



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*).

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*).

Despite this situation, the Construction Sector has been very sensitive to the economic crisis in the Eurozone countries, and especially in

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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.

Years	GDP at market prices (EUR million)	Brut added value of Construction to basic prices (EUR million)	Participation of Construction 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

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

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.

Rank	Value added (EUR million) (1)	Employment (Thousands) (1)	Share of non-financial business economy			
			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%)

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 h, for workers starting their activities in a construction firm, to which 20 h 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 3162 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

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