

ANALYSIS AND DIAGNOSIS OF RISK-PREVENTION TRAINING ACTIONS IN THE SPANISH CONSTRUCTION SECTOR

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ABSTRACT

The aim of this research paper is to analyze occupational risk-prevention training in Small and Medium Enterprises (SMEs) in the Spanish Construction Sector. To do so, an in-depth study is completed on compliance with the entrepreneurial obligation to inform and to train workers in occupational risk-prevention, in accordance with the regulations laid down in Directive 89/391/EEC, and transposed into Spanish Law in Act 31/1995, of 8 November, on Risk Prevention in the Workplace [*Ley de Prevención de Riesgos Laborales* (LPRL)]. Three questionnaires were designed and two discussion groups were organized with risk-prevention trainers and business representatives in the sector. Databases from various bodies were jointly consulted, specifically the External Prevention Services (EPS) and the Construction Labour Foundation [*Fundación Laboral de la Construcción*] (CLF), to establish both the weaknesses and the strengths of occupational risk-prevention training and the training systems of the firms in the sector. Having gathered all the information, the strategic indicators of training in risk-prevention were analyzed, such as the professional qualifications of the trainers, the training methodologies employed, and the training and information that the worker received on the job. The results showed that the majority of trainers in charge of training courses were not construction specialists, the training courses were not adapted to the training level of the workers and, importantly, the teaching materials were never in the other languages of the foreign workers. In conclusion, higher levels of professionalization are necessary for all the agents involved in risk-prevention procedures and construction processes.

1. Introduction

Construction has traditionally figured among the economic motors that have contributed most to the growth of the economy in Spain. Spanish construction companies are now a reference; one of them occupying the highest ranking among construction and engineering groups with the largest international presence ([Engineering News-Record, 2015](#)). These Spanish firms have over 80% of their business portfolio concentrated in foreign works contracts.

The figures on the sales volumes of construction firms represent an increasingly large portion of Spanish Gross Domestic Product (GDP) ([Ministerio de Economía y Competitividad, 2014](#)), interrupting the markedly downward trend that began at the start of the economic crisis. Analyzing the history of the sector's contribution to GDP, a clearly upward trend may be seen since 1997, until it peaked at a maximum of 10.45%

in 2006, as shown in the table of economic indicators of the Spanish Construction Sector in 2014 (Table 1).

The construction industry has gradually been losing its leading role in the generation of wealth. With a progressive fall in activity, the figures on participation in national GDP confirm these data, with an estimate of 50% for 2014 in relation to the values reached in 2006 (Table 1).

Years	GDP at market prices	Brut added value of construction to basic prices	Participation of Construction
	(EUR million)	(EUR million)	Sector in GDP (%)
2000	646,250	59,165	9.16
2001	699,528	66,633	9.53
2002	749,288	73,631	9.83
2003	803,472	79,692	9.92
2004	861,420	85,986	9.98
2005	930,566	96,620	10.38
2006	1,007,974	105,326	10.45
2007	1,080,807	109,192	10.10
2008	1,116,207	113,190	10.14
2009	1,079,034	106,503	9.87
2010 (P)	1,080,913	87,526	8.10
2011 (P)	1,075,147	74,177	6.90
2012 (P)	1,055,158	60,779	5.76
2013 (P)	1,049,181	55,070	5.25
2014 (A)	1,058,469	53,672	5.07

Table 1. Economic indicators of construction up to 2014. Source: National Accounting of Spain 2010 (1). INE. Ministry of Economy and Competitiveness. (1) *Change of basis because of the implementation of the new European System of National and Regional Accounts (SEC 2010)*. (P) *Provisional estimate*. (A) *Advance estimate*. *National Quarterly Accounting Data*.

Nevertheless, the premature growth of the economy in Spain and the forecasted improvement of the macroeconomic Eurozone indicators have prompted a moderate recovery of construction activity over recent years. In accordance with the last statistical records, growth in 2014 was 2.4%, and some average previsions for development over coming financial years are estimated at around 4.0% (Euroconstruct, 2015a).

Up until the onset of the economic crisis in Spain in 2007, construction activities had been among the most dynamic, in both the generation of income and job creation, reaching a total number of 2,455,700 employees in 2004 (Eurostat, 2008) (Table 2).

Rank	Value added	Employment	Share of non-financial business economy			
	(EUR million) (1)	(thousands) (1)	No. of enterprises (2)	Turnover (2)	Value added (2)	Employment (2)
1	United Kingdom (82,281)	Spain (2,455.7)	Portugal (19.4%)	Spain (12.7%)	Spain (16.3%)	Spain (19.1%)
2	Spain (74,871)	Italy (1,748.4)	Finland (17.5%)	Portugal (10.8%)	Luxembourg (11.4%)	Luxembourg (16.2%)
3	France (59,979)	Germany (1,624.0)	France (17.1%)	Estonia (8.3%)	Portugal (11.0%)	Portugal (15.6%)
4	Germany (56,563)	France (1,547.6)	Czech Republic (17.1%)	Latvia (8.0%)	Austria (9.5%)	Italy (11.9%)
5	Italy (52,870)	United Kingdom (1,347.4)	Spain (15.4%)	Czech Republic (7.8%)	Netherlands (9.5%)	Slovenia (11.3%)

Table 2. Construction Sector. Structural profile: ranking of top five Member States, 2004. (1) *Greece and Malta, not available; Luxembourg, 2003.* (2) *Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.* Source: Eurostat-Official EU statistics, 2008.

Despite this situation, the Construction Sector has been very sensitive to the economic crisis in the Eurozone countries, and especially in Spain (Gelles, 2014; Gutiérrez and Delciòs, 2015), where a total of 1,640,000 jobs were lost (including the ancillary industry) in the period 2007-2014, and where 250,000 firms disappeared (more than 30% of those registered in 2007). All of this, linked to the excessive leadership of the construction in the Spanish economy aggravated the fall in employment. As a direct consequence, the number of jobs in the sector fell by 35% in 2014, in relation to the peak it had reached in 2007; while it fell by 71% in the rest of the Eurozone, less dependent on this activity, (Consejo Económico y Social de España, 2016); which led to higher levels of unemployment among less qualified workers (European Commission, 2016).

Eight years having elapsed since the beginning of the crisis, a slight but sustained increase in construction activities and employment levels may be appreciated these days, with the unemployment rate dropping by 23.36% in 2014 and by 19.6% in 2015 (Euroconstrut, 2015b).

Looking back over the past, if the evolution of incidence rates in the Spanish Construction Sector is analyzed over the years at the height of the economic crisis, a significant descent may be appreciated. A sustained drop in the total incidence rate, with sick leave in the working day during the period between 2006 and 2012, mainly justified by a significant slow-down in activity, the disappearance of firms committed to construction and support activities, as well as the elimination of both direct and indirect jobs, with a considerable loss of productive activity and leadership within the sector (INSHT, 2009; INSHT, 2014a; Muñoz, 2011).

In accordance with the above-mentioned points, the direct relationship that exists between incidence rates and the model of risk-prevention management in the firms should be highlighted, in conjunction with the level of training of its managers and workers (Agnello, 2006; Kagan and Komissarov, 2013). Such circumstances are corroborated by the detailed analysis of the results obtained from the surveys completed for this study in section 3.2 of the present document.

Worth mentioning on this point is that both the inherent versatility and the dynamism of construction activities, linked to the excessively temporal nature of contractual relations, in many cases distort the incidence rate. Therefore, many situations pass by unnoticed; nothing other than signs of a notorious absence of a “*risk-prevention culture*” among entrepreneurs and workers in the sector (Pedron et al., 2006, Hasle et

al., 2010), as well as significant shortcomings in worker training and specialization in the processes of completing construction units.

Despite the decline in activity and the accidents that occurred during that period, the incidence rate in the construction sector continues to be especially alarming (Segarra et al., 2017; Kanchana et al., 2015; López et al., 2012; Camino et al., 2008). With a view to remedying this situation, it is worth noting the efforts made by the Public Administrations in favour of promoting industrial safety in firms (Cagno et al. 2014) and encouraging the training of workers in matters of risk-prevention (INSHT, 2007); even preparing strategic plans over subsequent periods (INSHT, 2015a) studied within the same line of action. Indeed, despite the considerable reduction in the incidence rate in absolute numbers, the figures show that no advantage has been taken of the economic crisis, to initiate a true restructuring of the sector in terms of training. Even with the inverted economic resources, the incipient improvement of activity in 2013 has been accompanied by a rise in the total number of accidents, which was confirmed in 2014 by a consolidated increase in the incidence rate of over 4% (INSHT, 2015b).

As is set out, the training of entrepreneurs and workers in risk-prevention matters is a basic indicator to achieve the level of professionalization that construction activities require, with the aggravating circumstances involved in the inherent risks of production processes (Bahn and Barratt-Pugh, 2014). The Fifth General Convention of the Construction Sector in Spain, valid up until 2016, under article 143, expressly refers to an initial basic training of 8 hours, for workers starting their activities in a construction firm, to which 20 hours are added for skilled on-site jobs (BOE, 2012).

According to the Second European Survey of Enterprises on New and Emerging Risks (ESENER-2) (INSHT, 2014b), with a sample of 3,162 work centres at the level of the State, the Construction Sector more than any other has reduced investments in risk-prevention and safety to levels as low as 20%. During the crisis, firms have limited themselves to formal compliance with obligations in risk-prevention out of a fear of fines (reactive measures), without valuing the positive effects that continued training of both managers and workers has on the reduction in the number of accidents (preventive measures) (Hernández, 2015; De León, 2015). It is also well known that the deficit of a “*risk-prevention culture*” in firms and the poor training of workers are critical factors associated with higher incidence rates (Liu and Cheung, 1994; Rostami et al., 2014, Champoux and Brun, 2003), both circumstances that are more than evident in the Construction Sector.

The fall in investment under these budget headings is also justified by the specific peculiarities of the risk-prevention management system of the Construction Sector, which has meant that the firms themselves assume the high costs arising from the training of their workers. This circumstance involved an added cost for the sector of €87,316,182 in 2011, an average of €947 corresponding to each firm, almost €60 over the national average with regard to the other economic and productive sectors (Fundación Tripartita, 2011). According to the Survey on Professional Training for Employment [*Encuesta de Formación Profesional para el Empleo (EFPEE)*] (Ministerio de Empleo y Seguridad Social, 2010), completed in line with Eurostat criteria and methodological guidelines, it is evident that cutbacks, at times of crisis, directly affect

training activities before anything else; while firms assume the risks in matters of risk-prevention that might arise in such a situation.

In addition, the arduous work-loads that workers in the sector endure and the shortage of time, linked to the high cost of training courses, as well as the fact of having to contract properly qualified personnel, are among the main factors mentioned by firms in the sector, in their attempts to justify such a lack of investment (Fundación Tripartita, 2011).

The affirmation that the Construction Sector has its own characteristics of a sociological nature, which can also influence incidence rates, is therefore evident. One example is its precarious employment conditions, with the adaptation of contractual terms according to the singularities of the project that in no way help to create empathy between the worker and the firm. Likewise, the size of the firm is another factor, because there are substantial differences between the means available to either large or small and medium firms to organize risk-prevention. Despite those differences in their human and material means, both types of firms have to confront the continuous changes that take place in the course of a construction project.

Hence, it may be affirmed that the opportunity offered by the economic crisis and the slow-down in construction activity, to initiate profound improvements in the human resources of the sector in terms of training, has been wasted. This situation implies a lost opportunity from a strategic and leadership perspective in this area of the sector. In consequence, very much to the contrary, the economic crisis has favoured a policy of budgetary cuts in firms; risk-prevention and safety activities are among the first to be affected by the loss of resources and investment (Sørensen et al., 2007).

The investigation described in this paper sets out a descriptive and objective diagnostic of the current state of training among workers and agents involved in the occupational risk-prevention processes of SMEs in the Construction Sector, in accordance with their responsibilities and their participation in the different phases of the constructive process.

2. Methodology

2.1. Data Collection

The prospective technique of the survey was used to gather information for the optimization of the research process. This method was chosen on account of its quantitative nature (Cea D'Ancona, 2012); a procedure for the collection of information that is best suited to the universe of study (Sánchez, 2012). Additionally, this technique allows us to clarify *in situ* the doubts that might arise among the participants in the study (Díaz, 2015) and it is also adaptable to the different forms of communication that are proposed, such as telephone calls, e-mails, digital surveys (Google docs) and personal interviews.

Three surveys were designed with the objective of achieving an up-to-date perspective of the Construction Sector in Spain, concerning training-information activities through the application of the LPRL (BOE, 1995). The survey indicators were designed to

outline and to describe possible weaknesses in the risk-prevention systems of the firms with accuracy and precision and in an unbiased way, as well as its strong points, and possible areas for improvement. To do so, previous investigations with similar characteristics are taken as references, adapting their contents to the current regulations in force (Calderón, 2006; Consejería de Economía y Empleo de la JCyL, 2010; Foment del Treball Nacional, 2007; Reinhold et al., 2015).

As a complement to the prospective research, the academic qualifications of the risk-prevention trainers imparting courses in the Spanish Construction Sector were analyzed. To that end, the study was conducted with two databases: firstly, with the information facilitated by the External Prevention Services (EPS) with a presence throughout Spanish territory; and, secondly, with statistical data from the region of Castile-La Mancha and Castile-Leon, facilitated by the Construction Labour Foundation (CLF), in reference to the training contents of the Professional Construction Card [*Tarjeta Profesional de la Construcción* (TPC)] for Construction Sector workers.

The qualitative technique of the Focus Group was used to validate its reliability and to contrast the information gathered through the above-mentioned data-collection techniques (Kitzinger, 1995), with the objective of setting up a common frame of reference, rooted in the personal experience of the agents involved in the research (Korman, 1986; Juan and Roussus, 2010).

Finally, the joint methodology of quantitative and qualitative prospection processes (Domínguez, 2007) was articulated in four defined stages: the universe of study, the sample size, the design and the redefinition of the surveys, and the discussion groups (Jaráiz and Pereira, 2014; Morgan, 2010; Stewart and Shamdasani, 1990; Visauta, 1989; Zapata, 2011).

2.2. Study design

Four universes of study were defined for the collection of the information, to achieve the greatest objectivity in the results obtained through the surveys that were administered. From among the 17 Autonomous Regions or NUTS 2 (Eurostat, 2013) that are part of Spanish national territory, only 2 were studied, each with different geographical localizations, but with similar investment profiles in training and security, as well as the set of EPS implemented throughout national territory.

The size of each universe of study was obtained by applying the following mathematical expression (Del Castillo, 2008):

$$n = \frac{k^2 * p * q * N}{(e^2 * (N - 1)) + k^2 * p * q}$$

Where:

N: Size of the population or universe (total number of possible interviewees).

k: Constant that depends on the level of confidence that is assigned to the process under study.

e: Desired sampling error.

p: Proportion of individuals in the population with the characteristic under study.

q: Proportion of individuals without that characteristic, in other words, 1-p.

n: Size of the sample

In the case of Castile-Leon (2,472,052 inhabitants) and Castile-La Mancha (2,059,191 inhabitants) (INE, 2015), the paired "number n" is obtained. They are the most similar autonomous communities with regard to the number of inhabitants, calculated by adding the decisive parameter of the surface area of the territory to the equation (94,225 km² Castile-Leon, 79,462 km² Castile-La Mancha) (INE, 2014), yielding the population density of each territory with both data (26.24 inhab/km² Castile-Leon, and 25.91 inhab/km² Castile-La Mancha).

In accordance with the reference sample "n" for the study, 106 representative firms from the Construction Sector in the Autonomous Region of Castile-La Mancha and 127 from the Autonomous Region of Castile-Leon were selected.

The four universes of study were constituted in the following way:

1. Entrepreneurs/firms from the Autonomous Region of Castile-La Mancha and Castile-Leon, from which a representative sample of 233 participants was obtained (106 entrepreneurs/firms from Castile-La Mancha and 127 entrepreneurs/firms from Castile-Leon).
2. Construction Sector workers with the selected firms, from both Autonomous Communities. The workers were chosen from among different professions: site administrators, site managers (foremen and employees), managers of the firm and workers acting as Safety representatives in risk-prevention in the construction processes. The sample was formed of 530 workers that were chosen from a larger sample, selected for a larger-scale prospective research study, in which the Research Group is currently engaged over a time span of two years (2016-2018). 106 workers were chosen for each group of workers until the total of 530 workers was completed: 106 administrative staff, 106 managers, 106 risk-prevention resources, 106 foremen, and 106 manual workers. The distribution between workers from Castile-La Mancha and from Castile-Leon was 238 and 292, respectively.
3. The data were taken from the e-mails of 41 of the 375 EPS based in national territory (SERPA, 2016). These 41 EPS have a staff of 611 technicians qualified in Occupational Risk-Prevention: 486 high-level technicians [*Técnicos Superiores de Prevención de Riesgos Laborales* (TSPRL)] who have at least specialized in workplace, and 125 intermediate-level technicians who promote prevention in the firm, and whose role and qualification levels are defined in Chapter VI of the Regulation on Risk-Prevention Services (BOE, 1997a).
4. The information provided by the CLF on the trainers who were licensed over the past few years to provide instruction in training actions referring to the Construction Sector. This universe of study was constituted with the data from 1,249 certification requests received by the CLF, of which 746 were from Castile-La Mancha and 503 from Castile-Leon, over the period of time analyzed in this study.

The information obtained through the three survey models, one for each universe of study (the fourth universe being a compendium of data, unrelated to the survey results, although it has 4 questions as shown in Appendix 1) was later contrasted with the Focus Group technique, with a group of risk-prevention experts and another formed exclusively by entrepreneurs from the Construction Sector (Segarra et al., 2017).

The questionnaires were designed as a survey tool of a prospective nature that would gather information for subsequent scrutiny. The analysis is subjective and depends on the experience and knowledge of the researchers, in this case professors and high-level risk-prevention technicians with university qualifications in Architecture and Construction. Hence, each survey was designed in accordance with the universe of study (firms, workers, External Prevention Services) to whom it was addressed, through the inclusion of specific indicators with questions designed to gather information on the aim of this research.

In the first survey, personalized indicators were included referring to the nature of the receptor groups from the first universe of the study, in this case, the construction firms of the Autonomous Communities of Castile-La Mancha and Castile-Leon. First and foremost, information was gathered that referred to: general data on the firms (9 questions); the system of risk-prevention organization and the “*risk-prevention culture*” (3 questions out of 6 that constitute this section); the training of workers and other agents working in the firm (5 questions); health monitoring; and, statistics on workplace accidents. This first questionnaire was composed of 60 questions, from which 17 were taken from this study. The interactions between the different blocks of questions were designed in accordance with the schemes that are shown in [Appendix 1](#).

The design of the second survey was based on questions adapted to the singularities of the workers from the 233 firms selected for this research. The content of the survey is structured around thematic blocks, placing special emphasis on the section that refers to the information-training processes of the workers, allotting 21 questions for that purpose, from which 6 were taken for the present research ([Appendix 1](#)).

The comparative study of the results from both Autonomous Regions was oriented towards the collection of objective and representative data through comparative techniques, searching for equivalences between them. A contents diagram was prepared to visualize the interrelation between the different groups of questions. It shows that blocks of questions are not isolated, but interrelated between each other ([Appendix 1](#)).

Finally, a third survey was designed, formed of 6 questions relating to the scope of the academic training of the Expert Trainers in occupational risk-prevention who impart those training actions. The questionnaire was given to the EPS implanted in Spain; 4 of its questions being taken as a reference for this study ([Appendix 1](#)).

All the aforementioned surveys were designed with an adapted language in accordance with the population segment to which it was directed, after having estimated any possible academic studies that might be considered necessary for the performance of their work (as well as the estimated risk-prevention knowledge). By doing so, there was a greater likelihood that the surveys would be accurately completed, owing to the similarities in the language that was used.

2.3. Variables Analyzed

As a part of this research, the variables directly related to the implementation of the risk-prevention training and information processes in the firms active in the Spanish

Construction Sector were analyzed. The variables related to the Specialist Trainers who provide the EPS training courses in collaboration with the firms were considered, as well as those variables that affect the Construction Labour Foundation, the intermediary firm-trade union entity in charge of accrediting the training of the Specialist Trainers.

Consequently, the surveys were designed by taking account of the circumstantial variables that directly affect the training processes, so as to achieve a real overview of the state of entrepreneurial and worker training in firms from the sector. These variables are the “*corporate responsibility*” of the management and managers of the service, the “*risk-prevention culture*” of the trainers, the entrepreneurs and the operators of the processes, the “*accreditation criteria and protocol*” of the accreditation bodies, the “*monitoring and control procedures*” of those responsible for the Public Administrations (in charge of overseeing compliance with risk-prevention measures), as well as the mandatory “*regulatory quality*” in matters of risk-prevention.

3. Results and discussion

From the 87 questions that integrate the three survey models prepared for the purpose of this study, the responses to 27 questions that directly affect the variables listed in the former section were studied: the contextualization of training actions in the regions where the data was collected (section 3.1); the competences and the specific professional knowledge in construction matters of the trainers and the criteria for the accreditation of the qualifications of the trainers in charge of delivering the training activities (section 3.2); as well as the training level of the workers attending the training actions (section 3.3). As objective references, training actions were considered that are required under current regulations in Spain.

3.1. Contextual setting of the training actions by territory

In the first place, the training actions within the two Autonomous Regions taken as a reference in the research work were contextualized. To do so, the results of the 2010 Survey on Professional Training for Employment in Firms (EFPEE) (Ministerio de Empleo y Seguridad Social, 2010), developed by the State Foundation for Training in Employment, were analyzed. This survey was prepared following the methodological guidelines of the EU Statistical Office (Eurostat, 2008), referring to the ranking of the Autonomous Regions, with regard to the resources assigned to training in relation to their population. In accordance with this classification, the ratio between workers and trained workers in the Construction Sector ranks the Autonomous Community of Castile-Leon second by the number of training courses at a national level, with 64.7%, while the Autonomous Community of Castile-La Mancha is positioned in an intermediate range (placed outside of podium positions and above the Foral Community of Navarre, and the Autonomous Regions of Valencia and Cantabria, respectively ranked in the last three places), with 62.89% (Fundación Tripartita, 2011). Both administrations dedicate similar amounts of resources in their territorial areas to the training of workers in the Construction Sector (very much higher than the national average, set at around 46.9%); by doing so, the comparisons that might be established between two similar territorial realities are suited to the purpose of the study.

Equally, both Autonomous Communities have a similar percentage of workers dedicated to construction activities, 5.7% in the case of Castile-Leon and 6.4% in the case of Castile-La Mancha ([Ministerio de Industria, Energía y Turismo, 2016](#)), so very similar reference populations are compared.

As an initial conclusion, it may be inferred that the unequal proportion of resources assigned to the training of construction workers by territory might become a competitive disadvantage for those Autonomous Regions with lower levels of investment under this heading.

3.2. Analysis of the academic training of trainers involved in risk-prevention training activities in the Construction Sector

With the information received from each EPS, on the basis of the survey gathered through various telematic channels, the present-day situation of training in relation to construction activities in Spain was analyzed in depth, subject to the requirements covered in the Fifth General Convention of the Construction Sector ([BOE, 2012](#)).

From the analysis of the data, it is found that almost all of the trainers providing risk-prevention training in construction activities are high-level Occupational Risk-Prevention technicians or Specialized Trainers, with the exception of a small percentage of technicians who only hold intermediate-levels of training. Moreover, it is noted that the university training of the technicians is very wide-ranging and varied, with a scarce presence of trainers with specialized training in construction activities, such as Architecture and Engineering. In the same way as the holders of the aforementioned qualifications cannot deliver health-related or food-handling courses (which are reserved for university courses in health-related disciplines), it is totally contradictory that current legislation in no way regulates qualifications that authorize the delivery of training actions related to the Construction Sector; a sector that also presents a high incidence rate and contributes so much to the economy of the country ([Eurostat, 2016](#)).

In agreement with the above, some of the university qualifications mentioned in the responses to the survey reflect the academic choices of the trainers in charge of providing the training in the EPS, such as: Law, Business Administration and Management, Sociology, Agricultural Engineering, Forestry Engineering, Labour Relations, Human Resources, Political Sciences, Economic Sciences, Chemical Sciences, Biology, Geology, Sciences of Work, Business Sciences, Maritime Science, etc.

This circumstance becomes especially critical, as it confirms that most of the trainers in risk-prevention matters in construction “*are not specialist trainers in this subject*”. It is illogical that the current legislation lends no consideration to the regulation of recognized university qualifications in the field of construction, with a view to the professionalization of a sector shaken by the crisis and high incidence rates. Possible regulatory improvements in that respect would be viable and easily implemented in accordance with the provisions of the Law on Building Standards [*Ley de Ordenación de la Edificación* (LOE)] ([BOE, 1999](#)), in which each one of the professional attributes of the Technical Architects, Building and other Engineers are specified, under its specialist heading, from either Architecture or Engineering.

A second analysis tested the reliability of the results obtained from the information provided by the CLF referring to the academic training of the trainers authorized to deliver training courses and programs in the Construction Sector of Castile-La Mancha and Castile-Leon. It is worth mentioning that all qualifications prior to October 2013 were compliant with the requirements established by the State Public Employment Service (BOE, 2010) and the Fifth General Convention of the Construction Sector (BOE, 2012). As from that date, modifications to the requirements of the entities authorized to deliver courses in the field of occupational risk-prevention in the Construction Sector (BOE, 2013a; BOE, 2013b) established that only authorized bodies could deliver that type of training, including the CLF (a Spanish Accreditation Body).

Information is shown in Table 3, on the one hand, on the data of the 87 organizations that have been authorized by the CLF to deliver risk-prevention training in construction, all within the territory of Castile-La Mancha. On the other hand, the table also shows information on the 93 organizations that have been authorized by the CLF in Castile-Leon. From among the applications of the trainers who deliver training in these authorized bodies, table 3 clearly points out the numbers holding a university training that qualifies them to work as Health and Safety Coordinators (HSC) in construction. As contained in the LOE (BOE, 1999), these qualifications are Architect, Technical Architect, Engineer and Technical Engineer, in accordance with the skills and specialties of each one.

It is remarkable that in the case of Castile-La Mancha, up until September 2013, the number of authorized trainers with specific training in construction fell from 55% (198 accreditations over a total of 360 authorized trainers) to 31.51% (75 accreditations over a total of 238 authorized trainers) since October 2013, when the new regulation on the accreditation of training bodies entered into force. It may therefore be affirmed that the majority of trainers in the field of risk-prevention in the Construction Sector are not specialists in Construction Sector-related content matter. From the available information, in absolute values, only 45.65% (273 accreditations over a total of 598 authorized trainers, between the periods of time under analysis) of all authorized trainers have followed a specific training in construction. Similar data to the information from this autonomous community may be found in the case of Castile-Leon, with 49.23% (191 qualified technicians out of a total of 388 qualified trainers, between the time frames under analysis) from among the total of all authorized trainers holding specific training in construction. These figures imply a low index of training professionalization among the technicians who deliver specific training in construction (in all cases below 50%). So the data corroborate the information obtained from the telematic surveys of the EPS, which highlights the low professionalization of the sector, with trainers holding no construction-related studies. Equally, the numerical discrepancy between both autonomous communities may in great measure be due to the accredited bodies that in the last instance decide upon the autonomous community to assign their technicians, who may have been authorized in Castile-La Mancha, although their professional work is in Castile-Leon or any other autonomous community, within national territory.

Date	Num. of requests	Authorized trainers	University Qualifications*
From 01/01/2011 to 30/09/2013	472	360	198
From 01/10/2013 to 15/05/2016	274	238	75
Total Castile-La Mancha	746	598	273
From 01/01/2011 to 30/09/2013	341	260	106
From 01/10/2013 to 15/05/2016	162	128	85
Total Castile-Leon	503	388	191

Table 3. Applications for the accreditation of trainers, up until 30/09/2013 and from 01/10/2013. Source: Construction Labour Foundation (CLF), 2016. (Where: University Qualifications* = Architect, Technical Architect, Engineer and Technical Engineer).

The data under analysis lead us to reflect on the need considered by administrative managers to modify the current training strategies, as the present system allows non-specialist trainers, untrained in construction procedures, techniques and processes, to deliver the training referred to in the Fifth General Convention of the Construction Sector.

In addition to the above, it may be affirmed from the results of the surveys given to the Construction Sector workers in Castile-La Mancha and Castile-Leon that the most highly valued Academic University Qualifications for trainers who provide risk-prevention training are those of: Architect, Technical Architect, and Industrial Engineer (together they amount to 94.97% and 93.83% of the responses respectively obtained from each Autonomous Community) (Table 4).

High-rated Academic Qualifications	Castile-La Mancha	Castile-Leon
Architect	37.82	40.75
Technical Architect-Building Engineer	39.92	40.75
Industrial Engineer	17.23	12.33
Others	5.03	6.17
Total (%)	100	100

Table 4. Academic University Qualifications of the trainers in occupational risk prevention in construction that are most highly valued by the workers. Where: 100% = 238 workers in Castile-La Mancha, and 100%= 292 workers in Castile-Leon; the total sample amounts to 530 workers.

These results highlight the existing demand for qualified professionals, with specific knowledge of construction processes and building facilities, in order to achieve a more technical and professional sector that nowadays lacks competitiveness, while it is a very real reference for other productive sectors.

3.3. Analysis of the training level of the workers

The information collected from the various surveys sent both to entrepreneurs and to workers in the sector lead us to the following analyses:

3.3.1. “Worker information” and “Training of workers” in the workplace

“*Worker information*” and “*Training of workers*” with respect to construction employees is determined by Art. 10 and 12, respectively, of European Directive 89/391/EEC (EU, 1989), in which the obligation to inform and train workers once they are contracted by entrepreneurs is underlined, as well as when they change jobs or when a new technique is introduced in the working processes.

Hence, if the training that the workers in the sector, from both Autonomous Communities, declared in the survey is taken as a reference, the training received by workers (44.34%) and site foremen (38.68%), as well as managers (35.85%) and administrative staff (42.45%) is very elemental and is limited to 8 hours of initial basic training; in other words, it is limited to the minimum training that all workers should receive at the time of joining a firm (Table 5).

Training received	Workers	Foremen	Managers	Administrative Staff	Risk-prevention resources
50 to 60 hours	-	-	-	-	60.38
20 hours	13.21	8.49	-	6.60	-
10 hours	-	-	16.04	-	-
8 initial hours	44.34	38.68	35.85	42.45	-
Both (8+20 hours)	20.75	11.32	14.15	8.49	-
None	8.49	27.36	20.75	24.53	30.19
Other	13.21	14.15	13.21	17.92	9.43
Total (%)	100	100	100	100	100

Table 5. Basic risk-prevention training referring to the posts of the workers who were surveyed in the sector (Workers) (100%= 106 Workers), site foremen, skilled workers and intermediate posts in the firm (Foremen) (100%= 106 Foremen), Firm Managers (Managers) (100%= 106 Managers), Administrative staff (Administrative) (100%= 106 Administrative staff), and Risk-Prevention Resources (Risk-Prevention Resources) (100%= 106 Risk-Prevention Resources); the total sample amounting to 530 workers from both Autonomous Communities. In compliance with the provisions of the Fifth General Convention of the Construction Sector.

These results are worrying in the case of blue-collar construction workers (bricklayers, labourers, etc.); with 8.49% of workers declaring that they have had no training whatsoever. But it is especially serious in the case of site foremen and managers, with records of 27.36% and 20.75%, respectively, declaring themselves without training. It is precisely these two agents from whom the current legislation requires specific knowledge of the preventive activities, as far as the safety of their subordinates directly depends on the implementation of their skills and knowledge. From a quick review of the records shown in Table 5, it may be concluded that training is, in general terms, very irregular, if not even scarce in the majority of cases under analysis. It may be affirmed that there is a lack of knowledge of the current regulations, in which the “*Training of workers*” referred to under Art. 12 of Directive 89/391/EEC (EU, 1989), transposed into Spanish legislation in Art. 19 of the LPRL (BOE, 1995), is the direct responsibility of the employers.

Important deficiencies in the training of the workers who perform risk-prevention functions in construction work are observed. The majority stated that they only have a basic level of training (60.38%), the minimum training established in Spanish legislation for this role collected in the First General Convention of Construction 2002-2006 (BOE,

2002) A more concerning fact is that 30.19% stated that they have no specific training at all, and 9.43% affirmed that they hold another type of training.

Meanwhile, the majority of firms affirmed that they complied with the stipulations on “*Worker information*” referred to under Art. 10 of European Directive 89/391/EEC, to Art. 18 of the LPRL and Art. 15 of Royal Decree (RD) 1627/97 (BOE, 1997b), the latter RD being the transposition of Directive 92/57/EEC (EU, 1992). Indeed, 70.75% of entrepreneurs from the Construction Sector of the Autonomous Community of Castile-La Mancha and 72.44% of entrepreneurs from the Autonomous Community of Castile-Leon declared that they informed their workers of risk-prevention management in the development of their professional activity. Nevertheless, the situation worsens when it is seen that in 29.25% and 27.56% of cases, respectively, they affirmed that they took no action at all in that regard (Table 6).

“Worker information”		Castile-La Mancha	Castile-Leon
Is “ <i>initial information</i> ” provided?	Yes	70.75	72.44
	No	29.25	27.56
Total (%)		100	100
Who provides the “<i>initial information</i>” ?			
	Health and Safety Coordinator	15.09	18.11
	External Prevention Service	26.42	31.50
	Entrepreneur (Employer)	7.55	6.30
	Foreman or Site Manager	24.53	24.41
	Don’t Know / No Comment	26.42	19.69
Total (%)		100	100
What sort of information was provided?			
	Theoretical	100.00	100.00
	Practical	0	0
Total (%)		100	100

Table 6. Percentage of entrepreneurs from the sector who provided “*Worker information*” to their workers on the inherent risks of the works to be carried out (100%= 106 Entrepreneurs from Castile-La Mancha; 100%= 127 Entrepreneurs from Castile-Leon) / List of the agents who, in compliance with the obligation to inform the workers in the sector who were surveyed, provided that information in situ (Percentage %) (100%= 106 Firms from Castile-La Mancha; 100%= 127 Firms from Castile-Leon) / Type of information: Theoretical or Practical (100%= 106 Workers from Castile-La Mancha; 100%= 127 Workers from Castile-Leon).

Directly related to the above, if the results collected in Table 6 are analyzed, then it may be seen that the way of transmitting the information in firms that affirmed compliance with this legal obligation is very varied. The role of the site foreman is used in 24.53% and 24.41% of cases (results from Castile-La Mancha and Castile-Leon, respectively), or the entrepreneur provides it directly (7.55% and 6.30%). Nonetheless, most firms externalize the “*initial training*” to the External Prevention Services (26.42% and 31.50%), although the high percentage (26.42% and 19.69%) of cases that are unaware of how they do it or whether they actually do it or not is a matter of great concern, which points to a lack of control in the internal risk-prevention management processes of the firm. This affirmation is upheld by the fact that, respectively, 15.09%

and 18.11% of firms consider that responsibility for “*Worker information*” is in the hands of the on-site Health and Safety Coordinator (EU, 1992), a risk-prevention position that the Promoter fills to verify that the firm contracted for the completion of the works complies with the provisions of the Safety and Health Plan. There is no obligation among the duties of the Safety and Health Coordinator to inform workers of the contracting firm, as there is neither a working relation nor are there functional links with them, but merely the task of verifying that the workers have been informed by their companies and that they implement the measures in the risk-prevention plan for the completion of their work.

It may therefore be affirmed that the “*initial information*” contained in the “*Worker information*”, which is one obligation of the employer, is done in irregular ways. As may be observed, compliance is formal in the majority of cases, these actions being carried out by staff who either have no competence to do so, in accordance with the regulatory norms in force (Health and Safety Coordinator), or their ability to do so is questionable (entrepreneur, foreman). In the last instance, it is the EPS that assume this “*derived responsibility*” in 26.42% and in 31.50% of cases, respectively.

In contrast, the results of the surveys administered to construction firm workers in the Autonomous Community of Castile-Leon are alarming. In fact, although 91.44% of the workers in the survey affirmed that they have attended training actions regulated by the Fifth General Convention of the Construction Sector, all of the participants (100%) in the research expressly pointed out that they had received no “*practical training*” at all in risk-prevention matters. These same results are repeated in the case of workers from Castile-La Mancha, with 100% of workers affirming that they had received no “*practical training*” at all.

Through the qualitative analysis of these results, the existence of a “*formal system of training*” may be observed, exclusively directed at the initial theoretical training of the workers. This system is a long way away from the increasingly necessary “*practical training*” oriented towards the exchange of experiences and praxis-based knowledge, which is more professional and appropriate, and better adapted to the changing nature of construction activities (Ozmec et al., 2015). The training processes of construction workers in Spain show important shortcomings, both in its orientation and in its contents. These circumstances are especially significant among workers from the sector, as they limit themselves to the transfer of very basic knowledge to the different participants in the organizational structure of the firm (Cabañas, 2009).

The results were contrasted with the conclusions from the debates of the Focus Group of Experts and the Focus Group of Entrepreneurs from the Construction Sector, within the framework of a sector where the particular characteristics of construction activities and the variability of the processes and its dynamism, linked to the scant control by the Public Administrations, all contribute to the lack of commitment among agents involved in risk-prevention. These circumstances have been aggravated by the crisis that is still affecting the Construction Sector in Spain, as the human and the material resources needed to guarantee a risk-prevention management system in accordance with the singularities of construction activities are drastically reduced.

Moreover, most construction firms in Spain can be categorized as Small and Medium Enterprises. Their corporate structures are very limited, in some cases very elemental, so much so that they have insufficient human and material resources to integrate prevention in their Internal Management System.

As a summary of the debates that took place in both Focus Groups, a content cloud was generated (Fig. 1): it identifies the most frequently reiterated terms in the different debates, to know both the concepts that have been emphasized and the keywords from the different debates and to set out a summary of this content.



Fig. 1. Content cloud of the debates in both Focus Groups. The content is arranged in such a way that the final image corresponds to the geographical map of Spain.

These reflections are reinforced by the results from the Seventh National Survey of Working Conditions (INSHT, 2011), in which an alarming 30% of workers from the Construction Sector pointed out that they “*have not received training or information*” on the risks for their health and safety related to their work, when the expected response should have been positive in 100% of the cases.

Finally, if the workers’ perceptions of the need to receive quality training in the field of risk-prevention are analyzed, then 91.60% and 93.15% (data from Castile-La Mancha and Castile-Leon, respectively) of the answers affirmed that both the training and the information received “*were not adjusted to the requirements of the job*” that was carried out. However, their perceptions of the need for satisfactory training and information, to carry out the activities of the post in a safe and secure way, was ratified by 98.74% and 98.29% of the workers in the survey, respectively (Table 7).

Quality of the training received		Castile-La Mancha	Castile-Leon
Does the training fit the job requirements in the work place?	Yes	8.40	6.85
	No	91.60	93.15
Total (%)		100	100
Is training important for you to carry out your activity safely?	Yes	98.74	98.29
	No	1.26	1.71
Total (%)		100	100

Table 7. Analysis of the perceptions of workers on the quality of the training received in relation to the performance of the activity in the work place. Where: 100%= 238 workers in Castile-La Mancha, and 100%= 292 workers in Castile-Leon; the total sample amounting to 530 workers.

3.3.2. The way of transmitting information, instructions at work, etc.

Another factor of analysis that has been taken into account is the “*type of language used*” in the training processes, an element of special importance due to the poor qualifications of construction workers in Spain. All the workers surveyed possess basic-level studies, without any medium-level or higher-educational studies, such as a university qualification; holding neither a master’s nor a doctorate degree. This is visible in the lack of professionalization within the Construction Sector, which has traditionally welcomed workers with no recognized knowledge on the matter and continues to do so. In addition, it is a professional activity that has attracted higher numbers of foreign workers at times of economic growth (González, 2013).

Likewise, it is noted that the workers surveyed in both Autonomous Communities, even in the case of workers whose mother tongue is Castilian sometimes considered the language used in the training courses “*unintelligible*”. This communicative gap is due in part to the “*basic level of studies*” that the workers possess, which means this sector is less competitive and less professional, as well as the barrier that the language implies for foreign workers. Additionally, the lack of a “*risk-prevention culture*” may be added, to which both the entrepreneurs and the expert trainers in the sector in Castile-La Mancha have referred.

The variety of cultures and nationalities that converge within the Construction Sector is confirmed to be a critical factor in the process of training and is one of the causes of the high incidence rate that ravages the sector (Cheng and Wu, 2013). To the question: How do you solve the provision of training to immigrant workers if they have difficulty understanding Castilian Spanish? (Table 8), the firms from Castile-La Mancha and Castile-Leon reported the use of translators in a derisive 2.10% and 1.03% of cases, respectively. Castilian Spanish is used in most cases (55.88% and 61.99%), either because the workers are Spanish speakers or because they speak and understand Castilian Spanish. Even so, it is at least interesting that 42.02% and 36.99% of firms from both Autonomous Communities responded “*not applicable*”, either because they have no foreign workers among their staff, or because they undertook no training activities with this group (Table 8).

Provision of training to the immigrant	Castile-La Mancha	Castile-Leon
Translators are hired	2.10	1.03
Provided in Castilian Spanish	55.88	61.99
Not applicable	42.02	36.99
Total (%)	100	100
Language in which training should be provided		
In the native language of the worker	80.25	84.93
In another language	19.75	15.07
Total (%)	100	100

Table 8. Solution proposed by Construction Sector firms in Castile-La Mancha and Castile-Leon to the problem of providing training to immigrants. (Percentage %). Language in which the training should be provided, according to the workers themselves (Percentage %). Where: 100% = 238 workers in Castile-La Mancha, and 100%= 292 workers in Castile-Leon; the total sample amounting to 530 workers.

The most prominent opinion among the group of workers from the Construction Sector in the Autonomous Community of Castile-Leon (in 84.93% of cases) was that the training of workers should preferentially be provided in their native language. Similar data were obtained in Castile-La Mancha, where this percentage was 80.25%. The data obtained in the surveys is similar to the results from the Second European Survey of Enterprises on New and Emerging Risks (ESENER-2) (INSHT, 2014b). This publication indicated that 22.8% of work centres in Spain offer this type of training in other languages (19.75% and 15.07% in the case of Castile-La Mancha and Castile-Leon, respectively); numbers that are not so very far from the European average (22.6%), although it is a long way off countries like Estonia (61.3%) and Luxembourg (58.9%).

To sum up the data that have been presented, it may be concluded that the basic-level qualifications of the workers have a decisive influence on the level of understanding of the information received on training courses. Hence, strategies must be established for the workers that focus on appropriate and effective on-site training in risk-prevention matters that are both theoretical and practical. Furthermore, it has been verified that ignorance of the language is a risk factor for those workers who neither speak it nor understand it, requiring the employment of translators or training that is conducted in the language of each worker and even, handing out training manuals in the language that they speak. The absence of a “*risk-prevention culture*” that is effectively implemented in the day-to-day life of all the agents intervening in constructive processes may be added (to which end awareness-raising campaigns have to be done in the workplace both on workplace accidents and on the benefits that timely integration of risk-prevention in the management system of the firms have for the workers and for the whole firm), which could lay the foundations of a possible in-depth reform of the sector in favour of safety and professionalization (which would reduce the high incidence rates that characterize the Construction Sector in comparison with other productive sectors).

4. Conclusions

This research work has provided an authentic understanding of the current state of training in the field of risk-prevention in the Spanish Construction Sector. From the analysis completed from the available information and in accordance with the methodology that was followed in the research process, the following conclusions may be drawn.

A clearly heterogeneous development of training courses may be appreciated in accordance with the territorial context. From the comparative analysis between Castile-La Mancha and Castile-Leon, an unequal assignation of training resources may be observed, a product of the unique and particular legislative policies of the territorial organization of the Spanish State. This situation may be understood as an imbalance in the system, as the unequal assignation of training resources in a globalized labour market (Ngowi et al., 2005) can give rise to important deficiencies in matters of “*Training of workers*”, a circumstance of special importance in such a dynamic sector and with such significant risk factors.

It is relevant that the trainers providing training in risk-prevention matters in the context of construction have, in most cases, no “*specific and accredited university training*” in this area (Table 3). This circumstance is especially critical, as Spanish legislation confers specific attributes for professional activity in the field of construction to the University Degrees of Architecture, Technical Architecture, Engineering or Technical Engineer, each one in the field of its specialty (BOE, 1999).

Likewise, the “*participation of trainers without specific training*” in the context of construction processes and with no knowledge of constructive techniques (very unique and with significant risks in its execution), call the quality of the training programs into doubt. This factor is especially aggravated by the permissiveness of the administration itself by accepting trainers with no knowledge of constructive techniques and by accrediting situations that in no way guarantee the reliability of the knowledge that is transferred. It is well known that the participation of trainers with high-levels of knowledge is a success factor in the “*Training of workers*” (Barber, 2003).

Equally, gaps in the use of methodologies that allow the understanding of information transmitted to the foreign workers are also observed, a circumstance that may affect the safety of this group of workers in the exercise of its profession (Demirkesen and Arditi, 2015). At present, most of the firms apply no methodologies that facilitate the understanding of information transferred to workers (Table 8), because they either have no need to do so, as they employ no foreign employees, or the ones they do employ already possess enough understanding of the language. In contrast, the reiterated demand among workers for continuous refresher courses in risk-prevention training, provided by qualified specialist trainers in the sector, with a greater practical presence in the structure of the courses have intensified, in stark contrast with the non-existent training actions of a practical nature that are provided today. In the same way, workers demand accessible training in risk-prevention at any level of study and adapted to the nationalities of its attendants in case they do not understand Castilian Spanish. The integration of foreign workers must be a priority and should be understood as an opportunity for improvement. Even though this practice has been encouraged by the Government of Spain (OERyX, 2011), it is necessary to develop and improve management of the communication procedures, in both the learning

processes and the transmission of information (Pink et al., 2010; Azita et al., 2015), through techniques that incentivize worker participation and the development of a *risk-prevention culture* (Choudhry, 2014).

“*Worker information*” and the “*Training of workers*” are obligations that are fulfilled to a very high percentage (Table 6), but with a conveyance of very elemental knowledge, both to those in charge of firms and to the workers (Table 5). Although the habitual practice in Small and Medium-sized Enterprises (SMEs) is to subcontract training through EPS (in the majority of cases, construction firms have no human resources for training that employers are obliged to fulfil), the results have shown evidence that the “*initial information*” is provided by “*non-competent staff or in a very shallow way*” in many cases. In both cases, the participation of non-specialist trainers is evident in construction, which explains the deficiencies observed in the surveys.

These circumstances are aggravated by the lack of solid organizational structures in the SMEs, which hampers the dedication of specialized human resources for training purposes, obliging them to resort to an EPS that in many cases is unaware of their management systems and operation.

In conclusion, it is evident that all the indicators point to the Construction Sector as a “*complex sector*” in Spain, which is difficult to manage because of the “*lack of a risk-prevention culture*”. It is a sector with a segment of poorly-qualified workers and with no personal affiliation to the corporate structure of the firm, due to the factors related to the temporality and the provisional nature of the contractual links.

Likewise, important gaps in training have been observed, both in the organizational structures of the firms in the sector as well as in the qualifications of the trainers. These trainers have qualifications with little relation to the training they provide, and the formal requirements established by the public administrations are not backed up by supervision and inspection of the processes.

Everything points to the conclusion that the Construction Sector in Spain should focus its efforts on the “*professionalization of construction activities*”, with firms and workers engaged in achieving professional excellence. The present-day economic crisis is a good opportunity to reflect on and to design a model of relations that shares standards with other economic sectors that are more competitive, with professional structures that are more in accordance with the progress of society. The EPS in conjunction with the entrepreneurs in the sector and the public administrations have to take the first step, in order to professionalize the sector, so as to achieve a greater awareness of all the agents involved in the preventive processes. Finally, greater control is required over the trainers and the qualifications related to the training actions that they will provide.

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Appendix 1.

UNIVERSE OF STUDY					
		1	2	3	4
INDICATOR	A	-	-	-	- Requests for authorization.
	B	<ul style="list-style-type: none"> - Percentage of foreign workers among the employees of the firm. - Modality of risk-prevention organization of the firm. - Training in Occupational Risk-Prevention of the person filling in this form (entrepreneur/worker...). - In general terms, indicate the level of satisfaction of your firm with the actions of the External Prevention Services (EPS) that have been contracted. - Does the firm have an Occupational Risk-Prevention Officer in accordance with the Law on Risk-Prevention (LPRL)? - Does the firm have a Safety and Health committee in accordance with the LPRL? - Is there a contact person or a liaison officer in the firm on risk-prevention matters for the External Prevention Services? - In compliance with the provisions of the General Convention of the Construction Sector, Metal and Iron work, Glass, Printing... what basic training referring to the position at work has that contact person or liaison officer received? - Are the workers kept informed of the on-site risks? If yes, indicate who has provided that on-site training. 	-	- How many intermediate and high-level technicians of Occupational Risk-Prevention are there in the firm?	-
	C	<ul style="list-style-type: none"> - How does the firm provide training if the immigrant has difficulty in understanding our language? - Does it organize some type of initiative in "risk-prevention promotion" in the workplace? If yes, indicate which one. - Have you ever received practical risk-prevention training in your training activities? - Do you consider that training/information in risk-prevention is appropriate for the job position? - Training in the workplace is regulated by article 19 of Law 31/1995 on Occupational Risk- 	<ul style="list-style-type: none"> - Have you ever attended any courses in accordance with the Fifth General Convention of the Construction Sector (masonry, basic level, initial classroom, formwork, etc.)? - If yes, have you received practical training in those areas? - Training at work is regulated by article 19 of Law 31/1995 on Occupational Risk-Prevention. Are you aware of having received such training? Who provided it? Safety and Health Coordinator/ Prevention Service/ 	<ul style="list-style-type: none"> - Does your agency provide training in accordance with the Fifth General Convention of the Construction Sector? 	<ul style="list-style-type: none"> - Trainers that possess some of the university qualifications accrediting the functions of a Safety and Health Coordinator (architect/technical architect/ engineer/ technical engineer).

	Prevention. Are you aware of having received the training it describes? If that training has been provided, who gave you the training? Safety and Health Coordinator/prevention service/entrepreneur /site foreman or manager /DK/NO.	entrepreneur/ site foreman or manager/ DK/NO.		
D	-	- The Construction Sector is characterized by its dynamism and the diversity of nationalities among its workers. In what language is preventive training given? The first/another language of the worker. Are translators contracted to give the training in the case of immigrants or is it given in Castilian Spanish?	- What training do your Occupational Risk-Prevention Technicians have? - What university qualifications recognized in the General Convention of the Construction Sector do the prevention technicians that impart the training possess?	- Authorized trainers in Castile-La Mancha and Castile-Leon.
E	-	- Do you consider that training/information in preventive matters is necessary to complete your work safely? If yes, do you consider it sufficient? - Do you consider that the training/information in preventive matters is appropriate to your job position?	-	-
F	- Are the workers or their representatives regularly consulted, facilitating their participation in the development of fundamental elements of its risk-prevention system? - Is the registration of the work center completed before the commencement of the works at all or only at some of the sites? - Are the workers given the Safety and Health plan before the commencement of the works?	-	-	- Distinction between the authorizations in accordance with the entry into force of regulations on the standardization of training entities as of 30/09/2013.
TOTAL	17	6	4	4

Appendix 1. Study design: indicators and universes of study. Indicating Universe of study: **1:** entrepreneurs Castile-La Mancha and Castile-Leon; **2:** Construction sector workers from selected firms of Castile-La Mancha and Castile-Leon; **3:** High level Prevention Technicians of 41 of the 375 EPS located in national territory; **4:** technicians trained by the CLF to provide training-of-trainers courses in the Construction Sector. Indicating **A:** general data; **B:** general data of the firm; **C:** training; **D:** information; **E:** training and information; **F:** preventive culture.

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