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Kontakt / Contact:

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Informationszentrum (IZ) Bildung
E-Mail: pedocs@dipf.de
Internet: www.pedocs.de

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Is Dual VET a Differentiating Factor in Firm-School Relationships? Evidence From the Basque Country

Beatriz Otero^{*1}, Mikel Olazaran², Cristina Lavía¹, Eneka Albizu³

¹*University of the Basque Country UPV/EHU, Department of Sociology and Social Work, Barrio Sarriena, s/n, 48940 Leioa (Bizkaia), Spain*

²*University of the Basque Country UPV/EHU, Department of Sociology and Social Work, Plaza Oñati, 3, 20018 Donostia–San Sebastián (Gipuzkoa), Spain*

³*University of the Basque Country UPV/EHU, Department of Financial Economics II, Barrio Sarriena, s/n, 48940 Leioa (Bizkaia), Spain*

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Abstract

Context: The relationship which firms and schools establish around compulsory student internships is a key aspect of the Spanish vocational education system. The introduction of extended student internships (the so-called "dual Vocational Education and Training" or "dual VET") in recent years has received considerable attention. Whereas some authors have pointed out at positive results in terms of academic results and employability, others indicate that important challenges remain regarding formalisation of the in-company curriculum and diversity of student internship experiences. Most of recent studies look at education agents, and there is a need of further evidence coming from the firms. In particular, limited attention has been paid so far at the comparison between standard and extended ("dual") internship experiences.

Approach: A survey-based quantitative study has been carried out with a sample of 254 industrial Small and Medium-sized Enterprises (SMEs) from the Basque Country (Northern Spain). The questionnaire looks at different aspects of the relationships which firms and schools develop around student internships, as experienced by the companies: Motives for receiving students, implementation of the internships, and outcomes. Special attention is paid to the impact of dual VET on firm-school relationships.

*Corresponding author: beatriz.otero@ehu.eus



Results: The evidence gathered shows that firms and schools have developed rich, reciprocal relationships around student internships (both standard and dual). Firms having experience of dual VET have a more intense relationship with schools in aspects such as training in competencies needed by the firm, selection and supervision of students, frequency and depth of communication with the school tutor, organisational width of the intern student experience, use of the training contract, better knowledge of the school curriculum, and hiring the student after graduation. However, other variables, related to the innovative culture of the firm, exert also a wide influence on the relationship in aspects like student selection and integration in the firm, long-term view of training (affecting all employees in the organisation), participation in intern student evaluation, formalisation of student training plans and contribution to the quality of the school curriculum.

Conclusion: The key message emerging from the study is that dual VET has an effect on the intensity of firm-school relationships, but that it does not alter radically the character of the relationship which had been established before, based on standard student internships. Along with the dual experience, the innovative culture of the firm also has an important effect on the relationships.

Keywords: Vocational Education and Training, VET, Student Internships, Dual VET, Spain, Industrial SMEs

1 Introduction

In the last 30 years the Spanish vocational education system has undergone very important changes. The 1990 Education Act made student internships in firms compulsory, involving 20% of the two year degree curriculum at both intermediate VET (International Standard Classification of Education, ISCED 354, student age 16-18) and higher VET (ISCED 554, age 18-20) levels. The Spanish vocational education system is school-based, and has been historically characterised by a low level of involvement of economic actors in the provision of occupational qualifications. The massive implementation of compulsory work placements starting in the 1990s was a milestone in the evolution of the system, along with the modularisation of the educational curriculum, which allowed for an increasing coordination between the initial and continuous training subsystems.

After the 2002 Copenhagen declaration of ministers of vocational education and training, European "soft-framing" and coordination gained momentum and, in the late 2000s and early 2010s, in a context of deep economic recession, high unemployment (affecting especially young people) and labour market reform, a decree (Royal Decree 1529/2012 on "dual VET" was passed in Spain without much participation of educational and social agents which allowed for an extension of the vocational education work placement duration, from 20% to 33%

(or more) of the time in the firm (Echeverría, 2016; Marhuenda-Fluixá et al., 2015, 2016). Since then, two types of internship in firms have coexisted, which we will call standard (Spanish acronym FCT) and extended (known as "dual VET" in Spain). In the Basque case, the regional government established a minimum of 40% of the curriculum for work-based learning in dual VET from 2015, a contract or grant being compulsory (Basque Decree 83/2015).

After some years of implementation of extended internship schemes in school-based vocational education systems, European "soft" coordination has more recently focused on the quality of company-based training (European Council 2018 declaration and formulation of the 14 criteria of the European Framework for Quality and Effective Apprenticeships). In the Spanish case, recommendations made so far include increasing formalisation of students' in-company training (personalised training plans), more frequent meetings between firm and school supervisors, training for both supervisors, increasing use of work contracts for the in-company period, and a compromise of non-reduction of teaching personnel from vocational schools (as a consequence of extension of student work placement periods; Carrasco-Miró et al., 2021).

The objective of this paper is to contribute to the recent scientific debate about the implementation of so-called "dual VET" in Spain (i.e., extended internships within a school-based system). Attention will be paid to dual VET as a differentiating factor in the relationships which firms and vocational schools establish around student work placements, looking at motivation-related aspects, organisational aspects and outcomes of the relationships. The results refer to the differences between dual-VET internships (minimum of 40% of the curriculum in the firm in the Basque region) and standard internships (20% of the curriculum).

2 Theoretical Framework

The relationships established between vocational schools and firms around student internships can be conceptualised in terms of a "service-for-service" exchanges (Grönroos & Voima, 2012; Vargo & Lusch, 2016). The company scans and selects future workers, also contributing to the local community (training students who won't be selected) and strengthening its social legitimacy as a "good employer", able to attract future capable students from the environment. In turn, the vocational school "places" students in companies and, through school tutor-firm tutor relationships, gains knowledge about firms' processes and technology, so being able to update the school curriculum and adapt it to the state-of-the art in firms (and maybe offering other services such as tailored training to firms). Importantly, by helping school-to-work transitions the school gains legitimacy as a "worker provider" in the local labour market.

As authors from the "service-dominant logic" and university-business cooperation perspectives predict, "provider-customer" relationships can evolve into increasing levels of service exchange and value creation, eventually becoming partnerships of value co-creation or co-construction characterised by high levels of mutuality of interest, trust, and relational norms and obligations (Barnes, 2003; Pavlin, 2016; Rampersad, 2015; Rybníček & Königsguber, 2019; Vargo & Lusch, 2016; see also Fuller & Unwin, 2019). These processes can also be conceptualised using social learning and community practice theory, as firms' internal processes of learning (related to the uptake of student interns) are linked to "boundary processes" and relationships with vocational schools (Lave & Wenger, 1991; Wenger, 2000).

It is important to keep in mind that internships in school-based VET systems (such as the Spanish one) are "fundamentally different in their strategic function and purpose" from Germanic-type apprenticeship systems (CEDEFOP, 2018, p. 12). In the former, in-company internships are less or not regulated, varying from company to company, often being firm specific (CEDEFOP, 2018). Nevertheless, in our view, starting from a lack of involvement of firms in VET in the 1980s, implementation of compulsory student internships (from the 1990s) and extended internships (so-called "dual VET" from the 2010s) is bringing about important changes in firm-school relationships which are worth studying.

After reviewing the recent literature about the implementation of dual VET in Spain, several interesting aspects emerge (see table 1 for a summary). First of all, dual VET is an important development affecting certain sectors, types of firms or local systems (row 4 in the table). We can expect that extended internships are being implemented in local systems which already have a strong tradition of firm-school relationships built up around standard internships, such as the Basque Country.

The extension of dual VET at national, Spanish level has been rather limited so far, affecting currently (according to the latest data available) 3.8% of ISCED 354 students and 5.4% of ISCED 554 students (4.4% for the whole vocational education system, reaching 7.6% for industrial specialties) (Caixabank, 2023).

Studies carried out show that flexibility of the in-company training curriculum is a key aspect of the Spanish system (row 7 of table). In fact, this lack of regulation or formalisation has been used by school actors as an incentive to "invite" firms to take intern students. Related to that, firms have low participation in intern student selection and in overall formal student evaluation (row 8).

In the 2021-2022 academic year, only 4.5% of dual VET students had a training contract, while 67.7% received a grant and 24.2% had neither a grant nor a contract (there was lack of information about the remaining 3.6%) (Caixabank, 2023; see also references in row 9 of table 1).

Firms' main motive for accepting dual VET intern students is the search and selection of future personnel (5th row in the table), thus integrating students into the firm culture. Strict

calculations about the cost of supervising students do not seem to intervene. At the same time, public incentives such as reduced social security payments don't seem to be a first level factor (row 11).

The core of the relationship is the exchange between company and school tutors (row 6), continuous communication, reciprocity and trust being a key aspect here. Some firms seem to indicate that the school tutor's dedication could be improved. The role of the firm tutor is also very important for student satisfaction.

As for the results of dual VET, according to the evidence available they are good in academic and employability terms (row 10), this being in part a consequence of attracting students who had higher grades before they went to the internship. Students show high levels of satisfaction with the dual internship experience.

The risks are related to the firm-specific character of in-company training, the subsequent loss of curriculum content and the possible use of students as cheap labour in certain sectors or firms (row 12). The school teachers play a key role, taking responsibility for helping students learn the parts of the curriculum that have not been seen in the firm and, in general, managing the diversity of students' internship experiences in the classroom.

Table 1: Summary of Recent Research on Spanish "Dual VET"

(1) Lack of involvement in VET and training culture among Spanish firms (especially among SMEs); weak social dialogue regarding VET	Arnau-Sabatés et al., 2023; Guerrero-Puerta & Lorente-García, 2025; Marhuenda-Fluixá, 2012; Marhuenda-Fluixá et al., 2017; Marrero-Rodríguez & Stenardi, 2023; Martín-Artiles et al., 2020; Rego-Agraso et al., 2015; Rigby & Ponce, 2016; Šćepanović & Martín-Artiles, 2020; Todolí-Signes, 2015
(2) Regional differences in VET system structure and governance	Martínez-Izquierdo & Torres-Sánchez, 2024, 2025; Moso-Díez et al., 2022; Olazaran et al., 2023; Sanz & Serra, 2024
(3) Definition of qualifications framework at national level (positive). Based on social dialogue. But process very slow	Marhuenda-Fluixá, 2019; Martínez-Morales & Marhuenda-Fluixá, 2020; Sanz, 2017; Sanz et al., 2025; Zaunstöck et al., 2021
(4) Dual VET for selected sectors	Bentolila & Jansen, 2019; Homs, 2016; Leis-Blanco, 2021; Valiente & Scandurra, 2017
(5) Worker selection motive (vs. strict cost motive). Relevance of social motive	González-Veiga et al., 2010; Jansen & Pineda-Herrero, 2019; Lavía et al., 2024; Pineda-Herrero et al., 2018; Rom et al., 2016
(6) Role of firm and school supervisors. Importance of communication, coordination, trust. Rotation of student through different firm sections In some cases cooperation could be improved	Hernández-Lara et al., 2019; Martínez-Izquierdo & Torres-Sánchez, 2025; Pineda-Herrero et al., 2017; Renta-Davids et al., 2019; Sanz, 2017; Virgós-Sánchez, 2022; Virgós-Sánchez et al., 2023, 2025
(7) Flexibility of in-company training curriculum	Marhuenda-Fluixá et al., 2015, 2016; Cedefop, 2016; Pineda-Herrero et al., 2017, 2018; Cedefop, 2018; Jansen & Pineda-Herrero, 2019; Barrientos-Sánchez et al., 2019; Fundación Bertelsmann, 2021; Pozo-Llorente & Poza-Vilches, 2020; Virgós-Sánchez, 2022; Marrero-Rodríguez & Stenardi, 2023
(8) Firm participation in student selection and evaluation (less)	Marhuenda-Fluixá et al., 2015; Marrero-Rodríguez & Stenardi, 2023; Rodríguez-Pérez et al., 2024; Sanz et al., 2025; Virgós-Sánchez, 2022; Virgós-Sánchez et al., 2023

(9) Mainly grant (vs. contract)	Bentotila et al., 2020; Caixabank, 2023; Consejo Económico y Social, 2023; Fundación Bertelsmann, 2021; Martín-Suárez, 2023; Todolí-Signes, 2015
(10) Dual VET's academic (grades, continue studying) and employability results (better). Attracts more motivated and better educated students. Actors' satisfaction	Arnau-Sabatés et al., 2023; Bentotila & Jansen, 2019; Bentotila et al., 2020; Fandos-Garrido et al., 2017; Guerrero-Puerta & Lorente-García, 2025; Jansen & Pineda-Herrero, 2019; Mora et al., 2022; Pellicier, 2021; Pozo-Llorente & Poza-Vilches, 2020; Rodríguez-Pérez & Pineda-Herrero, 2023; Serrano et al., 2016
(11) Economic incentives less important	Marhuenda-Fluixá et al., 2015
(12) Risks: Lack of sector competencies; loss of school curriculum content; inequalities between students; cheap labour	Marhuenda-Fluixá, 2012; Marhuenda-Fluixá et al., 2015, 2016; Martín-Artiles et al., 2020; Pineda-Herrero et al., 2017, 2019; Poza-Vilches & Pozo-Llorente, 2024; Šćepanović & Martín-Artiles, 2020
(13) Dual VET could be used with disadvantaged students and people	Guerrero-Puerta & Lorente-García, 2025; Gutiérrez-Morillo, 2021

Note. Source: Authors' elaboration.

In recent years more attention is being given to the role of skilled workers in innovation, especially within the so-called DUI (doing, using, and interacting) mode of innovation, as distinct from innovation coming from basic research (Albizu et al., 2017; Brunet-Icart & Rodríguez-Soler, 2017; Toner & Woolley, 2016). Skilled workers' practical knowledge and know-how are essential components of the processes of development, adaptation and implementation of new technologies. As a consequence, vocational schools are increasingly recognised as relevant agents of local and regional innovation systems (Lewis, 2023; Lund & Karlsen, 2019; Olazaran et al., 2018; Porto-Gómez et al., 2017; Rupietta & Backes-Gellner, 2019; Rupietta et al., 2021). Within this context, it can be expected that innovative firms have a closer or more intense relationship with vocational schools.

3 Research Questions

The literature review carried out shows that important learning processes are taking place around the implementation of extended internships (the so-called "dual VET"). Firms' participation in the vocational education system is increasing and vocational schools, using their autonomy, seem to be adapting to the different types of firms and internships.

In this context, our research aims to answering the following questions, from the point of view of firms (industrial SMEs). Which are the main aspects of the relationships which firms and schools establish around student internships (both standard and extended)? To what extent is the extended, dual internship experience a differentiating factor in firms' views about the relationships? Which other factors have an influence in the relationships?

Our hypotheses are the following:

H1) In general (for both standard and extended internships), firms' main motives for taking on intern students are related to selection of future personnel, but there are also broader aspects linked to cooperation with vocational schools and contribution to the local training system.

H2) Spanish "dual VET" being an extension or intensification of the standard internship model, we expect it to have an effect on important aspects of firm-school relationships.

H3) However, we do not expect dual VET to alter radically the character of the relationship which has been established before, based on standard internships.

H4) We expect that the organisational culture of the firm, in particular its orientation towards innovation, will be an important factor influencing firm-school relationships.

4 Methodology

In order to test the hypotheses a survey-based quantitative study was carried out with a sample of 254 industrial small and medium-sized firms (SMEs) from the Basque Country which regularly have student internships (standard or dual). The sample was taken from a population of 3513 industrial SMEs (i.e., belonging to National Classification of Economic Activities codes 05 to 39) having between 10 and 250 employees. The sampling frame was the Iberian Balance Sheet Analysis System (SABI) data base (Bureau van Dijk, n.d.). The sample was designed using quotas of provinces (three) and size (five strata). After an initial phone contact, companies from each stratum that had not received interns in the last six years were excluded, with the remainder defined as the target population. 254 out of 414 firms contacted completed the questionnaire, with a response rate of 61.3%. The data were collected in February and March 2021 using a mixed method, either by telephone (51.6%) or online (48.4%). The respondents were general managers, Human Resource managers, or training tutors, at the discretion of the company. The sample is representative with a sampling error of 5.81% at a 95% confidence level and for $p=q$.

The questionnaire was designed *ad hoc* by the research team with a view to measuring firms' perception and assessment of VET student internships (41 items). Based on the idea that those internships are the main and most important form of relationship between industrial firms and vocational education schools, the questionnaire looks at different aspects of the internships (student work placements), as they are experienced by the companies. A Likert-type scale was used with four levels of agreement: Fully agrees, rather agrees, slightly agrees and disagrees.

Descriptive characteristics of the firms and their activity were gathered, as well as a number of potentially explanatory variables. Most surveyed firms are small (52.8% having fewer than 25 employees) and belong to metal-mechanic (74.4%) and low and medium-low technology sectors (66.9%). Nevertheless, 33.9% of the firms see themselves as being stronger than their competitors in innovation, and 43.3% have taken part in innovation projects carried out in cooperation with external Research and Development (R&D) agents. 60.6% of the surveyed companies have received dual-type, extended internship students from vocational education schools, as compared to 39.1% which have only taken standard-type internship students. This dual vs standard dichotomy will be the main independent variable of our analysis.

For each of the 26 items of the questionnaire (dependent variables) selected, levels of agreement (1-4 scale) and percentage of agreement (rather agrees plus fully agrees) were calculated. As mentioned, experience with dual work placements (yes vs. no) was taken as independent variable. Two types of statistical significance tests by the independent variable were carried out: Student's *t* test for the difference of two independent means and Chi-square test of association for 2x2 contingency tables with the agreement percentage statistic. Significance evidence was completed by measuring effect size: Cohen's *d* for means difference and Cramer's *V* for contingency tables (Domínguez-Lara, 2018)¹.

In order to avoid effects from other variables, stepwise logistic regressions were performed for each item (agreement) with seven independent variables: Experience with dual-type work placements (main independent variable, yes vs. no), company size (up to 24 employees vs. more), sector (metal-mechanic vs. rest), technology level (high vs. low), innovation capability (bigger than competitors vs. similar or smaller), experience in innovation cooperation projects (yes vs. no) and competitive position (better than competitors vs. no)². Net effects obtained from each model allow for the identification of each variable's contribution (controlling the rest) to explain agreement with the item. All analyses were conducted using SPSSV28.

5 Results

The results obtained from the selected items are referred to the three main moments of the relationships between firms and schools in student work placements: i) Motivation for taking students, ii) organisation and development and of the internship, and iii) outcomes and evaluation of the relationship.

1 For the Cramer *V* test, effect sizes are interpreted from .10 (small), .30 (medium) and .50 (big). For Cohen's *d*, interpretation guidelines are: From .20 (small), .50 (medium), and .80 (big).

2 The data supporting the findings of this study are available from the authors upon request.

5.1 Firms' Motives for Receiving Students

The main motives for taking students (referring to both standard and dual work placements), showing an agreement higher than 85%, are "accessing future worker candidates" (mean 3.56 out of 4), "training students in competencies needed by the firm" (3.46) and "immersing trainees in the company culture" (3.40).

Strong correlations have been detected between the "train in the competencies and skills needed by the firm" motive and others (Spearman's $Rho=.577$ with "accessing potential worker candidates" and $Rho=.403$ with "integrating students into the company culture"), showing student work placements' importance for firms' short-to-medium term, customised training needs.

Experience with dual-type student work placements has an influence in all selected motives, with significant differences found in mean and percentages (small effect) for the "training students in the competencies needed by the firm" motive. The multivariate analysis carried out shows that it is a real net effect which almost triples the positive response (table 2).

Motives related to the training culture of the companies are also important, with levels of agreement between 60 and 75%. Thus, firms state that they "contribute to training people even if they are not going to hire them", that they see training as a "long-term investment" and that "hosting student trainees reinforces the training culture of all employees". Reputational motives also appear here, with 65% of managers affirming that receiving trainee students helps improve the employer firm's image.

Table 2: Descriptive and Significance Test Results for Motivation-Related Items by Type of Work Placement (Dual vs. Standard) – Independent Variables Having a Significant Net Effect According to Logistic Regression Models

Motive	% of firms which rather agree or fully agree			Mean (1-4) (SD)			Significant net effects (ExpB)
	Total	Dual	Standard	Total	Dual	Standard	
M1. Access potential future employee candidates for the firm	93.7	94.2	93.0	3.56 (.64)	3.56 (.63)	3.54 (.66)	Cooperates* (4.76)
		.023			.039		
M2. Train people in the competencies and skills needed by the firm	91.3	94.2*	87.0	3.46 (.69)	3.53* (.63)	3.36 (.66)	Dual * (2.70)
		.124			.253		
M3. Integrate student trainees into the company culture	87.0	90.3	82.0	3.40 (.74)	3.46 (.69)	3.30 (.81)	Competitive position* (2.87)
		.120			.218		

M4. Contribute to training people, even though we are not going to hire them	73.9	73.9	74.0	3.04 (.91)	3.07 (.91)	3.01 (.90)	Metal-mech. sector* (.362)
		.002			-.061		
M5. The VET school knows our problems and needs	70.5	73.2	66.3	2.92 (.88)	2.97 (.86)	2.84 (.90)	
		.074			.149		
M6. Hosting student trainees improves our image as employers	65.0	66.9	62.1	2.81 (1.00)	2.88 (1.00)	2.71 (1.00)	Competitive position* (2.22) + Size (1.92)
		.050			.165		
M7. In the medium to long term we recoup the investment in training	61.7	64.2	57.9	2.7 (.96)	2.76 (.94)	2.62 (1.00)	Cooperates** (2.48)
		.063			.141		
M8. Hosting student trainees leads to a more favourable attitude towards training among the workforce	60.1	63.0	55.4	2.66 (.97)	2.73 (.99)	2.55 (.93)	Cooperates* (1.88)
		.075			.184		
M9. Existing incentives (grants, lower social security contributions, etc.) have encouraged us to receive student trainees	41.0	40.9	41.1	2.20 (1.05)	2.22 (1.08)	2.18 (1.00)	Cooperates* (0.48)
		.001			.040		

Note. * $p < .05$; ** $p < .01$. T test for the difference of two independent means and Chi-square test for percentages of agreement. In lower rows and in italics, effect size measures for differences between two groups: Cohen's d for means and Cramer's V for percentages. Exp(B) for variables with significant net impact (*) according to logistic regressions. Source: Authors' elaboration.

Even though motives related to the firm's training culture or "social" motives are not as important as the more "economic" ones mentioned before (means between 2.6 and 3 in the 1-4 scale), they are part of a set of perceptions that are associated with each other (Spearman's Rho coefficients between .5 and .6). Companies which have experienced dual internships have slightly higher scores, but the differences are not significant. In fact, the competitive position of the firm and experience in innovation cooperation projects have a stronger, significant effect on different aspects of the training and organisational culture, as can be observed in the table.

Finally, it is relevant to point out that existing economic incentives seem to be important only for a minority of firms (agreement level 41%, mean 2.2 over 4), this being independent from the internship format.

5.2 Organisation and Development of Internships

A big majority of firms underline their implication in student internships, as shown by expressions such as "we contribute with resources and personnel" (91.7%), "we participate in students evaluation" (88.8%), and "we have defined the training contents for internship students" (74.1%) (see table 3). They also recognise school supervisors' implication and

availability (85.5%). SMEs with experience on dual internships show a significantly greater level of agreement with the mentioned expressions of firm implication, as well as with the idea of frequent communication with the VET school (69.9% vs. 57.1%). Controlling for other variables, the net impact of dual experience is significant for almost all aspects considered.

With respect to other organisational aspects, firms point out clearly at the importance of training contracts (81.5%, mean 3.13), with a significant difference for companies having experience of dual internships (small effect). Along with that, they indicate that administrative costs of the internships are not high (13.2% of agreement, 17.8% for firms with dual internships).

Table 3: Descriptive and Significance Tests Results for Internship Organisation and Development Items by Type of Work Placement (Dual vs. Standard) – Independent Variables Having a Significant Net Effect According to Logistic Regressions

	% of firms which rather agree or fully agree			Mean (1-4) (SD)			Significant net effects (ExpB)
	Total	Dual	Standard	Total	Dual	Standard	
Organisation and development of internships							
D1. We dedicate resources and personnel to students coming from VET schools	91.7	96.9	83.7	3.42 (.70)	3.53 (.56)	3.23 (.85)	Dual * (5.80) + Cooperates* (4.35)
		.231			.434		
D2. We participate in students' evaluation	88.8	92.2	83.7	3.29 (.70)	3.36 (.67)	3.18 (.75)	Innovation capability* (2.99)
		.131			.251		
D3. The school supervisor shows implication and is always available	85.5	86.8	83.3	3.23 (.76)	3.29 (.79)	3.15 (.71)	
		.049			.188		
D4. The training contract is a useful instrument for student internships	81.8	86.8	73.7	3.13 (.81)	3.22* (.79)	2.98 (.82)	Dual* (2.29)
		.166			.304		
D5. We have defined well the training contents for trainee students' work placements	74.1	77.3	69.1	3.01 (.84)	3.08 (.82)	2.90 (.87)	Innovation capability* (2.24)
		.091			.224		
D6. During their internship students get to know more than one area or department of the firm	69.8	74.7	62.2	2.92 (1.01)	3.04* (.96)	2.73 (1.08)	Dual * (2.00)
		.132			.303		
D7. Communication with the VET school is frequent	64.9	69.9	57.1	2.84 (.92)	2.92 (.94)	2.72 (.87)	Dual * (1.81)
		.131			.215		

	38.8	46.1	27.6	2.22	2.36*	2.00	Dual** (2.21) + Cooperates* (1.81)
D8. We participate in trainee student selection				(1.09)	(1.11)	(1.03)	
		.185			.329		
D9. Bureaucratic procedures related to the management of student internships are costly	13.2	17.8	6.1	1.56	1.65*	1.43	
				(.80)	(.86)	(.67)	
		.168			.280		

Note. * $p < .05$; ** $p < .01$. T test for the difference of two independent means and Chi-square test for percentages of agreement. In lower rows and in italics, effect size measures for differences between two groups: Cohen's d for means and Cramer's V for percentages. Exp(B) for variables with significant net impact (*) according to logistic regressions. Source: Authors' elaboration.

In addition, firms which have experienced dual placements show a much higher agreement (net effect) with the idea of trainee students participating in several areas or departments of the company (72.7% vs. 62.2%) and indicate significantly greater participation in student selection (46.1% vs. 27.6%).

The impact of the dual experience is complemented by the effect of the innovation cooperation variable for some items like student supervision and student selection. In addition, the firm's innovation capability has a significant impact on student evaluation and formalisation of training contents.

5.3 Results and Evaluation of the Relationship

Trust (92.5%) and reciprocity (88.4%) are key components of the relationships that firms and schools establish around student work placements (both standard and dual). Beyond this element, the aspect which attracts most agreement is the idea that "trainees' skills and competencies have improved after their internship in the company" (89%, mean 3.39), showing firms' contribution to the student training system. The connection of this system with the firms' needs is also clear, as 61.1% state that it is quite frequent that "trainee students end up being hired by the company" therefore fulfilling one of the main objectives of the SMEs, as we saw in the motives section. This objective is significantly linked to the dual experience (66.7% vs. 52.5%).

The idea of firms' contribution to student training is complemented by the assessment of students' training level *before* they join the firm. Here the dual experience also makes a difference (controlling for all other independent variables), as 53.2% of dual firms show high levels of agreement with the adaptability of students' initial training to the needs of the firm, as compared to only 39% for companies which only have standard internships.

Table 4: Descriptive and Significance Tests Results for Internship Results and Evaluation Items by Type of Work Placement (Dual vs. Standard) – Independent Variables Having a Significant Net Effect According to Logistic Regressions

Results and evaluation of the relationship	% of firms which rather agree or fully agree			Mean (1-4) (SD)			Significant net effects (ExpB)
	Total	Dual	Standard	Total	Dual	Standard	
R1. Relationships with the VET school are based on trust	92.5	94.1	89.9	3.46 (.67)	3.52* (.65)	3.35 (.69)	
		.078			.254		
R2. The skills-sets of the trainees improved after their time in the company	89.0	89.4	88.4	3.39 (.69)	3.41 (.70)	3.35 (.68)	Cooperates* (3.33)
		.015			.090		
R3. Our relationship is based on reciprocity	88.4	89.5	86.5	3.35 (.74)	3.42* (.75)	3.23 (.70)	
		.047			.267		
R4. Our contribution helps improve the quality of training programmes at schools	72.4	76.3	66.3	2.97 (.82)	3.06* (.83)	2.81 (.78)	Competitive position* (2.079)
		.109			.311		
R5. Trainees usually end up being hired by the company	61.1	66.7*	52.5	2.75 (.87)	2.84* (.85)	2.61 (.88)	Dual* (1.95)
		.142			.268		
R6. The training that trainees bring from the school adapts to the needs of the company	47.6	53.2*	39.0	2.48 (.78)	2.56* (.82)	2.35 (.72)	Dual* (1.95)+ Metal-mech. sector** (.393)
		.139			.268		
R7. There is knowledge transfer with VET school teachers	41.4	48.0**	30.9	2.31 (1.07)	2.44* (1.06)	2.09 (1.05)	Dual* (1.82)
		.169			.329		
R8. Work placements facilitate the introduction of technical or organisational changes	20.4	23.2	16.2	1.90 (.83)	1.96 (.88)	1.80 (.76)	
		.085			.195		

Note. * $p < .05$; ** $p < .01$. T test for the difference of two independent means and Chi-square test for percentages of agreement. In lower rows and in italics, effect size measures for differences between two groups: Cohen's d for means and Cramer's V for percentages. Exp(B) for variables with significant net impact (*) according to logistic regressions. Source: Authors' elaboration.

As well as having a higher assessment of the schools' educational offer, 48% (mean 2.44) of firms with dual internship experience go on to affirm that there is "knowledge transfer" between firm tutors and school teachers, as compared to 30.9% (mean 2.09) for firms which only have standard internships. It is in this item that the influence of the dual experience is greatest.

In addition, firms with a higher competitive position and innovation cooperation experience see themselves as making a greater contribution to the educational curriculum in general.

Other possible results of the relationships, such as the introduction of technical and organisational changes receive much lower levels of agreement.

6 Discussion and Conclusions

The results obtained show that strong and rich, trust-based relationships have been established between firms and schools around student internships throughout time. SMEs having experience of dual VET get higher scores in many of the items considered, reaching statistical significance mainly in aspects related to the implementation and development of the internships, such as training in competencies needed by the firm, selection and supervision of students, frequency of communication (and level of "knowledge transfer") with the school tutor, organisational width of the intern's experience, use of the training contract, better knowledge (and adaptability) of the school curriculum, and hiring the student after the in-company training period.

The influence of the dual VET experience is important and can be seen as showing an intensification of certain aspects of the relationship. However, it has been found that variables related to the organisational culture of the firm (i.e., participation in innovation projects in cooperation with external agents, innovation capability, competitive position) have an even wider influence upon firm-school relationships, affecting aspects such as future worker selection and integration in the firm, long-term view of training (including continuous training of all employees), participation in intern student evaluation, formalisation of student training plans, and contribution to the school curriculum and its quality (even if they are not going to hire the trainee student).

The combination of extended (dual) internships and an "advanced" (so to speak) organisational culture (innovation cooperation capability, competitive position) brings about an intensification of most aspects considered by the literature (table 1, rows 5 to 11), regarding worker selection motives, social motives, role of firm and school tutors and relationships between them, participation in the educational curriculum (as well as in student selection and evaluation), and use of the training contract.

As the most recent literature reviews have underlined, research on firms' motives and views regarding dual vocational education in Spain is very scarce -especially quantitative research- as most studies focus on the education sector or rely on qualitative methods (Echeverría & Martínez Clares, 2019; Navajas-Torrente & Roldán-Casas, 2025; Virgós-Sánchez et al., 2025). As Martínez-Izquierdo and Torres-Sánchez (2025, p. 5) have recently pointed out, "empirical research based on direct sources concerning the intrinsic motivations and justifications of Spanish actors for adopting dual VET remains virtually nonexistent. Only the study by Jansen and

Pineda-Herrero [2019]... can be loosely situated within this line of inquiry". Our study tries to fill this gap by enriching the conceptual framework of firms' motives, producing quantitative evidence about the relative importance of the different motives and, importantly, looking at both standard and extended (or dual) internships, in order to see the differences between them.

The study shows that innovative SMEs have a closer reciprocal relationship with vocational schools, dual internships being an important factor which enriches and develops that relationship even further. The study complements earlier work showing that innovative firms have relationships of a wider kind with vocational schools, including continuous training and technical services, as well as student internships (Olazaran et al., 2018).

As for the limitations of the study, the main one is that the results cannot be generalised to all types of companies or regions due to the methodological design of the research. Although the sample is representative of the target population, these companies have characteristics that influence the relationships analysed and, therefore, the measurable results. It should also be noted that it was not possible to cover a larger and more diverse population with the resources available. On the other hand, the survey as a data collection technique can be affected by some social desirability bias in the responses collected, although the instrument can be systematically applied to other cases to broaden and compare findings. Our data should therefore be considered with these limitations in mind, but also as part of a body of evidence that will be comparable at different levels in the future.

So, what does the study show for other Spanish regions? Recent research in some regions has shown that firms' involvement in VET education, especially SMEs' involvement, is rather low (e.g., Guerrero-Puerta & Lorente-García, 2025; Marrero-Rodríguez & Stenardi, 2023; Martín-Artiles et al., 2020; Rego-Agraso et al., 2015). Indeed, in Spain there has been a historical trajectory of limited involvement of economic actors in vocational education (Marhuenda-Fluixá, 2012). Our study shows that, for the sectoral and regional case analysed, this tradition does not hold. By looking at the richness of the school-firm relationships, the study shows that, in the case analysed, the level of involvement of SMEs in vocational schools is rather high. In this line, the study corroborates the importance of SMEs in the adoption of dual VET detected recently in the Catalonia region (Rodríguez-Pérez et al., 2024).

The study carried out shows that dual internships help strengthen the relationships between firms and schools, but that those relationships also depend on firms' organisational culture, in particular their innovative orientation (experience in innovation cooperation projects with suppliers, clients and technology centres). In the Basque case, industrial sector's dual VET can be seen as a step further in an existing trajectory of firms' participation in vocational schools and intensive backing from the regional government (Martínez-Izquierdo & Torres-Sánchez, 2025; Olazaran et al., 2023). These conditions cannot be easily replicated in other regions and sectors, but aspects or components of the model can be adapted to other regional environments.

In any case, standard internships remain a key instrument for firms' and schools' learning processes, even more so at Spanish national level (Marhuenda-Fluixá, 2019). In this line, after our work was carried out, the Spanish government extended the duration of standard internships from 20% to between 25% and 35% of the curriculum, making the contract compulsory³ for so-called "intensive internships" (equivalent to the former "dual" internships), involving more than 35% of the curriculum (Organic Law 3/2022).

In our view, extension of standard internship time will be positive in the mid-term, but the terminology adopted in the law (stating that "from now on all vocational education will have a dual character") seems a bit unfortunate and confusing for an international audience. The standard student internship has been a key instrument in fostering firm-school relationships and learning processes. Extending standard internship time will surely be positive, even though important challenges remain (such as further formalisation of firms' participation in the curriculum). At the same time, calling standard internships "dual" now shows that the "intensive" internships (former "dual" work placements, involving more than 35% of the curriculum, 40% in the Basque case) remain a minority experience which cannot be generalised to the majority of firms or sectors right now.

We can say that the advanced regional experiences (such as the Basque case) have served as a model, in order to generalise the increase in the workplace component of all VET degrees in Spain (Olazaran et al., 2023). With the last, 2022 reform, firms and schools will continue to learn together along the way, so to speak, as they have done so far, gradually increasing firms' participation in the curriculum and therefore, increasing the workplace component ("dual component" in the 2022 Law's terms) of a school-based system.

As mentioned before, the results obtained in our study refer to a region and sectors which have a strong tradition of firm-vocational school relationships. The existing intensity of relationships in the case analysed allows for a quantitative study of the different aspects of the relationships. Studies about firms' views of vocational education schools remain very scarce in Spain, as most studies look at educational agents' views. We hope that the study carried out sheds light on important aspects of firm-school relationships, which can be confirmed and developed further in future studies about different regions, sectors and firm characteristics.

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³ Nevertheless, grants have been admitted so far.

Ethics Statement

Informed consent has been obtained from all subjects involved in the study. The survey cover letter informs that the data are processed anonymously, in aggregate form and for the sole purpose of conducting scientific studies. Respondents were also informed that the results of the study would be used in scientific publications.

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Biographical Notes

Beatriz Otero Gutiérrez (Santander, 1978) holds a PhD in Sociology from the University of the Basque Country and is Lecturer in the Department of Sociology and Social Work at the same university. Her research focuses on R&D systems, innovation and education, and she has participated in several competitive projects and academic publications in these fields.

Mikel Olazaran Rodríguez (Pamplona, 1963) holds a PhD in Sociology from the University of Edinburgh and is Lecturer in the Department of Sociology and Social Work at the University of the Basque Country. His research and publications address innovation, organisations and education. He teaches at the Faculty of Education, Philosophy and Anthropology in Donostia–San Sebastián.

Cristina Lavía Martínez (Bilbao, 1963) holds a PhD in Sociology from the University of Deusto and has been Lecturer in the Department of Sociology and Social Work at the University of the Basque Country since 1992. As a member of the COI research group, she has conducted research on innovation systems, social indicators and quantitative methodologies.

Eneka Albizu Gallastegi (Bilbao, 1963) holds a degree in Economics and Business Administration and a PhD in Economics from the University of the Basque Country, where he is Lecturer at the Faculty of Labour Relations and Social Work. His research interests focus on innovation, organisational learning and change, and people management.