

- 37 • understand what the students perception of construction sector is,
- 38 • discover what the limitations are for women within the construction industry.
- 39 • how to overcome the limitations for females in the construction industry

40 By following these objectives it enabled the researcher to find an adequate method
41 to encourage women to join the industry. To complete this study, a literature review
42 has been undertaken to find out what research has already been carried out. This was
43 continued by carrying out a qualitative assessment of student's perception of their
44 education and the industry.

45 **2 Literature Review**

46 Grant Prior from Construction Enquirer (2019) stated that a further 168,500
47 construction related jobs will become available over the next five years despite the
48 uncertainty of Brexit. However as the job opportunities continue to rise, this causes
49 the shortage in workers to increase also, therefore there must be an increase in
50 methods taken to fill the skills deficit. We know that there are many opportunities for
51 females to join the industry; however are they aware of them?

52 **2.1 Skills shortages and its impact**

53 The last recession caused a huge decline in employment within the construction
54 industry; the CITB explained that the total construction output hit an all-time low in
55 2009, and therefore forced many construction workers to leave the industry. The
56 CITB (2018) explained that these workers have never been replaced and has left a
57 shortfall within a booming market. Due to the small workforce within the construction
58 industry, it has proven difficult for employers to recruit. Therefore one of the
59 incentives to entice applicants is an increase in salaries. Dominic Claeys-Jackson
60 from Prospects (2017) and Construction Enquirer (2016) reported that salaries had
61 increased by 6%, a rate three times larger than across other industries. Brian Berry,
62 Chief Executive of the Federation of Master Builders (FMB) (2018) also explained
63 that 'two-thirds of those running small and medium-sized construction firms are
64 struggling to hire bricklayers and carpenters as construction skills shortages hit a
65 record high'. Brexit has left many employers and employees with doubts over their
66 job security, and this could prove to have a huge impact. Jodie Cox from the
67 Independent (2017) reported that 176,500 European workers are employed within the
68 industry, meaning that a huge vacuum could be left if they are forced to leave the
69 country. The industry is also battling against an aging workforce. In 2013 the CITB
70 announced that over 400,000 people were expected to leave the industry within the
71 next 5-10 years and the rate of recruitment is not matching the amount of workers
72 retiring. Radford (2017) explained that due to the age of the workforce many
73 tradesmen are retiring from the industry and are not being replaced. RICS Chief
74 Economist, Rubensohn (2016) also explained that the labour shortages in the
75 construction sector are causing significant delays at various stages of the construction
76 process and cannot keep up with the demand of building 110,000 houses per year.
77 Therefore the construction industry cannot build enough properties to house the
78 expanding population (The Construction Index, 2016). Millennials are having a huge

79 impact on the construction industry, due to them not wanting to join the sector. Neil
80 Martin of Lend Lease (2016) describes that the industry is poorly communicating
81 with young adults and not describing what there is to offer and what career
82 opportunities are available, therefore the workforce will reduce until this issue is
83 corrected. Hilary Osbourne (2016) from The Guardian explained that the impact of
84 the skills shortage covers issues such as the housing programme, salary inflation and a
85 smaller workforce. Due to the construction industry demanding more progress with
86 building projects but having a limited workforce available, construction companies
87 are battling for tradesmen and professionals, enabling employees to have higher
88 salary expectations.

89 **2.2 Obstructions stopping females joining the industry and the benefits of** 90 **joining the industry**

91 There are many advantages for women to join the construction industry such as
92 diversity, skills shortages, team work and to satisfy the growing population, however
93 equally there are also negatives that stop females joining the sector such as
94 harassment and discrimination, stereotyping, their family commitments, a lack of
95 opportunity and awareness.

96 Matthew Goff (2019), Director of UK operations at Actavo Building Solutions,
97 explains that having a diverse workforce can achieve better results across the
98 business. He furthered this by stating that within the sector there is a huge gender
99 pay gap of almost 45.5% and that if an individual is capable of undertaking a task
100 regardless of their age, gender, ethnicity, sexual orientation or physical impairment
101 they should have the opportunity to do so. The Royal Institute of Chartered Surveyors
102 (RICS) (2018) explain by encouraging a more diverse workplace, it helps inspire
103 more people to join the industry as it will complement the individuals personalities
104 enabling more personnel to review projects increasing the team work and satisfying
105 the skills deficit. However unfortunately there are several negatives that must be
106 addressed that are currently deterring females and students from joining the
107 construction industry. Kimberle Crenshaw (2016) claims there must be support
108 against intersectionality within the workplace as she believes that multiple factors
109 such as gender, religion, ability and race discrimination is stopping the public from
110 joining industries and employers are discriminating against potential employees. She
111 also believes that white women are traditionally employed to complete administration
112 positions and white men would complete the manual jobs. Using this analogy it
113 suggests that women cannot complete the manual or professional positions and RG
114 Group (2017) confirm this by claiming that the stereotype that men are physically
115 bigger and stronger deters females from joining the industry and get drawn to other
116 sectors. RG Group furthered this by explaining that the perception of the construction
117 industry is that it is male dominated and therefore when women join the industry they
118 feel they might be treated differently, thus keeping their heads down and acting as
119 'one of the lads'. This view enhances the evidence that the construction industry is
120 poorly marketed – not only is it perceived to be low status, dirty and badly paid, an
121 opinion that has stigmatised the industry for many years (CIOB, 2018), but RG Group
122 perceive the industry to be advertised to men as it is proposed to be a masculine and

123 strong industry that will build purpose and identity as a man. Another issue that has
124 been identified is that women will not join the construction industry due to family
125 commitments. Meg Munn (2014) described this as indirect discrimination, explaining
126 that women struggle to deal with the responsibilities of a family as well as staying at
127 work within the industry. Due to this, females view this as an infringement when
128 attempting to progress their careers and feel that they are judged by senior
129 management if they get married or have children.

130 **2.3 What is the industry doing to attract Females to join the industry?**

131 There are various efforts within the construction industry to reduce the skills deficit
132 by targeting both genders and females individually of all ages. An example of this is
133 The Black Country Children's University. University of Wolverhampton (2018),
134 explains 'as the University of Opportunity, they are committed to raising the
135 aspirations of children within our communities'. Using this initiative it encourages
136 young adults to learn about the construction industry and other sectors within the
137 workplace. This initiative reaches out to many schools and academies in
138 Wolverhampton, Sandwell, Dudley, Walsall and ECMAT (Education Central Multi
139 Academy Trust). The Construction Youth Trust (CYT) (2017) offer short courses that
140 are designed to present the opportunities that exist within the industry. The CYT aims
141 their courses at young people aged between 18-30, who may be unemployed. Athena
142 SWAN (2019) support universities and colleges to build inclusive cultures that build
143 the values of diversity, and resist the barriers for students and employees to progress
144 whilst challenging the unfair practices that disadvantage their peers. Athena SWAN
145 offer bronze, silver and gold accreditations to the educational sectors enabling
146 institution to meet the criteria and aim for gold. Athena SWAN understands that the
147 main diversity issues are age, disability, ethnicity, gender, intersectionality and new
148 protected characteristics such as religion and sexual orientation. Apprenticeships are
149 also a popular method to help reduce the skills deficit as there are many advantages to
150 them, such as the employer being able to apply for funding and having the benefit of
151 training an individual within their company whilst learning the companies model and
152 working methods, and the apprentice has free training earning a salary for his service
153 whilst gaining qualifications. The RICS (2018), are promoting 'degree
154 apprenticeships' which have similar advantages to a regular apprenticeship; however
155 these are aimed at A-level students with the intention of reducing the skills deficit in
156 professional positions such as in quantity surveying and architecture. This enables
157 experienced employees to train apprentices which enables the average age of an aging
158 workforce to be reduced. In 2017 the Government enhanced the apprenticeship-
159 funding scheme by introducing an apprenticeship levy to companies who had salary
160 outgoings greater than £3 million (GOV.UK, 2016). The levy is 0.5% of their salary
161 output; however companies can recover the costs by employing apprentices. The
162 Government took that view that companies needed to employ and train more
163 employees, enabling the individuals to gain qualifications whilst working. Work
164 experience and sandwich courses are also good methods to persuade students that the
165 construction industry could include a career that is suitable for them. Many year 11
166 school students have the opportunity to gain 1-2 weeks work experience with an

167 employer to help decide a career path for when they leave full time education. My
168 World of Work (2019) explain many advantages of work experience and sandwich
169 courses such as; it helps gain an insight in to work; it uses the required skills used
170 within the work place; it develops self-awareness; it helps to understand the links
171 between school subjects and work and it helps the students meet new people. Balfour
172 Beatty (2018), explain that only 13% of the construction industry is made up of
173 females, however they are encouraging more females to join the sector by raising the
174 profile of their current female employees, campaigning to help females join the
175 industry and using their 'Women In Construction and Engineering' (WICE) awards to
176 promote it. Through this Balfour Beatty expect women's participation to increase to
177 25% by 2020. The CITB (2018) have also developed an organisation called Women
178 in Construction (WIC) to help persuade females to join the sector and to help solve
179 the skills shortage. However WIC explained five key objectives to help potential
180 candidates, they are; advice, training, work placements, mentoring and jobs. By
181 completing these objectives the CITB feel that they will improve the following;
182 retention of women in construction, productivity, opportunity to secure work and
183 capacity and skills to implement new policies to attract and retain women. By
184 reviewing these main areas, it enables further research to be reviewed, detail and
185 recommend new methods to reduce the skills deficit, encouraging young adults to join
186 the industry.

187 **3 Methodology**

188 A mixture of primary and secondary research was used for this study. Saul McLeod
189 (2017) describes qualitative research as data collected through participant observation
190 and interviews. Therefore within this study interviews were completed consisting of
191 both closed and open questions, enabling the interviewer to extract as much
192 information from the participants as possible. The participants for this study were all
193 students in Universities studying towards their degree in construction related aspects,
194 doing Bachelor of Science (BSc), Master of Science (MSc) and Doctor of Philosophy
195 (Phd) courses containing 6 males and 6 females. This enables the researcher to gain
196 experienced views from both genders and students who are studying different levels
197 of education. Each interview took up to 40 minutes. The questions during the
198 interview were aimed to gain a brief idea of the participant's general knowledge and
199 experience within the built environment and to understand the participants' perception
200 of women in construction. To help find further information about the skills shortages
201 within the construction industry, journals from construction bodies such as the CIOB,
202 the RICS and the CITB, Government and ONS documents have been identified and
203 studies to ensure that research and data has been maximised enabling a full research
204 study has been completed. By using the information gained throughout the literature
205 review and the interviews will enable the researcher to complete the research
206 objectives and conclude the study with a solution to this issue.

207 4 Results and Analysis

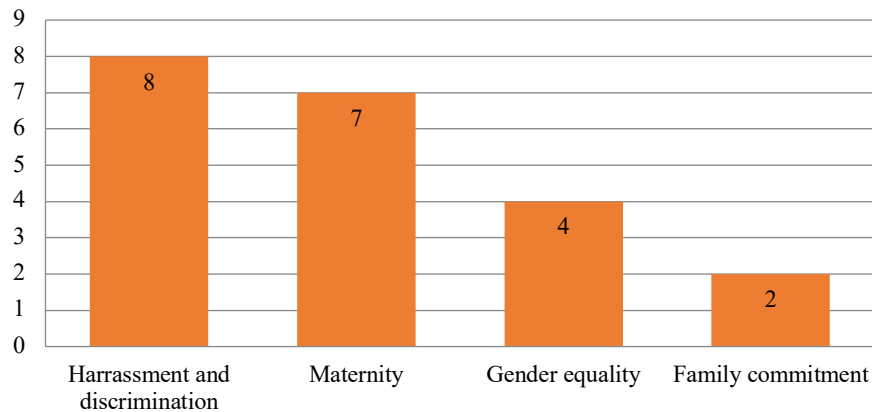
208 This section summarises the data collected, enabling the researcher to depict and
 209 analyse the information provided. Twelve interviews were successfully completed
 210 with participants whom were studying towards construction related degrees.

211 The first question that was asked, was ‘What did the students feel are the main
 212 challenges to women in the construction industry?’ Table 1 displays the results that
 213 students felt discrimination and harassment was the highest challenge to women
 214 followed by the stereotype of society. This perspective was the view of both genders
 215 combined and individually, however the males also felt the stereotype of the industry
 216 by the public was a deterrent to females. Males did however have the opposite view to
 217 females about gender equality and awareness of the industry.

218 **Table 1.** Challenges women face within the construction industry

Challenges	Combined ranking	Male Ranking	Female Ranking
Gaps in Gender Equality	8%	0%	17%
Society’s Perspective/Stereotype	25%	33%	17%
Lack of Awareness in Opportunities	8%	0%	17%
Discrimination and Harassment	42%	50%	33%
Family Commitments	17%	17%	17%

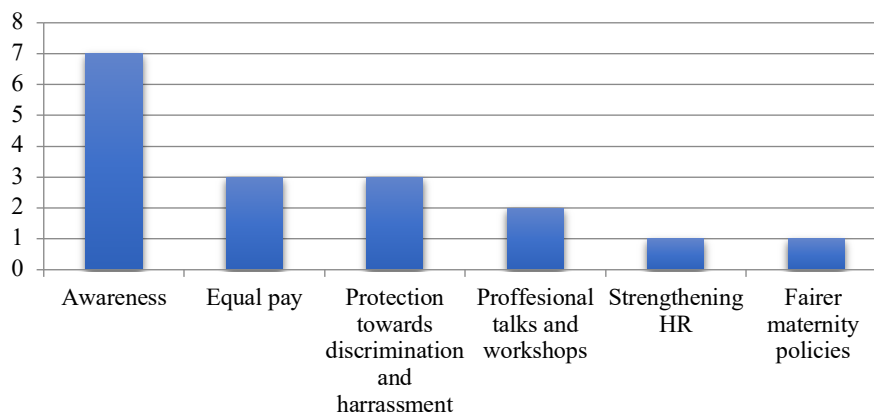
219 The participants were then asked a series of open ended questions, requesting their
 220 opinion on what they thought females can bring to the construction industry. The first
 221 question was how did the participants feel women could benefit the construction
 222 industry? Some of the most common answers were greater diversity, new ideas, a
 223 different perspective and a solution to the skills shortage. The following question
 224 asked the 12 participants what motivated the students to enrol on a construction
 225 related course. 25% of the students explained that they enrolled due to other family
 226 members working in the construction industry, other answers included that the
 227 construction industry is a popular industry in their homeland and because some of the
 228 participants were good with numbers they studied quantity surveying and commercial
 229 courses that complemented the academic ability. The next question asked the
 230 participants why they felt that women were less likely to be employed within the
 231 construction industry. Figure 1 displays the answers that have been categorised,
 232 explaining that discrimination and harassment was the answer offered most
 233 commonly, however the participants also felt that that females taking maternity leave
 234 was also a big factor.



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Fig. 1. Factors those are less favorable for women.

237 The participants were then asked a series of closed questions that were specific to
238 women in construction. The first question was have the participants seen any
239 advertisement toward women in construction. 67% of the participants answered yes,
240 and then the participants were asked if they knew any women working in
241 construction. 75% of the participants said yes to this question. This suggests that the
242 construction industry is attempting to promote itself to women. 92% also felt that the
243 public's perception of the sector feel that it is a male dominated industry and 100% of
244 the students felt that the awareness of the construction industry needs to be taught to
245 people at a young age. Consequently, the participants were then asked how they felt
246 that women could be further encouraged to join the construction industry.



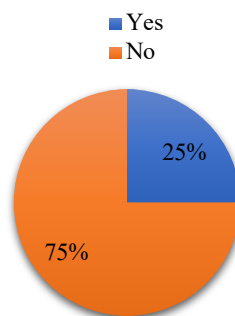
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Fig. 2. Factors that encourage women to join the construction industry

Figure 2 shows that greater awareness of the industry takes precedence over all of the other suggestions to get more women involved, as 7 of the participants suggested this

251 compared to only 3 participants feeling that further support towards equal pay and
 252 protection against discrimination is required.

253 Figure 3 displays the students understanding of Athena SWAN and WISE is poor
 254 as only 25% feel that they have a good understanding of it. Therefore this shows that
 255 academic sector is not teaching or expanding their support of Athena SWAN and the
 256 aims academia are working towards.



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Fig. 3. Students' knowledge of Athena SWAN and WISE

259 **5 Discussion**

260 The skills shortage is affecting the construction industry in many ways, but most
 261 significantly the UK's housing shortage, aging workforce, rising salary costs and the
 262 UK's construction programme to build the required properties. One of the main items
 263 that are being reviewed is the difference between males and females working within
 264 the construction industry. ONS (2018) explain that only 13% of construction
 265 employees are female. There are many issues that have been identified that explain
 266 the reasons for this including discrimination and harassment, equality, awareness,
 267 family commitments, maternity and diversity.

268 RG Group (2017) claim that women will not join the construction industry due the
 269 stereotypes that exist, explaining that females feel inferior to men in a male
 270 dominated industry and therefore are often drawn to joining other sectors. This proves
 271 that the construction industry is poorly marketed as it has been described as low
 272 status, dirty and badly paid (CIOB, 2014). This is supported by 75% of the
 273 participants in this study agreeing that harassment and discrimination is a huge factor
 274 stopping females joining the industry. However, having been identified by industry
 275 professional Matthew Goff (2019), Director of UK operations at Actavo Building
 276 Solutions, that there is pay inequality issues with males being paid an extra 45.5%,
 277 consequently 25% of students agreed this is an issue that needs to be resolved. 10
 278 participants confirmed family commitment and 2 participants further confirming
 279 maternity legislation as issues for females joining the sector. Meg Munn (2014)
 280 confirmed this view explaining that females do get judged, especially if they get

281 married or have children. Meg Munn, also confirmed that this is indirect
282 discrimination and women struggled to cope with the pressures of both work and
283 family commitments due to a lack of support from these companies. Although there is
284 not much that can persuade women to change their internal perception of how they
285 feel about coming back to work when starting a family, businesses can do more to
286 show support to working mothers.

287 The research completed via the literature review and the interviews with current
288 students coincide. Matthew Goff (2019), Director of UK operations at Actavo
289 Building Solutions, firstly admitted that including females within the workforce
290 enables greater diversity and will help achieve greater results across a business. This
291 is supported by many of the students who were interviewed explained that females
292 joining the industry would bring greater diversity, new ideas, a different perspective
293 and a method to reducing the skills shortage. The CITB (2018) also confirmed that by
294 offering females advice, training, mentoring, work placements and jobs it will offer
295 the construction industry a greater skill set and the opportunity for organisations to
296 retain their staff reducing the staff turnover and a reduction in recruitment costs but
297 also the potential to win further work.

298 The construction industry is attempting to improve the awareness of the
299 construction industry for both males and females. 58% of participants suggested that
300 greater awareness needs to be improved within the construction industry to enable
301 further people to join the sector. The University of Wolverhampton is supporting the
302 Black Country Children's University, encouraging young adults to join the industry.
303 Balfour Beatty are one of many companies encouraging women in construction
304 through their 'Women in Construction and Engineering' awards, and therefore expect
305 women's construction participation to increase by 25% by 2020. The participants also
306 explained that workshops, work experience and construction talks would enable
307 prospective construction workers to gain a greater understanding of the sector. The
308 Construction Youth Trust (CYT) (2017) promotes short courses that are designed to
309 help 18-30 year olds get back into employment, supported by Meg Munn (2014)
310 confirmed that contractors should offer work experience to females, and explaining
311 that women should contact contractors to gain a greater understanding of the industry
312 and feminist Kimberle Crenshaw (2016) claims that there must be support against
313 sectionality.

314 The students were asked if they had seen any advertisement promoting to the
315 industry to females. 66.66% answered yes, however other research suggests the
316 construction industry is low status, dirty and badly paid. Therefore this shows effort
317 needs to be made on specific campaigns enabling females to learn more about the
318 industry giving them the opportunity to display the talents they have and having a
319 major input in to the construction sector. Jon Henley of The Guardian (2018)
320 announced the Icelandic Government have now made it a legal requirement for both
321 males and females to receive equal pay. The UK government must now reflect upon
322 the legal changes within Iceland and support those changes reviewing the pay equality
323 UK legislation. The UK Government should also review the Swedish policies
324 surrounding the maternity policy as Libby Kane of Business Insider (2018) revealed
325 that Sweden's maternity and paternity policy is one of the best in the world as males

326 and females are allowed to share 480 days earning at least 80% of their salaries. By
327 supporting these policies, it will encourage females to join the construction industry
328 by reducing the discrimination.

329 **6 Conclusion**

330 The scope of this study was to review what the limitations are that stop women
331 joining the construction industry, but also raise awareness of the benefits of the
332 industry from a student's perception and therefore a literature review of the current
333 market research was completed to find out what the impact of the skills shortage was,
334 the obstructions stopping females joining the industry and how women are a benefit to
335 the sector. Therefore using this information enabled qualitative research to be
336 completed, however one limitation was that only 12 students were interviewed and
337 interviews could have been conducted with women working in the industry to gain an
338 insight of their experiences.

339 The results from the collected data show that the construction industry displays
340 limitations that are deterring women from the industry such as harassment and
341 discrimination, awareness, equality, and family commitment. However research also
342 suggests that females also have many attributes that could benefit the construction
343 sector such as bringing greater diversity, new ideas, a different perspective and a
344 method to solve the skills shortage. There are many initiatives that are attempting to
345 solve the skills shortage such as teaching students from a school age, an idea that the
346 participants promoted and are supported by the University of Wolverhampton. There
347 are also other organisations such as the Construction Youth Trust, Athena SWAN,
348 Princes Trust and the Lighthouse Club that promote the industry to the public and
349 construction bodies such as the CIOB, CITB and the RICS whom develop and
350 promote programmes. The industry also needs to prove that it has removed the poor
351 stigmas, by removing the harassment and discrimination issues that surround the
352 sector. This must be supported by a culture change, teaching young adults that the
353 sector supports both genders, enabling females to have raise families as well as the
354 opportunity to enhance their career. Research also suggests that there other nations
355 support legislation such as pay equality and maternity leave and pay and therefore it
356 is suggested the UK government should review their policies. Large construction
357 contractors similar to Balfour Beatty must publicly challenge themselves to improve
358 the employment conditions females are working in and be supported by improved
359 government legislation and construction bodies such as the CIOB, CITB and the
360 RICS to remarket the sector teaching young adults from a school age about what the
361 construction industry involves enabling males and females to have a greater input into
362 the sector.

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