Women's career development in the construction industry across 15 years: main barriers

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Abstract

Purpose – Through a systematic literature review covering 15 years, this paper aims to identify and annotate the barriers that hinder the career development of women working in the construction industry. Furthermore, it describes publication trends that have contributed to the evolution of the topic.

Design/methodology/approach – A systematic literature review of credible sources in different databases has been carried out for the period from 2000 to 2015. By means of thematic analysis, a data set of 60 articles has been analysed.

Findings – The topic has been and still is of interest to the research community. Women who work in the construction industry in different countries confront numerous career barriers, the more frequent being the difficulty of balancing work and family, and the lack of professionalism in human resource management.

Research limitations/implications – Some publications related to the topic might have been inadvertently omitted. Hopefully, this paper can be valuable for informing future research directions.

Practical implications – The paper is useful to human resource managers to understand how their practices influence women's career development, gender equity and organisational injustice, and how to improve them. It informs policies to reduce gender discrimination and guides researchers interested in gender diversity in the industry.

Social implications – A clear vision of career barriers affecting women is required to find solutions and improve the fairness and justice of business practices.

Originality/value – Previous studies do not offer a comprehensive and up-to-date review covering such a wide time period and so many countries. It will have implications in the identification of initiatives critical to achieving lasting change in gender equity in the construction industry.

Keywords Literature review, Gender, Women, Career development, Construction industry, Career barriers

Paper type Literature review

Introduction

Over the past decades, there has been significant progress in women's educational achievements (ILO, 2016). In 2012, women made up between 40 and 60 per cent of top-level graduates in all EU countries, and their numbers have grown at a faster yearly rate than men's. Yet, large differences still remain regarding the subjects studied, with fields such as

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engineering, manufacturing and construction showing signs of persistent gender horizontal segregation (European Commission, 2016).

But females' progress in education has not translated into similar advancements in the world of work, where gender inequality persists (ILO, 2016). The concentration of women and men in different sectors and occupations is endemic across countries, being an enduring trait that contributes to gender gaps both in terms of the number and the quality of jobs (ILO, 2016; French and Strachan, 2015). For example, women remain overrepresented as "clerical, service and sales workers" and in "elementary occupations" (ILO, 2016), while many obstacles line the path for their development in sectors traditionally seen as male-dominated such as construction (EBC, 2016).

In fact, the construction industry has long been a site of gender discrimination across cultures and nationalities, women remain under-represented (Galea *et al.*, 2015; French and Strachan, 2015; Sang and Powell, 2012) and "gender stubbornly remains a marker of division" (Pickerill, 2014, p. 3). In Europe, the construction sector provides jobs to 14.1 million operatives, which represent 6.5 per cent of Europe's total employment (FIEC, 2015). However, it employs a very small percentage of women: 1.5 million construction workers in the EU are female (EBC, 2016). Only 10 per cent of women have overcome the barriers to become active and recognised professionals in the European construction sector. Figure 1 shows these low numbers ranging from 4.5 per cent in Malta to 14.1 per cent in Austria (ILO, 2016).

Outside the EU, in the USA, the percentage of construction jobs held by women in 1983 remained the same 27 years later (2.6 per cent) (Bigelow *et al.*, 2015), and "their rates of participation in the building trades have rarely exceeded 3 per cent" (Moir *et al.*, 2011, p. 18). In Australia, women represent 13.3 per cent of the construction workforce (Francis and Prosser, 2014), while in Canada, this figure is 12.6 per cent, but the rate of their presence in trades is 4 per cent (Construction Sector Council, 2010). This intense horizontal gender segregation, which results in the exclusion of women from manual occupations, is a common trait in most developed countries.

On the contrary, as women's role in construction in developing countries is different, their situation is not comparable (Aulin and Jingmond, 2011; Gurjao, 2006). With up to 50 per cent of the workforce being female, women in Bangladesh, Ethiopia and India constitute the informal economy and are at the bottom end of the job hierarchy, as unskilled helpers or "head-load carriers" of earth, bricks, mortar, sand, quarry or stones within construction (Choudhury, 2013; Wellington, 2010; Barnabas *et al.*, 2009).

Within the industry, women and men carry out different types of work, leading to occupational segregation. Statistics of the formal construction sector in different countries show the considerable divide between operative and professional levels, with women's presence at operative level below 3 per cent, compared with 10 per cent for the professions

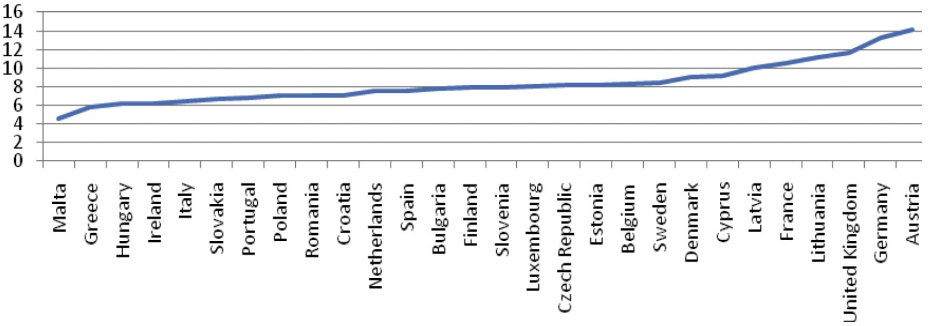

Figure 1.
Per cent EU28 Women participation in construction. 2015

(Clarke *et al.*, 2015). In fact, skilled and supervisory tasks are usually undertaken by men (Enshassi *et al.*, 2008). In the USA, for example, out of 813,000 construction managers, only around 60,000 (7.3 per cent) are women (Bigelow *et al.*, 2016).

Moreover, the majority of women working in construction perform administrative work (Rodríguez-Garzón *et al.*, 2015; Simon, 2013; Ness and Green, 2012), while those controlling "technical", "fee-earning" careers are mostly men (Galea *et al.*, 2015). Even in the Swedish labor market, described as a gender-equality champion, female project managers are mainly found at headquarters or in softer areas such as landscaping and planning, or special posts related to the environment or quality (Olofsdotter and Randevåg, 2016; Olofsdotter and Rasmusson, 2016; Arditi *et al.*, 2013).

In light of the factors which explain the different situations experienced by men and women in the sector, research from various countries focuses on obstacles limiting women's career development, underlining the need to carry out specific interventions and strategies to remove them (Haupt and Fester, 2012) and promote a change which will make the industry fairer. English and Le Jeune (2012) state that to increase the number of women, it is necessary to have an understanding of the potential barriers both for women who are already in the industry and for those seeking to enter.

Studies on career barriers faced by women in the construction industry have been previously published, but they do not offer a comprehensive literature review covering most countries and a wide period. In an attempt to describe a reality which is sometimes ignored by many, and even denied, in what Mills *et al.* (2014) define as the "politics of ignorance", we try to fill in this gap.

The main objective of this paper is to identify women's career barriers which have come to light in recent research on the construction industry. Therefore, an exhaustive review of international research has been carried out, which contributes new data on the reality of the sector, making visible the obstacles which hinder and obstruct women's career development. Furthermore, the aim is to obtain a comprehensive perspective and description of the published literature on the subject.

To accomplish this task, the research is explained in five sections. The concept under study is defined in the first one. Next, the method of the systematic review and analysis is detailed. Then the findings provide a description of the literature and list and explain existent barriers to women's development. The discussion section provides insight on publication trends and barriers. Finally, the conclusions reflect on opportunities for further research, implications for practice and limitations.

Women's career development and barriers

A career is defined as a journey that takes place over the course of a person's work life. It is frequently described as a path involving a series of jobs that involve advancement and competency progress (Buzzanell and Kristen, 2006). A traditional career pattern tends to be linear, progressive and hierarchical, with uninterrupted full-time employment within the bounds of an organisation that allows to rise up a career ladder (Dainty and Lingard, 2006; Matthewson, 2015).

However, in contrast to men's careers, women comprehend more than work; they are heterogeneous and they progress in a different manner (O'Neil and Bilimoria, 2005). Being influenced by a broader range of life roles and having a stronger focus on relationships (O'Neil *et al.*, 2008), women's careers end up being shaped more snake-like than ladder-like (Simosi *et al.*, 2015). O'Neil *et al.* (2008) assert that a woman's career development will be much more complicated because of barriers imposed by gendered social contexts.

Barriers are complex and multifaceted, with influence on career goals and decision-making (Leung, 2008). They can be defined as those "events or conditions, both internal and in an individual's environment, which hinder career progress" (Swanson and Woitke, 1997, p. 446), or as "obstacles that individuals face in the attainment of their career goals" (Ng and Feldman, 2014, p. 170). Among these obstacles, women confront the following: multiple role conflict within the family model, worries about childcare, sexual harassment, lack of pay equality, lack of promotion opportunities, lack of behavioural models which could guide careers, worries about criticism from others and the perception that their errors are more harshly judged (Swanson and Tokar, 1991; Cochran *et al.*, 2013; Bester, 2011; Donoso *et al.*, 2011; Elejabeitia and López, 2003) These hindrances reflect a more complex and difficult reality for women than for men.

Methodology

A systematic literature review (SLR) has been carried out to address this study's objective. The SLR methodology is nowadays well established and is appropriate with large volumes of evidence over long periods (Henry and Foss, 2016). It follows a procedure to collect and analyse publications, giving transparency and reproducibility to the research and results of the literature review (Tranfield *et al.*, 2003). However, aiming at a balance between a sensitive and a precise search, some flexibility has been allowed (Gonzalez Aleu and Van Aken, 2016).

The initial step was the identification of relevant literature through Boolean searches of several databases (ISI Web of Science, SCOPUS, ARCOM, REDALYC and Google Scholar), combining the following series of keywords and search terms: "barriers", "career development", "discrimination", "gender", "construction industry", "architects", "engineers" and "women". To obtain a view of career obstacles in the industry in the twenty-first century, searches were restricted to literature published between 2000 and 2015. This literature was further supplemented by publications in the reference lists of the initial database.

This preliminary search resulted in 147 works that included empirical, theoretical and conceptual articles, unpublished dissertations, books, conference papers and official documents. This list was refined to account for the:

> tension between the statistical benefits of including a large number of primary studies and conducting high-quality reviews of fewer studies with the use of more selective methodological criteria of inclusion and exclusion (Tranfield *et al.*, 2003, p. 215).

Hence the following five selection criteria for exclusion were established:

(1) research on perceived barriers by students was disregarded, as we aimed to identify real career barriers confronted by women with working experience in the construction industry;

(2) studies of women academics working at construction-related schools, considering the research focus was the construction industry;

(3) literature written in languages other than English or Spanish were excluded due to available resources;

(4) theoretical or conceptual articles and literature reviews such as Gurjao (2006) and Bagilhole (2014), as we looked for empirical findings reflecting reality; and

(5) research focused on solutions only or good practice cases.

This appraisal was made during the analysis of the articles with the agreement of all authors. In-between articles were discussed between the three researchers and consensual decisions

were made. Overall, 87 articles were dismissed from the initial data base of 147. The final data set consisted of 60 articles published over a period of 15 years.

The next step was the analysis to retrieve relevant information from the 60 papers according to the research aims. Through a collaborative iterative process, a template was developed that allowed extraction of descriptive data and text from the studies. It contained two categories of data: descriptive bibliographical data and conceptual categories for career barriers. The bibliographical variables taken into account were similar to those of other SLRs (Voetglin and Greenwood, 2016; Gonzalez Aleu and Van Aken, 2016): authorship, year of publication, country where the research was carried out, unit of analysis, sample size, methodological approach and publishing format.

As regards the conceptual categories, a thematic analysis was used for undertaking the analysis (Braun and Clarke, 2006; Dixon-Woods *et al.*, 2005). This method was chosen because it allows for the identification of prominent themes or patterns across the data in a systematic, theoretically flexible manner. The approach taken was inductive, or "bottom-up", which means that the themes identified were strongly linked to the data themselves (Braun and Clarke, 2006). No software package was used. The first step of this analysis consisted of reading and rereading the literature to become familiar with it. Then the material was divided into smaller parts and assigned codes or descriptive labels by means of open coding. The next stage involved searching for themes that grouped codes. Through a collaborative process of revision, comparison, agreement, disagreement and discussion between the authors, themes were identified, named and renamed. Finally, the themes became part of the template. Thematic analysis resulted in 12 career barrier themes. An overview is presented in Table I.

An analysis of each paper according to this template allowed us to retrieve descriptive data and key career barriers.

Reliability and interpretative validity of this review and results' analysis were pursued through the following actions: protocols for the search, data extraction template, several rounds of coding by the three authors and transparency in reporting the process (Tranfield *et al.*, 2003).

Findings

This section presents the results of the SLR in two parts, which correspond to the two categories of data: findings of the bibliographic data and conceptual categories for career barriers.

Career barriers	No. of studies
1. Work-family balance	32
2. Gender stereotypes	28
3. Allocation of posts and activities	25
4. Promotion	24
5. Working conditions	23
6. Sexist culture	22
7. Harassment and lack of respect	21
8. Recruitment and selection	19
9. Lack of recognition	13
10. Pay	11
11. Social networks	9
12. Other	7

Table I. Identified gender career barriers.

Description of previous studies

Research productivity on the topic was quite steady during the first 10 years of the twenty-first century, with 26 per cent of all works published from 2000 to 2005 and 24 per cent from 2006 to 2010 and a yearly average publication of 3. Yet, the last five-year period considered have been more prolific, doubling research output with a yearly average of 6. The year 2014 is outlined as the year with most publications (11 in total) and 18 per cent of all works (Figure 2).

Great Britain was the country where the earliest empirical research was implemented (2000-2002). It has also been the most prolific country, publishing 23 per cent of all works, followed by Spain (20 per cent). Yet English-speaking countries (Great Britain, USA, Australia, South Africa and Canada) account for 43 per cent of the research considered here. Other countries of different levels of development have also dealt with the subject: Argentina, Bangladesh, Ethiopia, India, Malaysia, Nigeria, Palestine, Peru, Singapore, Tanzania, Thailand and Turkey. There have also been comparative studies between Great Britain and Spain (Caven and Navarro-Astor 2013), Great Britain and Australia (Dainty and Lingard, 2006), Thailand and Bangladesh (Hossain and Kusakabe, 2005) and several countries from the EU (Byrne *et al.*, 2005; Michielsens *et al.*, 2004).

As regards publishing formats, 73 per cent of the studies have been published in academic journals, 12 per cent presented at research conferences, 7 per cent in reports funded by public authorities and the rest are books and PhD or final master dissertations. In reference to the journals, four types with different approaches have been identified. The first group is composed of sociology periodicals such as "*Work, Employment and Society*" (three references), "*Sociological Forum*" and "*Sociology*" (one reference each). The second corresponds to feminist research like "*Feminismos*", "*Journal of International Women's Studies*", "*Women in Management Review*", "*Gender, Place and Culture*" and "*Gender, Work and Organization*", with one reference each. The third and most prolific is of a more technical nature related to construction and engineering from a multidisciplinary point of view. The periodical with the greatest number of publications is "*Construction Management and Economics*" (11 references), but "*Revista de la Construcción*", "*Journal of Management and Engineering*", "*Building and Environment*" and "*Engineering, Construction and Architectural Management*" are also relevant. Last, the field of education is also identified with "*International Journal of Construction Education and Research*", "*Journal of Professional Issues in Engineering*

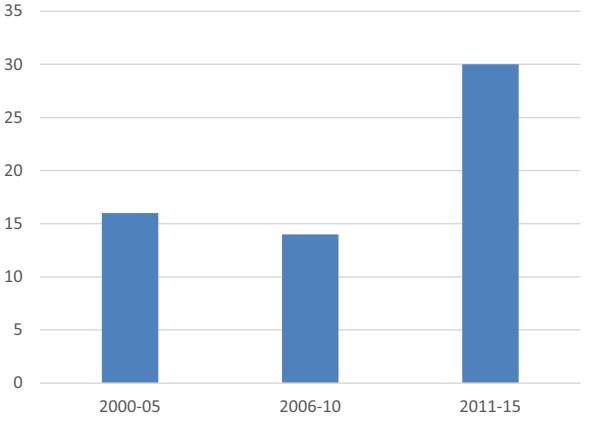

Figure 2.
Number of studies per five-year period

Education and Practice" (two references each), "*International Journal of Engineering Education*" and "*European Journal of Engineering Education*" (one reference each).

The majority of samples selected are women-only samples. They are mainly university-educated women: architects, civil engineers, building engineers, professional technicians in general, women executives of small construction firms and female managers co-preneurs. But the situation of women workers in the construction trades has also been analysed and there have been combined studies of female professional technicians and females in the construction trades as well.

The most used research methodology for data gathering is of a qualitative nature, through in-depth face-to-face or telephone interviews and/or focus groups. Yet, several investigations of a quantitative nature have applied questionnaires for data collection (Barreto, 2015; Abdullah *et al.*, 2013; Kolade and Kehinde, 2013; Babatunde *et al.*, 2012; Barnabas *et al.*, 2009; Menches and Abraham, 2007), and other multi-method studies use both a quantitative and qualitative perspective (Alessandrini and Winter, 2014a, 2014b; English and Le Jeune, 2012; Worrall *et al.*, 2010; Construction Sector Council, 2010; Eliufoo, 2007). The size of the samples varies greatly, from 7 participants (Lu and Sexton, 2010) up to 1,290 (Construction Sector Council, 2010).

Main career barriers

The main career barriers identified through thematic analysis are shown in Table I, in terms of the number of research studies in which they appear, thus illustrating their rate of incidence. Next, each barrier is commented upon and the authors involved are listed.

Work–family balance and multiple role conflict. In the majority of research, the multiple role conflict and the need to balance personal life with work are still a problem almost exclusive to women. Women point out that these responsibilities oblige them to take career breaks. In fact, they feel they still need to choose between family and career (Caven and Navarro-Astor, 2013; Navarro-Astor, 2011), they fear losing their jobs or being demoted because they have children or that they will fall behind in their career development when returning to work (De Graft-Johnson *et al.*, 2005).

An example of this are Australian female civil engineers who stated that benefiting from measures helping to reconcile work and family had had a negative impact on their career, and they had been criticised and marginalised for having made use of flexible working arrangements (Ayre *et al.*, 2013). In the case of the USA, Bilbo *et al.* (2014) showed that the fact of being married and having children was negatively correlated with the salary of women construction project managers. In South Africa, a participant stated that "having a family can affect the work" (English and Hay, 2015, p. 157) (Appendix 1).

An Australian woman architect clearly illustrates the pull of architecture against that of motherhood as being almost physical:

> I thought, I'm no good at architecture, I'm not good at home, I'm not a good partner […] Because you try to divide and find your feet and how to best split your(self) to fit all kind of hats (Matthewson, 2015, p. 242).

Gender stereotypes. Gender stereotypes are "the structured group of beliefs concerning characteristics – traits, behaviour, attitudes, values and norms – which are generally thought to be typical or desirable in women or in men" (Jato, 2007, p. 160). Many such deep-seated assumptions about the nature of construction work and female's capacity endure; two in particular were the most often quoted.

On the one hand, there is the pervading idea that women do not have the physical qualities necessary to work adequately on building sites because they lack physical strength or because they fear working at heights (Alessandrini and Winter, 2014b; English and Le Jeune,

2012; Ibáñez and Fernández, 2011; Wellington, 2010; Construction Sector Council, 2010; Barnabas *et al.*, 2009). On the other hand, it is said that because of the hostile conditions of building sites, women cannot endure hard work (Enshassi *et al.*, 2008). Examples of these conditions are: working in the open air subject to extreme temperatures, the associated dangers, having to get dirty, having to travel and be away from home and family, the lack of female facilities, the lack of comfort and rough treatment. Even women's incapacity to manage construction workers has been brought to light.

When referring to professionals, on-site stereotypes also abound. In fact, men believe women are there to carry out administrative tasks, to take care of customers and to answer the telephone: "On the phone people assume you're in an office and ask who they'll see on site" (English and Hay, 2015, p. 156).

These stereotypes predominantly present in onsite work were also extended to other areas of the industry in which women architects were categorised, in the eyes of men as being "weaker in their capacity for 3D perception" (Fowler and Wilson 2004). Yet, women are said to have traits contributing to a successful career as office engineer: carefulness, good taste, thoroughness and patience (Enshassi *et al.*, 2008).

Matthewson (2015, p. 163) maintains that the potential for maternity can also affect the assignment of project opportunities to Australian women architects, as gender stereotypes imply unreliability and business risk. This idea is confirmed by Enshassi *et al.* (2008) (Appendix 2).

The allocation of posts or activities. The allocation of positions, work and tasks, is carried out favouring men and leading to occupational segregation in the industry, both at management level and in onsite trades. Onsite, women are expected to work in more technical trades or other areas which are less physically demanding such as the finishing touches of the building, the painting or the tiling (Construction Sector Council, 2010). This sexist allocation is a consequence of negative stereotypes upheld by employers and/or superiors.

Paternalism (although it can also be referred to as sexism) means that women are assigned certain positions (design, support services, interior design, office engineering and domestic architecture) and men are allocated others (site management, customer relations, exterior and building design). Women's tasks mainly involve designing, drawing, estimating and specification writing, but little opportunities for on-site work (Enshassi *et al.*, 2008). The following words of a female Argentinian engineer illustrate this idea: "The owner said that for the position that I occupy he wanted a woman because it is delicate work and it requires patience" (Borrás and Bucci, 2003, p. 14). Alessandrini and Winter (2014b) also point out that women architects in Tasmania (Australia) usually carry out office-based tasks, and that professional women are pushed into domestic or helping roles.

This sexist work assignment limits both access opportunities and career progress of women in certain areas of the industry (Appendix 3).

Promotion. In human resource management, promotion is understood as "the disposition of the institution to fill job vacancies with employees from lower levels of its organisation" (Núñez-Cacho *et al.*, 2012, p. 23). As far as this aspect is concerned, according to Dainty *et al.* (2000), women in the sector tend to see their careers progress one step behind their male colleagues. In fact, few women occupy management positions in construction companies, coming up against a "glass ceiling" which limits their promotion to higher echelons of the company (Arenas, 2014; Arenas *et al.*, 2014).

A lack of formal development procedures (Matthewson, 2015), the prevalence of informal networks over merit (Dainty and Lingard, 2006; Watts, 2009), preference for male employees (Kehinde and Okoli, 2004), industry intolerance of career breaks (English and Le Jeune 2012),

lack of recognition and even appropriation of their contributions (De Graft-Johnson *et al.*, 2005), are all examples of the discrimination and difficulties encountered by women when getting promoted. All this causes their disappointment, marginalisation, absence of support and feelings of social isolation (Dainty and Lingard, 2006) (Appendix 4).

Working conditions. Working conditions in the industry belong to the "masculine model" traditionally designed by men for men: high time commitment, long working hours, presenteeism, no culture of part-time hours or job sharing, the nomadic nature of site work, amongst others (Matthewson, 2015; English and Hay, 2015; Bagilhole, 2014). This model has its origin in building being a job principally carried out by men, based on the traditional absence of co-responsibility in housework and care for other members of the household. It represents a labour relations model characterised by the priority of male interests, who give too much importance to work to the detriment of other life facets (López-Sáez *et al.*, 2004). The consequence is prejudice against those women who work in the sector and still maintain their roles as carers and are responsible for household tasks.

At times, the working day can be extended by social events such as entertaining clients in nightclubs, which can be an uncomfortable situation for women in a place where they do not feel they fit in (Román *et al.*, 2013; De Graft-Johnson *et al.*, 2005).

It was also noted that women construction workers in less-developed countries face employment insecurity, as they are often hired during pick periods or phases of building processes. According to Wellington (2010), women's lives in some Ethiopian construction sites could be compared to the life of slaves because of the few options they have: to carry bricks, earth, water, sand and mortar and to break stones (Appendix 5).

The culture of sexism. Women also have to tolerate a sexist culture (English and Le Jeune, 2012; Denissen, 2010; Menches and Abraham, 2007; De Graft-Johnson *et al.*, 2005), both dominating and autocratic (Watts, 2009), and in which male colleagues refuse to cooperate with them (Ling and Leow, 2008), with resistance to women's "humiliating" authority (English and Hay, 2015; Román *et al.*, 2013; Wellington, 2010), and a generally sexist attitude (Arslan and Kivrak, 2004; Worrall *et al.*, 2010).

The aggressiveness and intimidation felt by a woman architect in her interactions with external groups in the male-dominated construction process is well expressed as follows:

> It was tough. I mean, the builders were bastards and a lot of the consultants were quite aggressive as well. It was quite old-school […] (Matthewson, 2015, p. 167).

All these situations make the working environment a hostile place in which to work, and women are forced to either survive or abandon the industry (Appendix 6).

Harassment and lack of respect. This barrier was identified for all categories of female workers in the sector: architects, site managers, quantity surveyors, civil engineers and construction workers. But it is mainly onsite where women have to put up with and endure unacceptable behaviour such as verbal harassment (obscene comments, wolf whistles, swear words, offensive language, jokes), requests for sexual intimacy, fondling or other types of sexual harassment (Kaewsri and Tonghthong, 2014; English and Hay, 2015; Choudhury, 2013; Wright, 2013; Wellington, 2010; Denissen, 2010; Bagilhole *et al.*, 2002). This atmosphere has been described as "locker room" culture, an excluding culture where explicit sexual references are made to assert the dominant male heterosexuality (Bagilhole *et al.*, 2002).

Women are expected to adapt to and tolerate behaviours and language which many would consider unacceptable. The lack of resources to combat abuse and the absence of support from employers seem to be the cause of many women leaving their jobs in the construction industry (Construction Sector Council, 2010). At times, this workplace

harassment even has tragic consequences such as suicides, as pointed out by an Australian informant in Alessandrini and Winter (2014b) (Appendix 7).

Recruitment and selection. Recruitment and selection processes in the industry tend to be informal, that is to say, they are not in line with methods used by human resource professionals. Transparent and objective guidelines are not followed; hence, when choosing between different candidates for a position, criteria based on experience and confidence in the candidate prevail. The first criterion which might at first seem objective, is not, given that women often suffer more interruptions in their careers and accumulate less working time. Men are preferred to women for this reason (Román *et al.*, 2013; Arenas and Calama, 2012; Whittock, 2002). The second, as it makes use of informal networks, favours candidates who have contacts in the company (Dainty *et al.*, 2000). Given that the structure of the industry and the networks are fundamentally male-dominated, these are normally men.

Matthewson (2015), for example, shows that recruitment for junior staff in Australian architectural practices is often done via word of mouth and contacts; hence, it is open for gendering processes including homosociality.

Other research highlights deliberate preferences for men and the rejection of women (Davis, 2014; Román *et al.*, 2013; Arslan and Kivrak, 2004). Together with this direct discrimination other subtler forms were found, such as asking a female candidate in the selection interview about whether she was thinking of having children (Construction Sector Council, 2010), or the language used in recruitment advertisements which seems to exclusively refer to men (López-Sáez *et al.*, 2004; Borrás and Bucci, 2003). All this hinders access to the industry and places female candidates in a situation of inequality with respect to their male counterparts.

The widespread idea that it is easier to manage a business without gender problems is present in the case of construction workers' and apprentices' selection (Construction Sector Council, 2010). Employers' fear of legal responsibility for possible onsite harassment, potential workers' distraction with female presence or the suspicion that they cannot speak to women in the same way they speak to men, are examples of obstacles when selecting women candidates (Agapiou, 2002) (Appendix 8).

Lack of recognition of women's work. Difficulties in evaluating and assessing women's work and their having to work harder than their male colleagues because of their gender, hinder their development and reveal an unjust system (Barreto, 2015; English and Hay, 2015; Alessandrini and Winter, 2014b). An excessive level of demands when women are concerned, was detected as regards the qualities required for jobs in engineering, "special training and a lot of personality, perhaps if we were talking about a man they wouldn't demand so much" (Borrás and Bucci, 2003). Women have to push themselves more and have to prove themselves all the time, while men are highly valued.

This is a double standard which is widespread in the building trades. Canadian women, for example, need to show their worth in ways not required of men, given that every time they move to a new site where "they are automatically on trial" (Construction Sector Council, 2010, pp. 120-121). Australian women civil engineers highlight this same idea:

> You've gotta work a bit harder as a female engineer I believe to prove yourself […] when I go out on site and talk about what solution I can provide, they're usually very hesitant to listen to me […] new clients that is. […], whereas perhaps it if was a male engineer they'd see it differently (Ayre *et al.*, 2013, p. 229).

Moreover, when supervisors, colleagues or clients question their surveying abilities (Sang *et al.*, 2014) or their capacity to supervise the work (Kaewsri and Tonghthong, 2014; Kolade and Kehinde, 2013), they show prejudice which will influence their work assessment (Appendix 9).

Pay. Pay discrimination refers to the fact that women receive less pay for equivalent work. This barrier has been highlighted in research carried out above all in countries with lower levels of development such as Bangladesh (Choudhury, 2013), Nigeria (Kolade and Kehinde, 2013), Ethiopia (Wellington, 2010) and India (Barnabas *et al.*, 2009). In these countries, as women are casual workers, they not only face insecurity but are paid lower wages than those paid to male labourers for the same work. In Ethiopia, for example, while male unskilled labourers could earn 15 birr, women in the same category could only earn 10 birr (Wellington, 2010).

But this obstacle has also been identified in Great Britain (Greed, 2000). Furthermore, research by De Graft-Johnson *et al.* (2005) focused on women architects in Europe, Asia, Australia and North America, underlined that pay is considered low or unjust, lacking transparency in the salary structure, and it highlighted that women's skills and experience are ignored or undervalued. In addition, Stratigakos (2016, p. 28) points out that the pay gap exists at all levels in the architectural profession in the USA, with men earning on average 20 per cent more than women among full-time architects (Appendix 10).

Social networks. Social capital consists of both formal and informal networks, that enable resources to be shared, and a person's capabilities to be seen. This social capital, and access to it, is very important for career advancement and opportunities (Scott *et al.*, 2010).

Networks of informal contacts play an important role in this industry and women tend to be outside, as informal networking often takes place outside the workplace, when they are less likely to be available (Barreto, 2015; Dainty *et al.*, 2000; Greed, 2000). The homosocial behaviour, with formal and informal male-dominated social networks implies women's exclusion and their struggle to belong to them (Sang *et al.*, 2014; Lu and Sexton, 2010). Hence, men make better use of their social capital (Appendix 11).

Other less evident barriers. The attitude of scorn and arrogance as regards feminism on the part of some women who have already achieved success, not supporting and even standing in the way of other women, is highlighted in the literature to a lesser extent (De Graft-Johnson *et al.*, 2005; Greed, 2000). This phenomenon, whereby women leaders assimilate into male-dominated organisations by distancing themselves from junior women and legitimizing gender inequality, is referred to as the "queen bee" syndrome (Derks *et al.*, 2016).

Other barriers of an intrinsic or more personal nature are lack of confidence when dealing with men (Elejabeitia and López, 2003), or the preference for certain jobs which limit their opportunities of career advancement (Babatunde *et al.*, 2012) (Appendix 12).

Discussion

Throughout the reviewed time period, a total of 60 empirical studies have been found whose object of study is gendered career barriers in the construction industry. Hence, it is clear that the subject has been and still is of interest to the research community.

Publication trends can be assessed through the analysis of publication rates over time (Gonzalez Aleu and Van Aken, 2016). It has been found that the past five years under analysis (2010-2015) constitute a period of rapid growth. This is positive, as it shows that researcher interest in this area is increasing, probably because societies are becoming more aware of women's discrimination, governments are investing more funds in this area and male-dominated jobs have become the focus of attention.

This topic, while attracting interest from authors around the world, is primarily concentrated in English-speaking countries (Great Britain, USA, Australia, South Africa and Canada), and Great Britain was the first to publish. This could imply that Great Britain has had the greatest impact in shaping the subject over the 15-year time period considered. We

have highlighted the fact that barriers have also been studied in countries with lower levels of development. This might have happened because authors received their PhD training in institutions located in these pioneering countries, and they used their home countries as a setting for developing their research.

According to some authors, a high concentration of authors in few countries shows that the subject is emerging as a research area (Maloni *et al.*, 2012). It seems clear that this research topic could benefit from the increased diversity of perspectives and contexts resulting from the participation of new countries that have not been explored yet. Gender inequality is deeply entrenched in societies across the world (Bimrose *et al.*, 2015), but there are geographical patterns of variation, with women facing fewer economic barriers and having more development opportunities in more advanced countries (Green, 2015, p. 12). After all, women's career development takes place in particular social, economic and historical contexts. We invite researchers to explore the topic in new countries, taking into account and considering the contextualised realities of practices within the construction sector. For example, Scandinavia, Germany and The Netherlands are a model of "high road" construction industries, while Italy, Portugal or Greece have taken the "low road" path (Ness and Green, 2012). These differences influence gender career barriers as well, but have been rarely taken into account.

There is a lack of a single dominant publication outlet. Journals on women studies are not the only ones publishing on the topic. On the contrary, researchers from different fields have shown interest. This reveals the multidisciplinary nature of the career barriers' domain, studied from different perspectives, drawing from sociology, feminism, construction, engineering and education. The important clue for its development would be for researchers to explore what other fields different from their own are concluding, and to be flexible and open-minded.

Because women's presence at the operative level is much lower than at the professional level (Clarke *et al.*, 2015), it is not surprising that most research has focused on professional well-educated women. It would be enriching to explore in depth female construction manual workers because, as Ness and Green (2012, p. 19) point out, "the majority of construction work still takes place out on site, in all weathers", and manual workers make up roughly 80 per cent of the industry.

Diverse research methodologies have been applied, but those of qualitative nature have been used the most. This way, authors put forward the need to include participants' points of view (Matthewson, 2015; Román *et al.*, 2013, Caven and Navarro-Astor, 2013; Wright, 2013; Choudhury, 2013). In fact, many female sociologists reject quantitative techniques because they are related to a traditional and positivist scientific conception (Díaz and Dema, 2013). Qualitative research methodologies also provide vivid examples of the universal constraints operating on women's participation in the construction industry across societies and through time. And they "open avenues for new understandings in the world of work" (Stead *et al.*, 2012, p. 107). We therefore call for more sound qualitative research on the topic.

The results of this SLR demonstrate that women are differentially affected by obstacles related to their careers. By analysing research implemented on different countries, this article also discovers more commonalities than divergences in gender discrimination across nationalities. The difficulty of balancing maternity and family life with their profession is the most commonly identified barrier. Family responsibilities, the absence of co-responsibility and the characteristics of the prevailing industry work model, oblige many women to take career breaks, having to choose between family or career. Others fear losing their job or being degraded for having children. Each of these situations leads to women falling behind in their career development.

Long and inflexible working hours that characterise this industry, with slow progress on family-friendly working practices, means that greater flexibility is required within the home (Wright, 2016). This could imply shifts in the traditional domestic division of labour, in how childcare and other domestic responsibilities area shared within households.

Ness and Green (2012, p. 27) state that "the building site is one of the last bastions of a traditional working class masculinity", a workplace where there is no obligation to be polite or "nice" to people. Hence, women still put up with harassment and lack of respect. These are associated with low job satisfaction and psychological and physiological health symptoms and workplace injuries (OSHA, 1999). Yet, a study by the US Department of Labor reports that it is widespread among women construction workers, with 88 per cent of them experiencing sexual harassment at work, compared to 25 per cent of women in the general workforce (NWLC, 2014). These unchallenged situations would be unthinkable in other settings or industries.

Lack of professionalism in human resource management in general, and in recruitment and selection, promotion, pay and performance assessment in particular, constitutes another great obstacle. Explicit preferences for hiring men, entrenched gender stereotypes and employers' fears are all elements hindering women's access to the sector. Wage inequalities and male-only social networks equally contribute to women's slow and tortuous career progress. Moreover, the occupational segregation of the industry caused by employers' discretionary work allocation reduces women's possibilities for professional enrichment and career advancement.

The barriers identified are multi-level, interdependent and can reinforce each other. For example, gender-stereotyped assumptions and generalisations lie at the base of discriminatory human resource practices (job allocation, promotion, staff selection, lack of recognition and pay). Masculinised workplace cultures have an influence on harassment and lack of respect. And harsh working conditions lead to increasing the multiple role conflict and putting more pressure on work–family balance.

These gendered career barriers may influence how seriously women will consider an occupation as a viable alternative. As a result of them, women will probably reject some professional alternatives in favour of more viable ones with fewer obstacles and more opportunities (Gottfredson, 1981, 1996, 2002, 2005). This may explain why segregation within the construction industry itself is maintained and reinforced. Hence, eliminating these barriers is essential. Findings lead us to assert that there is a need for action at many levels.

Yet, the large amount of research that has been carried out on the subject contrasts sharply with the limited studies focused on how to address obstacles to gender diversity. In fact, tradeswomen in the USA, for example, resent being studied by many researchers while their working conditions remain the same (Moir *et al.*, 2011). Lowe and Woodcroft (2014, p. 74) state that "there is movement, but it is often in isolated pockets of good practice". It is obvious then that clear and strong measures need to be set if gender diversity is to be improved in the construction industry and it is time to start now.

Examples of good practice for greater gender inclusivity, especially focused on the operative workforce, are shown in Clarke *et al.* (2015), Wagner (2015), English and Hay (2015) and Wright (2016, 2014). Among these, the London Olympic Park and the Crossrail scheme in the UK, the Vancouver Island Highway Project in Canada, the Century Freeway Project in Los Angeles (USA) or the initiatives sponsored by the Department of Transport and Public Works in South Africa can be highlighted. Due the nature, size and complexity of mega infrastructure projects, they tend to be highly regulated and offer the possibility of more inclusive employment policies (Clarke *et al.*, 2015). In fact, fair procurement requirements settled on construction companies by public institutions can be an important stimulus for

increasing women's presence in the industry (Wright, 2014; Haupt and Fester, 2012). Other pilot initiatives aimed at empowering women contractors have been carried out in South Africa (Haupt and Fester, 2012; Verwey, 2008), finding mentoring and coaching as effective tool for achieving growth and success.

Conclusions

To find solutions that will contribute to the creation of a more equitable and inclusive industry, where gender discrimination has no place, it is required to have a clear vision of career barriers affecting women. This topic is of vital importance for making progress in women's inclusion, and also for the competitiveness of the industry.

The aim of this paper was to identify recent barriers to women's career development in the construction industry and to obtain a comprehensive perspective of the literature on the subject. A literature search and thematic analysis of empirical literature published from 2000 to 2015 was carried out and a group of 12 multi-level and interdependent barriers has been identified. Each barrier has been described in detail and a specific list of references has been provided. This is precisely the theoretical contribution of the article: the knowledge on barriers to women's career development over 15 years in this industry.

Previous studies do not offer a comprehensive and up-to-date review covering such a wide time period and so many countries. Hopefully it can be helpful for informing future research directions. Findings strongly suggest that more research is needed with respect to countries where career barriers have not been explored yet, and that the experiences of female workers in manual roles, who have been almost invisible, should also be studied. It also gives recommendations on methodology. But moving forward, where more work is needed, is on specific interventions and measures to attract, retain and develop women in the industry. Hence, international feminist researchers are encouraged to further analyse and explore the issue of solutions to the problem.

This review can also be valuable for informing decision-making at different management levels. For example, it might be relevant to human resource managers at construction companies, to understand how their gender-biased practices influence women's career development, gender equity and organisational injustice. It could persuade and change employers' attitudes towards women, increasing the number of contractors "taking a chance" on employing them. It also informs policies to reduce gender discrimination.

Finally, some limitations of this study must be pointed out. Although much effort was employed to produce as comprehensive and exhaustive a review as possible, we accept that some articles may have been inadvertently omitted. This is inevitable, as publication retrieval involved a few databases, and languages considered were only English and Spanish. If other languages had been included, it is possible that more countries appeared in the findings. In addition, the choice of search terms may have caused inaccuracy in searching the target. As regards the analysis, the main limitation is that the feminist theory was not considered as one of the bibliographical variables in the template.

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Appendix 1

Work–life balance/multiple role conflict – Authors

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Appendix 2

Gender stereotypes – Authors

Matthewson (2015), English and Hay (2015), Alessandrini and Winter (2014b), Azhar and Griffin (2014), Kaewsri and Tonghthong (2014), Navarro-Astor and Caven (2014), Sang *et al.* (2014), Davis (2014), Pickerill (2014), Kolade and Kehinde (2013), Arenas and Calama (2012), Babatunde *et al.* (2012), English and Le Jeune (2012), Ibáñez and Fernández (2011), Wellington (2010), Lu and Sexton (2010), Construction Sector Council (2010), Barnabas *et al.* (2009), Enshassi *et al.* (2008), Dainty and Lingard (2006), Arslan and Kivrak (2004), Fowler and Wilson (2004), Kehinde and Okoli (2004), Michielsens *et al.* (2004), López-Sáez *et al.* (2004), Agapiou (2002), Whittock (2002) and Greed (2000).

Appendix 3

Allocation of posts or activities – Authors

Matthewson (2015), Barreto (2015), Kelly *et al.* (2015), Alessandrini and Winter (2014b), Azhar and Griffin (2014), Kaewsri and Tonghthong (2014), Navarro-Astor and Caven (2014), Pickerill (2014), Caven

and Navarro-Astor (2013), Agudo and Sánchez (2011), Kaewsri and Tonghthong (2013), Choudhury (2013), Denissen (2010), Wellington (2010), Construction Sector Council (2010), Barnabas *et al.* (2009), Enshassi *et al.* (2008), Eliufoo (2007), Menches and Abraham (2007), Dainty and Lingard (2006), De Graft-Johnson *et al.* (2005), Fowler and Wilson (2004), Borrás and Bucci (2003), Dainty *et al.* (2000) and Greed (2000).

Appendix 4

Promotion – Authors

Matthewson (2015), Barreto (2015), Arenas (2014), Arenas *et al.* (2014), Azhar and Griffin (2014), Davis (2014), Kaewsri and Tonghthong (2013), Kolade and Kehinde (2013), Infante *et al.* (2012), English and Le Jeune (2012), Worrall *et al.* (2010), Barnabas *et al.* (2009), Watts (2009), Enshassi *et al.* (2008), Ling and Leow (2008), Menches and Abraham (2007), Dainty and Lingard (2006), Hossain and Kusakabe (2005), De Graft-Johnson *et al.* (2005), Kehinde and Okoli (2004), López-Sáez *et al.* (2004), Elejabeitia and López (2003), Dainty *et al.* (2000) and Greed (2000).

Appendix 5

Working conditions – Authors

Matthewson (2015), Barreto (2015), English and Hay (2015), Sang *et al.* (2014), Davis (2014), Román *et al.* (2013), Kolade and Kehinde (2013), Arenas and Calama (2012), Navarro-Astor (2011), Wellington (2010), Worrall *et al.* (2010), Watts (2009), Ling and Leow (2008), Menches and Abraham (2007), Eliufoo (2007), De Graft-Johnson *et al.* (2005), Byrne *et al.* (2005), Kehinde and Okoli (2004), Michielsens *et al.* (2004), Fowler and Wilson (2004), López-Sáez *et al.* (2004), Dainty *et al.* (2000).

Appendix 6

Sexist culture – Authors

Matthewson (2015), Barreto (2015), English and Hay (2015), Kelly *et al.* (2015), Azhar and Griffin (2014), Román *et al.* (2013), English and Le Jeune (2012), Worrall *et al.* (2010), Wellington (2010), Denissen (2010), Watts (2009), Ling and Leow (2008), Enshassi *et al.* (2008), Watts (2007), Menches and Abraham (2007), Arslan and Kivrak (2004), Elejabeitia and López (2003), De Graft-Johnson *et al.* (2005), Byrne *et al.* (2005), Fowler and Wilson (2004), Borrás and Bucci (2003), Dainty *et al.* (2000).

Appendix 7

Harrassment and lack of respect – Authors

Barreto (2015), English and Hay (2015), Kelly *et al.* (2015), Alessandrini and Winter (2014b), Kaewsri and Tonghthong (2014), Navarro-Astor and Caven (2014), Caven and Navarro-Astor (2013), Choudhury (2013), Abdullah *et al.* (2013), Román *et al.* (2013), Wright (2013), Wellington (2010), Construction Sector Council (2010), Watts (2009), Menches and Abraham (2007), Watts (2007), Dainty and Lingard (2006), Byrne *et al.* (2005), Agapiou (2002), Bagilhole *et al.* (2002) and Whittock (2002).

Appendix 8

Recruitment and selection – Authors

Matthewson (2015), Kelly *et al.* (2015), Davis (2014), Kaewsri and Tongthong (2014), Román *et al.* (2013), Arenas and Calama (2012), English and Le Jeune (2012), Construction Sector Council (2010), Byrne *et al.* (2005), Hossain and Kusakabe (2005), Arslan and Kivrak (2004), López-Sáez *et al.* (2004), Elejabeitia and López (2003), Borrás and Bucci (2003), Whittock (2002), Agapiou (2002), Fielden *et al.* (2000) and Greed (2000), Dainty *et al.* (2000).

Appendix 9

Lack of recognition – Authors

Barreto (2015), English and Hay (2015), Alessandrini and Winter (2014b), Sang *et al.* (2014), Pickerill (2014), Ayre *et al.* (2013), Román *et al.* (2013), Kolade and Kehinde (2013), Agudo and Sánchez (2011), Lu and Sexton (2010), Construction Sector Council (2010), Borrás and Bucci (2003) and Agapiou (2002).

Appendix 10
Pay – Authors
Choudhury (2013), Kolade and Kehinde (2013), Babatunde *et al.* (2012), Infante *et al.* (2012), Wellington (2010), Sánchez (2010), Barnabas *et al.* (2009), Ling and Leow (2008), Byrne *et al.* (2005), Borrás and Bucci (2003) and Greed (2000).

Appendix 11
Social networks – Authors
Barreto (2015), Kelly *et al.* (2015), Sang *et al.* (2014), Choudhury (2013), Wright (2013), Lu and Sexton (2010), Dainty and Lingard (2006), Byrne *et al.* (2005) and López-Sáez *et al.* (2004).

Appendix 12
Other barriers – Authors
Babatunde *et al.* (2012), Lu and Sexton (2010), De Graft-Johnson *et al.* (2005), Arslan and Kivrak (2004), Elejabeitia and López (2003), Whittock (2002), Greed (2000).

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