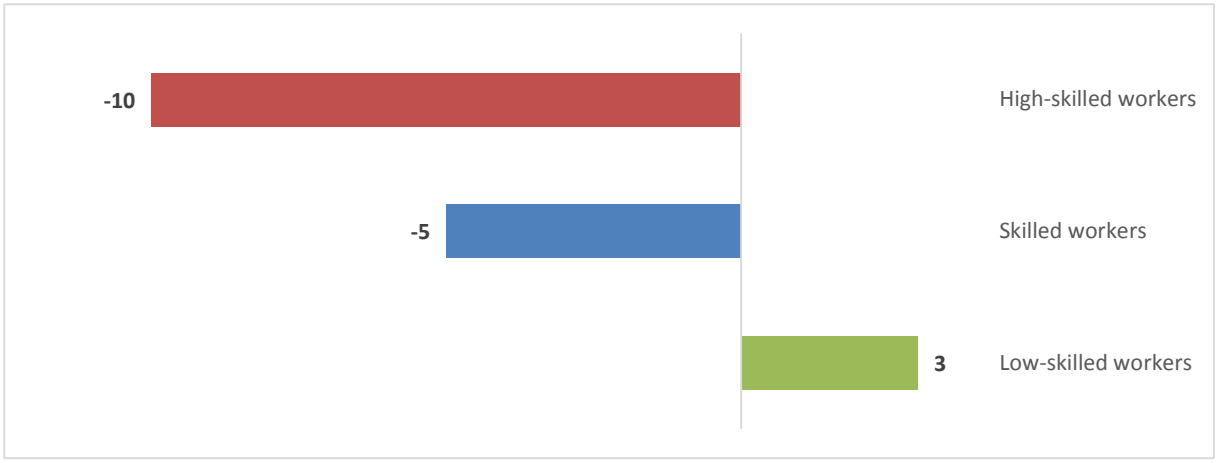


Source: IWAK (2015) based on Statistische Ämter des Bundes und der Länder (VGRdL) and Bundesagentur für Arbeit (BA)

2.2. Trends and skills

The projections concerning qualifications predict that Hesse will show a deficit of skilled and high-skilled workers by 2020, whereas low-skilled workers will face higher competition for fewer jobs due to a surplus in the low-skilled labour supply (Fig. 19). Low-skilled people will show a positive mismatch of three percent, a surplus of approximately 13,600 workers. By contrast, skilled workers will display a negative mismatch of five percent, which represent 90,000 workers. Hence, this group has the highest absolute deficit, while high-skilled workers show the highest relative deficit due to a negative mismatch of ten percent, approximately 44,000 workers.

Fig. 19: Relative mismatch of workers by 2020 (%), according to qualifications



Source: IWAK (2015) based on Statistische Ämter des Bundes und der Länder (VGRdL) and Bundesagentur für Arbeit (BA).

On the one hand, a decreasing demand is the primary reason for the low-skilled workers surplus, while on the other hand, a relatively fast-growing demand for high-skilled workers is causing a high supply deficit. These projections for Hesse correspond to insights about the impacts of technological advances on occupations and labour markets as well as to current employment trends across most advanced economies (Autor 2015; Frey and Osborne 2013; Katz and Margo 2013). Frey and Osborne as well as Katz and Margo point out the increasing importance of skills and the growing demand for high-skilled people.

However, employment trends can show differences between low-skilled workers in general and workers in certain low-skilled service jobs (Autor and Dorn 2013). IWAK's (2015) *regio pro* report also supports this observations. However, one must consider that the *regio pro* report does not classify workers according to their occupational level but rather according to their skills level. That means, just as low-skilled workers can theoretically also occupy middle-skill or high-skill jobs, skilled and high-skilled people can occupy low-skill jobs. Nonetheless, we take this data as an approximation of the actual number of low-skilled people working in those jobs.

According to the *regio pro* report, demand for some occupational categories with many low-skilled service jobs is significantly rising and economic activity will probably suffer from labour

deficit. This is especially the case in several care-related professions, categorised primarily in health activities and social work activities, as well as in cleaning jobs which belong to administrative and support service activities. Compared to Figure 18 above, both economic activities anticipate relatively high labour deficits by 2020. Approximately half of the people employed in elderly care (16,700) are working in low-skill jobs. By 2020, projections predict a labour deficit of 5,300 workers in elderly care. Furthermore, since more than 92,000 people working in low-skill service jobs are currently doing cleaning work, this occupational category is also quite important for low-skilled people. Projections predict that the demand for cleaning jobs will rise, but the relatively low labour supply might cause a deficit of around 10,000 workers. The data from IWAK (2015) are not clear about how much of this deficit belongs to low-skill jobs.

Another interesting observation relates to people in accommodation and food service activities. The occupational category linked to these economic activities covers more than 20,000 low-skill jobs and amounts to one quarter of total employment. However, projections predict a comparatively high labour deficit of more than 9,500 jobs. One reason is the high replacement demand, but another reason might be that technological advances will not cause significant job cuts among these low-skill service jobs. The same is presumably true for low-skilled care and cleaning jobs (see for example Autor and Dorn 2013).

Transportation and storage have significant shares of low-skilled employment as well, with nearly 92,000 people employed in low-skill jobs in this sector in 2013, slightly more than half of all workers in this industry sector. Questions arise about the future of many of these low-skill jobs, since technological advances might change significantly, requiring more sophisticated skills (HOLM and Fraunhofer IML 2016). However, less than six percent of companies in transportation and storage in the Rhine-Main region agreed that further vocational training is necessary to deal with digitalization and automation trends as of 2016 (Fischer and Schmid 2017). The next chapter takes a closer look at employment trends in this sector due to its importance for employment trends and economic development in Hesse.

SECTION 3: SELECTED ECONOMIC SECTOR AND TARGET GROUP IN HESSE

Transportation and storage

The occupational sector transportation and storage counted about 172,500 workers in Hesse as of March 2017 and therefore was one of the four sectors employing the most people (Bundesagentur für Arbeit 2017b). Besides its central geographical location in Europe, good infrastructure makes the state of Hesse an important place for transportation and storage. No other German state is as deeply integrated in international logistic networks as Hesse (HOLM and Fraunhofer IML 2016). Most of the activities are concentrated in the Rhine-Main area that occupies a top position in Europe as an international hub for air, road and rail traffic.[8] Furthermore, after London, Paris and Amsterdam, Frankfurt airport is the fourth busiest airport in Europe and the largest airport in Germany (Helaba 2013).

The overall employment situation in the logistics industry in Germany is good. After experiencing a slight decline in 2008 due to the financial crisis, it attained its pre-crisis level again by 2013 (DSLV 2015), and, according to the Federal Employment Agency, overall employment in the German logistics industry is still growing (ibid.). In Hesse, four out of the five largest companies, based on the number of employees, belonged to the logistics industry in 2012 (Fig. 20).

Fig. 20: Top five companies in Hesse (2012) by sector, according to number of people employed in Hesse

	Company	Employees in Hesse	Sector
1	Deutsche Lufthansa AG	37,400	Transportation
2	Rewe Group	29,000	Trade
3	Deutsche Bahn AG	25,100	Transportation
4	Fraport Konzern	20,700	Transportation
5	Deutsche Post Gruppe	18,000	Logistics

Source: Hessen Agentur, Helaba Volkswirtschaft/Research, own illustration.

According to the Institute for Employment Research (Institut für Arbeitsmarkt- und Berufsforschung), as of 2011, about 19.3% of workers in the occupational category of transportation and storage did not have any vocational training (Fig. 21). However, since 1999 this figure has fallen from 27.5%. During the same span of time, the number of people with an apprenticeship fell by about four percentage points to 53.1%, whereas people with an unidentified professional education increased significantly – by more than 12 percentage points – to 26.5% by 2011. While the share of highly qualified people did not change over time, the share of specifically trained people in this sector decreased.

[8] https://english.hessen.de/economy/about-economy (accessed July 19, 2017).

Fig. 21: Share of employees in the logistics industry in Hesse, in regard to their educational attainment (1999, 2002, 2005, 2008, 2010, 2012)

	1999	2002	2005	2008	2010	2011
Below Upper Secondary Education	27.5	25.3	23.3	21.3	20.0	19.3
Vocational Education and Training	57.3	55.1	55.4	54.1	53.4	53.1
Tertiary Education (Fachhochschule)	0.6	0.5	0.6	0.6	0.6	0.6
Tertiary Education (University)	0.4	0.4	0.5	0.5	0.5	0.6
Professional Education unidentified	14.3	18.6	20.2	23.5	25.5	26.5

Source: Institut für Arbeitsmarkt- und Berufsforschung (2011), own illustration.

As we have already seen, the share of low-skilled employment in the transport and storage sector is significant. Questions are arising about the future of many of these low-skill jobs. In their study on future development in the logistic and mobility sector, HOLM and Fraunhofer IML (2016) point out that workers with mixed skills (people who can carry out tasks of a trucker and a clerk for example) are particularly expected to become more important in the future due to technological change and increasingly required flexibility. More training will be necessary in order to meet these future challenges.

The overall increase of low-skilled workers that have attended training programs in Hesse since 2009 suggests that more and more people achieve some kind of qualification and, one can extrapolate that low-skilled people in the logistics industry are also becoming more skilled (Fischer, Schmidt, Larsen 2016). However, whether a firm offers its employees vocational or further training depends to some extent on the firm size. Bigger firms are more likely to qualify and train their workers (ibid.). Since 90 percent of the firms working in the logistics industry in Hesse are small- and medium-sized enterprises (SMEs), we should consider structural obstacles to raising qualification levels. Moreover, although these SMEs conduct apprenticeships and vocational training, they do not offer many opportunities for professional development. Therefore, many apprentices move to a larger firm after graduation in search of better career options. To compensate their loss of skilled workers, SMEs more frequently employ people that are either unskilled or trained in another occupation. Therefore, one of the main characteristics of the logistics industry is its high rate of so-called lateral entry employees (*Quereinsteiger*). SMEs primarily provide those workers with on-the-job training in order to prepare them for their tasks. For many SMEs in the logistics sector, it is increasingly difficult to find skilled workers and to retain them in a sustainable manner (Wiesen and Trott 2014). Due to this, the further qualification of low-skilled people remains an important approach to meeting the labour force demand.

Target Group

According to a survey among SMEs in the transportation and storage sector in Hesse, low-skilled people working in the logistics industry typically concentrate in three occupations: warehouse logistics, transportation and fleet management (Wiesen and Trott 2014). Whereas warehouse logistics as well as transportation are dominated by men, the proportion of women and men in fleet management is more balanced. Moreover, there are also differences in the level of qualification among the workers in the identified occupations. More than 50 percent of all employees working in warehouse logistics are considered to be low-skilled.

In contrast to warehouse logistics and transportation, only 12 percent of workers in fleet management are considered low-skilled workers (ibid.). However, many people seem to be re-assigned to fleet management after working in other departments of the same firm; they have been moved to fleet management due to health or age reasons. The relatively low share of low-skilled workers in fleet management can be partly explained by the higher need for skilled workers. Firms are interested in training their fleet management employees in clerical skills, logistics and languages. Therefore, low-skilled people are rather rare in fleet management. On the other hand, low-skilled jobs in fleet management are more often based on long-term agreements (Westenberger and Wiesen 2014).

In order to provide this industry sector with adequately skilled workers, the German VET system includes several apprenticeships that are specialised for the logistics industry. According to a survey conducted by the *Deutscher Speditions- und Logistikverband (DSVL)* in 2015, about 77% of the surveyed logistics firms in Germany participate in apprenticeships. Figures show that most of those apprentices work in storage or as specialist clerks. Apart from apprenticeships, industry associations offer vocational training programs, especially for people who have held apprenticeship for their specific job and who entered the occupation without the required skills.[9] These vocational training courses are certified by associations, so people can benefit from a training that is recognized in the transportation and storage industry across Germany.

This industry sector is pressed for time as well as time-sensitive and requires a lot of flexibility and, therefore, companies need individually-tailored training programs (Westenberger and Wiesen 2014). Besides industry associations, several private education institutions run qualification programs that offer companies and workers various opportunities to enhance their skills. Courses take place during the work day, in the evening and on the weekend. Most companies prefer Saturday trainings and, hence, employees attend qualification programs in addition to their working hours. However, despite the many opportunities to up skill their employees, further training activities are not yet systematic in most of the firms; the exception is health and safety training that is required by law (Westenberger and Wiesen 2014).

Since the transportation and storage industry offers employment opportunities for many low-skilled people, the state or public institutions financially support and promote some training for low-skilled people in order to meet the labour demand. The Federal Employment Agency offers support to unemployed people in terms of qualifications that aim at occupations in the

[9] For more information see for example Bildungsakademie Speditions- und Logistikverband Hessen / Rheinland-Pfalz e.V. (http://slv-bildungsakademie.de/slv-bildungsakademie/index.php , accessed July 10, 2017).

transportation and storage industry sector. It provides low-skilled people to this industry and expects that they will then receive further on-the-job training. Concerning transportation, the Federal Employment Agency supports unemployed people by paying them to obtain a truck driver license under certain conditions. Regarding warehouse logistics, the BA does finance training on forklift trucks, since it is considered a vocational training or qualification measure according to SGB III. However, employers are less willing to offer more than basic training, for instance on forklift trucks, and the mandatory training concerning health and safety (Wiesen and Trott 2014).

SECTION 4: RESULTS OF EXPERT INTERVIEWS

Due to a significant number of fields of activity, the logistics sector offers, a wide range of employment opportunities for specialists as well as for low-skilled workers.

As already mentioned in Section 3, the logistics sector is one of the four largest industrial sectors in Hesse (BA 2017). Nationwide the sector of transportation and storage is among the three biggest industries. People with a low qualification level are an important group in transportation and logistics companies, because they can be appointed to a wide range of activities. Due to the lack of skilled workers in the fast-growing logistics industry (DSLV 2017), there are a lot of vacant positions at the moment. This creates potential opportunities and emphasizes the need for qualification, so low-skilled workers are able to cover present and future replacement demands.

In this chapter the results of the qualitative expert interviews will be illustrated. They support the data analysis in the preceding chapters. The interviews with key stakeholders from employment services, business associations, vocational education and training centres as well as companies aimed at obtaining relevant and detailed information about the sector and work activities in which low-skilled workers can find employment. Furthermore, we will develop an understanding of occupational requirements and working conditions.

4.1. Description of the current situation of the target group in the chosen sector

Currently, low-skilled people in the transportation and storage sector often work in basic stock operations and the transportation segment. The former includes activities such as commissioning, loading and unloading and the storage of goods as well as the land transport and cargo dispatch.

In the transportation segment low-skilled people work as forklift operators in in-house transportation, as operators of transport carriers or as (shuttle) bus drivers. To become employed in hauling or in passenger services requires a valid driving licence and at least a three-month basic qualification as a commercial driver (*beschleunigte Grundqualifikation*).

To become employed as a forklift operator, one requires a specific forklift licence, which can be acquired at several institutions for vocational education and training. To become a forklift operator, a trainee needs to learn theoretical and practical content, which is tested in a combined final exam. The theoretical training takes two to three days, depending on the individual's previous knowledge and skills. One must be at least 18 years old and have passed a mental aptitude exam, which gets approved with a physical health check for driver activities, wheel activities and surveillance activities.[10][11]

[10] Schulungszentrum für Bauwesen und Logistik: Fahrausweise für Flurförderzeuge/Stapler (http://www.sfbl.de/flurfoerderzeuge-stapler-fuehrerschein.html ,accessed November 7, 2017).
[11] Deutsche Gesetzliche Unfallversicherung e.V. (2017): Leitfaden für Betriebsärzte zur Verwendung des G25 (http://publikationen.dguv.de/dguv/pdf/10002/g25.pdf , accessed November 7, 2017).

According to an association representative in Hesse, a maximum of 10% of the commercial truck drivers currently possess a regular three-year vocational training. By contrast, 90% of drivers graduate with an accelerated basic qualification (*beschleunigte Grundqualifikation*), the so-called "qualification light" (*Ausbildung light*). This qualification comprises a training course totalling 140 hours, including ten practical lessons. At the end of the qualification measure the trainee must pass a practical and theoretical IHK-exam. The accelerated basic qualification requires a minimum age of 21 years. By contrast, the minimum age to start a regular vocational training as a commercial driver is 18 years of age.[12]

As of 10 September 2009, the *Berufskraftfahrer-Qualifikations-Gesetz* was revised, updating the preconditions that a commercial or occupational truck driver has to fulfil. Since then, in addition to a regular truck driver's licence, the driver has to follow the accelerated basic qualification. The aim of the law is to regulate the occupational qualification and training of commercial drivers and thereby improve road safety and the protection of the environment.[13] The accelerated basic qualification is a shortened qualification measure, which does not require a successful completion of a proper vocational qualification as a commercial driver (*Berufskraftfahrer*) or as a professional in vehicle operation (*Fachkraft im Fahrbetrieb*) or any other officially recognized occupation requiring formal training.[14] A regular driver's licence for cars is not required either.[15]

Graduation from an accelerated basic qualification is frequently encouraged and financed by the companies themselves or by the Federal Employment Agency. According to the statements of the business associations, entry-level employees tend to follow a standard vocational training taking three years, while employees making a lateral career move prefer the accelerated basic qualification.

To find employment in the administration of the logistics sector, companies usually require a background in economics or profound working experience, because the routines and tasks in this job are more complex than in the sectors of warehouse logistics and transportation. The candidates for these job positions need to have very good organisational skills as well as communication skills, since they have to coordinate communication among the process chains and with clients. Therefore, they need strong language skills (written and oral) as well as

[12] Springer Fachmedien München GmbH: Grundqualifikation und beschleunigte Grundqualifikation (https://www.eu-bkf.de/de/home/bkrfqg/grundqualifikation.htm , accessed November 7, 2017).

[13] IHK Berlin: Prüfungen beschleunigte Grundqualifikation Berufskraftfahrer (https://www.ihk-berlin.de/pruefungen_lehrgaenge/pruefungen/Sach-_und_Fachkundepruefung/Berufskraftfahrerqualifikation/2265106 , accessed November 7, 2017); Bundesamt für Güterverkehr (https://www.bag.bund.de/DE/Navigation/Rechtsvorschriften/Qualifikation-Weiterbildung/qualifikation-weiterbildung_node.html , accessed November 7, 2017).

[14] Bundesministerium für Justiz und Verbraucherschutz (2017): Gesetz über die Grundqualifikation und Weiterbildung der Fahrer bestimmter Kraftfahrzeuge für den Güterkraft- oder Personenverkehr (Berufskraftfahrer-Qualifikations-Gesetz - BKrFQG) (https://www.gesetze-im-internet.de/bkrfqg/BJNR195810006.html , accessed November 7, 2017).

[15] IHK Berlin (2017): Beschleunigte Grundqualifikation Berufskraftfahrer Güterkraftverkehr (https://www.ihk-berlin.de/blob/bihk24/pruefungen_lehrgaenge/pruefungen/Sach-_und_Fachkundepruefung/HTML-Verlinkungen_Verkehr/pdf-Dokumente_Verkehr/2279914/446a43fbfa94da74fec8439c2e105eeb/BKF_Merkblatt_Pruefung_beschleunigte_GQ_GueK_2010_08-data.pdf , accessed November 7, 2017).

maths or accounting skills to find employment in this field of work. Consequently, there are few low-skilled people working in administration in this sector.

Nevertheless, the training centres we interviewed pointed out that they are observing a rethinking of administrative roles. More often training measures are offered to competent workers to qualify them in this field of work. Moreover, to quickly and successfully integrate a new employee into the company, so-called "onboarding"-processes[16] should systematically include the administrative roles, in order to achieve high work performance as quickly as possible after a settling-in-period.

4.1.1. Low-skilled worker in the storage and transportation sector

All of the interview partners mentioned that most jobs in the warehouse logistics sector as well as in the transportation sector are male-dominated (70-85%). Not only are the jobs physically demanding, but most of the companies are organised in shift-work in the warehousing and transportation sector. These working conditions have an impact on the gender distribution. Furthermore, there are differences in the gender distribution according to the fields of work within the sector of storage and transportation.

Large companies have made attempts to deliberately raise the percentage of women. For example, there are projects that try to integrate more women in simple warehouse activities. Such projects provide alternative working hours models (e.g. the possibility of part-time employment, shorter work shifts, etc.) for women to reduce the physical burden and improve the compatibility between family and work.

The physical and mental fitness, which is assumed for engagement in the sector of storage and transportation, also affects the age pattern among low-skilled workers. The employees are predominantly 20 to 50 years old. All respondents stated that employees aged 55 years and older are quite uncommon in warehouse logistics. According to the employment agencies, the field of transportation is characterized by a higher average age. There is an assumed age limit with respect to the physical burden of loading and unloading transport vehicles. Because of the current labour market situation, companies emphasise that the physical fitness of the candidate is more important than the age.

If low-skilled workers are no longer able to work in their original positions for reasons of age and health, large companies frequently transfer these employees internally to a physically less-demanding field of work, so-called *Schonarbeitsplätze*. The aim is to reduce the physical burden and thereby keep the employee working as long as possible. The capacity for internal staff transfers are limited and consequently only temporarily affordable. In small and medium-sized companies, an internal staff transfer is rarely possible, because the companies do not have sufficient financial and personnel resources. Health trainings are sometimes implemented in an effort to reduce physical burdens.

[16] The term/concept „Onboarding" covers all measures of a company, which aim for a quick and successful integration of new employee into the company.

The employment agencies state that low-skilled people in the sector of storage and transportation are mainly employed in unlimited and full-time employment positions. At the same time, the employment agencies observe that, within this industry, employees change their workplaces frequently and quickly (high labour turnover rate). As a consequence, in regions where high demand for labour is observed, the employees are paid remarkably well (above the statutory minimum wage), to help with retention.

On the other hand, the companies emphasise that they initially use fixed-term employment contracts, due to the comparatively high labour turnover rate. Most of the fixed-term contracts are later turned into unlimited employment contracts after an appropriate period of time. According to an entrepreneurial expert, low-skilled people initially receive a two-year fixed-term employment contract with a chance of an unlimited contract after the expiration of this probation period. The company justifies the temporary work contracts at the beginning of employment with the dismissal protection in unlimited employment contracts. A two-year period seems to be an acceptable probation period to evaluate the employee with respect to his/her interpersonal, social and job-related skills and to confirm that the employee fits in with the company culture. In times of high order position the companies additionally hire temporary employees on a EUR 450-basis, most commonly by relying on temporary employment agencies.

Furthermore, the companies point out that vacant appointments for qualified workers in some areas are filled with low-skilled people as well as lateral entry employees, who are trained within the company, because of the tense labour market situation and the reluctance to work in the target sector.

Currently the employment structure in the warehouse logistics and transportation sector is very heterogeneous, with a high ratio of Eastern European employees. Due to the tense labour market situation in Germany, logistics companies rely on the labour force from other European, and especially Eastern European, countries. Additionally, a variety of initiatives exist that aim at integrating refugees and immigrants into industries, which are confronted with an acute shortage of labour. This effort is subsidised by federal funds. These programs cover occupational orientation and learning, for example *Perspektive für Flüchtlinge (PerF)* and *Perspektive für junge Flüchtlinge (PerjuF)*, which are conducive to orienting individuals in the German training and employment system as well as in the identification of occupational skills.[17][18] The *ESF-BAMF-Progamme* for occupational language advancement[19] as well as *Flüchtlingsintegrationsmaßnahmen (FIM)*, are programmes which create employment opportunities for refugees and bridge the waiting period until the residence permit is granted[20].

[17] Federal Employment Agency (2017): Perspektive für Flüchtlinge – PerF (https://www3.arbeitsagentur.de/web/wcm/idc/groups/public/documents/webdatei/mdaw/mtyz/~edisp/l6019022dstbai819996.pdf?__ba.sid=L6019022DSTBAI820002 , accessed November 7, 2017).

[18] Federal Employment Agency (2017): Perspektive für junge Flüchtlinge – PerjuF (https://www3.arbeitsagentur.de/web/wcm/idc/groups/public/documents/webdatei/mdaw/mty0/~edisp/l6019022dstbai820006.pdf?__ba.sid=L6019022DSTBAI820010 , accessed November 7, 2017).

[19] Federal Office for Migration and Refugees (2015): Berufsbezogene Deutschförderung (ESF-BAMF-Programm) (http://www.bamf.de/SharedDocs/Anlagen/DE/Publikationen/Flyer/Berufsbezsprachf-ESF-BAMF/berufsbezsprachf-esf-bamf.pdf?__blob=publicationFile , accessed November 7, 2017).

[20] Federal Ministry of Labour and Social Affairs (2017): FAQ. Flüchtlingsintegrationsmaßnahmen (FIM) (http://www.bmas.de/SharedDocs/Downloads/DE/Thema-Arbeitsmarkt/faq-arbeitsmarktprogram-fim.pdf?blob=publicationFile&v=5 , accessed November 7, 2017).

Additionally the Federal Government offers educational grants. There are programmes, which help companies financially and organisationally train refugees, for example *Einstiegsqualifizierung (EQ)* or *Assistitierte Ausbildung (AsA*). Refugees can also obtain support proposals to fund a successful graduation (e. g. *Ausbildungsbegleitende Hilfen (abH)*). A third main area focuses upon funding programmes for refugees who are already qualified. The aim is to facilitate the first step into the German workforce and to offer in-house trainings. Companies can obtain subsidies through programmes such as *Eingliederungszuschüsse (EGZ)* or *WeGebAU*.[21]

4.1.2. Barriers to find employment as low-skilled worker

Companies in the logistics industry ask low-skilled workers to provide sufficient language and maths skills as a basic requirement. These skills are assessed as necessary to quickly and successfully train the employee in his/her new job position (including training for health and safety reasons), to guarantee that operating instructions are understood properly and to ensure the employee can successfully participate in further qualification measures. Furthermore the following job-related behavioural patterns are considered important to find work in the logistics sector: motivation, reliability, flexibility, willingness to shift work in two or three shift systems, soft skills, willingness and ability to be mobile as well as to cope with physical and mental burdens (stress resistance) and the willingness to engage in lifelong learning. The companies usually do not require specific professional qualifications, and trainings are mainly organised internally (e. g. in terms of trainings on the job).

Altogether no fixed catalogue of skills and qualifications were identified, which the companies in the logistics sector require as preconditions for the employment of the target group. Due to the lack of labour force, companies frequently renounce basic qualifications as long as the employee is prepared to work. Furthermore, companies emphasise different skills and qualifications based on their respective orientations. The smaller and often more traditional companies focus more on basic qualifications, such as language and maths skills as well as soft skills, while large companies ask for an affinity for technique and digital media more often. Furthermore, insufficient language skills are no real obstacle to employment as long as there is someone (multilingual employees and executives) on the work floor that speaks German and the respective language of the new hire, to enable on-the-job peer-learning. Furthermore, extensive language skills are not necessary for all jobs in the warehouse logistics.

While the interviewed business associations classify basic skills in orthography as essential for employment in the sector, employment agencies and companies consider this skill less relevant. Furthermore, business associations consider an affinity for technology and digital media as a basic requirement, no matter the size and focus of the company.

[21] Federal Government (2017): Übersicht der Fördermöglichkeiten. Flüchtlinge in Arbeitsmarkt integrieren (https://www.bundesregierung.de/Content/DE/Artikel/2017/04/2014-04-13-integration-am-arbeitsplatz.html , accessed November 7, 2017).

4.1.3. *Career possibilities*

In the logistics sector, business associations and vocational training providers report career opportunities for low-skilled people, while employment agencies evaluate career opportunities for this employment group as small. The associations and training providers assume that low-skilled people can work in leading positions after passing qualification measures (e.g. the development from a manual worker to a group manager, master of motor traffic, dangerous goods safety adviser or dispatcher), as long as they are pro-active, motivated and show the ability to do process-related thinking. In addition to that, companies consider benefits as a necessary component. Therefore, the main success factors for career advancement in the logistics sector among low-skilled workers are as follows: a motivated and dedicated employee and an employer who supports the employee.

By contrast, community employment agencies assume few career opportunities for low-skilled workers. Due to the high share of SMEs in the sector,[22] there are hardly any intermediate job positions. In most of the companies, heads of department and shift foremen are working as intermediaries between the supervisors and owner and the low-skilled workers.

The companies point out the disparity in the career opportunities between small, medium and large companies. Large companies offer and encourage vocational education and training. To participate in such programmes the low-skilled workers have to display engagement and motivation. If successful, they have the opportunity to pass an IHK-qualification by an external audit (*Externenprüfung*).[23] The qualification enables low-skilled people to complete vocational training up to a master craftsman level. To pass such an external audit they have to prove skills and knowledge, which are determined in the description of the qualified job.[24] In contrast, small and medium-sized companies report limited career opportunities for their low-skilled workers, because leading positions are limited and usually allocated beforehand and for the long term.

4.1.4. *Career potentials and motivation*

Low-skilled people need incentives to participate in qualification programmes. The commitment to invest in training measures can be part of regular appraisal interviews. Other incentives include paid leave of absence for education and training programmes as well as financial incentives. If an employee is interested in vocational education and training, companies can support them through individual funding, dependent on their performance and the presumed success rate.

Currently or prospectively, a shortage of skilled professionals is one of the main reasons why large logistics companies invest in the qualification of low-skilled people. The companies

[22] Deutscher Speditions- und Logistikverband e. V. (DSLV): Zahlen, Daten, Fakten aus Spedition und Logistik (2015) (https://www.dslv.org/dslv/web.nsf/gfx/6CFE028FC9D5A06BC1257E5B003C8189/$file/DSLV_Zahlen-Daten-Fakten_2015-Downloadversion.pdf , accessed November 7, 2017).

[23] IHK Berlin: Zulassung zur Abschlussprüfung ohne Berufsausbildung (https://www.ihk-berlin.de/pruefungen_lehrgaenge/pruefungen/ausbildungspruefungen/Termine_in_der_Aus-_und_Weiterbildung/Voraussetzungen_zur_Pruefungszulassung/Externenpruefung/2262828 , accessed November 7, 2017).

[24] IHK-Düsseldorf (2010): Externe Prüfung: Information und Antrag. Zulassung zur Abschlussprüfung ohne vorangegangene Ausbildung (https://www.duesseldorf.ihk.de/blob/dihk24/Ausbildung/downloads/2596620/80c02e880fcbb161f56626596fa24c7e/M6_Externenzulassung-data.pdf , accessed November 7, 2017).

consider successful graduation from vocational education and training programmes as a "realistic aim". Nevertheless, the companies have to make an effort in motivating low-skilled people to take part in qualification measures, because quite often they do not share the interest in further training or qualification. This is especially true for employees who have already worked in their respective company for a relatively long time. Most often the job is regarded as necessary earn a living and nothing else. They are not attached to the company nor do they identify themselves with their occupational activity. Consequently few people are dedicated and motivated to take on further training and improve their occupational competences. Furthermore, all interviewed stakeholders emphasised that it is important for the company to promote qualification and advancement opportunities for low-skilled persons.

4.1.5. Recruitment of low-skilled workers: barriers and opportunities

Companies rely on several recruiting channels when hiring low-skilled workers. Companies of all sizes draw on classic channels, such as job advertisements on relevant job-portals or on the company website, in addition to word-of-mouth recommendations and intermediation measures by employment agencies and job centres as well as temp agencies. Additionally, especially the larger companies have internal staffing departments that can run marketing campaigns and present the company at job fairs.

The Federal Employment Agency also offers promotional measures for vocational education and training if the demand for specific jobs increases. A challenge in setting up these measures is that the employment agencies are confronted with an obscure pattern of demand, because many companies do not report vacancies since they do not trust the employment agencies to provide adequate candidates.

Logistics companies currently face huge labour shortages. This is aggravated by the fact that potential workers frequently lack interest in working in the storage and transportation sector. For this reason, many logistics companies engage temporary employment agencies to recruit workers from Poland, the Czech Republic and Bulgaria, who are willing to work under the given working and wage conditions in the logistics sector in Germany. Adequate wages, the reliability of German companies with regard to payment, as well as the social insurance system are incentives for foreign labourers. But the companies envisage new problems in employing temporary and contract workers– even from abroad – because of legislative amendments.[25]

4.1.6. Difficulties and barriers to engage low-skilled people

The companies struggle to mobilize and retain motivated low-skilled workers. There is a high labour turnover rate in the logistics sector because of the physically demanding shift-work and the few career opportunities. Furthermore, only few low-skilled workers are motivated to pass a professional qualification because of the long training period with reduced income. As a consequence, companies in the logistics industry assess the high labour turnover rate as a

[25] Federal Government (2016): Bundesrat hat zugestimmt. Mehr Rechte für Leiharbeiter (https://www.bundesregierung.de/Content/DE/Artikel/2016/06/2016-06-01-leiharbeit-werkvertraege.html, accessed November 7, 2017).

risk factor with regard to investments in vocational education and training programmes for low-skilled people.

Additionally, missing or insufficient language skills are another barrier to further training activities, especially for immigrants. Companies try to bypass such problems by lowering the threshold for employment and providing in-house language training.

4.1.7. Problems and chances of low-skilled workers in finding and maintaining employment in the selected sector

In the sector of storage and transportation the career opportunities for low-skilled worker are collectively classified as positive, due to low entry requirements for the target group.

Programmes such as the accelerated basic qualification (*beschleunigte Grundqualifikation*), help to integrate low-skilled worker in long-term contracts subject to social insurance contributions. But other qualification measures frequently take place in-house and are not officially approved. The aim of this company policy is to retain workers. Low-skilled people who have been trained in-house are indirectly bound to the company in which they passed their training, because the recognition of their qualification is also tied to the company.

One expert representing the employment agencies identified mobility as a big issue: Since many logistics companies set up their warehouses in remote areas with poor access to public transport a driver's license and a car are helpful. Currently, the employment agencies and job centres struggle to find low-skilled workers who would be able to commute to these locations.

4.2. Training, Participation, Engagement and Recruitment

In the last two to three years, the relevance of vocational education and training measures in the sector of storage and transportation has increased. This development is based on the serious and acute lack of suitable, qualified employees. Hence, alternative strategies are developing, which prepare low-skilled people for the requested jobs by training them before and/or on-the-job.

The employment agencies report that several companies have recognized the importance of qualification measures and incorporated the vocational education and training of low-skilled people into their standard practices. Nevertheless, the majority of companies are not sufficiently informed about programmes and subsidies for vocational education and training or they are not interested because of accruing costs. Large companies are able to take advantage of training offers more easily, since they have their own internal HR departments, whereas this is not possible for small and medium-sized companies due to a lack of personnel and financial resources.

The employment agencies and job centres set up qualification measures for low-skilled people to support the transition into the labour market and in order to cover the demand for qualified employees. Besides basic qualification such as language skills, the companies ask for company or activity-specific knowledge.

However the companies point out that they do not ask for specific vocational education and training, since it is not relevant and not needed when performing simple ancillary activities. On the contrary, the companies consciously recruit low-skilled workers due to the fact that they do not need any special skills, trainings or knowledge. Moreover the qualification of low-skilled people, who are working in ancillary activities, are more or less discouraged, since training and qualification also imply higher salaries. At the same time, the employees do not actively express any demand for qualification measures either.

The training providers state that the employers/companies should become more aware of their role in reducing the labour shortages by providing more in-house qualification measures. Although the companies can draw on various grants, they frequently do not take advantage of these opportunities. The training providers are frustrated by a lack of real commitment by the companies.

4.2.1. Training programmes/opportunities and grants in the sector for low-skilled people

Various political programmes subsidise companies in their efforts to provide qualification measures for low-skilled people.

There are federal programmes such as education vouchers (*Bildungsgutschein*) or the project *WeGebAU*. Within the frame of vocational training, education vouchers can be granted for individual educational needs.[26] The *WeGebAU*-programme focuses on further training opportunities for low-skilled workers that are already employed in small and medium-sized companies.[27] Furthermore the companies and low-skilled workers can take advantage of subsidies from the federal state of Hesse that encourage vocational qualification (e. g. occupational retraining). The programmes of the European Social Fund (ESF) supplement the pool of funding, which aims to reduce local, regional and national disadvantages on the labour market. In Hesse these funding programmes are *unternehmensWert:Mensch* and *Integration durch Qualifizierung (IQ*) as well as *ProAbschluss*. All of these programmes are co-financed by the Federal Ministry of Labour and Social Affairs and the European Social Fund. The programme *unternehmensWert:Mensch* offers small and medium-sized companies assistance in developing a anticipatory and employee-oriented strategy in human resources.[28] The programme *Integration durch Qualifizierung (IQ)* aims at improving the employment opportunities for people with an immigrant background. In the current funding period, the ESF is focusing on the recognition of foreign certificates (university and VET qualification) to help the holder of the certificate find adequate employment.[29] Employees who want to acquire a professional qualification in their current occupation can apply for funding by the initiative

[26] Federal Employment Agency (2012): Bildungsgutschein (https://www3.arbeitsagentur.de/web/content/DE/BuergerinnenUndBuerger/Weiterbildung/Foerdermoeglichkeiten/Bildungsgutschein/Detail/index.htm?dfContentId=L6019022DSTBAI486072 , accessed November 7, 2017).

[27] Federal Employment Agency (2016): Programm WeGebAU (https://www3.arbeitsagentur.de/web/content/DE/BuergerinnenUndBuerger/Weiterbildung/Foerdermoeglichkeiten/Beschaeftigtenfoerderung/index.htm, accessed November 7, 2017).

[28] Bundesministerium für Arbeit und Soziales: unternehmensWert:Mensch (http://www.unternehmens-wert-mensch.de/das-programm/was-bietet-das-programm/ , accessed November 7, 2017).

[29] ebb Entwicklungsgesellschaft für berufliche Bildung mbH und Zentralstelle für die Weiterbildung im Handwerk (ZWH) (2017): Förderprogramm „Integration durch Qualifizierung (IQ)" (http://www.netzwerk-iq.de/fileadmin/Redaktion/Downloads/IQ_Publikationen/Flyer/IQ_Flyer_DE.pdf , accessed November 7, 2017).

ProAbschluss.[30] Furthermore the interviewed stakeholders mentioned the qualification advice and qualification planning of the Federal Employment Agency, which helps companies define the format and extent of qualification measures needed.

4.2.2. Awareness and use of funding

In the last two to three years the relevance of vocational education and training for low-skilled people has increased due to the lack of skilled labour. The employment agencies observe a slow but constant increase in the demand for funding possibilities. However structural differences with regard to the companies have to be considered, since it is less common for small companies to take advantage of the funding and grants than large companies. In the logistics industry a demand for specific qualifications in each field of work in the target sector is assessed.

However, the overall demand for training offers from companies in the storage and transportation sector remains low. The actors seem to lack awareness of the relevance of qualification measures, because they currently do not see the necessity to invest in vocational training. Additionally the lack of reliable job applicants and the high turnover rate as well as still relatively easily covered replacement demand negatively affects the companies' interests in training opportunities.

4.2.3. Problems and effects of vocational education and training programmes

It is difficult to convince low-skilled people to apply for qualification measures, since they rarely have incentives to participate in trainings. One reason might be that companies usually provide vocational trainings off-time, which has a negative impact on the motivation of potential participants. The employers highlight the differences between large and small companies with reference to the format of qualification opportunities. Large companies tend to draw on formal and theoretical qualification measures, whereas small companies make use of internships or affiliation grants offered by the Federal Employment Agency[31]. The latter have a strong practical focus on integrating low-skilled workers directly into the workforce.

The stakeholders emphasize the importance of incentives that motivate the employers to promote qualifications measures and that motivate employees to demand training opportunities. A relatively formal agreement between the employer and the employees seems to be important to the successful completion of qualification measures as well.

Furthermore, all stakeholders agree that another success factor is the close collaboration between the companies and the training providers. With regard to the target group of low-skilled people measures for practical vocational education and training are considered to be most effective.

[30] Weiterbildung Hessen e.V: Hundertpro mehr Zukunft mit Berufsabschluss (http://www.proabschluss.de/die-initiative/was-ist-proabschluss/ , accessed November 7, 2017).
[31] Federal Employment Agency (2016): Eingliederungszuschuss: https://www3.arbeitsagentur.de/web/content/DE/Unternehmen/FinanzielleHilfen/SchaffungvonBeschaeftigungsverhaeltnissen/Eingliederungszuschuss/Detail/index.htm?dfContentId=L6019022DSTBAI495135 , accessed November 7, 2017).

Nevertheless, for a number of activities in the warehouse and logistics sector, the workers do not have to possess any additional qualifications, and as a result there is no demand for any training programmes. Altogether in the target sector, there is a lack of awareness of the relevance of qualification measures for low-skilled people, because in many companies, the business potentials with regard to the qualification of low-skilled people are insufficiently analysed and requested.

4.2.4. Vocational education and training on companies for low-skilled workers: motivation and barriers

Currently, most companies use in-person trainings with internal or external teachers. No matter the target group, classroom teaching has been evaluated to have the best learning outcomes, since it allows exchange among the students as well as between the students and the trainer. This kind of exchange and contact is especially important if there are language barriers or questions with regard to the subject. Furthermore, this training format enables trainers to better and more efficiently monitor the performance and learning progress.

By contrast, companies in the transportation and storage sector less often rely on e-learning formats to train their low-skilled employees. These learning formats tend to be easy to implement and less expensive at first but they require technical competence, more sophisticated equipment and space, which generally must be provided by the company. Additionally, the use of e-learning depends on the contents, and the needs and abilities of the target group have to be considered. Obligatory training courses, e.g. for health and safety reasons, can be easily implemented via an e-learning format, whereas other teaching formats seem to be more appropriate when it comes to specialist trainings and complex content. E-learning formats are generally more suitable to train skilled people due to their schooling and potential better ability to learn effectively and autonomously. Low-skilled persons are considered to have experienced a shorter and less successful education, which is why e-learning is generally less suitable for this group. For low-skilled people the focus is on the practical relevance of the training. Consequently, in-house trainings for low-skilled workers usually take place in the form of on-the-job-training. According to the interviewed experts, the best qualification results can be obtained by praxis-orientated trainings combined with theoretical instruction.

Small companies frequently rely on cooperation with external education providers, because in-house training is not profitable for such a small number of employees. By contrast, medium and large companies draw on in-house trainings more often. In this case, they most commonly organize their in-house trainings autonomously and provide over their own teaching staff.

Both the companies and the low-skilled workers express a demand for specialist and job-related qualification measures to offset the lack of labour in the logistics sector.[32] Moreover there is a demand for language courses.

[32] Bundesvereinigung Logistik e. V. (BVL) (2017): Fachkräftemangel in der Logistik deutlich spürbar (https://www.bvl.de/presse/meldungen/umfragefkmangel , accessed November 7, 2017).

4.2.5. Difficulties and barriers to achieve a higher participation rate in vocational education and training with regard to the target group

The structure of the companies and the attitude of the employees also contribute to the difficulties and barriers associated with providing a higher number of low-skilled workers with vocational education and training measures.

The business structure plays an important role, because the size of a company is considered to have a significant impact on the use of vocational education and training: Due to a lack of resources, small companies are often unable to take advantages of funding opportunities for vocational education and training. By contrast, large companies have separate HR departments who are responsible for these programmes. Further barriers to providing qualification measures are the time-consuming bureaucracy required to apply for subsidies, the lack of awareness of the necessity of vocational training as well as lack of interest in the qualification of low-skilled people due to rising salary demands after the qualification. Additionally, the companies blame an insufficient or faulty information policy regarding potential funding opportunities (e.g. non-informative info leaflets, missing information events as well as missing locally contact persons).

For the employees, lack of motivation is a major barrier to participation in qualification measures. Older employees and employees that have worked in the same company for many years are less likely to consider training a necessity and may feel less prepared to leave their comfort zone. Low-skilled people participate most commonly in voluntary training if they want to gain competences, make an occupational advancement or get a salary increase. The companies highlighted the motivation of low-skilled employees to participate in vocational training. Due to the fact that these persons are generally less inclined toward education, it is important to provide qualification measures with a low barrier to participation.

Altogether, several proposals and opportunities for vocational training exist already for the target group of low-skilled people in the sector of transportation and storage. However the communication between business associations, companies and employees proves to be lacking. It seems to be important institutions such as associations and training providers promote the relevance of the trainings in order to increase the motivation of both employers and employees. Small companies in particular need more information about the advantages of vocational training as well as information about funding opportunities. Furthermore, a support structure for low-skilled employees seems helpful, e.g. a contact within the company as well as an external contact person (e.g. one contact person at the educational provider and another at the job centre). Furthermore, companies need to promote their own attractiveness for potential job candidates, since the labour market is quite tight. For example they can focus on being present and available and recruit regionally (e.g. through local recruitment events).

4.3. Future trends and perspectives

Considering the increasing digitalisation and automation in nearly all industries, experts assume that the transportation and storage sector will grow and still be in need of low-skilled workers in the near future. However, they expect a drop in employment possibilities for the target group due to changes in work processes and in the working areas where low-skilled people are engaged. Nevertheless, this drop in employment possibilities is not necessarily negative because of the overall shrinking workforce due to the demographic change. It is anticipated that workers will not automatically be replaced by machines, but with regard to the growing lack of labour, digital systems will be developed to compensate for the labour deficit. Additionally, work activities of low-skilled people are expected to become more monotonous through increasing digitalisation.

Furthermore the experts assume a change in competence requirements, which is reflected on the one hand by reduced physical exertion (e.g. thanks to semi-automatic machines), and on the other hand by more complex work activities. But the experts disagree as to whether low-skilled people will need to have specialised knowledge or interdisciplinary thinking to find engagement in the logistics sector in the future. Some stakeholders suggest that low-skilled people will work in specialised jobs due to the growing automation of work activities. By contrast, another group of experts argues that an increase in interdisciplinary thinking will be needed, so one worker can be assigned to different working areas easily. According to the anticipated changes, low-skilled people will be expected to keep up with the times and become more open to lifelong learning. The experts emphasise that this is especially important in the future-oriented logistics sector.

The experts also named some special qualification requests and training requirements. The handling and operating of mobile devices will be a necessary and essential skill to be engaged as a low-skilled worker in the logistics sector. Furthermore, basic skills such as language and maths skills will remain relevant attributes as well as a pronounced, lifelong willingness to learn.

With respect to future training formats, the importance of e-learning will increase due to the advantage of portable and flexible learning opportunities. However, in the case of e-learning, the problems remain that the target group will likely need personal contact and performance review. Regarding thematic content, the experts assume that there will be a focus on trainings for the handling of technical devices and digital media. Furthermore, in-house vocational education and training will become more important in response to the shortages on the German labour market.

SECTION 5. SOME CONCLUSIONS ABOUT THE IDENTIFIED OPPORTUNITIES

- The transportation and storage sector is one of the four largest industrial sectors in Hesse and number three nationwide. It offers a wide range of employment opportunities for educated executives as well as for low-skilled workers. Currently the sector is expanding due to the growth of e-commerce.

- Low-skilled people are an important employment group for transportation and logistics companies, because they can be assigned to a wide range of activities such as picking, packing and loading/unloading of goods as well as in the transportation segment. Beside an increasing low-skilled labour requirement, there are also a lot of vacant positions for professionals, e.g. as truck drivers. This fact stresses the importance of qualifying low-skilled people to be able to cover present and especially future replacement demands.

- The logistics sector is a male-dominated sector with a culturally heterogeneous group of employees and a high ratio of Eastern European employees. Although an overall increase in low-skilled workers that attend training programs in Hesse has been reported since 2009, almost 20% of workers in the target sector did not have any vocational training on their job as of 2011.[33]

- In recent years the relevance of vocational education and training in the logistics sector has increased, even though the majority of companies do not take advantage of opportunities to provide vocational education and training. There are differences in how training programs are provided depending on the size of company. Large companies more likely have the personal, financial and temporal resources to offer trainings to their employees and to gather detailed information about possibilities for grants. A lack of motivation among employees and the inability to see the immediately obvious necessity are the greatest barriers to participation in vocational training. Consequently, there is a need to motivate and to create incentives for employees.

- Useful training formats to reach the target group of low-skilled people are face-to-face formats, which focus on basic language and maths skills as well as company-related or activity-related content. Some of these aspects can be imparted through on-the-job-training. In total, the cooperation of the employers, the employees as well as the training provider seems to be a major factor in determining success.

- Low-skilled workers in the logistics sector face a moderate risk of replacement by automation. Due to technical innovations, there will be a loss of some jobs, however there will be several working areas that remain labour-intensive on a low-skilled level in the medium future. Overall, work performed by low-skilled people is expected to become more monotonous because of digitisation, which calls for more specialised skills on the one hand and for the ability to transfer knowledge to other work activities on the other hand.

[33]IAB Forschungsgruppe „Berufliche Arbeitsmärkte" (2011): Beschäftigten- und Arbeitslosenstatistik der BA. Berufe im Spiegel der Statistik. Berufsfeld Verkehrs- und Lagerberufe: http://bisds.infosys.iab.de/bisds/result?region=6&beruf=BF14&qualifikation=2 , accessed December 1, 2017).

- In the future, better information about funding opportunities for employers as well as for employees need to emphasise the importance of vocational education and training to ameliorate challenges on the labour market. Small companies in particular will need other concepts and formats of information policy, such as local information events and local contact persons.

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