

# Employability of Academically and Vocationally Qualified Employees – Theoretical Reflections and Empirical Evidence from the Commerce Sector in Germany

Silvia Annen and Michael Tiemann

Federal Institute for Vocational Education and Training (BIBB), Bonn, Germany

Email: {annen, tiemann}@bibb.de

**Abstract**—Currently there is a debate on the labor market usability of vocational versus academic qualifications in Germany due to changes in the education system. There was a reform of academic qualifications with the introduction of bachelor programs which are ranked on the same level of the German Qualification Framework as vocational further training programs. There are also rising shares of people with a general degree allowing them to attend university and thus it is expected that the shares of graduates from bachelor programs will rise as well. This will possibly lead to competitions on the labor market with persons holding vocational further training certificates. Earlier studies pointed out there might also be a complementarity between the two kinds of educational programs. This paper reports first results from a research multi-method and multi-perspective project aimed at answering the question whether there is complementarity or competition. We contribute to existing literature by analyzing individual educational decisions and career paths. By matching achieved and required qualifications we also consider the quality of employment and labor demand in the sector. We hereby evaluate the usability of qualifications on the labor market.

**Index Terms**—vocational training, academic training, competition, complementarity, signaling, segmentation, education system, labor market

## I. INTRODUCTION

The presented results derive from a project set up to identify typical educational pathways and careers in commercial occupations for selected branches and potential competitiveness between vocational and higher education. Within the project qualification and skill utilization of the respective educational programs will be evaluated with regard to occupational status and positions as well as income. The research concept combines curricula and vacancies analyses, case studies and a quantitative survey. The theoretical background is formed by the signaling and screening approaches as well as the segmentation theory.

From a labor market perspective we show which career paths can be leading up to comparable occupational positions and from an individual perspective we compare the labor market outcomes of persons with equivalent qualifications. The intended practical impact of the research results is to develop ideas for the future structure of vocational education and training programs based on their actual usability on the job market.

In doing so, we use the German National Qualification Framework as a reference to classify comparable qualifications. To find comparable occupational positions we use the national classification of occupations which includes information on qualification requirements. We contrast the assignment of vocational and academic qualifications in the German National Qualification Framework to the actual status quo on the labor market (based on the Employment Survey). This empirical overview is the first step to identify typical educational pathways and careers.

In the following we will give an empirical overview based on the data set of the BIBB/BAuA Employment Survey 2012 [1]. This analysis focuses on employees' educational pathways using the commerce sector as an example.

## II. COMPETITION OR COMPLEMENTARITY?

In Germany the discussion about the relationship between vocational certificates and higher education certificates is triggered by the higher education structural reform ("Bologna process") as well as the implementation of the German Qualifications Framework (GQF). Two central arguments support the assumption of a competition between vocational and higher education qualifications or substitution tendencies of academically trained for vocationally trained persons: 1) Due to changes in recruitment patterns of firms, vocationally trained persons could be competing with academically trained bachelor graduates for the same positions while 2) students leaving school with a higher degree allowing them to go to a university could increasingly flow into bachelor programs instead of taking up an apprenticeship. The implementation of the new Bachelor programs gives

young people the opportunity of attaining an academic qualification in a comparable time to established apprenticeships, while promising higher prestige, higher wage classification and also access to a broader set of follow-up programs in comparison to apprenticeships [2]-[4]. The probability of a competition in the employment system is particularly high where there are strong similarities regarding the demands of the activities to be performed.

Besides the assumption of a competition, at the same time complementary qualification profiles exist where companies tend to differentiate positions into different tasks and areas of work accordingly [5]. Previous research shows that differences between industry sectors exist and that company-internal personnel structures as well as the training activity of the companies influence the competitive relationships [5].

Up to now, several surveys among companies have been conducted to learn more about the acceptance of, experiences with and partly (first steps) of bachelor graduates' career paths. Results differ and show relatively high acceptance and positive employment prospects of bachelor graduates [6]-[8] but also dissatisfaction due to bachelor programs being out of step with actual practice [9].

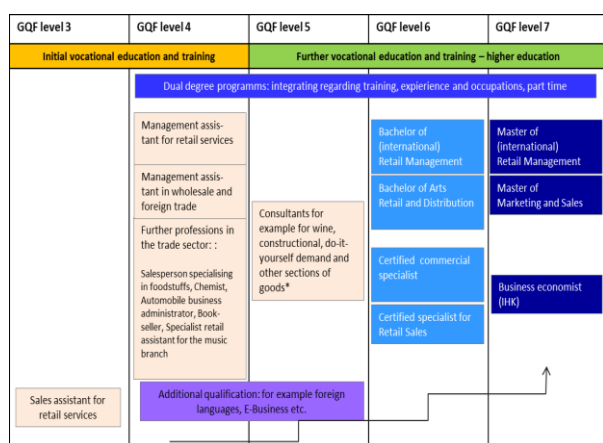


Figure 1. Relevant qualifications in the retail sector.

Within the GQF vocational, academic and general qualifications are located on certain levels. While the GQF overall comprises 8 levels we only focus on levels 3 to 7 here, which leaves basic qualifications below an apprenticeship (levels 1 and 2) as well as a PhD or comparable qualifications (level 8) aside. Apprenticeships are located on level 3 if they last two years and on level 4 if they last three years. Further trainings regulated by public law can be found on three levels of the GQF. The first level (“Fachberater”) is linked to level 5, master craftsmen and comparable vocational degrees (“Meister” and “Fachwirte”) are linked to level 6 and the third group (“Betriebswirte”) is linked to level 7. This means they are equivalent to bachelor (level 6) and master (level 7) degrees. Changing recruitment strategies of firms to favor academically trained graduates would cut traditional vocational career paths and thus lower the attractiveness of VET as a whole. Commercial and theory oriented occupations are

expected to experience high competition between vocationally and academically (especially in bachelor programs) trained graduates, unlike industrial and skilled manual occupations [10]. Fig. 1 shows the relevant qualifications in the retail sector.

Commercial occupations are of special interest here not only because of competition with bachelor graduates being more likely but also due to their empirical importance: Out of the six regulated VET programs taken up by apprentices holding a certificate allowing them to also enroll at a university five are commercial occupations [11]. In 2012 more than 40,000 persons were enrolled in one of these five apprenticeship occupations. In two of the occupations the share of young people who could also go to university was over 65 % (65.1% for “Industriekaufmann” and 71.9% for “Bankkaufmann”).

### III. THEORETICAL REFLECTIONS

Since we want to find out which career paths employees in commercial occupations take it is necessary to combine the perspectives of individuals and firms. Individuals will have to decide on the paths they are going to take and this decision might involve enrolling in a bachelor program versus taking up an apprenticeship. The information they have about possible future labor market outcomes of the respective programs are crucial for their decisions. On the other hand firms will recruit persons of whom they think they fit best to the tasks demanded by them on the job. Here, the firms' information about the contents of educational programs and the expected productivity of graduates are of interest.

In order to combine these perspectives analytically, we base our project on signaling/screening and segmentation theories. The signaling theory developed by Spence treats the problem of reduction of information asymmetry on markets, which can be eliminated according to the theory by using signals [12: 355ff.]. The core idea of the signaling approach is that the better informed stakeholder first acts to give the less informed stakeholder a signal to point to a not directly recognizable characteristic. These theoretical reflections can be transferred to the labor market.

In his analysis Spence also refers to the labor market, where employers are not sufficiently informed about the skills of the applicants. In his model the characteristics of the employees become apparent over time. This is the reason why the decision to hire an applicant can be characterized as an investment decision under uncertainty [12: 356ff.].

Employers receive information about the applicants from their CVs, credentials and letters of reference. They cannot observe to which extent the applicants meet their requirements, but they can only build assumptions based on the available information.

Characteristics of the applicants are only signals if they can be changed or influenced by the applicants. Due to this Spence differentiates between signals and indices, whereas the latter cannot be changed or influenced [12: 357]. Examples for indices are age and gender. These indices do not contain information about unobservable

characteristics. Hence applicants have the opportunity to signalize potential employers their productivity and their suitability for the respective job or function by documenting their educational achievement (i.e. degrees and certificates). This causes costs for the applicants in terms of time and money, which Spence calls signaling costs [12: 358]. Applicants accept these costs as long as the expected higher earnings in terms of wages are high enough.

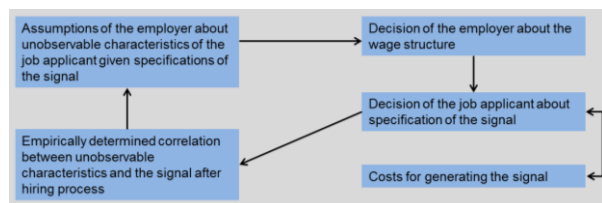


Figure 2. Information feedback process in the signaling model. Source: [12], p. 359

However a signal only distracts productive from less productive, i.e. suitable applicants, if the signaling costs are negatively correlated to the productivity to be signalized. This means that the acquirement of the signal is less costly for productive respectively suitable applicants than for unsuitable ones. This precondition is necessary, because otherwise all applicants would invest in the same way in the signal, so that they can no longer be distinguished based on the signal [12: 358]. A certain characteristic can be a signal for certain types of jobs. Fig. 2 illustrates the information feedback process within the signaling model.

The following results refer to the signaling theory as we analyzed how certain educational attainments of the employees in a certain job respectively position are related to the educational attainment typically required by the employers on this job/position.

Sengenberger develops an approach to structure the labor market analytically and to reduce its complexity in reality [13, p. 209ff.]. He differentiates between three ideal types of labor markets: the unstructured, the occupational and the in-company labor market, which he characterizes as follows. On the unstructured labor market there is no mutual bond between the employer and the employee, while employees own an undirected mobility. Wages are used as steering mechanism on the unstructured labor market. In contrast the occupational labor market is characterized by a mutual bond between supplier and demander of labor to a certain occupation. Applicants depend on certain jobs, which require a certain qualification, but they do not depend on a certain employer. Correspondingly employers also do not depend on certain applicants, but on certain certified qualifications. This labor market is adjusted by changing the employer and through coordinated change or modification of the qualification configuration of the applicants or the qualification requirements of the employers. Finally, within in-company labor markets the employees and the employers are characterized by a mutual bond. Adjustment is conducted by a quantitative or qualitative balance of supply and demand of workload.

There are two options to structure labor markets based on this differentiation. One could use the three types to develop a one-dimensional model or one could combine the organizational form of the partial labor market with the quality of the employment to reach a two-dimensional model. The latter implements the dimension of quality into the model [13, p. 209f].



Figure 3. Sengenberger's [13: 211] model of partial labour markets.

Furthermore Sengenberger differentiates the unstructured labor market into an independent and a dependent segment. Whereas within the independent segment employees and jobs are not related to other segments, this is the case for the dependent segment. Those markets are called buffer markets, as they buffer certain risks and costs for the other segments. In any case employments of a different quality have a complementary relationship: the quality of employment in one segment improves to the same extent as the quality of employment in another segment declines [13: 211]. The reallocation of quality of employment through the distribution of jobs into "good" and "bad" corresponds to the concept of a dual labor market model [14].

Fig. 3 illustrates Sengenberger's model of partial labor markets. This model is used as theoretical basis for the analysis of the quality of employment in the commerce sector. Due to the available data in the BIBB/BAuA Employment Survey 2012 the analysis focuses on the vertical dimension of the model.

#### IV. METHODOLOGICAL DESIGN AND DATA

Within the project we use a combination of qualitative and quantitative methods. For the examination of contents of corresponding vocational and academic qualifications we conduct a document analysis of the respective curricula under consideration of the classifications in the GQF. With this we want to assess the actual comparability of vocational and academic trainings preparing for occupational positions linked to the same level of the GQF.

An analysis of vacancies serves to identify the requirements and expectations of companies regarding the respective positions and activities. The vacancies data hold information on the positions and jobs advertised, on the requirements the firms set and also on the occupational qualification required – plus (if applicable) alternative occupational qualifications.

The examination of recruitment strategies of enterprises and the criteria relevant to them will be

realized by means of case studies and a company survey. With this step we look at how firms deal with the uncertainties and incomplete information about educational programs and the actual capabilities of applicants.

Finally a follow-up survey to the 2017/18 Employment Survey will be conducted to deliver insights into the usability of vocational and academic qualifications on the job market – in particular from the individual point of view.

The following results are based on a branch-oriented analysis of the commerce sector using data from the BIBB/BAuA Employment Survey 2012. This is a representative computer-assisted telephone interview (CATI) survey of 20,036 persons in core-employment. The mean interview time was about 40 minutes. Respondents gave self-assessed information on different aspects of their working conditions, the tasks to be performed, fields of knowledge they have to be proficient in, different qualification and situational requirements and also their qualification paths with up to five completed programs. Being in core-employment means these persons have to hold a paid job of at least 10 hours a week which is not an apprenticeship and they have to be older than 15. For more information see [15]. The data are weighted with a structural weight with the German Microcensus 2012 as reference structure.

Due to its large sample size the data allows for detailed analyses in large enough sub-populations as well as comparisons between different groups. Overall, there are 1,366 respondents working in the trade sector (Classification of Economic Activities, Edition 2008 (WZ 2008), Division 47 “Retail trade, except of motor vehicles and motorcycles”).

These respondents gave information on up to five vocational trainings ranging from initial vocational education and training (VET) to academic degrees (up to doctorates), including further trainings and also school-based vocational education programs. They also assessed what level of qualification was necessary in order to perform the jobs they were holding at the time of the interview. This required qualification can then be directly compared to the actually achieved level of qualification of the respondent (i.e. their held qualification).

## V. FIRST RESULTS

The discussion outlined above sets the background for this research project. The main question is that of competition versus complementarity of academic and vocational training. More specifically, we will look at a number of branches, occupations and occupational positions, where a high competition between academically and vocationally trained employees is to be expected. These sectors include finance, tourism and trade, among others. In some of them there are traditions of vocational qualification paths leading to higher occupational positions (e.g. in trade) and others where academic qualifications, sometimes combined with in-company trainings, already form the major pathway to

higher positions (e.g. in finance). Here we will look more closely at the trade sector as a first example.

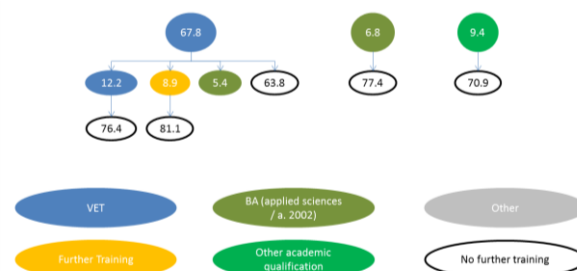


Figure 4. Career paths over all employed persons. Source: BIBB/BAuA Employment Survey 2012, weighted, own calculations.

The employment survey's data give us a representative view on the outcomes of recruitment processes, since the respondents all are in employment. Given a specific sector (here: trade), we can assess which educational career paths the employees took. For this the information on the qualification careers are used. They are ordered temporally and we can then see what qualification programs respondents went through over time. These are only programs they graduated from. For example, a person could start out with an apprenticeship and after that achieve a bachelor's degree or complete further training and achieve a master craftsman's certificate. Fig. 4 shows the situation over all employees. Slightly more than two thirds (67.8 %) of them first complete a vocational education and training (VET) program. Nearly one out of ten persons starts by achieving another academic qualification besides a bachelor's degree (9.4 %). Of those who started with a VET certificate, 8.9 % complete further training. Only 5.4 % acquire a bachelor's degree after initial VET.

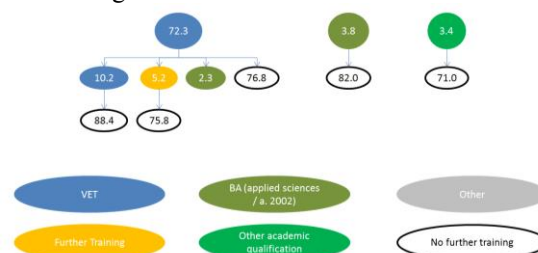


Figure 5. Career paths in the trade sector. Source: BIBB/BAuA Employment Survey 2012, weighted, own calculations, trade sector: WZ 2008 47

Compared to the overall situation, we see that in the trade sector (Fig. 5) signals from vocational education paths seem to be valued higher by employers since 72.3% of employees here started out with a vocational training compared to 67.8% over all. On the other hand, academic trainings do not seem to be valued as much: Of those working in the trade sector only 3.8% are graduates of bachelor programs and 3.4% of other academic qualifications as opposed to 6.8% and 9.4% over all, respectively. Further training following an initial vocational training also is not sought as often in the trade sector (5.2%) as overall (8.9 %).



The quality of employment is depicted by matching required and held qualifications. For required qualifications respondents' information on what level of qualification is needed to perform their current job is compared to their highest acquired qualification. Both are recoded into the same four-level scheme of "no vocational training" ("no qualification"), "vocational education and training" ("VET"), "further training" and "academic qualification" (here including bachelors' degrees). Weighted cross-tabulations show the shares of employed persons' highest achieved qualifications working on positions requiring specific qualifications.

Within the trade sector we have a vocationally ordered market where, according to segmentation theory, given the educational careers of employees in it, we should find high shares of employees working in jobs where a VET qualification is required holding such a qualification.

TABLE I. QUALIFICATION MATCH IN THE TRADE SECTOR.

Achieved Qualification	Required Qualification (row perc.)				Total (abs., in Thousands)
	No Qual.	VET	Further Training	Academic Qual.	
No Qual.	66.1	32.0	0.0	1.9	333.8
VET	26.0	72.1	0.9	1.0	1,704.4
Further Training	4.9	58.2	31.9	5.0	121.6
Academic Qual.	25.7	26.3	7.1	40.9	237.0
Total	30.5	61.3	2.9	5.3	2,396.7

Source: BIBB/BAuA Employment Survey 2012, weighted (grey: less than 30 cases), own calculations; trade sector: WZ2008 47

In Table I we see that nearly three quarters (72.1%) of employees in the trade sector hold a VET qualification where one is required. Also, a relatively high share of persons works overqualified with an academic qualification where a VET qualification is required. In total only a small minority of jobs in the trade sector requires further training or an academic qualification (8.2%), with the high share of VET qualifications (61.3%) corresponding to the picture drawn by the career paths.

Regarding the high shares of matched employees in this sector the quality of occupations can be described as good in the trade sector. But we also see that the highly institutionalized link between education system and labor market with occupations forming a link between them favors VET trainings with employees having acquired certificates from regulated VET programs. As long as the share of positions requiring an academic qualification is not dramatically rising, competition here might not be a prominent problem. On the other hand such an increase might be driven by higher shares of persons with a bachelor's degree flowing into the labor market and firms reacting to this change in supply with an accordingly higher demand for academically trained persons.

## VI. PROSPECT

So far, the project on the employability of academically and vocationally qualified employees has just started. With data from the BIBB/BAuA

Employment Survey 2012 we presented first empirical results. The next steps to take will be the case studies of firms recruiting mechanisms and the typical pathways of employees to comparable occupational positions within the sectors of interest. We expect to find evidence on whether there is competition or complementarity between vocationally and academically trained persons.

In order to investigate companies' recruitment strategies we will in a next step conduct several explorative case studies in relevant firms. The analysis of in-company markets as a part of "high-quality" partial labor markets will be part of the explorative case studies of this research project. To gain actual data on the firms' rationales on evaluating qualifications and for hiring either vocationally or academically trained persons we will conduct a quantitative survey. The results will show how educational attainment determines professional and social opportunities. The analysis of vacancies will supplement this with a set of required qualifications and skills, while the next cross-section of the Employment Survey and its supplement survey will give us new and recent data on individuals' qualification career paths. Combined, the information will help us answering the question whether new qualification requirements are needed in commercial VET occupations.

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**Silvia Annen** studied Business and Human Resource Education at the University of Cologne. She finished her PhD-Project (Recognition of competences – comparison of selected approaches in Europe) in Social Sciences at the University of Cologne in June 2011 and published her dissertation in 2012. In 2006 and 2007, she worked as a research fellow

at the University of Cologne and in a research-project on recognition of vocational qualifications and competences in a higher educational context. Since 2007, she is a researcher at the Federal Institute for Vocational Education and Training, Bonn, Germany. Besides the development, implementation and evaluation of curricula for vocational education and training in the dual system and in further education in Germany she also gained research experience in various national and international research projects on recognition of qualifications and competences as well as occupations in the commerce sector.

**Michael Tiemann** earned a doctorate in Sociology at the University of Cologne in 2014. He graduated with an M.A. in Sociology from Düsseldorf University in 2006 and achieved an M.A. in Philosophy at University of Leeds in 2000. Since 2007 he works as a senior researcher for the Federal Institute for Vocational Education and Training (BIBB) in Bonn. His research interests are the development of work and employment, knowledge in work and occupational contents.