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Employer Preferences and Career Progression: A Choice Experiment on Advanced Training and Dual Higher Education Paths

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Abstract

Despite the increasing number of bachelor's degree holders in recent years, there is limited insight into the roles they occupy within organizations and whether they directly compete for career progression with vocationally trained professionals, such as master craftsmen, technicians, or certified senior clerks. This study reports the findings of a choice experiment in which managers at German companies were asked to select one of three candidates for a vacant project management position. The candidates had either completed advanced vocational training or a bachelor's degree through dual study programmes (integrating training or practical work). They also varied in other attributes, including training location, final grades, work experience, and area of specialisation. Findings indicate that an establishment's approach to training and its prior experience with bachelor's graduates significantly influence career advancement decisions. Candidates with advanced vocational qualifications were favored only in establishments that exclusively support advanced training programmes; in all other cases, the type of qualification did not significantly affect selection. These results suggest that expanding dual higher education programmes and increasing awareness of them could make this path an appealing alternative to traditional advanced vocational training for young professionals.

Keywords: Germany, Choice experiment, Establishment survey, Vignette study, Higher education, Bachelor's, Dual study programmes, Advanced further training

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Introduction

In 1999, Germany, along with other European countries, committed in Bologna to establishing a European Higher Education Area to harmonize the standards and quality of higher education across Europe. The subsequent Bologna Reform, which introduced bachelor's and master's degrees, added a new dimension to the German education system, where previously initial vocational qualifications could only be completed in roughly three years through the (dual) vocational training system, without a higher education pathway. Moreover, the newly implemented short-cycle academic bachelor's programmes are formally considered equivalent in competence to advanced vocational qualifications—such as master craftsmen, technicians, or certified senior clerks—which traditionally marked the culmination of the vocational route.

This development sparked concerns that bachelor's graduates might replace employees trained through the established dual vocational system [1], potentially reducing the appeal of vocational careers in Germany [2]. Contrary to these substitution fears, early empirical studies highlighted complementary roles between vocational and academic pathways, as they emphasize different types of tasks—practical versus theoretical [3-5]. However, these studies were conducted at a time when labor market experience with bachelor's graduates was limited, making the conclusions preliminary, particularly because many bachelor's graduates continued to master's programmes rather than entering the workforce directly [6].

Since then, Germany has seen a stagnation in vocational apprenticeships and advanced training participation, while the number of bachelor's degree holders continues to rise [7]. Employer surveys indicate that bachelor's graduates are often entrusted with project or business unit responsibilities [6, 8], yet concerns remain regarding their relative lack of experience, practical skills, and maturity [6, 9]. These mixed findings leave two key questions unresolved: first, whether employers view bachelor's graduates as substitutes for advanced vocationally trained employees when choosing between candidates, and second, to what extent employer knowledge and experience with bachelor's graduates shapes this decision-making [6].

This paper addresses these questions using a choice experiment embedded in an establishment survey, in which human resource decision-makers select among three candidates for a project management role. According to the German Qualification Framework (GQF), both bachelor's degrees and advanced vocational qualifications aim to develop competencies for planning, executing, and evaluating complex technical tasks. Additionally, holders of these qualifications are expected to assume responsibility within expert teams or to lead groups and organizations. This overlap implies that bachelor's and advanced vocationally trained employees may compete within firms for senior skilled or junior/middle management roles, with a project manager position representing an entry point on this career ladder.

Choice experiments are particularly suited for examining decision-making behavior [10], as they assume decision-makers act rationally [11] by selecting candidates most likely to possess the skills required while minimizing company costs, such as training time or wages. In practice, however, decision-makers operate as boundedly rational utility maximizers, given limited knowledge of the labor market and candidate productivity, as well as the costs of acquiring additional information. In such situations, decision-makers rely on prior experience and established heuristics, which Esser [12] interprets as rational behavior. Consequently, identical applicant attributes—such as educational qualifications—may be assessed differently depending on the company's experience and institutional context [13, 14].

I posit that establishments vary in their knowledge and experience regarding the relatively new bachelor's degrees, which in turn influences candidate selection. I identify three ways firms acquire information about candidate competencies: (1) by inferring potential skill heterogeneity from the certificate's level of standardization [15], (2) through direct involvement in the training process, and (3) by observing the performance of existing employees holding similar degrees.

The majority of the German workforce receives training through nationally standardized programmes regulated by the Vocational Training Act (BBiG) and the Crafts and Trades Regulation Code (HwO). These BBiG/HwO-regulated programmes are implemented at the federal state level, ensuring comparability across Germany. According to Damelang *et al.* [15], occupational standardization facilitates the matching process by providing clearer information to both employers and job seekers. Advanced vocational training programmes are accessible only after completing a BBiG/HwO apprenticeship and are also partially standardized at the national level (§ 53 BBiG/§ 42 HwO). Even when regulatory responsibility is delegated to competent bodies (§ 54 BBiG/§ 42a HwO), advanced training—such as becoming a master craftsman, technician, or certified senior clerk—has a long-standing tradition and is widely recognized in the German labor market. As a result, employers likely face lower transaction costs [16] when evaluating the expected productivity of candidates with advanced vocational qualifications, as they can generally trust the quality of these educational credentials [17].

Although one goal of the Bologna Process was to standardize curricula across degree types and clarify associated skills, bachelor's degrees in Germany remain less standardized than vocational qualifications, since universities (including universities of applied sciences) design their own curricula. Additionally, bachelor's degrees are newer and less established in the labor market compared to advanced vocational programmes. Consequently, without further information about the candidates, the following hypothesis is proposed:

H1: Applicants with advanced vocational training are more likely to be hired for a project management position than bachelor's degree holders when recruited from the external labor market.

Standardization is not the only distinction between advanced vocational programmes and bachelor's degrees. BBiG/HwO courses focus on specific skills, whereas academic programmes tend to emphasize more general, transferable skills. In the vocational sector, training responsibilities are shared between companies and vocational schools, while academic programmes are structured by universities and emphasize theoretical knowledge. Without a clearly defined project management role, employers may find it difficult to determine which skill set—specific or generic—is most suitable. However, shared vocational training allows companies to observe apprentices' productivity during training [18] and later during advanced vocational programmes, whereas employers often have limited means to assess bachelor's students [19].

Dual higher education programmes provide a unique context. These programmes allow companies to participate directly in the training of bachelor's students [7, 20]. Practice-integrated programmes involve extended practical placements at firms, credited as part of the academic curriculum [21], while training-integrated programmes combine nationally standardized BBiG/HwO vocational training with higher education study. Like advanced vocational programmes, dual study students are expected to acquire specific rather than generic skills. Moreover, direct involvement reduces information asymmetries, meaning that employers engaged in dual programmes should show no preference between advanced vocational qualifications and bachelor's degrees.

H2: Establishments that train bachelor's students through dual study programmes do not prefer applicants with advanced vocational training over those with bachelor's degrees for a project management role.

Esser's [12] concept of relying on "habits" and "frames" under conditions of imperfect information suggests that HR decision-makers draw on prior experiences when making recruitment decisions. Instead of participating in dual study programmes, employers could base their judgments on existing employees with bachelor's degrees. In cases of uncertainty, they may also consult similarly qualified employees ("personal contacts") within the organization to gather additional information on the quality of the educational signal [22].

H3: Establishments employing bachelor's degree holders do not prefer candidates with advanced vocational training over those with bachelor's degrees for a project management position.

Methods

To examine the proposed hypotheses, this study draws on the Reference Company System (RCS) maintained by the German Federal Institute for Vocational Education and Training (BIBB). The RCS consists of an Access Panel—a stable pool of establishments that have agreed to participate in BIBB surveys. Approximately 1,350 establishments are surveyed once or twice annually on current topics related to establishment-based vocational education and training (VET). The current study represents the fortieth survey conducted with these establishments within the RCS framework. The 2017 survey employed a choice experiment to simulate the selection of a project manager responsible for supervising up to three employees. A choice experiment, a type of vignette study, determines respondents' preferences by presenting descriptions of individuals or objects (vignettes) and asking them to select their preferred option. Attributes within the vignettes are systematically varied, allowing for causal interpretation of how these characteristics influence the likelihood of selection [10, 23].

It should be noted that, due to the nature of the access panel, the surveyed establishments are not fully representative of all German companies, as they exhibit a strong affinity for VET. While random sampling would be preferable to generalize findings across all establishments, this selectivity does not undermine the ability to detect causal effects. Indeed, causal inference in social sciences inherently relies on certain assumptions that must be carefully justified [24]. For the research question at hand, the strong VET orientation of these establishments is actually beneficial, as these organizations are particularly well-suited to assessing the potential for bachelor's graduates to substitute employees with advanced vocational qualifications. Familiarity with at least one of these qualifications is essential to identify competitive situations between candidates with differing educational backgrounds.

Specification of candidate attributes

In hypothetical decision-making scenarios, as required in a choice experiment, it is crucial to include all factors that would influence real-world decisions while keeping the experiment manageable [25]. Typically, five to nine attributes are recommended [10]. **Table 1** presents the attributes and their corresponding values used in this study. In total, five attributes were included—two with three levels each and three with two levels each—selected based on their relevance to candidate evaluation in practice.

Table 1. Attributes and attribute values of applicants in RCS-choice-experiment

Attributes	Attribute values		
Type of qualification	Bachelor's degree (training-integrated)	Bachelor's degree (practice-integrated)	Advanced further training (e.g. master craftsmen, technician)
Place of training	Own establishment	External establishment	
Final mark	Very good	Satisfactory	
Occupational experience	None	2 years in an external establishment	2 years in own establishment
Occupational specialisation	Fully corresponds to the task area	Partly corresponds to the task area	

The degree to which establishments are familiar with the skills and competencies certified through a specific training or study programme is particularly relevant for this study. I distinguish between traditional advanced vocational training (e.g., master craftsman, technician) and bachelor's degrees obtained through dual study programmes—either training-integrated or practice-integrated. All three educational pathways allow companies to participate in the training process, meaning applicants can be trained either internally within the establishment or externally. This distinction is important because internal training provides employers with deeper insights into applicants' actual skills.

Prior research indicates that strong final grades positively influence recruitment decisions [5, 13, 19, 26, 27]. Therefore, the choice experiment considers the final mark as an applicant attribute, distinguishing between "very good" and "satisfactory" results. Beyond formal qualifications, occupational experience is a key indicator of expected productivity [19, 26-30].

Applicants are categorized as either having no post-training work experience or possessing two years of experience within and outside the establishment. Hiring external specialists entails additional costs, including recruitment and induction expenses [31], so internal candidates typically benefit from lower training costs, all else being equal. While distinguishing internal from external applicants is difficult in a survey—since internal experience often correlates with internal training—it remains plausible for candidates to seek positions externally. To maintain age comparability across candidates, occupational experience is represented qualitatively rather than as a continuous measure.

Another critical factor is the alignment of the applicant's skills with the job requirements [13, 26, 27, 29]. Applicants are classified as either "fully aligned" or "partly aligned" with the project management task. Individuals lacking relevant qualifications are excluded, as the study focuses on filling a substantive project management role, where unsuitable candidates would be eliminated regardless of other attributes.

In addition to formal qualifications, social and personal skills—often referred to as "soft skills"—play a major role in hiring decisions [32] and can sometimes outweigh technical expertise [9, 32, 33]. However, since this research focuses on CV-related information, soft skills are not varied in the applicant vignettes. Instead, the experiment introduction clarifies that all applicants have successfully completed interviews and demonstrated adequate personal and social abilities (see questionnaire in ESM). This approach serves two purposes: it ensures that all candidates are considered qualified for the role, compelling respondents to make a decisive choice, and it eliminates the influence of the total number of additional applicants on the decision, allowing the focus to remain on the defined attributes.

Selection of choice sets

By combining all possible attribute levels, the full set of potential applicant profiles totals $32 \times 2^3 = 72$ unique types. Comparing three applicants simultaneously results in a full-factorial design comprising 373,248 potential choice sets. To avoid correlations among selected sets and to ensure efficient estimation of effects, careful sampling from this full factorial design is required [34]. Key design criteria include orthogonality (uncorrelated attributes), level balance (even distribution of attribute levels), minimal overlap among applicants in a set, and utility balance (similarly appealing alternatives) [35]. Since it is not feasible to satisfy all four criteria simultaneously, I employed a procedure that maximizes D-efficiency, which prioritizes orthogonality and balance [36] using SAS macros developed by Kuhfeld [37].

Initially, a subset of candidate comparisons was drawn from the 373,248 possibilities. Using an information criterion, the most efficient candidate pairs were selected. To ensure that both main effects and specific interactions—such as "type of qualification" × other attributes, "place of training" × "occupational experience," and "occupational experience" × "occupational specialization"—remain uncorrelated, the SAS macro %MktRuns suggested that half of the 72 candidates (36) would suffice to construct an orthogonal and balanced fractional factorial design. These 36 candidates were selected with the %MktEx macro, combining the modified Fedorov algorithm [38, 39] and a coordinate-exchange algorithm [40], achieving 100% relative D-efficiency compared to the full factorial design.

Next, the 36 pre-selected applicants were organized into choice sets of three alternatives each using the %ChoiceEff macro (modified Fedorov Candidate Set Search Algorithm). Candidate combinations were iteratively adjusted until efficiency reached a local maximum, accounting for expected sample size (~400 establishments) and anticipated parameter estimates [41]. This procedure yielded 36 choice sets with three applicants each; each candidate appeared three times on average, always in different contexts. These 36 choice sets were then distributed across 12 distinct questionnaires using the %MktBlock macro, ensuring uncorrelated attribute values across blocks.

To mitigate sequence effects inherent in complex vignette experiments [42], the order of the three choice sets was rotated within each questionnaire, resulting in 72 unique questionnaire versions (12 × 3!). Additionally, respondents could select "none of these candidates" to avoid forced decisions [10].

Analytic strategy

The analysis is grounded in random utility theory (RUT) [43] and Lancaster's characteristics theory of value (CTV) [44]. RUT, originating from psychology, models human decision-making under varying conditions and assumes that the utility of alternatives exists as a latent construct in the decision-maker's mind [45]. According to CTV, the value of an alternative arises from its attributes rather than the good itself. Consequently, an applicant's latent utility cannot be directly observed but is inferred through measurable characteristics such as work experience, qualifications, and specialization. Choice decisions depend on both applicant characteristics and the context provided by other alternatives, as well as the interaction between applicants and decision-makers.

A conditional logit model [46] is employed to differentiate the systematic component of utility uia between applicant attributes Xia and establishment characteristics Zi:

$$u_{ia} = c_a + X_{ia-} + (s_i Z_i)' + \epsilon_{ia} \quad (1)$$

Here, Xia represents alternative-specific characteristics varying across applicants and establishments, si denotes establishment-specific factors, and β contains the corresponding regression coefficients. Alternative-specific constants ca

center the unobserved utility component ϵ_{ia} at zero, capturing the mean effect of unobserved factors [47]. One alternative is normalized (e.g., set to zero) for identification, and the model is estimated via maximum likelihood.

Alternative-specific constants and variables are particularly useful to detect if one choice is selected significantly more often than others, for instance, when some establishments choose "none of the applicants." If interest lies solely in attribute effects, the constants can be omitted. Accordingly, the analysis first examines why some establishments opted for no candidates and subsequently focuses on all choice sets where an applicant was selected. In the conditional logit framework, independent variables represent relative utility scales; the absolute values of coefficients are less meaningful due to arbitrary coding of categorical variables. Instead, differences in utility between attribute levels are informative. For interpretability, average probabilities of selection are computed based on applicants' characteristics.

Results

Out of approximately 1,350 RCS establishments, 278 participated in the survey, with 124 responding via e-mail and 154 via postal mail, yielding an overall response rate of 20.6 percent (21.1 percent for e-mail after three reminders and 20.2 percent for postal surveys following one reminder). More than half (54%) of the responding establishments belong to the "producing and processing industries," while about 20% operate in "business-related services." Among these, 37% have fewer than twenty employees, whereas 42% have over 100 employees. As illustrated in **Figure 1**, establishments with 100 or more employees are considerably more likely to offer training through dual higher education programs and generally demonstrate a strong commitment to employee training. Notably, 94 percent of the larger establishments that support bachelor's students in dual study programs also assist their employees by covering costs or granting time off for advanced training initiatives. In contrast, roughly one-fifth of establishments did not provide funding for either training option, with 71% of these having fewer than twenty employees.

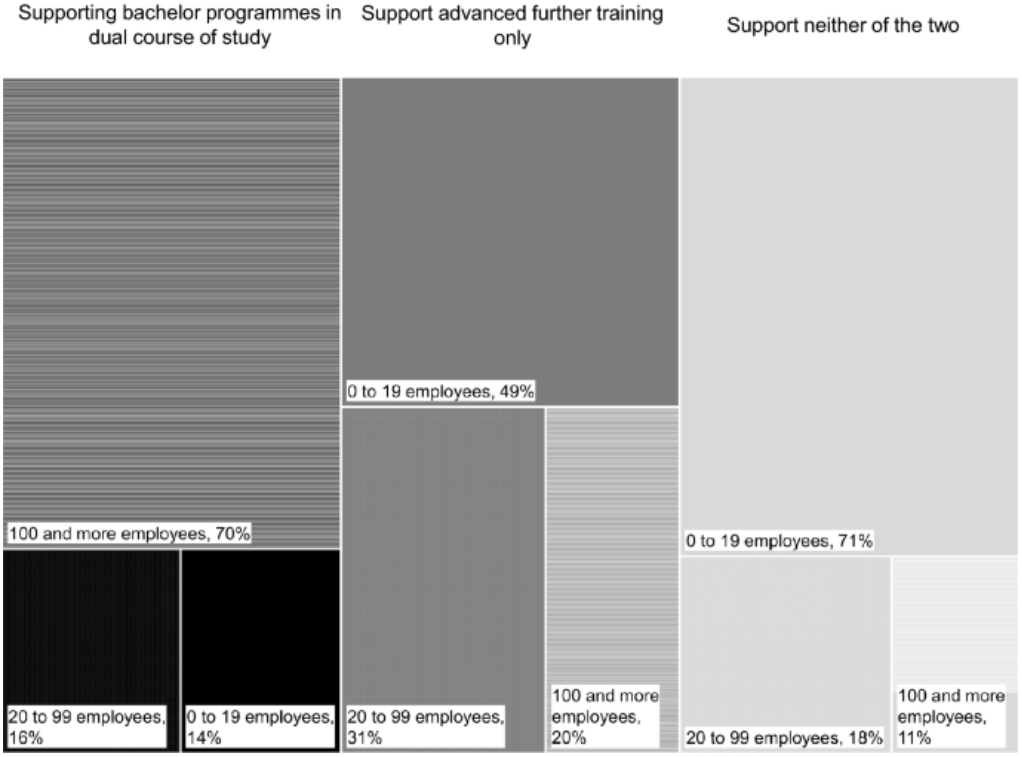

Figure 1. Establishments by training strategy and size. RCS 40 (2017), N = 265 establishments; establishments with missing values on the displayed variables were excluded. Calculations are based on the authors' own data

A chi-square test indicates that the distribution of the twelve different questionnaires, each containing three choice sets, did not systematically differ between establishments contacted by e-mail or by post. Overall, 824 recruitment scenarios were evaluated, and in 41 cases (5%), decision makers opted not to select any applicants. **Table 2** in the appendix presents the odds ratios for the alternative-specific conditional choice model (Eq. 1). The opt-out option was mainly chosen when applicant descriptions were perceived as either overly specific or insufficiently detailed, and it was selected significantly more often when the task area was technical. Smaller establishments, in particular, tended to regard applicant descriptions as too specific. As shown in **Table 3** in the appendix, applicants' descriptions were generally considered either too specific or too vague. Neither the perceived difficulty of the decision nor establishment size had a significant effect on opting out. These results suggest that decision makers may have struggled to adopt the intended decision-making perspective, and given the relatively low opt-out selection, these choice sets are excluded from subsequent analyses.

Without the opt-out option, the probability of selecting a given applicant is expected to be about 33% on average. **Figure 2** illustrates the average likelihood of selection based on qualification type, place of training, and occupational experience, all included with interaction effects in the conditional logit model. The highest hiring probability (45%) is observed for internal applicants with advanced further training. Regardless of qualification type, applicants with no additional occupational experience have below-average selection probabilities. Interestingly, candidates holding a training-integrated bachelor's degree have a lower selection probability than those with a practice-integrated bachelor's degree. Considering the simultaneous acquisition of a standardized IVET, one might have expected differing probabilities depending on whether the applicant was internal or the training occurred externally. In line with H1, it can be concluded that hiring probabilities do not vary when applicants are trained internally and apply from within the establishment; however, when either the training or the application is external, decision makers show a preference for candidates with advanced further training for the project management role.

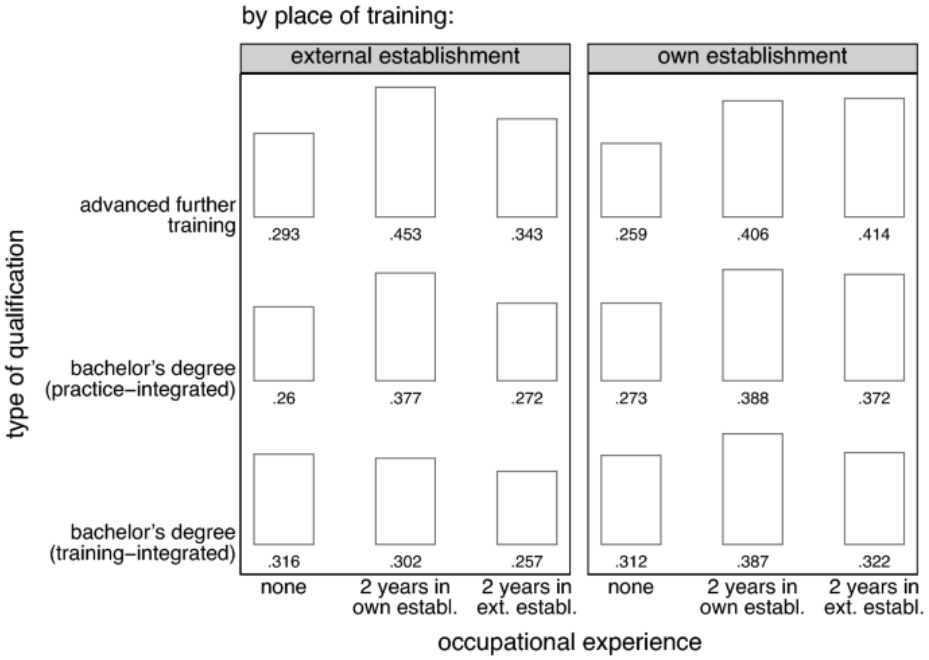

Figure 2. Effects of applicant characteristics on the hiring probability for a project management position. RCS 40, Pseudo R^2: 0.05, N = 2,262, with standard errors adjusted for 264 clusters. The conditional logit model accounts for alternatives, decision difficulty, description, task area, establishment training strategy, choice set position, applicant's final mark, matching occupational specialization, and interaction effects between "qualification × experience," "qualification × place of training," and "experience × place of training," excluding missing values. Probabilities are considered statistically different at a 5% significance level if they differ by at least 8.5 percentage points

Next, the influence of the establishment's training strategy **(Figure 1)** on decision makers' preferences for specific certificates is examined. Due to the smaller sample size, **Figure 3** presents 90% confidence intervals for the average marginal effects on hiring probability, separated by training strategy. Notably, for establishments supporting bachelor's programs in dual study courses, the model's variables largely fail to explain hiring decisions; aside from the final mark, none of the applicant characteristics significantly predicts selection. Only establishments that exclusively offer advanced further training internally show clear preferences: they are considerably less likely to select candidates with bachelor's degrees from less standardized, practice-integrated programs for project management roles, favoring instead those with advanced further training, particularly valuing additional occupational experience. Establishments that offer neither bachelor's nor advanced further training show no significant preference among the three qualification types but do exhibit a strong preference for internal candidates. Regarding H2, this indicates that establishments engaged in dual study training—or those not offering training—do not favor applicants with advanced further training over bachelor's graduates for project management positions.

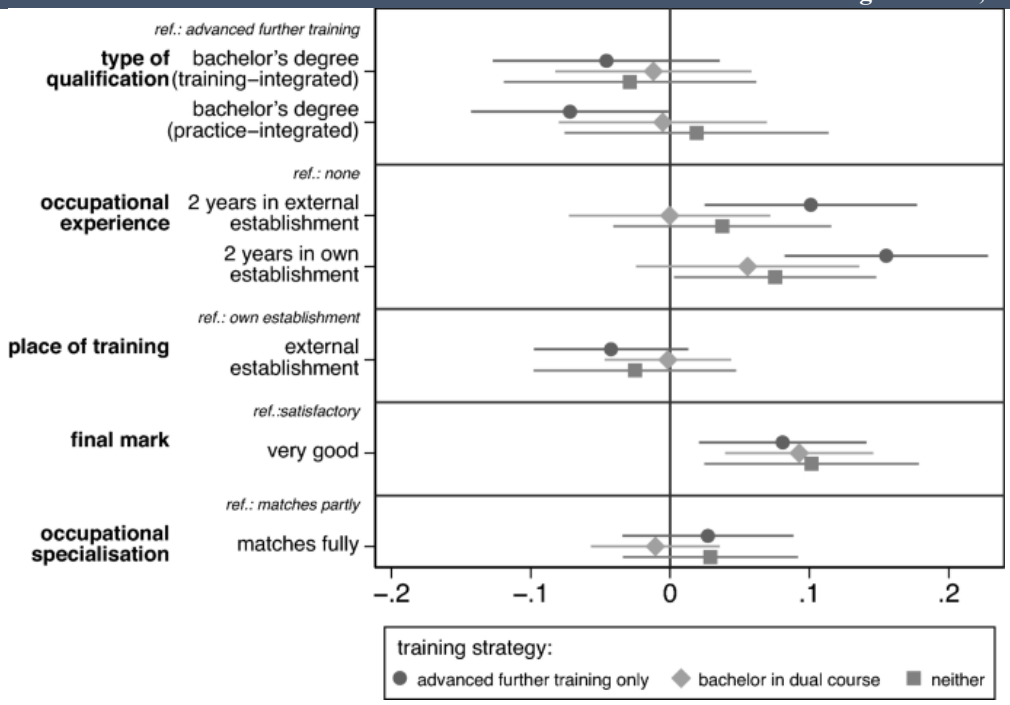

Figure 3. Average marginal effects of applicant characteristics on the hiring probability for a project management position, separated by establishments' training strategies. RCS 40: "advanced training only" N = 1,098, standard errors clustered by 128 establishments, Pseudo $R^2 = 0.03$; "bachelor in dual course" N = 735, clustered by eighty five establishments, Pseudo $R^2 = 0.07$; "neither" N = 459, clustered by fifty five establishments, Pseudo $R^2 = 0.07$. All three conditional logit models control for alternatives and interactions between applicants' "qualification × experience," "qualification × place of training," and "experience × place of training," excluding missing values. Confidence intervals are set at 90 percent

To test H3, the analysis focuses on establishments that do not train bachelor's students in dual study programs. These are further divided into establishments that employ bachelor's graduates internally and those that do not. **Figure 4** shows that establishments without prior experience employing bachelor's graduates exhibit no preference among the degree types when hiring for project management positions, placing greater importance on post-qualification occupational experience. In contrast, for establishments familiar with bachelor's graduates, the impact of occupational experience is more variable, but candidates with practice-integrated bachelor's degrees are significantly less likely to be selected for the project management role.

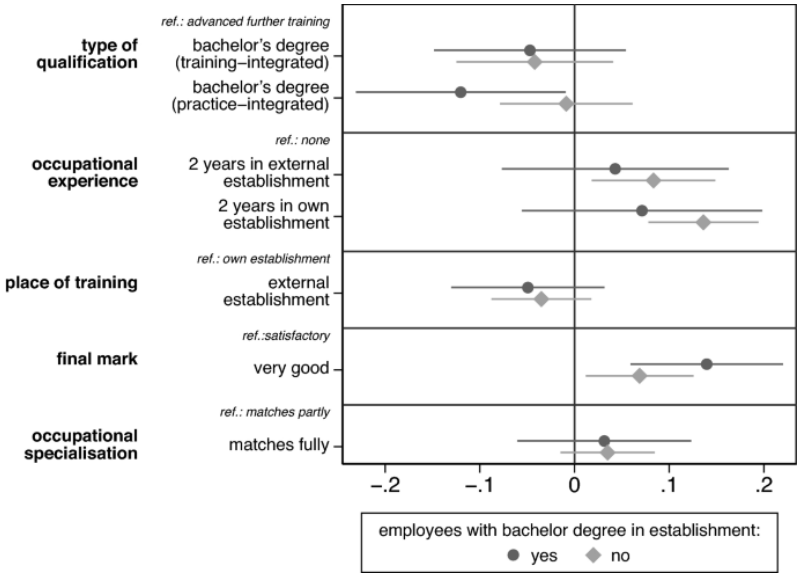

Figure 4. Average marginal effects of applicant characteristics on the likelihood of being hired for a project management role—distinguished by establishment type. RCS 40; for establishments with employees holding a bachelor's degree, N = 435, standard errors clustered by fifty one establishments, Pseudo $R^2 = 0.10$; for establishments without bachelor's degree employees, N = 732, standard errors clustered by 85 establishments, Pseudo $R^2 = 0.07$. Both conditional logit models account for alternatives and interactions between applicants' "qualification × experience," "qualification × place of training," and "experience × place of training." Only establishments that do not offer dual-study training are considered, and calculations omit missing values. Confidence intervals are set at 90 percent

Experience with bachelor's graduates

To better understand these findings, **Figure 5** shows responses to direct questions asked immediately after the experiment, separated by the two establishment groups. Establishments employing bachelor's degree holders perceive these graduates as more likely to perform theoretical, research-oriented, analytical, or strategic tasks than establishments without such employees. They also believe bachelor's graduates can inspect and assure quality at levels comparable to master craftsmen, technicians, or senior clerks. Notably, regarding the likelihood of filling a project management role, 42% of establishments with bachelor's graduates consider them more likely to succeed, whereas only 17 percent of establishments without bachelor's graduates share this view. This contrasts with the experimental results in **Figure 4**, suggesting either that decision-makers' choices were made independently of expected bachelor's graduate performance or that the experiment did not capture variables reflecting the observed advantages of bachelor's graduates.

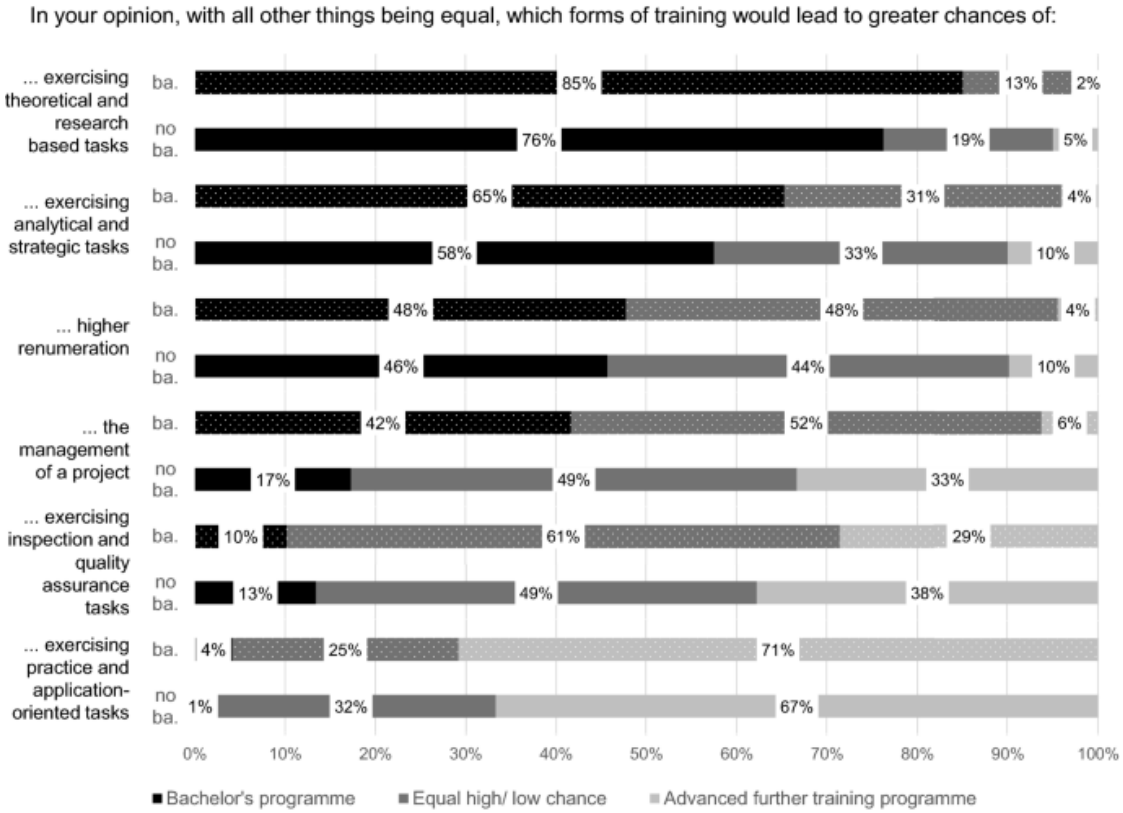

Figure 5. Assessment by establishment representatives of potential areas of deployment according to applicants' qualifications—separated by establishments' experience with bachelor's graduates. RCS 40; N = 80 for establishments with bachelor's degree employees (ba.), N = 47 for establishments without bachelor's degree employees (no ba.). Only establishments that do not offer dual-study training are included, and calculations omit missing values. Percentages are rounded to whole numbers

Discussion

This study aimed to examine whether establishments view bachelor's degree graduates as substitutes for individuals with advanced further training, using a novel approach that simulated an actual hiring scenario for a project management position rather than asking respondents directly. A particular focus was on how prior experience with bachelor's students or graduates affects hiring decisions. While detecting significant interaction effects between establishment groups would have ideally required a sample of around 400 establishments, this target was not met. Comments on the questionnaire suggest that many decision makers could not imagine themselves in the hiring scenario, often because bachelor's graduates are irrelevant in their establishments. If this implies that responding decision makers were better able to engage with the simulated recruitment situation, it provides a reasonable justification for the sample.

Due to the smaller subsamples in the models for training strategies, it was not feasible to estimate average marginal effects while controlling for decision difficulty, applicant description, and task area. Instead, seemingly unrelated regressions were used to test whether coefficients for applicant characteristics differed when accounting for establishment-specific factors; no significant differences were found, including in models considering establishments' experience with bachelor's graduates **(Figure 4)**.

The experiment indicated that the final academic mark is a particularly influential selection criterion, which is somewhat unexpected in a segmented labor market like Germany's, where occupational fit might be assumed more important than

grades. According to Di Stasio and van de Werfhorst [13], this could suggest that final marks were interpreted as indicators of general performance ability or trainability, aligning with the idea that establishments employing—but not training—bachelor's graduates focus on attributes not explicitly represented in the experiment. For these establishments, final marks had the strongest effect, although reliance on grades could be problematic in practice due to variability across study programs and institutions.

Conclusion

The German education system offers two career paths: vocational training through IVET followed by advanced further training, or university-level study via bachelor's programs followed by master's degrees. Both routes, according to the GQF, qualify participants to handle comprehensive tasks, evaluations, and leadership responsibilities. The relative attractiveness of vocational versus academic pathways is determined during recruitment when candidates with differing qualifications compete for positions. This paper simulated such a scenario using a choice experiment for a project management vacancy.

To allow fair comparison between advanced further training graduates and bachelor's graduates, the experiment focused on dual higher education programs, in which students spend substantial time in an establishment during studies, enabling internal recruitment and familiarity with their skills, similar to advanced training graduates.

From a rational choice perspective, the knowledge and experience establishments hold regarding graduates' actual skills was expected to influence hiring decisions. Establishments with VET-affinity are more familiar with advanced further training due to its standardized nature and tradition, while practice-integrated bachelor's programs are relatively new and lack standardized curricula.

Results show that bachelor's graduates from dual programs have lower chances of filling project management roles compared to advanced further training graduates if trained externally. Only establishments exclusively supporting advanced further training show a clear preference for these candidates over bachelor's graduates. Establishments supporting neither qualification type display no significant preference. Where training strategies are not explicit, qualifications compete for career advancement opportunities, with project management roles representing the initial step. Establishments without experience in dual-study bachelor's programs struggle to evaluate such candidates, relying primarily on occupational experience, whereas establishments employing bachelor's graduates emphasize final marks, possibly as a proxy for productivity.

Given that advancement chances equalize in establishments familiar with training contents, it is worth noting that bachelor's programs (approx. 3 years) are shorter than IVET plus advanced training, suggesting that dual higher education could become an attractive alternative if expanded and better recognized. The high VET-affinity of surveyed establishments indicates potential support for this trend.

The experiment further reveals that excellent final marks significantly boost recruitment likelihood compared to occupational specialization, regardless of establishment training strategy, suggesting that cognitive ability—as indicated by grades—may be weighted more heavily than professional specialization traditionally gained in advanced further training programs. Further research is needed to investigate the influence of occupational specialization more precisely.

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