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Lehrstuhl für Betriebswirtschaftslehre – Controlling

## **Challenges of SMEs in Apprentices' Recruitment and Employment: Empirical Studies to Overcome the Skilled Labor Shortage**

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**LIST OF ABBREVIATIONS**

BIBB	Bundesinstitut für Berufsbildung
BMBF	Federal Ministry of Education and Research
DID	Difference-in-differences
SMEs	Small and medium-sized enterprises

# 1 INTRODUCTION

## 1.1 SMEs need to act in times of skilled labor shortages

In the field of human resources, the German economy faces serious and diverse challenges caused by demographic changes (Bellmann & Helmrich, 2014). Whereas in 2014, the German population comprises about 81 million people, it is predicted to fall in 25 years to under 70 million people (see Table 1). Not only the reduction but also the shift within the age structure of the population will have impacts on the staffing of German firms (Kay et al., 2008). In 2014, 61% of the population is between 20 and 64 years old; by 2050, people of working age will comprise only 51% of the population (Federal Statistical Office, 2014). Currently, firms are facing the first impacts of the demographic changes: Already since 2011, the number of vacancies for skilled labor in Germany has increased significantly (Bechmann et al., 2012).

Table 1: Changes in the age structure of the population in Germany

Age structure (year 2014)				Forecast age structure (year 2050)			
<20 years	20–64 years	≥65 years	Population in total	<20 years	20–64 years	≥65 years	Population in total
14.4 million	49.3 million	17.3 million	80.9 million	10.7 million	35.7 million	23.0 million	69.4 million
18%	61%	21%	100%	15%	51%	33%	100%

Table 1 is based on calculations of the Federal Statistical Office (2014).

Small and medium-sized enterprises (SMEs) are particularly affected by the shortage of skilled labor because of their low level of public awareness and their lower financial resources for (personnel) marketing activities and competitive wages (Kay et al., 2008). Regarding their vacancies, SMEs have more problems than large companies in finding employees (Bundesinstitut für Berufsbildung (BIBB), 2013, 2014; Federal Ministry of Education and Research (BMBF), 2013, 2014). In order to counteract this, it is necessary for SMEs to boost their internal and external recruitment efforts (Kay et al., 2008).

An important strategy for SMEs in the fight against the shortage of skilled labor includes the training of apprentices. Particularly for SMEs, the qualifications of each employee play a key role in managing technological changes and shifts in the economic environment (Bechmann et al., 2012). This qualification can be achieved by providing apprenticeship training, which has the benefit of enabling qualified young people to accurately fit in to the firms' requirements. SMEs believe in the long-term effects of their own apprenticeship training programs: Empirical studies reveal that SMEs

specify apprenticeship training as a method for expanding personnel capacities and overcoming skilled labor vacancies (Bechmann et al., 2012; Kay et al., 2008).

However, the situation in the apprenticeship market is already strained. In 2013, the supply of training positions from apprenticeship firms exceeded the demand from young people willing to start apprenticeship training (BMBF, 2014). Based on demographic changes, the situation is likely to deteriorate because of a decreasing number of school graduates potentially available for apprenticeship training. Figure 1 shows forecasts for the development of German school graduates subdivided into school types. Thereby, all school types will suffer a reduction in graduates. For example, graduates with a “Realschule” leaving certificate will decline by 10.6% from 339,000 (2011) to 303,000 (2025) graduates. With a decrease of about 32%, the school type “Mittelschule” will experience the largest reduction from 167,000 (2011) to 114,000 (2025) graduates (Kultusministerkonferenz, 2013). Considering this negative trend together with the value of apprentices in ensuring SMEs’ future, the recruitment efforts of SMEs should concentrate mainly on attracting this young labor group.

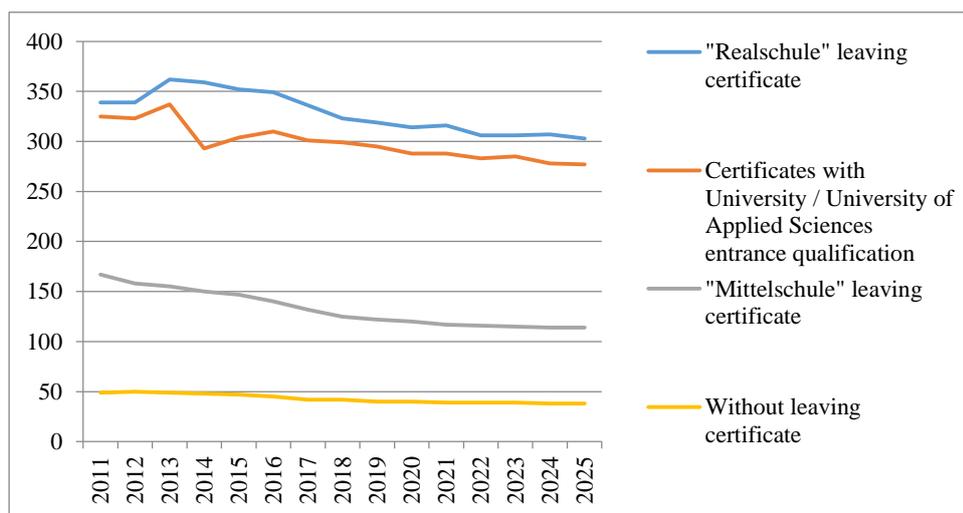


Figure 1: Development of the number of German school graduates

Figure 1 is based on the forecast of the Kultusministerkonferenz (2013).

Numbers of school graduates are denoted in thousands.

## 1.2 Craft firms' situation in recruiting and training apprentices

The crafts sector is a typical representative of SMEs, which comprises 130 professions defined by law (Zentralverband des Deutschen Handwerks, 2013a). In 2013, approximately one million craft firms existed, making up 27.3% of all German firms. With an average of seven employees per firm, the crafts sector comprises 12.8% (2013) of the entire labor force. Thereby, the crafts sector trains nearly 30% of all apprentices in Germany (Zentralverband des Deutschen Handwerks, 2013b).

However, studies show that the crafts sector is expecting the highest lack of apprentices compared with firms from other branches (Kranzusch et al., 2009). This negative expectation might be influenced by the high importance of apprentices to craft firms: Whereas apprentices have a share of 4.5% in German firms, they average 6.6% in the crafts sector (Kranzusch et al., 2009). Hence, supporting the crafts sector in recruiting and employing apprentices to secure the provision of qualified staff constitutes the motivation for the present dissertation, which possesses a high practical, economic, and scientific relevance.

The crafts sector has considerable problems in recruiting suitable and sufficient apprentices. In 2013, approximately 33,000 proposed training positions in Germany remained vacant (BMBF, 2014) of which 15,000 were allocated to the crafts sector (Zentralverband des Deutschen Handwerks, 2014). A study among young people (14–18 years old), who assessed the crafts sector as a possible employer, might have revealed one reason for the large number of vacancies: About 70% of the respondents rated the social status of the crafts sector as low. Moreover, about 50% indicated that they generally perceive firms from the crafts sector as unattractive employers (o. V., 2010). However, the problems of craft firms in the context of apprentices are not limited to their recruitment, but also include the post-recruitment phase. For several years, the crafts sector has been among the branches with the highest number of drop-outs during apprenticeship training in Germany. With 31.5% of their apprenticeship contracts being terminated prematurely, they have led the statistics since 2012. Thereby, the average drop-out rate is 24.4% with an absolute number of 150,000 terminations in Germany in 2012 (BIBB, 2014).

Altogether, in the context of apprenticeship training in the German crafts sector, two major challenges can be identified that raise the following questions:

1. What measures can help firms from the crafts sector in attracting and recruiting young job seekers for apprenticeship training in order to reduce vacancies?
2. How can firms from the crafts sector retain these apprentices during the apprenticeship period to secure the growth of a new skilled labor force?

The present dissertation addresses these questions with three essays. Papers 1 and 2 can be assigned to the first question and deal with the pre-apprenticeship phase. Paper 3 takes the second question and concentrates on the post-recruitment phase when the apprentice already works at the craft firm. The post-apprenticeship phase—when the apprentice has successfully completed his training—is not included in the present study. For this period, Wolf (2012) has analyzed determinants that bind qualified workers to their apprenticeship firms after finishing apprenticeship training in the crafts sector. Thereby, he contrasted the attractive features of the crafts and industry sector to detect why a

lot of craft apprentices change their employer after their apprenticeship training and prefer employment in other industries. The results indicate that young workers surprisingly do not leave the crafts sector for monetary reasons but because of a poor working atmosphere or a lack of further training (Wolf, 2012).

### **1.3 Insights of this dissertation for craft firms' recruitment and employment of apprentices**

The present dissertation is composed of three essays. Thereby, each paper addresses specific issues relevant for craft firms' recruitment (Papers 1 and 2) and employment (Paper 3) of apprentices. Because each essay deals with its own research question—to which the field of literature as well as the research methodology is directly linked—the papers are presented in complete form with one chapter each.

*Paper 1* empirically investigates the effectiveness of recruitment measures on young job seekers' awareness of craft firms as possible employers. More precisely, firm presentations and site visits as typical recruitment measures for apprentices are analyzed to clarify whether their implementation in schools has positive impacts on pupils' employer brand ratings for craft firms. The design of the study is quasi-experimental and thereby unique compared with previous research in the field of personnel marketing. In cooperation with 14 craft firms, presentations and site visits were provided for a large number of pupils within Bavaria. These pupils were questioned twice—before and after their participation in either the firm presentation or the site visit. Furthermore, parallel classes received questionnaires at the same time while acting as a control group. This self-collected data set with pre-/post-treatment/control group design makes it possible to detect the causal effects of both recruitment activities.

The results of the difference-in-differences analysis in Paper 1 show that both strategies are successful in strengthening the perceived employer brand of craft firms. Thereby, both measures have roughly similar effects and can be assessed as equally valuable for craft firms' employer branding. In addition, Paper 1 opens a new perspective on the importance of firms' recruitment staff as well as the meaning of an optimal adaptation of the recruitment measures on the target group. Recruitment staff perceived as very friendly positively influences the employer brand ratings of their firms. In contrast, firm representatives who are perceived as not likeable even worsen the pupils' employer brand evaluations. The same effect appears if the recruitment measures appeal or do not appeal to the young people.

Considering the process of recruitment from conceptual studies, a potential employee can be affected or involved differently during recruitment (Cable & Turban, 2001). Thereby, influencing job

seekers in their assessment of the employer brand (Paper 1) is just a first, yet basic, step in recruitment. Further important recruitment outcomes, which Chapman et al. (2005) empirically confirmed as relevant dependent variables for measuring recruitment effects, are shown in Figure 2. In contrast to the development of the employer brand, job seekers' perceptions of employer attractiveness as well as their application intentions arise from a different background (see Figure 2). How attractive an organization is seen to be and how likely a potential employee is to apply for a job depends on the job seekers' personal values and needs (Cable & Turban, 2001) and their fit with the employer or job (Cable & Judge, 1996; Kristof-Brown et al., 2005). Thus, it is possible that job seekers react positively to an employer regarding the employer brand, but feel no congruence with their needs and, therefore, are not attracted and not willing to apply for a job within the firm (Cable & Turban, 2001). Although the present dissertation does not investigate the structure of the recruitment model in Figure 2, the second Paper includes employer attractiveness evaluations and the application intentions of the pupils to gain a deeper insight regarding the manipulation of potential apprentices through both measures.

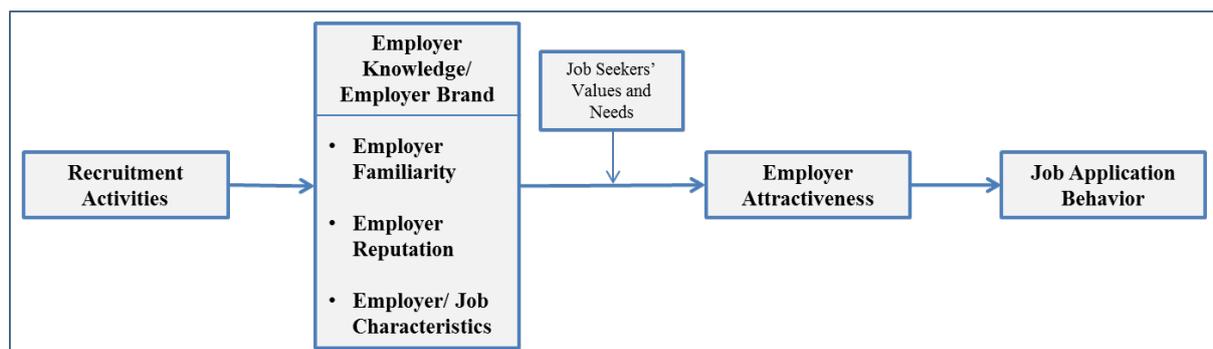


Figure 2: Process model of recruitment

Figure 2 is an own representation based on the model of Cable & Turban (2001).

*Paper 2* empirically analyzes the question whether a firm presentation and a site visit—besides their employer branding effects (Paper 1)—actually attract young job seekers and enhance their application intentions. Additionally, frame conditions are involved in the study to test the influence of job seekers' individual characteristics (e.g., interest in tasks from the crafts sector) or the organizational circumstances of both measures (e.g., effects of additional information after the recruitment measures) on recruitment success. To investigating this, the same data set from the quasi-experimental field study of Paper 1 was used. Therefore, Paper 2 has the same benefits by being able to calculate the causal effects of the implementation of firm presentations and site visits on the pupils' perceived employer attractiveness and application intentions.

Unexpectedly, the difference-in-differences analysis for Paper 2 displays that both firm presentations and site visits failed in strengthening the perceived employer attractiveness and the application intention of the pupils. Thus, according to Paper 1, both measures are appropriate only for

craft firms' employer branding, which means that they strengthen craft firms' visibility and reputation as potential employers with their special employer and job characteristics. Nevertheless, firm presentations and site visits are not able to overcome the craft sectors' major challenge of attracting apprentices.

However, Paper 2 gives insights into frame conditions that are relevant for apprenticeship marketing as they positively influence employer attractiveness ratings and application intentions. The results show that particularly the monetary aspects of the workplace and the given development opportunities at the craft firms are relevant employer and job attributes for the derivation of application intentions. Furthermore, vocational interests play a role in the recruitment phase as they are positively related to pupils' attractiveness evaluations and application intentions. Moreover, pupils who obtained further information on the craft firms after the recruitment measures also indicated higher attractiveness ratings and application intentions. Another frame condition with great relevance is the consideration of regional school collaborations because the regional proximity between pupils and potential employers has an effect on pupils' application intentions.

*Paper 3* focuses on the post-recruitment phase and chooses the overarching question "How can firms from the crafts sector retain apprentices during the apprenticeship period to secure the growth of a new skilled labor force?" as its central theme. Thereby, it empirically investigates relevant drop-out reasons for different drop-out stages of apprenticeship training to get ideas on how to prevent premature terminations. Therefore, a self-collected data set is used, in which affected craft firms as well as their former apprentices were questioned on the reasons for their realized drop-outs. As premature apprenticeship terminations have been processed rarely in scientific studies so far, this paper contributes to secure the supply of skilled labor not only in practical terms.

Across both samples, Paper 3 found using multinomial logit and probit regressions that the "educational background and current school performance" is an important drop-out factor. In the crafts sector, this reason is relevant for late drop-outs. Furthermore, a wrong occupational choice of the young people occurred as an early drop-out reason. In addition, the behavior at school as well as the private circumstances of the apprentices showed significance in early as well as late drop-out phases in the different regression analyses. In contrast to the firms' view, in the apprentices' sample, the factor "working conditions and contractual reasons" also appeared to be relevant for drop-outs with a negative relation to premature terminations in the early phases of apprenticeship training.

The remainder of the present dissertation is structured as follows. Chapters 2 to 4 of the dissertation comprise essays 1 to 3. Thereby, the overarching structure of all three papers is similar. First, the underlying theory, from which the hypotheses are derived, is clarified in each paper. In the following sections of the three essays, the data set, the estimation model, and the measures are introduced in detail. Then, the results are presented, discussed, and processed further to gain practical implications for the different stakeholders in this dissertation.

## 2 ESSAY 1

# EFFECTS OF APPRENTICESHIP MARKETING ON EMPLOYER BRAND DIMENSIONS— A DIFFERENCE-IN-DIFFERENCES APPROACH

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### Abstract:

In contrast to previous studies, this paper uses a quasi-experimental design to empirically analyze the causal effects of two frequently used recruitment measures in practice for SMEs' apprenticeship marketing—firm presentation and site visit—on pupils' perceived employer brand. Despite the great importance of apprentices in sufficient quantity and quality for the success of SMEs, little is known about effective strategies for influencing recruitment outcomes among young job seekers. Therefore, a unique panel data set was collected in cooperation with 14 craft firms and pupils from 34 schools in Germany. Using difference-in-differences analysis, the results show that the implementation of firm presentations and site visits is leading to an increase in the SMEs' employer brand evaluations. In addition, it was found that the SMEs' recruitment staff and the appeal of the recruitment measures are important as, in the worst scenario, both negatively influence the pupils' employer brand ratings.

**JEL Classification:** J23, J24, M31, M51

**Keywords:** small and medium-sized enterprises, employer branding, recruitment, personnel marketing, apprenticeship marketing, occupational choice

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### 3 ESSAY 2

## ATTRACTING YOUNG JOB SEEKERS WITH TRADITIONAL RECRUITMENT PRACTICES? A DIFFERENCE-IN-DIFFERENCES ANALYSIS

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#### Abstract:

This paper empirically investigates whether site visits and firm presentations are effective recruitment activities for attracting pupils and for strengthening their application intentions in favor of dual apprenticeship training at small and medium-sized enterprises (SMEs) in Germany. Using a quasi-experimental study design and unique panel data set, for the first time, this paper provides information about the causal effects of these recruitment activities. Results of difference-in-differences analyses reveal that the implementation of firm presentations and site visits does not have effects on the examined recruitment outcomes. Nevertheless, SMEs have the chance to increase their recruitment success among potential apprentices with several aspects being considered, e.g., the information policy after the recruitment practices.

**JEL Classification:** J23, J24, M31, M51

**Keywords:** employer attractiveness, application intention, recruiting success, apprenticeship marketing, apprenticeship training, occupational choice, small and medium-sized enterprises

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## 4 ESSAY 3

# WHAT GOES WRONG WHEN IT GOES WRONG? EMPIRICAL ANALYSIS OF THE TIMING AND REASONS FOR PREMATURE APPRENTICESHIP TERMINATIONS IN GERMANY

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### Abstract:

This paper empirically investigates whether contractual terminations for various reasons predominantly occur in certain phases of apprenticeship training. With a self-collected data set of apprenticeship firms and former apprentices from the crafts sector, an insight was gained into critical stages during apprenticeship training from two perspectives. Using multinomial logit and probit regression analyses, the results show that contractual terminations in Germany's dual apprenticeship system because of the apprentices' educational background and performance in vocational training schools happen at late stages in apprenticeship training. In contrast to this, drop-outs resulting from wrong occupational choices were mainly realized in the probationary period or first apprenticeship year.

**JEL Classification:** J23, J24, M12, M53

**Keywords:** apprenticeship training, drop-out, small and medium-sized enterprises

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## 5 CONCLUSION

The present dissertation aims to support the crafts sector in recruiting and employing apprentices as an important resource for future professionals. Following the main challenges (see section 1), this dissertation analyzes whether the implementation of a firm presentation and a site visit as single marketing measures is an effective strategy in overcoming the shortage of skilled labor in craft firms. Thereby, this dissertation concentrates on pupils from secondary schools, whereas other studies have mainly focused on the impact of recruitment measures on students who are perceived as having high potential (e.g., Baum & Kabst, 2011; Collins, 2007; Lievens & Highhouse, 2003; Turban, 2001; Turban & Dougherty, 1992).

By considering three common indicators that the recruitment literature associates with recruitment and personnel marketing success—effects on the perceived employer brand, perceived employer attractiveness, and application intentions of potential job seekers (Cable & Turban, 2001; Chapman et al., 2005)—this dissertation offers comprehensive insights into the effectiveness of firm presentations and site visits for craft firms' apprenticeship marketing. To the author's knowledge, no other research project exists that analyzes all these recruitment outcomes using the same data set. Thus, this dissertation also contributes to the understanding of the recruitment process and the linkage of the analyzed recruitment outcomes.

*Papers 1 and 2* are based on the same self-collected data set, in which SMEs from the crafts sector arranged firm presentations and site visits for pupils from secondary schools called "Mittelschule" and "Realschule" in a quasi-experimental study setting. Choosing firm presentations and site visits as recruitment measures for the analyses in this dissertation reflects the frequent use of these activities in practice (Kay et al., 2010; Wagner et al., 2012). In contrast to this, there is a lack of information on the recruitment effects of these traditional measures for craft firms. Questioning the treated pupils and pupils from parallel classes (control group) at two different time points—once before and once after the implementation of the recruitment measures—the data structure allows the calculation of difference-in-differences and thereby provides information on the causal effects of the measures.

*Paper 1* investigates the effects of firm presentations and site visits on the perceived employer brand of craft firms. The results show that both recruitment measures have significant and positive treatment effects that do not differ in their extent. Thus, both measures are equally valuable for employer branding purposes among young job seekers. Considering the three dimensions of the craft firms' employer brand, the analysis reveals that perceived employer familiarity, perceived employer reputation, as well as perceived employer and job characteristics have increased as a result of the implementation of the measures. Moreover, the recruitment staff as well as the conceptualization and execution of the measures turned out to be important for employer branding. As a result of its design,

Paper 1 is the first study that is able to analyze the contribution of friendly vs. unfriendly and appealing vs. less appealing recruitment measures for apprentices. Whereas very friendly and very appealing measures contribute to strengthening of the employer brand, recruitment staff perceived as unfriendly or measures perceived as not appealing even diminish the worth of the craft firms' employer brand.

*Paper 2* provides deeper insights into the effectiveness of firm presentations and site visits for the recruitment of craft apprentices. Thereby, the impact of the measures is investigated with regard to the perceived employer attractiveness of young job seekers and their intentions to apply for an apprenticeship position within craft firms. In contrast to Paper 1, in which only employer branding effects were taken into account, Paper 2 examines more concretely whether the measures are helpful for craft firms to satisfy potential apprentices when starting apprenticeship training at their firms. According to Cable & Turban (2001) and their process model of recruitment (see section 1), both these recruitment outcomes drive the actual job choice behavior of job seekers more than the perceived employer brand. Hence, for craft firms, it would be more important to be successful in these recruitment dimensions.

Unexpectedly, the results in *Paper 2* reveal that the implementation of firm presentations and site visits for potential apprentices did not increase perceived employer attractiveness toward the recruiting firms. Moreover, participation in the recruiting measures did not persuade more pupils to apply for an apprenticeship position in craft firms. Beyond marketing and branding effects (see Paper 1), however, a single intervention with a firm presentation or site visit is not enough to improve craft firms' application prospects regarding apprenticeship candidates. A further explanation for this result may be that the measures were implemented too late in relation to the phase of pupils' career orientation.

*Paper 2* also investigates whether factors could be derived that show correlations with the recruitment outcomes and, therefore, are worth considering by craft firms when planning recruitment activities for potential apprentices. The regression analysis shows that the better the earnings are perceived by pupils, the higher is the intention to apply. The effect is small but significant. Furthermore, the development opportunities at the firms are detected as especially important for the pupils' perceived employer attractiveness and application intentions. So, if firms have contact with potential apprentices, they should particularly highlight the development opportunities offered.

Another insight from *Paper 2* is that pupils who show greater vocational interest in tasks from the crafts sector and who could imagine starting apprenticeship training in the crafts sector also reveal higher attractiveness ratings and application intentions. Thus, future research could clarify whether the implementation of the recruitment measures can improve recruitment outcomes when the participation is limited to pupils who are interested *ex ante*. Therefore, preselection of pupils on a voluntary basis is necessary. In addition, the information procurement of the pupils after the measures is positively

correlated with their perceived employer attractiveness and application intentions. Thus, firms should consider this and try to encourage pupils to engage with the firm as a possible employer.

An overarching result of this dissertation is that firm presentations and site visits are only partly effective for recruitment purposes. According to the process model of recruitment from Cable & Turban (2001), this finding can be interpreted as follows: The recruitment process starts with the evaluation of the employer brand. This assessment is made by job seekers without evaluating the complete adaptation of the employer and job to their personal values and needs (Cable & Turban, 2001). This explains why firm presentations and site visits induce employer branding effects but lack improvement in pupils' attractiveness ratings and application intentions.

The strength of the present dissertation lies in considering not only the recruitment phase but also the post-recruitment phase in which craft firms already employ apprentices. *Paper 3* raises the question of why and when many apprenticeship contracts are terminated prematurely in the crafts sector in order to develop measures to prevent these drop-outs in future. Therefore, this dissertation draws attention to failed apprenticeship training to gain an idea as to what the most serious problems are during the apprenticeship phase. The self-collected data set for Paper 3 includes the views of apprenticeship firms as well as their former apprentices on the realized drop-out in order to get a comprehensive view of the same incident. Thereby, drop-out reasons are considered in relation to the phase (probationary period, first, second or after the second apprenticeship year) in which the drop-out took place. In so doing, it could be detected which apprenticeship phases are especially at risk and for what reasons.

Different regression analyses with the firms' and apprentices' data set show that an inadequate educational background and performance of the apprentice at the vocational school are relevant factors in late drop-out decisions. In addition, apprenticeship firms mentioned wrong occupational choices of young people as an early drop-out reason. Furthermore, private circumstances of the former apprentices were significant for drop-outs in the early and very late stages of apprenticeship training. The study also reveals that craft firms are not aware of particular drop-out reasons. Whereas they confirm poor training quality as being responsible for premature apprenticeship terminations, firms have also been criticized by former apprentices for their working conditions and non-compliance with contractual agreements, which are negatively related to early apprenticeship drop-outs.

Insights that can be gained across the three papers in this dissertation underscore the relevance of certain employer and job characteristics to the recruiting process and, simultaneously, to the decision to quit an apprenticeship contract prematurely. In Paper 2, it was revealed that the better the pupils perceive the craft firms' earning opportunities during recruitment, the higher their application intentions are. Concordantly, in Paper 3, the factor "working conditions and contractual reasons" was found to be a drop-out factor. This factor also contains items regarding earnings, where apprentices complain about repeatedly not receiving their apprenticeship wages as a drop-out reason. In addition,

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the present dissertation shows that specific employer and job characteristics can be assessed to the full extent only after taking up apprenticeship training and not during the recruitment process. For example, the perception of the craft firms' working environment during the firm presentation or site visit shows no correlation with pupils' attractiveness ratings. In contrast to this, the factor analysis in Paper 3 reveals that a bad working atmosphere occurs among the drop-out reasons (even if there is no reference of this drop-out reason to a certain phase in apprenticeship training).

Considering the results of this dissertation across all essays, further research could concentrate more on the perspective of recruitment and attracting "the right" apprentices who fit with the company and offered professions. This suggestion results mainly from the results of Paper 3, which has revealed many early drop-outs happening because of wrong occupational choices. Thus, the apprenticeship marketing of craft firms should not only appeal to apprentices to reduce their vacancies but also work on sustained involvement of young people.

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