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Article

# Evaluating Strategies to Increase the Number of Women Working in the UK Surveying Profession

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**Abstract:** The surveying profession in the UK construction industry continues to be blighted by a skills shortage, and this continues to constrict growth. Therefore, it is suggested that this should make it easier for women and other underrepresented groups to be employed in the construction industry. While this is the case, barriers to entry have been well researched. This study aimed to identify what methods have been previously successful at increasing female engagement within the surveying profession in the UK. This study followed a mixed-method, complementary approach, combining quantitative and qualitative questions in an online questionnaire, which was distributed via social media (LinkedIn) and the researchers' contacts, and achieved 44 responses over a period of six weeks. The target population was female UK residents employed in surveying roles. Quantitative data on both awareness and opinion of the methods used during previous initiatives to engage women with surveying underwent reliability analysis, descriptive statistical analysis, and a Spearman's rank order correlation to assess the relationship between time in industry and opinion on the efficacy of the methods used in each initiative; however, no statistically significant relationship was found. To better understand the opinions of women already in the industry, the qualitative data underwent thematic analysis via inductive coding, the results of which then underwent descriptive statistical analysis. The study found a broad lack of awareness of previous initiatives, with most respondents having little or no awareness of the five initiatives examined. However, evidence suggested there was general support for the methods used in those initiatives, such as intervention at school age, increasing the visibility of women in surveying roles, and changes to workplace culture. There was no statistically significant link between time in industry and opinion on the efficacy of each initiative. Key themes included concerns regarding the implementation of current initiatives, and enthusiasm for intervention at school age as the best method to engage more women with the surveying profession. The findings have implications for both practice and future research. First, professional institutions, such as the Royal Institution of Chartered Surveyors, should be aware of the limitations of the initiatives they put in place to encourage women into their profession. Second, the results have an impact on other professions. However, a cross-comparative study that examines initiatives by other professional institutions would be useful.

**Keywords:** gender equality; women in construction; employment; construction skills; skills shortage

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## 1. Introduction

The construction skills shortage in the UK is widely acknowledged [1]. In January 2020, the Royal Institution of Chartered Surveyors (RICS) stated that the UK skills shortage was at its highest point since 2007. The reasons for this being an ageing workforce, a lack of education, poor prospects, and gender discrimination [2] Simultaneously, the UK government has set an ambitious target of building 300,000 new houses every year to address the housing shortage, meaning that construction industry professionals, such as surveyors, are in increasing demand [3]. It is estimated that the industry will require an additional 224,900 recruits by 2027 to replace the current workforce and meet additional

demand, with growth predicted across all regions of the UK. The industry must recruit from underrepresented groups to meet these demands [1].

Women only comprise 17% of global RICS membership [2], and in the UK, the figure is 31%—fairly low figures considering 49.5% of the world's population is female [4].

The percentage of women in the surveying profession has increased from 13% to 17% since 2009 [5], providing an indication that the female population presents an opportunity to tackle the skills shortage. There have been several efforts to increase the number of women in surveying professions, although these generally do not appear to be guided by labour market theory. However, the best method for increasing women's engagement with surveying careers is yet to be defined. Therefore, the aim of this study was to identify the successful methods employed to increase the number of females employed in surveying roles in the UK construction industry.

## 2. Literature Review

### 2.1. Gender Diversity

The commercial benefits of gender diversity for businesses have been well documented: those with more diversity in their teams are more likely to have better than average profitability [6,7]. Furthermore, the construction industry is facing labour shortages, skills shortages, and an ageing workforce. The Construction Industry Training Board (CITB) predicts that an additional 224,900 workers must be recruited to the sector in the UK by 2027 to meet output forecasts [1]. To achieve this, the industry must improve its recruitment from underrepresented groups. Current estimates for women as a percentage of the construction industry workforce are 15–16%, compared with 51% of the overall UK [1,8].

The theory of labour market segmentation and the theory of the dual labour market are given as the primary explanation for gender differences in occupational attainment and pay. These theories posit that the labour market can be separated into two distinct sectors, both of which are characterised by different features. The primary sector is characterised by higher wages, greater job stability, and better conditions for the workforce; however, roles require unfailing availability and geographical mobility, and career pathways are linear with limited accommodation of career breaks. The secondary sector lacks the desirable attributes of the primary sector, as it is characterised by low wages, low job stability, and poor working conditions; however, roles offer greater flexibility and lower levels of skill and training are required to attain them [9,10]. The demands of the primary sector characteristics are often incompatible with the more extensive involvement of women in domestic work outside of the labour market, known as the double burden. Thus, a barrier exists for women entering this sector. On average, European women contribute twice as much time daily to domestic tasks than men [6]. Another key element of the theory of labour market segmentation is the limited mobility between the segments, resulting in differences that persist for the individual beyond the first entry [11].

A further theory concerns gender differences in self-representation and job value priority and their effect on career decision-making. While studies have shown conflicting results regarding extrinsic rewards, several studies have shown that women persistently value intrinsic, altruistic, and social rewards more highly, placing greater value on working relationships, whereas men value salary, status, and prestige [9,12]. Considering the conflicting characteristics of the primary and secondary sectors discussed in the dual labour market theory, this finding may provide some explanation as to why women are less attracted to primary sector jobs. Low job satisfaction due to differing values could also contribute to the high attrition rates of women observed in the construction industry [1]. Furthermore, women are less likely to rate their performance as better than that of their peers, which may result in missed promotion opportunities. The masculine model for upward mobility requires individuals to assert their ability and gain recognition in the workplace for promotion [7]. Combined with covert biases which are intrinsic

to traditional organisational practices, the differences in self-representation and value prioritising between genders may therefore prevent the career progression of women [13].

A combination of the labour market situation and suggested gender differences in attitude could explain the differences observed in career ambition between women and men, which are then compounded by the lack of visible role models or mentorship opportunities for women in the workforce [6]. Women are more likely to experience a lack of mentoring for career development compared to men; however, women also find it harder to access mentoring opportunities [14]. Furthermore, more women identify a lack of visible role models as a barrier to their personal development [15].

## 2.2. Gender Equality and the Construction Industry

Gender equality is a global issue and one of the United Nations' (UN) sustainable development goals [16]. The UN Development Programme 'Gender Social Norms Index' reveals the extent of gender bias within the global population, with data from 2020 showing that 90% of people hold a negative bias against women, with around half of the respondents feeling that men make for better political leaders and over 40% feeling that men make for better business executives [17]. This bias has not recently emerged. The UN General Assembly first established the Commission on the Status of Women in 1946 and subsequently adopted the 'Convention on the Elimination of All Forms of Discrimination against Women' (CEDAW) in 1979. The CEDAW set out an agenda for achieving equality, which it entered into force as an international treaty in 1981, and by 1989, almost 100 nations had agreed to be bound by its provisions for tackling gender inequality [18]. The year 2020 also marked the 25th anniversary of the Beijing Declaration and Platform for Action: a resolution adopted by the UN in 1995 to promulgate a set of principles concerning gender equality [19]. The purpose of the declaration was to address equality and development for women everywhere. However, despite these longstanding global commitments, a 2015 review of progress found that advancement had been unacceptably slow, with some areas in stagnation or even regression. The report condemned the underwhelming actions of world leaders in pursuing their commitments and estimated that, at the current pace, it would take 81 years to reach global gender parity [20].

In the UK, the situation for women is better than it is for those in other countries as women have had some form of voting rights for over a century and voting equality since 1928, and women have equal legal rights to men [3,21]. Guided by the CEDAW and the Beijing Declaration, the UK has appointed a Minister for Women and Equalities since 1997 and is tackling gender inequality under the Equality Act 2010 [21,22]. In a 2020 progress review, the UK Government claimed to have progressed by introducing measures to support women's participation in the workplace and leadership positions, including enabling flexible working for women [21]. In the European Commission's 2014 report entitled 'Gender Equality in the Workforce', the UK was the top-ranked nation regarding flexible working for parents [23].

At face value, the statistics seem impressive, as the percentage of women in the working population has increased from 37% to 46% since 1971. However, the reforms are focused predominantly on flexible working provisions and improved childcare for women with children. They do little to approach other barriers to women in the workplace or the globally pervasive gender pay gap issue [21]. Furthermore, data demonstrating that legislative changes are responsible are insufficient. It is possible that the increase is due to cultural changes since 1971, increases in double-income and single adult households, and more women attaining higher education [24].

Worryingly, the attitude of the UK population towards gender inequality is one of decreasing concern; there is a cultural bias towards technical progress (i.e., legislation), and many believe the fight for gender equality is already won. In a 2021 study, 23% of those surveyed in the UK rated gender inequality as a matter of high concern, in contrast with 33% of those from other European countries. Additionally, countries that ranked higher on the UN SDG gender index than the UK rated gender inequality as an issue of higher

concern; for example, Sweden ranks fourth globally for gender equality on the SDG index and 37% of Swedes said gender equality was an issue of high concern, compared to the UK's ranking of 21st and 23%, respectively [25,26]. Perhaps relative progress, in contrast with other countries, has generated laxity towards gender inequality in the UK. However, being the fifth largest economy in the world and ranking only 21st for gender equality suggests the UK has room for improvement [25,27].

Turning to the construction industry, the existence of gender inequality is evidenced by the significant pay gaps for women in senior roles. This could be a contributing factor to the lack of women in senior roles, and the situation becomes worse for women after parenthood; women who change to part-time roles experience higher hourly pay gaps, and many seek a lower-level role in return for increased flexibility [24,28]. Reducing the pay gap for women, particularly women with families, could work towards improving gender equality for women in senior-level roles.

The conversation around tackling gender inequality has been gaining traction in the UK construction industry for years. The first research mentioning gender equality in construction appeared in 1970 in the form of a study defining the importance of universities in minority group employment [29]. The Sex Discrimination Act was only introduced in 1975, which made gender discrimination for job selection unlawful (HM Government, 1975). From the 1980s onwards, the movement to increase female participation in construction roles gained pace, and since then, several studies have outlined the barriers inhibiting women in the UK construction industry and have suggested techniques to overcome them. Notably, the Smith Institute study on women in construction demonstrated stubbornly low numbers of women in employment, widespread sexism, and a worse-than-average gender pay gap [30]. Additionally, the 2015 review of women in the UK construction workforce by Clark et al. (2015), which discussed sexism and an antiquated perception of women as cheap, 'back-up' labour persisting from the world war era, and Worrall's works on barriers, suggested that the primary barriers for women younger than 36 are 'attitudes, behaviours and perceptions', whereas, for women older than 36, the most significant barrier is 'inflexible working practices' which affect work-life balance [31,32]. Significant gender pay gaps at senior levels have also been identified as a contributing factor to the lack of women in senior roles, a situation which worsens for women after parenthood, as women who change to part-time roles experience wider hourly pay gaps, and many are forced to seek a lower-level role in return for increased flexibility [24,28]. These findings are consistent with the theory discussed earlier, which posited that women in construction are disadvantaged by a pervasive organisational bias that prioritises male characteristics, and in later life, struggle with the double burden when working in the primary sector. Suggestions for solutions included soft skills training for women to help them overcome sexist attitudes and the unique organisational culture of the industry, support networks and mentors to build confidence and reduce isolation, and raising awareness of careers opportunities among young people, parents, and teachers [30–33]. None of these studies considered intrinsic workplace bias, and despite these efforts, a study published in 2021 revealed that women still only constitute 15% of the UK construction workforce [34].

There has been some research regarding women in the surveying industry specifically. Greed [35] was one of the first to study women's participation in surveying careers and collected information regarding the environment for women in surveying from female surveyors in practice. Her findings were damning. They described a feeling of hopelessness, as women felt they could not achieve better facilities and flexibility in their male-dominated workplaces without more women present, but also felt that the same lack of flexibility and facilities was discouraging women from engaging. The findings also suggested that improvements could be made through better visibility of women in surveying and education of the younger generations. In two subsequent studies, Greed identified several barriers to women following successful careers in surveying: a lack of opportunity for vertical progression, the male-dominated culture pushing women into 'helping' or 'social' roles, and experiences in society during childhood which discourage women from working in the

construction industry [36–38]. Despite these in-depth studies of women in the surveying industry, Greed did not provide any form of action plan or suggest techniques for engaging women with surveying.

Ellison [39] focused on examining the experience of female chartered surveyors in senior management positions, with the aim of understanding the chronic underrepresentation of females in positions at this level, and identified similar issues, such as the lack of visible female role models in senior positions, while also identifying a further barrier in the level of personal and financial commitment required from an individual to obtain such roles. Ellison identified that there were differences in the career progression of males and females in the same role by the age of 35. Interestingly, Ellison accepted responses from males, who rated the identified barriers as much less significant than the female respondents and showed minimal recognition of gender pay discrepancies. As in Greed's studies, Ellison made no effort to suggest techniques for overcoming the barriers she had identified.

A study by Brandenberger [40] highlights the underrepresentation of females in professional mapping and land surveying roles finding that the percentage of female employees in technician-level roles was 23% and just 4% in professional roles. Turrell et al. (2002) [28] explored barriers to entry and the progress of females in surveying roles and found that the primary barrier was a lack of awareness of the profession, whereas, at later career stages, inflexible working arrangements and the attitudes of male colleagues slowed the progress and retention of women. Greater liaison between schools and surveyors was suggested to address the lack of awareness, but little was suggested to improve retention at later career stages. Interestingly, the RICS was identified as an organisation that could do better. In its latest gender pay gap report, the RICS boasted a reduction in the gender pay gap for employees, down to 19.7% from 30% the previous year [28,41]. Perhaps addressing this gap could better the retention of women in later career stages [24].

### *2.3. Improving Female Participation in Surveying Professions*

It has been shown that, although a multitude of research identifying and describing the barriers to women's engagement within the surveying profession exists, very few of these studies have been able to propose any solutions based on their findings. Despite this, several programmes to increase female engagement exist and are discussed below. The RICS 'Defining our Future' initiative is a consultation programme on key issues for RICS members which aims to shape how RICS champions surveying professions [42]. Following consultation in early 2021, 'Diversity and Inclusion' was introduced as an assessment characteristic for accreditation, and applicants must now demonstrate evidence of promoting diversity. It is hoped that including this characteristic will create positive change by altering the attitudes of new recruits towards minority groups such as women [43]. This technique relies on a slow cultural shift, increasing awareness of diversity issues through educating the younger generations and encouraging action from new entrants, as suggested by Greed [36,37]. As suggested by [38], it may also highlight the issues faced by females and subsequently improve male attitudes towards female peers. Although RICS did not consider labour market theory within their proposals, this method does provide an attempt to increase mobility between segments of the labour market and to counter industry bias towards male characteristics via individual entrants. However, this change was only introduced in February 2021, and data regarding its impact are not yet available.

A further RICS programme named the 'Inspire Schools' programme was aimed primarily at children aged between 13–15 years. The aims of the programme are to inspire young people to consider careers in construction and to address the male-dominated image of construction. The programme features workshops, delivered by educational specialists and RICS champions, to provide a taster of the profession at this key decision age. Subsequently, built environment qualifications have been developed and trialled at one school, following which every student involved chose to pursue a career in construction [44]. This

programme aimed to address the lack of awareness surrounding surveying careers, as identified by [28], but could also change the perception of the industry and improve the attitude of male entrants towards minority groups. Although the lack of awareness is an issue, increased awareness will have little effect without wider industry changes which tackle the organisational biases identified earlier. Again, this programme was launched in 2020 and involves the participation of young people, so it is likely to experience a delayed impact. Therefore, data allowing us to determine its success are yet to be produced.

A final RICS scheme, aimed at encouraging businesses to promote diversity in the workforce, came in the form of the 'Inclusive Employer Quality Mark' (IEQM), launched in 2015—a voluntary scheme through which organisations could achieve a quality mark for performance against inclusivity criteria [45]. To achieve a pass, an organisation had to demonstrate commitment to improving diversity, recruit from underrepresented groups, create an inclusive workplace environment, and offer development for all workforce members. The aim was to encourage cultural change within the industry. On the surface, this RICS initiative seems to present the most potential of the three for reducing the effects of labour market segmentation and organisational bias towards male characteristics. However, at the time of writing, only 183 companies have signed up, representing just 300,000 of the industry's 2.9 million employees. The IEQM was due to relaunch in spring 2021 but has yet to do so [46]. The IEQM is the largest step that the RICS has taken towards initiating cultural change within the industry, but it seems that this initiative is not yet common practice within organisations. Although feedback was collected from those organisations who had signed up in 2016, which revealed that female representation stood at 13% of the workforce after the first year, no impact data have been collected to allow for an evaluation of progress [47].

The 'Property Needs You' initiative, run by the Changing the Face of Property Group, is an initiative which has been running since 2012 and aims to encourage young people towards careers in the property sector. The project missions are to engage young people, inform careers advisors, and challenge industry stereotypes through a variety of online and school-based events, alongside an informational website showing diverse role models. It is an independent scheme, supported by several large firms who provide resources, a significant benefit over the RICS-led initiatives. Again, this program is focused on increasing awareness, something which both Greed [36] and Turrell identified as lacking [28]. However, this scheme does little to support women already in the industry.

The 'Women in Surveying' initiative, led by surveyor Marion Ellis, is a community group with a focus on peer support for female surveyors. Primarily based on social media, the group now has over 560 members and provides a network for women at all stages of their surveying careers [47]. Although it is a passive programme, Marion is improving the accessibility and approachability of surveying for women by speaking openly about her experiences. In addition, the group provides a network of female surveyors who can provide advice or professional opinions in a relaxed environment. This initiative does provide visible role models and opportunities for mentorship, the lack of which have been identified as barriers to women's progression. Unfortunately, the relaxed format precludes the acquisition of outcome data.

While the state of gender equality in the UK would appear to be better than that reported globally, it would seem that progress has become stagnant after reaching a certain, morally acceptable level. Where improvements to gender equality in many countries will rely on war resolution or cultural shifts, the UK may have reached a point whereby any further progress requires proactive steps from the government and industry—fairly expensive options. Therefore, progress is only likely to occur through legislative persuasion. The gender pay gap in the UK is evidence of the bias against women in senior or professional roles; 40% of respondents to the UNDP Gender Social Norms Index study believed that men make better business executives, and it is women at this level in the UK who suffer the worst pay gap. The UK government has attempted to address this issue with legislation; however, industry efforts are lacking, and significant improvement can still be made. As many

working in the construction industry are self-employed, pay gap information is poorly reported and difficult to obtain. Perhaps this, in addition to the perspective of construction as a male-dominated profession, has allowed the industry to ignore the equality issues described in the literature.

While there are many initiatives in place to engage new entrants with the surveying profession, currently, little has been done to address the organisational issues which prevent women from balancing work and domestic work or from developing their careers, which would improve the retention of women in the surveying profession. Key themes identified in this review include a lack of effort from the industry to effect change, a pervasive, male-centred environment in the industry, and women who feel that they are unable to create change in their industry. The RICS states that they are leading the sector in promoting diversity [48], although data quantifying this are scarce. A large part of their marketing campaign is centred around their sponsorship of the Women of the Future Awards [48]. While this provides a fantastic news story, it does nothing to approach the issues identified by women in practice.

However, not everything is negative. The latest literature concerning women in the surveying profession was published in 2006 [37], and similarly, the latest concerning the construction industry was published in 2015 [33]. Meanwhile, large businesses in the UK have recently been recognised for their progress in improving gender equality. For example, Mitie, Wilmott Dixon, and Sodexo have been recognised in The Times' 'Top 50 Places for Women to Work' list in 2020 and 2021; the ISS received an award from the Rockefeller Foundation in 2020 for its investment in diversity and inclusion; and the Wates Group has published yearly improvements to their proportion of women employees and gender pay gap since 2018 [49–53]. It could be the case that the literature has fallen behind the progress of industry and that the situation for women is far better than what is suggested by research. This is another reason for this study, to gain an updated perspective on women in the surveying industry in 2022.

This review of the literature demonstrates that programmes aimed at improving gender equality are failing to be informed by theory and that there is little post-project evaluation carried out on programmes aimed at improving gender equality. Furthermore, although studies describing the general experiences of women in the labour market exist, there has been little research into the views of those working in the surveying industry specifically. The aim of this study is to evaluate the awareness of the various initiatives discussed above, to understand perspectives on the methods employed, and to identify practical solutions to the issues identified from women currently working in the industry.

### 3. Methodology

The study adopted an embedded mixed-method design which used one data set (qualitative) in a secondary role to the primary data set (quantitative) within one phase. The advantage of this method is that the researcher is able to gain a comprehensive understanding of the scenario, without the significant time commitment required to evaluate two data sets, as is required in other mixed methodologies [54]. The literature has highlighted that little evaluative research has taken place following previous attempts to encourage female participation in surveying careers in the UK. The embedded design represented a robust methodological approach to help explore this area. For this study, an online questionnaire was selected as the method for data collection in order to maintain consistency with previous studies within this research area, most of which used questionnaires. This was then followed up by interviews to collect further qualitative data [28,36,37,39]. From a research perspective, conducting interviews may have benefited this study by providing more detailed insight and higher content validity; however, this additional data collection was disregarded due to practical reasons. This project was undertaken during the COVID-19 pandemic, which posed restrictions on in-person interviews or focus groups. Using an embedded mixed-method questionnaire with quantitative, closed questions and open-ended, qualitative questions allowed the researcher to gain detailed insight without



requiring further data collection. Finally, the questionnaire could be shared via online platforms, a method which was not affected by the limitations of the pandemic [55].

Data were collected through voluntary response sampling using an online questionnaire hosted on the website 'Easy Quest'. The target population was UK-based females currently employed in surveying roles or studying towards surveying-related qualifications. The first section of the questionnaire featured qualification questions to determine whether these target characteristics had been met before the respondent continued with the survey. The questionnaire then featured a combination of open and closed-ended questions, including Likert scales. The questionnaire was therefore made openly available to voluntary participants for six weeks, and the survey link was shared via the researcher's personal and professional contacts via LinkedIn and online peer support groups for female surveyors, which the researcher was a member of. A total of 44 responses were received during the sample period, a higher response rate compared to those seen in similar studies, with some receiving as few as 20 responses from female surveyors [28].

Quantitative data concerning time spent in the industry, awareness of the various initiatives identified during the literature review, and opinion on the methods employed within these programmes were collected. Likert scales in a negative–positive continuum with five intensity levels were used to collect ordinal data. Likert scale-type questions were preferable to binary questions for this study as the scaled responses provided a more detailed insight into respondent opinions than a 'yes' or 'no' answer [56]. While binary questions may show greater reliability, Likert scales provide better construct validity in practice [56,57]. The limitations of this design were that Likert scale responses are subject to individual interpretation, and such scales are susceptible to biases such as social desirability bias and acquiescent responding [57]. Therefore, the questionnaire was designed to include both positively and negatively framed questions to reduce response bias and increase validity [57,58]. A further limitation is that closed-ended questions restrict participant choice; however, the effects of this were reduced by using scales rather than binary questions [56].

Complementary qualitative data were collected using open-ended questions which asked participants to expand on their answers given to the Likert-scale questions, and these were embedded within the quantitative questionnaire with the aim of providing a greater insight and deeper understanding of the factors which affect the engagement and retention of women within surveying careers [54,59,60]. The limitations of qualitative questions are that they require more time and effort from the participant to respond; therefore, they may suffer lower response rates than Likert scale questions [61]. Furthermore, the analysis of the qualitative data obtained from these questions is far more time-consuming than the analysis of quantitative data. Nevertheless, these were included to improve the content validity of the study [62].

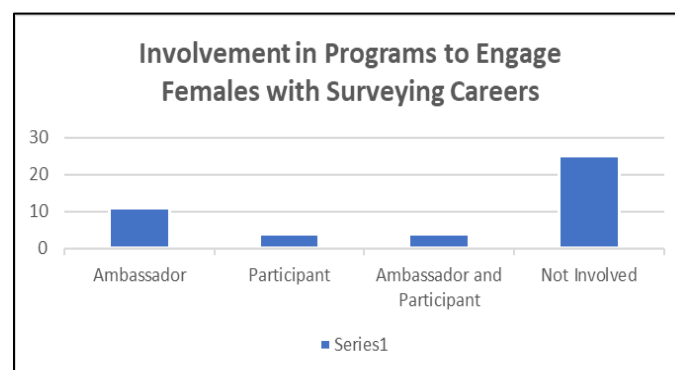
## 4. Results

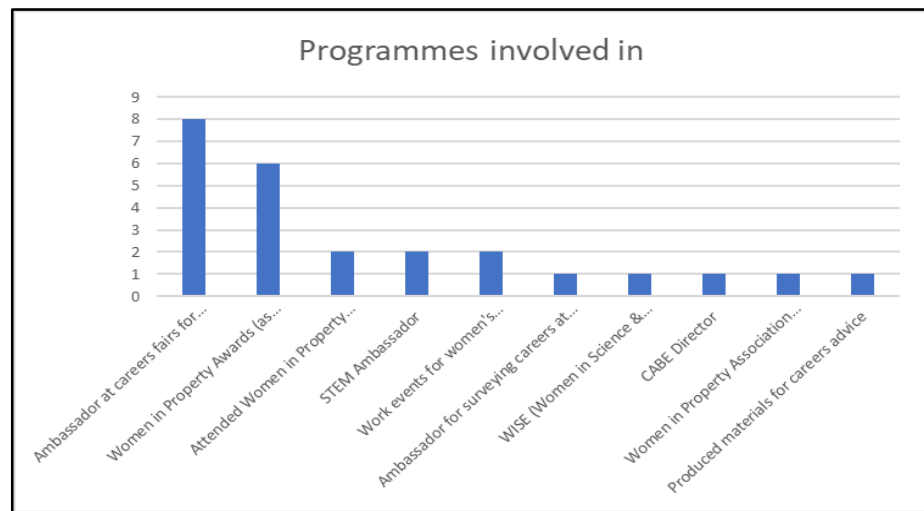
### 4.1. Participant Information

Table 1 and Figures 1 and 2 provide the background participant information from respondents. The target population was females who were permanent UK residents, currently employed within the surveying profession, or studying towards a surveying-related qualification. To ensure participants met the criteria, the survey included qualification questions regarding their place of residence, gender identity, and job role prior to accessing the questionnaire. Responses from participants who did not meet the qualifying criteria were removed from the results.

**Table 1.** Participant Information.

Information	No.	Percentage
<b>Employment Status</b>		
Employed Full Time	34	77%
Employed Part Time	2	5%
Employed Full Time & Part Time	6	14%
<b>Education</b>		
Self Employed	1	2%
Full Time Education	1	2%
Total	44	100%
<b>Time in Industry (years)</b>		
0–5	19	43%
6–10	14	32%
11–15	3	7%
16–20	5	11%
21–25	0	0%
26–30	3	7%
30+	0	0%
Total	44	100%
<b>Role</b>		
Building surveyor/Construction Surveyor	4	9%
Commercial Surveyor	1	2%
Contract Manager	1	2%
Cost/Commercial Manager	2	5%
Estimator	1	2%
Planning & Development Surveyor	4	9%
Project Manager, Planning & Development Surveyor	1	2%
Quantity Surveyor	19	43%
Residential Surveyor/Valuation Surveyor	7	16%
Rural Surveyor	3	7%
Stock Condition Surveyor	1	2%
Total	44	100%
<b>RICS Membership Status</b>		
MRICS	17	39%
AssocRICS	1	2%
APC Candidate	2	5%
Student	13	30%
Non-Member	11	25%
Total	44	100%

**Figure 1.** Participants' involvement in programs to engage females in surveying careers.



**Figure 2.** Programmes to engage females in surveying careers.

4.2. Reliability of Quantitative Data

Voluntary sampling is likely to introduce unintentional research bias, as certain individuals are more likely to respond to a survey than others. To counteract this, the researcher distributed the survey to a wide range of organisations to capture an accurate representation of the target population [63]. Furthermore, survey questions can be susceptible to ambiguity and are subject to interpretation by the participant. One method of addressing this limitation is for the researcher to administer the questionnaires in person; however, this was not practical for this study due to the COVID-19 pandemic restrictions in place at the time [64,65]. Instead, a trial was administered as the questionnaire was administered to five female professionals to ensure that the questions were clear and appropriately suited to the survey objectives [65].

Cronbach’s Alpha was used to determine the internal consistency of the Likert scale questions. A Cronbach Alpha score of >0.70 is generally deemed to be adequate. However, for scales with a small number of items (10 or less), a score of >0.50 is said to be adequate as higher Alphas are more difficult to obtain [66]. Analysis was undertaken using IBM SPSS Statistics 27 software. The scales for awareness and efficacy obtained an Alpha of 0.689 and 0.675, respectively (see Tables 2 and 3). Given that there were five items included within each scale, the tests can be said to have adequate internal consistency [66].

**Table 2.** Cronbach’s Alpha for Awareness.

NO.	Factors	Cronbach’s Alpha	Cronbach’s Alpha if Item Deleted
1.	Awareness—RICS Defining Futures	0.549	0.589
2.	Awareness—RICS Inspire Schools Program	0.542	0.599
3.	Awareness—RICS IEQM	0.727	0.493
4.	Awareness—‘Property Needs You’ Program	−0.005	0.743
5.	Awareness—‘Women in Surveying’ Initiative	0.371	0.694

**Table 3.** Cronbach’s Alpha for efficacy.

NO.	Factors	Cronbach’s Alpha	Cronbach’s Alpha if Item Deleted
1.	Efficacy—RICS Defining Futures	0.407	0.634
2.	Efficacy—RICS Inspire Schools Program	0.583	0.547
3.	Efficacy—RICS IEQM	0.424	0.626
4.	Efficacy—‘Property Needs You’ Program	0.528	0.602
5.	Efficacy—‘Women in Surveying’ Initiative	0.265	0.696

4.3. Quantitative Data and Results

Quantitative data was analysed using the Statistical Package for the Social Sciences (SPSS for Windows Version 27). SPSS software was chosen for convenience as it was available through the University. Data are presented as the number and percentage of respondents, and results are presented as mean and standard deviation (mean ± SD), including confidence intervals (CI) and mode unless otherwise stated. Table 4 shows the respondents’ view on how well the surveying profession is promoting gender equality. Table 5 presents results reflecting the level of awareness and perceived efficacy of the initiatives designed to encourage women to join the surveying profession provided by professional surveying institutions. Participants were asked to rate the level of awareness and the perceived efficacy on a Likert scale, with 1 representing ‘not at all aware/efficacious and 5 being very familiar/efficacious’.

**Table 4.** How well is RICS promoting gender equality.

How Well Do You Think RICS Is Promoting Gender Equality in the Surveying Industry? (RICS Members Only, 33 of 44 Respondents)					Mean	Standard Deviation	95% Confidence Interval of the Difference		Mode
1 Very Poor	2 Poor	3 As Expected	4 Better than Expected	5 Excellent			Lower	Upper	
4 12.1%	12 36.4%	11 33.3%	5 15.2%	1 3.0%	2.61	0.998	2.25	2.96	2

**Table 5.** Awareness and efficacy of initiatives to engage women with surveying careers.

	Program	Awareness (Likert Scale)					Mean	Standard Deviation	95% Confidence Interval of the Difference		Mode
		1	2	3	4	5			Lower	Upper	
		Not at All Aware	Aware but Know Little about	Aware and Some Understanding	Familiar/Good Understanding	Very familiar/Involved					
Awareness	RICS Defining Futures	18	16	3	6	1	2	1.121	1.66	2.34	1
		40.90%	36.40%	6.80%	13.60%	2.30%					
	RICS Inspire Schools	32	6	3	2	1	1.5	0.976	1.2	1.8	1
		72.70%	13.60%	6.80%	4.60%	2.30%					
	RICS IEQM	25	6	8	4	1	1.86	1.153	1.51	2.21	1
		56.80%	13.60%	18.20%	9.10%	2.30%					
'Property Needs You'	41	2	1	0	0	1.09	0.362	0.98	1.2	1	
	93.20%	4.50%	2.30%	0%	0%						
Women in Surveying	21	5	9	6	3	2.2	1.357	1.79	2.62	1	
	47.70%	11.40%	20.50%	13.60%	6.80%						
Efficacy	RICS Defining Futures	1	5	16	18	4	3.43	0.9	3.16	3.71	4
		2.30%	11.40%	36.40%	40.90%	9.00%					
	RICS Inspire Schools	2	0	2	24	16	4.18	0.896	3.91	4.45	4
		4.50%	0.00%	4.50%	54.60%	36.40%					
	RICS IEQM	1	5	10	24	4	3.57	0.9	3.29	3.84	4
		2.30%	11.40%	22.70%	54.60%	9.00%					
'Property Needs You'	0	0	9	28	7	3.95	0.608	3.77	4.14	4	
	0.00%	0.00%	20.50%	63.60%	15.90%						
Women in Surveying	1	2	5	25	11	3.98	0.876	3.71	4.24	4	
	2.30%	4.50%	11.40%	56.80%	25.00%						

A Spearman's rank order correlation was run to determine the relationship between time in industry and opinion on the efficacy of each initiative. There was a weak, negative correlation between time in industry and the efficacy of the RICS 'Defining Futures' initiative, which was not statistically significant ( $r = -0.290, p = 0.057$ ). There was a weak, negative correlation between time in industry and the efficacy of the RICS 'Inspire Schools' initiative, which was not statistically significant ( $r = -0.149, p = 0.336$ ). There was a weak, negative correlation between time in industry and the efficacy of the RICS IEQM initiative, which was not statistically significant ( $r = -0.129, p = 0.405$ ). There was a weak, negative correlation between time in industry and the efficacy of the 'Property Needs You' initiative, which was not statistically significant ( $r = -0.106, p = 0.493$ ). There was a weak, positive correlation between time in industry and the efficacy of the 'Women in Surveying' initiative, which was not statistically significant ( $r = 0.160, p = 0.918$ ).

#### 4.4. Qualitative Data Analysis

In addition to the quantitative data collected, complementary qualitative data was collected using free-text entry questions, which gave the participants an opportunity to expand on their Likert scale rating for each initiative. Qualitative data was also collected concerning how respondents thought the RICS should promote gender equality, their thoughts on the best methods to engage more females with surveying careers, and their inspiration for pursuing a surveying career.

Responses then underwent thematic analysis by inductive coding, during which key themes were identified. Extracts of the coding are presented in Appendix A Tables A1–A8. Analysis was undertaken using NVivo 12 software. Inductive coding can reduce researcher bias, as themes emerge from the data rather than being identified from the literature. This prevents the researcher from only identifying themes that support the intended outcome. The key themes identified from the qualitative survey data were then summarised in Table 6 and cross-referenced with the findings of the literature review to highlight techniques that have been discussed previously in the literature and those that were not.

**Table 6.** Identified themes of effective techniques for engaging and retaining women in the surveying profession.

Theme	Mentioned in Survey Numbers:	Number of Respondents	Percentage of Respondents	Key Examples
Family in industry	2, 3, 5, 6, 15, 22, 23, 28, 30, 32, 36, 37, 42	13	29.5	"My brother is a quantity surveyor, and I entered the industry as a direct result of this. My brother arranged my first interview as a trainee, and I have followed his footsteps ever since (2003) when I was 17 years old."   "Only knew this as a result of my brother working as a residential surveyor. Good salary and incentives, can be flexible and is varied."
Interest in buildings/property	1, 10, 11, 14, 17, 28, 31, 35, 39, 40, 41	11	25	"I had always been interested in the construction industry and after a lot of research I chose to study quantity surveying. Couldn't be happier."
Career opportunities	8, 12, 33, 34	4	9.1	"Something I could see as a long-term career choice."
Work placement	20, 22, 24, 43	4	9.1	"Work experience at school."
Chance	13, 18, 21, 29	4	9.1	"It was hap chance"   "I joined a construction company as an administrator, by pure chance a 65-year-old male QS took me under his wing and brought me onto a major site as his assistant."
Friends in industry	7, 16, 32	3	6.8	"Family friends were surveyors and told me all about the vast range of things that they did"
Wanted to make a difference	9, 26, 41	3	6.8	"Make a difference to the world around"
Apprenticeships	23, 38	2	4.5	"Wanted to do a degree where it was sponsored so I was not paying for it and whilst studying was able to work in the industry also which was a massive benefit whilst learning the basics at UNI."
Like a challenge	27, 31	2	4.5	"I liked the challenge it presented and have never been one to let a man stand in my way."

Table 6. Cont.

Theme	Mentioned in Survey Numbers:	Number of Respondents	Percentage of Respondents	Key Examples
Careers Advice	19	1	2.3	"a very switched-on lady at Sheffield Hallam University who, when she took my call as a young 18 year who simply said I love geography what can I do? sent me options all in the School of the Built Environment. I thank goodness for that phone call-often."
Working in other career in industry	4	1	2.3	"I was already working in property and my husband is a property developer, so I heard about the profession through that. I am a later comes to it."
Programs to engage with surveying careers	44	1	2.3	"The Career Ready charity which I was involved in at school!"



Table 6 was produced after the thematic analysis was completed and shows that themes emerging from the collected qualitative data are concurrent with those that were identified during the literature review. There were several themes identified by survey participants that were not found in the literature review, and these were marked with 'N/A' citations.

## 5. Discussion

This study aimed to identify the success factors employed during previous attempts to increase the number of females employed in surveying roles in the UK construction industry, and the objectives were as follows: to characterise the factors that facilitate the recruitment and retention of females in surveying roles in the UK construction industry, to investigate the level of awareness and engagement of females currently employed or studying as surveyors with previous programmes aimed at increasing the proportion of females employed within the UK surveying profession, and to recommend techniques for future initiatives with the objective of increasing the number of females employed within the UK surveying profession. As discussed in the literature review, there are many initiatives which aim to improve female engagement with surveying careers, but there have been almost no post-project evaluations of those initiatives to determine their reach or the efficacy of the methods employed. Furthermore, since 2006, discussions on the subject in the literature have been scarce; therefore, a review of the methods used to engage women is overdue [37,67].

The first two sections will consider the RICS' promotion of gender equality and the involvement of participants in initiatives designed to improve female engagement. The third section will discuss the level of awareness of each initiative the respondents had and their opinion on the methods used. The final sections will discuss respondents' opinions on the best methods to improve female engagement with surveying careers and respondents' reasons for pursuing their career in surveying.

### 5.1. The RICS' Efforts toward Promoting Gender Equality within the Surveying Industry

Of the 44 survey respondents, 75% held a RICS membership, the most common response being MRICS membership. Only those respondents with a RICS membership were asked to give their opinion on how well the RICS is promoting gender equality within the surveying industry. Of the 33 responses to this question, the mean response was  $2.61 \pm 0.998$ , and the mode was 2 (poor). Only one respondent gave an answer of 5 (excellent). Overall, the results from this question suggest that female RICS members are dissatisfied with the RICS' current efforts toward promoting gender equality.

Participants were then asked to state how they felt the RICS should be promoting gender equality within the surveying industry using a free-text entry question. There were two main suggestions: 18.2% suggested interventions at school age to increase the awareness of surveying careers among younger women and girls, and 9.1% suggested encouraging firms to modernise working practices in line with other industries, including better maternity/paternity policy, holiday policy, and better support for people with families. Other suggestions included a women's peer support network and more regular events led by the RICS, better consideration of inclusivity when publishing materials, better representation of women in surveying, regular consultation with women working in the industry to understand their issues, and a shift in focus from supporting women already in the industry towards encouraging more females to enter the profession.

In some respects, the findings of this section are concurrent with the suggestions of the literature review. Turrell [28] suggested that the RICS could do more to create change, both within the RICS and throughout the wider industry, a feeling that is echoed by female RICS members. However, respondents placed emphasis on increasing the awareness of surveying careers in younger generations, a method that was first suggested by Greed [35] and then Turrell [28]. According to the literature, this method has already been employed during past initiatives [41,68]. Worryingly, this suggests that female members of the RICS

are not aware of the RICS-led 'Inspire Schools' initiative, which employs this method [41]. Furthermore, women in the industry are still reporting the same issues of outdated working practices and culture, as first reported by Greed over 30 years ago [35]. This being the case, it could be deemed that the RICS' initiatives aimed at creating cultural change in the industry are ineffective. This is discussed further below.

### 5.2. Participant's Involvement in Initiatives to Engage or Retain Women within Surveying Careers

Of the 44 respondents, 43.2% had been involved with an initiative aimed at engaging women with surveying careers: 25% as an ambassador, 9.1% as a participant, and 9.1% as both. Some 10 different initiatives were mentioned, the most common being attending events for school-age children (18.2%). Other answers included being involved with the Women in Property Association committee, awards, and events, being involved with the STEM ambassador program, attending women's networking events in their workplace, being an ambassador for surveying careers within a university, being involved in the WISE project, holding a CABE directorship, and producing materials for careers advice purposes.

These findings suggest that many women in the surveying profession are keen to encourage engagement. However, although there are many initiatives aimed at improving female engagement, none of the initiatives examined in this study were mentioned, nor were they mentioned in the question regarding respondents' reasons for pursuing a career in surveying. Concurrently with responses to question one, this suggests that awareness of the initiatives is poor among females already in the profession and that these initiatives are having little effect on potential new entrants to the profession. This seems to counter the findings of the literature review, as the five initiatives included in this study aimed to address all of the barriers identified by [38], such as a lack of progression opportunities (RICS Defining Futures, RICS IEQM), male-dominated working culture (RICS Defining Futures, RICS IEQM, Women in Surveying), and the childhood experiences of women (RICS Inspire Schools, Property Needs You). Interestingly, Greed identified similar initiatives in 1994 and, while complementing their approaches, questioned their implementation. The broad lack of awareness of such initiatives among women in industry would support Greed's suspicions that they are published merely to impress rather than being properly implemented [38].

### 5.3. Previous Initiatives to Engage or Retain Women within Surveying Careers

This section will consider the awareness of respondents of the initiatives included in this study and their opinion on the efficacy of the methods used in each.

#### 5.3.1. RICS 'Defining Futures' Initiative

Of the 44 participants, the mean response for awareness was  $2 \pm 1.121$ , the mode response was 1, and 15.9% of respondents gave an answer of greater than 3. Participants were then asked to rate the method used during the RICS 'Defining Futures' initiative, which aimed to alter the attitudes of new recruits towards minority groups such as women and cause a slow cultural shift towards inclusive workplaces, on its ability to increase women's engagement with surveying careers. Of the 44 participants, the mean response was  $3.43 \pm 0.900$ , and the mode response was 4. A total of 49.9% of respondents gave an answer of greater than 3.

Qualitatively, responses showed positive feedback for creating a gradual, cultural shift within the industry (25% of respondents), improving the visibility of women in the industry (9.1%), and suggestions that RICS making publicly visible interventions may encourage more women to consider careers in surveying (6.8%), and the fact that men were also included (4.5%). Negative feedback given included a feeling that the initiative would be better off focusing on younger generations (22.7%), concerns that this initiative would only reach those already engaged with the RICS (9.1%), concerns of ambiguity in the initiative's approach (6.8%), concerns regarding the lack of awareness of the initiative (4.5%), doubts that relying on a slow cultural shift would not work (4.5%), worries that

it could cause employers to recruit women purely for statistics (2.3%), concerns that the initiative would not influence leaders (2.3%), and concerns that the initiative does not improve the perception of the industry among women generally (2.3%). In total, there were 20 positive and 25 negative comments made regarding the methods used in the 'Defining Futures' initiative.

These results imply that women working in surveying roles agree that changing the attitudes of new recruits towards minority groups such as women to slowly improve inclusivity is likely to increase women's engagement with surveying careers. However, awareness of the 'Defining Futures' initiative is low, with the mode response being 'not at all aware'. This method was ranked fifth out of the five initiatives included in the study for efficacy, and this was also reflected in the qualitative data collected, with there being more negative comments made than positive ones. There were common themes in the answers received, including that targeting those who are already RICS members is unlikely to create change and suggestions that resources would be better aimed at the younger generations.

### 5.3.2. RICS 'Inspire Schools' Initiative

Of the 44 participants, the mean response for awareness was  $1.50 \pm 0.976$ , the mode response was 1, and 6.9% of respondents gave an answer of greater than 3. Participants were then asked to rate the methods used during the RICS 'Inspire Schools' initiative, which primarily included increasing awareness of surveying careers through events in schools, on its ability to increase women's engagement with surveying careers. Of the 44 participants, the mean response was  $4.18 \pm 0.896$ , and the mode response was 4. In total, 91.0% of respondents gave an answer greater than 3.

Respondents hailed intervention with school-age children as the best method for increasing female engagement with surveying careers (90.9%) but had concerns about the awareness of the program and its implementation, including participants who had attempted to be involved themselves with no success (6.8%) and about the quality of delivery determining the success of the initiative (4.5%). In total, there were 40 positive and 5 negative comments made regarding the methods used in the 'Inspire Schools' initiative.

These results imply women working in surveying careers agree that increasing awareness of surveying careers through events in schools is a good method to increase women's engagement with careers in surveying; however, the awareness of the 'Inspire Schools' initiative is very low, with the mode response being 'not at all aware'. This method ranked first out of the five initiatives included in the study for efficacy, and this was reflected in the qualitative data, with the majority of comments made being positive. Most respondents strongly agreed with the notion of focusing resources on the younger generations to create change, with most of the negative comments being related to a disappointment at their own lack of awareness and respondents who expressed frustration as they had attempted to become involved but never received a response from the RICS. These concerns regarding awareness are reflective of the responses received during question one of the survey, during which several respondents who held RICS membership suggested that RICS should run an initiative targeting school-age children. Again, this is supportive of the suggestions made by [38] that initiatives are merely published to impress and that they are never intended to be implemented with the necessary time and financial resources. Specifically, Greed identified the 1990 RICS 'Working Party on Equal Opportunities' and discussed their suspect implementation of reforms. The results here suggest that there has been little real progress from the RICS over the last thirty years.

### 5.3.3. RICS 'IEQM' Initiative

Of the 44 participants, the mean response for awareness was  $1.86 \pm 1.153$ , the mode response was 1, and 11.4% of respondents gave an answer of greater than 3. Participants were then asked to rate the methods used during the RICS 'IEQM' initiative, which primarily included promoting inclusive workplaces and encouraging cultural change within the industry, on its ability to increase women's engagement with surveying careers. Of the 44

participants, the mean response was  $3.57 \pm 0.900$ , and the mode response was 4. A total of 63.6% of respondents gave an answer greater than 3.

Participants offered praise for the initiative regarding how it promotes inclusive workplaces (11.4%), raises the profile of women in surveying (9.1%), the utility of the quality mark as a useful tool for women to evaluate companies prior to employment (6.8%), provides goals for companies to work towards (2.3%), encourages modern working practices (2.3%), and engenders hope that larger companies could set a precedent (2.3%). Negative feedback included concerns surrounding the awareness of the initiative and whether it had actually been introduced to many companies (15.9%), that it may cause companies to employ women for statistical reasons (6.8%), that it is targeted at those already in industry and would have no effect on the recruitment (2.3%), that the terminology 'inclusive' is misleading and could be related to members of the LGBTQI+ or BAME communities rather than gender (2.3%), and that the quality mark has no capacity to measure the seniority of women's positions, rendering it a distrustful representation of gender equality (2.3%). In total, there were 15 positive and 13 negative comments made regarding the methods used in the IEQM initiative.

These results imply women working in surveying careers agree that promoting inclusive workplaces and cultural change is a good method to increase women's engagement with careers in surveying; however, the awareness of the 'IEQM' initiative is very low, with the mode response being 'not at all aware'. This method ranked fourth out of the five initiatives included in the study for efficacy and this was reflected in the qualitative data collected, with only slightly more positive comments made than negative ones. Again, the most common concern was the lack of awareness and lack of actual action taken under this initiative, with comments highlighting that the IEQM was not widely known in industry. It is interesting that the seniority of women's roles was mentioned, as [39] identified women's career progression was markedly behind that of men in the same role by the age of 35. Again, this method relies on a slow cultural shift, and as the IEQM was launched in 2015, it would seem that respondent's concerns regarding awareness and efficacy are valid. Given that women are still reporting the same cultural issues that have pervaded the industry for a long time, the IEQM seems to have had little real effect in seven years.

#### 5.3.4. 'Property Needs You' Initiative

Of the 44 participants, the mean response for awareness was  $1.09 \pm 0.362$ , and the mode response was 1. No respondents gave an answer of greater than 3. Participants were then asked to rate the methods used during the 'Property Needs You' initiative, which primarily involve increasing awareness of surveying careers in young people through events, on its ability to increase women's engagement with surveying careers. Of the 44 participants, the mean response was  $3.95 \pm 0.608$ , and the mode response was 4. In total, 79.5% of respondents gave an answer greater than 3.

Qualitatively, positive feedback again included high praise for intervention with school-age children (68.1%), raising the profile of women in surveying careers (2.3%), and creating an educational community (2.3%), while negative feedback included concerns about a lack of awareness (15.9%), the fact that success is dependent on the quality of delivery (9.1%), and that the event format could lead to poor attendance and that outreach within schools would be better (4.5%). In total, there were 32 positive and 13 negative comments made regarding the methods used in the 'Property Needs You' initiative.

The implications of these results are similar to those previously mentioned. Women in surveying careers agree that increasing the awareness of surveying careers in young people through events is a good method to improve women's engagement with surveying careers; however, the awareness of the 'Property Needs You' initiative is very low, with the mode response being 'not at all aware'. This method was ranked third out of the five initiatives included in the study for efficacy, with far more positive comments being made than negative ones. Again, most respondents were in favour of interventions with younger generations to increase general awareness of surveying careers, although once more there were concerns

about the lack of awareness of the initiative, with many respondents commenting that they had never heard of it.

#### 5.3.5. Marion Ellis' 'Women in Surveying' Initiative

Of the 44 participants, the mean response for awareness was  $2.20 \pm 1.357$ , and the mode response was 1. Only 20.4% of respondents gave an answer of greater than 3. Participants were then asked to rate the methods used in the 'Women in Surveying' initiative, which primarily involve providing a peer support network for women following surveying careers, on its ability to increase women's engagement with surveying careers. Of the 44 participants, the mean response was  $3.98 \pm 0.876$ , and the mode response was 4. In total, 81.8% of respondents gave an answer greater than 3.

Participants offered positive feedback that included most respondents agreeing that it was a good method for retaining women within the industry by providing peer support (79.5%) and that it would raise the profile of women in surveying careers (4.5%). Negative feedback included concerns regarding awareness of women in the industry (4.5%) and worries that it could create division in the industry by excluding males (2.3%). In total, there were 37 positive and 3 negative comments made about the methods used in the 'Women in Surveying' initiative.

These results imply women working in surveying careers agree that peer support groups are a good method to increase women's engagement with careers in surveying, and, although still low, awareness of the 'Women in Surveying' initiative was the best of those included within the survey. This method ranked second out of the five initiatives for efficacy, and this was reflected in the qualitative data collected, with most comments made being positive. Many commented that they felt peer support could help with both recruitment and retention, providing an excellent resource for those already in industry and making the profession more attractive to potential applicants, with the only concerns again relating to a lack of awareness.

#### 5.4. Participant's Opinion on the Best Techniques to Engage or Retain Women with Surveying Careers

Participants were asked to give their perspectives on how to improve female engagement with surveying careers using a free text entry question. A total of 11 different suggestions were made, the most frequent technique being intervention at school age to increase awareness of surveying careers (59.1%). Other suggestions included increasing the visibility of women in surveying careers (31.8%), opportunities for women's networking and events (11.4%), more flexible working practices (9.1%), mentoring opportunities (9.1%), more support for women with families (6.8%), RICS-led initiatives to increase the visibility of women in surveying (6.8%), more inclusive working environments (6.8%), more diversity and inclusion training (2.3%), and more women in industry as role models (2.3%).

The responses to this question were reflective of the responses given throughout the questions on previous initiatives, generally recommending that the focus should be on approaching the younger generation to increase awareness of surveying careers and increasing the visibility of women in surveying roles. Mentions of improving inclusivity in the workplace and modernising working practices to be more family-friendly were less frequent. There also seemed to be an interest in women's networking and mentoring opportunities, something that has begun to be provided by Marion Ellis under the 'Women in Surveying' initiative but does not seem readily available to many in the industry just yet. Interestingly, there was no mention of gender pay equality, something that the researcher expected would appear during the study after undertaking the literature review.

#### 5.5. Participant's Personal Reasons for Pursuing a Career in Surveying

To gain an understanding of how women are entering roles in the surveying profession currently, participants were asked to give their reasons for pursuing a career in surveying using an open-ended, free-text entry question. A total of 12 reasons were given, the

mode answer was having a family member who already worked in surveying (29.5%). Other reasons given were an interest in buildings (25.0%), being aware of good career opportunities in the industry (9.1%), undertaking work placements while at school (9.1%), chance (9.1%), having friends who work as surveyors (6.8%), wanting to make a difference in the world (6.8%), receiving careers advice (2.3%), working in another career in the industry first (2.3%), and participating in a careers program to increase awareness of various careers (2.3%).

This feedback clearly demonstrates that current initiatives to increase female engagement with surveying careers are not functioning effectively or providing sufficient outreach. From the perspective of women in the profession, the outstanding issue is a lack of awareness of surveying careers, which currently only appears to be countered by individuals having contact with someone in industry within their social circle. No respondents mentioned any surveying-specific initiative as a reason for pursuing a career in the profession. Given that 43.2% of respondents were new entrants with five years industry experience or less, the researcher had anticipated that some of these newer entrants may have discovered the profession through one of the initiatives discussed.

To summarise, the results of this study indicate there has been slow progress in encouraging more women to join the profession since the 1990s. The initiatives in place currently do seem to have the potential to broach the barriers women face in surveying careers, as identified by [35,37–39]. However, awareness of the initiatives is lacking among women who are already working in the profession, suggesting that little effort has been made to implement the initiatives. Considering RICS-led initiatives, the impression given is that they exist to improve the image of the RICS within the public sphere and the wider industry rather than to create real change [38]. The independent initiatives are perhaps not receiving adequate industry support; however, it is unclear whether this is through a lack of effort on behalf of those running the initiatives or a lack of enthusiasm from those in industry. The next chapter will discuss the findings in relation to the research aim and objectives and provide recommendations on their basis.

## 6. Conclusions

The aim of this study was to identify the success factors employed during previous attempts to increase the number of females employed in surveying roles in the UK construction industry. The justification for this was that skills shortages in the UK construction industry are currently at their highest point since 2007, an issue that has been escalating for years [41,48]. Despite this, the overall percentage of women in the surveying profession has only increased at a yearly rate of around 1% [41]. Increasing the number of women in the profession is not the only remedy for the skills shortage; however, there is clearly an untapped resource that could be better engaged.

The evidence presented above suggests that there is poor awareness among women already in the profession of the initiatives currently in place to increase women's engagement with surveying careers. Mean values showed some awareness for the 'Women in Surveying' and 'Defining Futures' initiatives but the mode response for all five initiatives was 'not at all aware'. Secondly, the evidence suggests that women in industry regard intervention at school age, modernising working practices within the industry to be more family-friendly, improving the image of construction to make women more visible, and the formation of peer support groups for women in the profession as the best methods to increase female engagement with surveying careers. Initiatives which rely on a slow cultural change taking place as their primary method were consistently lower rated. Thirdly, the research suggests that pushing companies to employ a certain percentage of women is not a successful technique, as respondents had personal experience of being employed for statistical purposes rather than employed on individual merit. Finally, the evidence suggests the retention of women in the industry is also an area for improvement as the majority of respondents had been in industry for ten years or less, with a steep decline from this point onwards. Overall, the results suggest that no current initiative aimed at

increasing female engagement with surveying careers has been successful. Respondents expressed frustration at being unable to participate in initiative-making efforts. While this prevents the characterisation of successful factors, there are still lessons that can be learned from the findings above.

The findings demonstrate that the situation is complex, and there is no one best method, rather a variety of barriers and issues requiring a combination of various techniques to gradually improve the representation of women in surveying roles. There is a clear preference among women in the profession towards using interventions at school age to increase awareness of the career opportunities available in the surveying professions, the need for which is demonstrated by the responses given when participants were asked what encouraged them to pursue a career in surveying. However, the findings also indicate that there are issues for women working in industry and without action being taken to change the male-dominated culture and old-fashioned working practices, the industry will continue to struggle to retain women. The decline in women in employment after ten years in industry could be suggestive of women finding the profession unsupportive after starting a family or women failing to progress to their satisfaction and seeking alternative careers, both of which were discussed in previous studies identified in the literature review. The general lack of awareness of the initiatives suggests that they are not currently running effectively, and this was corroborated by the feedback from respondents who had attempted and failed to participate in an ambassadorial capacity. The lack of awareness is perhaps most concerning when considering RICS-led initiatives, given that 75% of respondents held some level of RICS membership, and most were unaware.

The findings have implications for both practice and future research. First, professional institutions, such as the Royal Institution of Chartered Surveyors, should be aware of the limitations of the initiatives they put in place to encourage women into their profession. Second, while the study focused on the surveying profession and, in particular, an evaluation of their initiatives to encourage them into the profession, the results could also apply to initiatives seen in other construction-related professions, considering that the construction industry has continued to be male-dominated. Therefore, future studies could benefit from cross-comparative examinations of the initiatives provided by other professional institutions.

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**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A. Thematic Coding

**Table A1.** Feedback on how RICS should be engaging more women with surveying careers.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
1	School age intervention	1, 6, 8, 19, 21, 23	6	18.2	"I think they should aim at younger girls (school age) as most girls are not aware there are such jobs in the industry."   "Should target schools and demonstrate how to do the RICS degree apprenticeship giving presentations to everyone. By the time it gets to university stage a lot of people have already picked a career path."
2	Initiate a women's peer support network	8	1	3	"Form a women's group with the institution."
3	Provide women's networking events	8	1	3	"Women in Surveying Networking events."
4	Encourage modern working practices within firms	9, 15, 31	3	9.1	"Encourage companies to adopt more modern working practices and policies to better reflect society e.g., agile working, better holidays, maternity/paternity policy, overtime seems to be expected"   "Women invariably juggle career and family life and need more support to obtain career progression."
5	Consider inclusivity of published materials better	11	1	3	"I don't think it needs to be promoted per se, I just think with every piece of marketing/communication/pr they do they need to step back and think about women surveyors and have they been considered and included."
6	Work to increase visibility of female surveyors	36	1	3	"Further increase the representation of female professionals."
7	Consult females in industry and then address issues raised	38	1	3	"Possible sessions held to discuss the issues within the industry."
8	More focus on encouraging young women to enter the profession, rather than promoting equality	42	1	3	"Encourage more females to enter the surveying profession. They seem very good at promoting equality for women already in the profession, but I haven't seen anything they do to encourage the younger women to join the profession."



**Table A2.** Feedback on the efficacy of the RICS-led 'Defining Our Future' initiative.

Code Number	Code	Mentioned in Survey Numbers:	Number of Respondents	Percentage of Respondents %	Key Examples
1	Gradual cultural shift/behaviour change	1, 4, 5, 7, 14, 28, 29, 33, 37, 38, 39	11	25	"Gentle but persistent reinforcement of positive behaviours will drive cultural change" "changing the attitudes of new recruits would mean people are more acceptive of minority groups in construction"
2	Awareness of RICS efforts may encourage more women to consider career	18, 28, 42	3	6.8	"I think as awareness increases more women would take up surveying roles"
3	Raises profile of women	19, 20, 37, 38	4	9.1	"Raising the profile of women in the workplace is a very good place to start"
4	Includes men in programme	29, 38	2	4.5	"I like that it includes men, as this will help benefit the change in the viewpoint of women in the construction industry"
13	Focus on those already in industry is too late—should approach younger generations	3, 11, 16, 20, 21, 23, 24, 34, 36, 42	10	22.7	"I feel by altering the attitudes of new recruits it's a bit too late as the recruits have already made up their mind on what profession they wish to work in. We would need to tackle the younger students . . ."
14	Ambiguous about actions to influence attitudes	8, 29, 32	3	6.8	"I think the plan is a bit ambiguous with no foresight on how this will be achieved"
15	Responsibility lies with companies instead	9	1	2.3	"Companies need to do more to change, it's difficult to promote a profession where everyone is feeling overworked"
21	Poor awareness/programme is not working	10, 13	2	4.5	"The profession still seems to be biased towards white British men; employers do have some prejudices despite the number of initiatives to include women and minorities."
16	Relying on gradual cultural shift does not work	11, 37	2	4.5	"Because I am the only female in a team of 10 and slow shifts don't work with old, white men"
17	No influence on those not already engaged with RICS	21, 23, 34, 44	4	9.1	"Need to reach out to those that aren't already engaging with RICS"
18	Might cause employers to recruit women purely for statistics	26	1	2.3	"the initiative is great but as I've experienced, the employers get the wrong end of the stick sometimes and deliberately chose women for the roles which feels a bit "plastic""

Table A2. Cont.

Code Number	Code	Mentioned in Survey Numbers:	Number of Respondents	Percentage of Respondents %	Key Examples
19	Does not influence leaders	27	1	2.3	"Issues lies with the older generation now currently in positions of power. they need to lead the changed from the top down"
20	Sector is not attractive for women; this will not change it	30	1	2.3	"I feel some women who already have a career simply do not want to work in the sector, even if the opportunities are presented."

Table A3. Feedback on the efficacy of the RICS-led 'Inspire Schools' initiative.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
5	School age intervention is good technique for engaging women with surveying careers	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44	40	90.9	"I strongly agree that schools need to raise awareness."   "Most female quantity surveyors got into the profession through having a family connection to the industry. Most people, most children won't have heard of what a surveyor is or what they do so by going into schools it at least puts it on their radar as a profession."   "There was no mention of surveying when I was in secondary school."   "I wish someone told me when I was that age what a surveyor was and that I could have been one."   "I feel this would have benefitted me as a child."
21	Poor awareness/programme is not working	2, 13, 42	3	6.8	"I have personally tried to participate by registering my interest but didn't get contacted by the RICS for over 6 months which was disappointing. I have not heard of any young surveyors getting inspired through this programme"   "My son is in high school and this very age group. Given his mum and dad are surveyors he would know what any advertising of this was. I asked him and nothing in his high school. So, it's not reaching his high school."   "I didn't know the RICS did this (and I don't believe they have done this at any schools I know of)."

Table A3. Cont.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
22	Effectiveness depends on quality of delivery	1, 16	2	4.5	"This is subjective as it is entirely dependent on who is delivering the programme, how engaging and relatable they are. So, it could be extremely effective, and it could be the opposite depending on how the subject matter is delivered/received."

Table A4. Feedback on the efficacy of the RICS-led 'IEQM' initiative.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
6	Cause change by representation in large companies	2	1	2.3	"Ratings from other organisations which are more well-known/highly regarded in the marketplace."
7	Enables women to choose better rated companies	4, 16, 21	3	6.8	"For those females just starting out they can see what rating a company has and this will help them to decide which companies to apply for."   "good indicator for potential staff."
3	Raises profile of women in surveying	17, 18, 36, 37	4	9.1	"Awareness important for staff and management"   "Seeing a wider demographic of individuals within a workplace may promote this."
8	Encourages modern working practices within firms	19	1	2.3	"This will also help balance the status quo enabling more women to remain in their jobs/professions after starting families."
9	Provides guidance and goals for companies to aim for	23	1	2.3	"It provides guidance/gives companies something to aim for and a benchmark of what they should be achieving."
10	Promotes inclusive workplaces	31, 32, 36, 38, 42	5	11.4	"Promoting inclusive workplaces is a positive step"   "Inclusivity and cultural change are key in improving uptake of females in surveying."

Table A4. Cont.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
18	Might cause employers to recruit women purely for statistics	26, 28, 30	3	6.8	“It may lead to women being employed purely because they are women, or that perception in the workforce.”   “the initiative is great but as I’ve experienced, the employers get the wrong end of the stick sometimes and deliberately chose women for the roles which feels a bit “plastic”   “Puts pressure on employers to simply employ someone because she is a woman, adding to the negative stigma already surrounding women in construction.”
21	Poor awareness/programme is not working	4, 12, 16, 17, 18, 29, 33	7	15.9	“Similar to the defining our future, the intention is good, but I don’t believe many plans have gone ahead to achieve this, seems a tick boxing exercise for companies to complete rather than change the perspective of women”   “Unless you are involved with the RICS and up to date on this information potential candidates and old school professionals potentially wouldn’t look for it.”   “I wish this was at my workplace!”   “I don’t think it’s widely known about and so not a quality mark that female surveyors may purposely seek out when applying for posts”
23	No measure of seniority of women’s positions	34	1	2.3	“Within the rural sector this would have more of an impact if it also measured at what rank the women in surveying were at.”
13	Focus on those already in industry is too late—should approach younger generations	3	1	2.3	“It’s too late in the process for cultural change in the industry, I don’t think it would promote new female recruits into the industry as it does not directly relate to potential surveying students.”
24	Association of inclusivity with LGBTQI+ and BAME, not women	1	1	2.3	“People associate inclusive as being bame or lgbtq+.”

**Table A5.** Feedback on the efficacy of the 'Property Needs You' initiative.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
5	School age intervention is good technique for engaging women with surveying careers	1, 2, 3, 4, 5, 6, 8, 12, 14, 17, 18, 19, 20, 21, 24, 26, 27, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 42, 43	40	90.9	"Yes, any awareness raised through role models and people who have been there themselves is very beneficial to new young recruits"   "Young people need to 'see it' to believe they can 'be it'."   "Careers in surveying are not promoted in schools nearly enough. A programme such as this could attract an interest to young women."
11	Create a community	39	1	2.3	"Helping to educate, build a community"
3	Raises profile of women in surveying	42	1	2.3	"I have found in most of my career that all my line managers/senior management teams/leadership teams have all been men. It sometimes makes me feel I cannot progress as no other woman has."
22	Effectiveness depends on quality of delivery	4, 10, 16, 34	4	9.1	"It will depend on what the events are and how well run"
25	Events require attendance, outreach is better	9, 34	2	4.5	"Events require attendance, if you are unfamiliar with something, you won't necessarily go. Outreach/touring schools is a better route."
21	Poor awareness/programme is not working	13, 15, 16, 17, 23, 28, 32	7	15.9	"Never seen any public advertising of this. Can't see who this is being targeted at. If it's at university then people are either already on a surveying course or are doing something else and unlikely to switch degree course."   "I have not heard of this."

**Table A6.** Feedback on the efficacy of the 'Women in Surveying' initiative.

Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents	Key Examples
Good technique for retaining women with surveying careers	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 42	35	79.5	"Yes, I like the idea of peer groups. I think this would help in giving young potential female recruits more confidence knowing there is a support group available for them."   "It would definitely help with retention"   "Having additional support through their career from people who have been through similar experiences would be beneficial"   "From my experience I can count the women I have come across in surveying roles on one hand. The workplace is massively male dominant and sometimes this can be daunting, especially for younger women starting their career. Initiatives like this one can minimise that fear and provide assistance from people with years of knowledge and experience they may not be able to receive anywhere else."
Raises profile of women in surveying	2, 34	2	4.5	"Championing and supporting women play a key role in increasing representation in the professional"   "I think it is key to support the women already in the industry so they can self-promote and inspire more women to also join."
Creates division in the industry	40	1	2.3	"Creating separate groups for only women in surveying causes divided. Imagine having men in surveying group. Work together not in singles."
Poor awareness/ programme is not working	3, 21	2	4.5	"It needs to be advertised more though as I hadn't heard of this programme"   "Making wider potential: target audience aware of its existence and impact would be good"

**Table A7.** Feedback on how participants thought that female engagement with surveying careers could be improved.

Code Number	Code	Mentioned in Survey Numbers:	Count	Percentage of Respondents
	Childcare assistance/family support	1, 15, 21	3	6.8
	Better representation/visibility of women	2, 5, 7, 10, 16, 17, 18, 22, 24, 26, 28, 31, 32, 34	14	31.8
	Intervention at school age	3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 16, 22, 23, 24, 26, 27, 28, 29, 30, 32, 33, 35, 37, 40, 42, 43, 44	26	59.1
	Networks and events for women	4, 20, 23, 29, 39	5	11.4
	More flexible working practices	4, 11, 21, 42	4	9.1
	Mentoring	4, 14, 15, 34	4	9.1
	RICS led initiatives to increase visibility of women	10, 13, 43	3	6.8
	Diversity and inclusion training	14	1	2.3
	Large companies to set an example	14, 29, 31, 33	4	9.1
	Get more women in industry involved as role models	19	1	2.3
	More inclusive environment	36, 38, 42	3	6.8

**Table A8.** Feedback on why respondents decided to pursue a career in surveying.

Theme	Mentioned in Survey Numbers:	Number of Respondents	Percentage of Respondents	Key Examples
Family in industry	2, 3, 5, 6, 15, 22, 23, 28, 30, 32, 36, 37, 42	13	29.5	"My brother is a quantity surveyor, and I entered the industry as a direct result of this. My brother arranged my first interview as a trainee, and I have followed his footsteps ever since (2003) when I was 17 years old."   "Only knew this as a result of my brother working as a residential surveyor. Good salary and incentives, can be flexible and is varied."

Table A8. Cont.

Theme	Mentioned in Survey Numbers:	Number of Respondents	Percentage of Respondents	Key Examples
Interest in buildings/property	1, 10, 11, 14, 17, 28, 31, 35, 39, 40, 41	11	25	"I had always been interested in the construction industry and after a lot of research I chose to study quantity surveying. Couldn't be happier."
Career opportunities	8, 12, 33, 34	4	9.1	"Something I could see as a long-term career choice."
Work placement	20, 22, 24, 43	4	9.1	"Work experience at school."
Chance	13, 18, 21, 29	4	9.1	"It was hap chance"   "I joined a construction company as an administrator, by pure chance a 65-year-old male QS took me under his wing and brought me onto a major site as his assistant."
Friends in industry	7, 16, 32	3	6.8	"Family friends were surveyors and told me all about the vast range of things that they did."
Wanted to make a difference	9, 26, 41	3	6.8	"Make a difference to the world around"
Apprenticeships	23, 38	2	4.5	"Wanted to do a degree where it was sponsored so I was not paying for it and whilst studying was able to work in the industry also which was a massive benefit whilst learning the basics at UNI."
Like a challenge	27, 31	2	4.5	"I liked the challenge it presented and have never been one to let a man stand in my way."
Careers Advice	19	1	2.3	"a very switched-on lady at Sheffield Hallam University who, when she took my call as a young 18 year who simply said I love geography what can I do? sent me options all in the School of the Built Environment. I thank goodness for that phone call- often."
Working in other career in industry	4	1	2.3	"I was already working in property and my husband is a property developer, so I heard about the profession through that. I am a later comes to it."
Programs to engage with surveying careers	44	1	2.3	"The Career Ready charity which I was involved in at school!"



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