



CIOB



INCLUSIVITY:

the Changing Role of Women in the Construction Workforce

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Published by: The CIOB



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ACKNOWLEDEMENTS

I am indebted to the CIOB and the Worshipful Company of Constructors for their sponsorship and support of this research.

I would also like to thank Professor Roger Flanagan, my supervisor, and Carol Jewell for their guidance, encouragement and helpful comments during this study.

EXECUTIVE SUMMARY

The UK's construction industry is facing a skills shortage that is a threat to the long-term health of the industry. It is suffering recruitment problems with its traditional source of labour - young men aged 16-19. Efforts are being made to recruit women into the workforce, but with limited success. In the short term, the industry is filling the skills gap using workers from low wage economies. What is needed is a skilled workforce that sees its long term future in the UK construction industry. To meet the challenge of the skills gap the recruitment of women is no longer simply a nice thing to do; it has become a necessity.

Women in the UK construction industry currently account for under ten per cent of the workforce, reflecting their under-representation in an industry that fails to attract and retain women.

Career sexism is an important issue for government, industry, employers and individuals. Occupational segregation is damaging the UK's competitiveness by contributing to the gender pay gap and preventing it from benefiting from the talents of a balanced workforce. The under-utilisation of human resources dependent on gender patterns is of economic and social concern especially for an economy with an ageing workforce.

Whilst recruitment remains important, there is a knowledge gap in translating qualifications into employment, and employment into retention. This is described by the 'leaky pipeline' concept. Attraction by itself is not the key to increasing women in the construction workforce. Recruitment must be followed by induction of the new employee in order to improve retention levels. Job satisfaction as a result of opportunities and promotion is more likely to retain staff. For women in older age groups/mature women, part-time and flexible working women, the real barrier is the balancing of work and family life, just like other industries.

Women occupy junior and supporting positions within high status professions (Dainty 1998). The "glass ceiling", the situation where women can see, but not reach higher level jobs and are prevented from progressing in their careers, still exists in many occupations and industries, including design and construction. There are very few female chairpersons, CEOs, or COOs of architectural, design engineering, or major construction companies in the UK.

This research is important because it raises the debate about the advancement in the subject of inclusivity, assessing the real barriers faced by women today and discussing means of redressing the balance to improve the inclusivity of the industry. Expanding inclusivity, which includes attracting and retaining more women in the construction sector, is a key priority for the UK and many overseas construction sectors. In countries facing skill and labour shortages, increasing the number of women in the workforce would go some way to solving the problem.

In summary, the important issues are:

- Attracting more women to the industry by not only focusing on young entrants but also returnees to work following a career break, and those who seek a career change
- Retention of women in the workforce
- Understanding the extent of women employed in the whole industry, including the supply chain.

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ABBREVIATIONS

CIB	Construction Industry Board
CIOB	Chartered Institute of Building
CITB	Construction Industry Training Board
DfES	Department for Education and Skills
DTI	Department of Trade and Industry
EOC	Equal Opportunities Commission
GAD	Government Actuary's Department
GNVQ	General National Vocational Qualification
HND	Higher National Diploma
HRD	Human Resources Development
HRM	Human Resources Management
HESA	Higher Education Statistics Agency
IER	Institute of Employment Research
IES	Institute of Employment Studies
ILO	International Labour Organisation
IMS	Institute of Manpower Studies
LFS	Labour Force Survey
LMT	Labour Market Trends
NAWIC	National Association for Women in Construction
ONS	Office for National Statistics
OSHA	Occupational Safety and Health Association
SET	Science Engineering and Technology
UCAS	Universities Central Admission System
VRQ	Vocational Related Qualification
WAMT	Women and Manual Trades
WEB	Women's Education in Building
WEU	Women and Equality Unit
WITANTO	Women into Trades and Non-Traditional Occupations
WISE	Women into Science and Engineering

1.1 Background

The UK construction industry plays a critical role in ensuring Britain's prosperity. It provides a tenth of the UK's gross domestic product and is a substantial employer, with over two million people employed (*DTI 2003b; CITB 2003a*). The UK construction industry is one of the strongest in the world, with annual output ranked in the global top ten.

The construction industry is not homogeneous; it embraces a wide range of activities, products and skills. It includes design, building, civil engineering, oil and gas, heavy engineering, design and consultancy, and companies manufacturing and fabricating components and products used by the industry. Companies range from those employing over 5,000 people to small and medium sized enterprises that are the backbone of the industry. A multitude of skills and trades make up the workforce. The assumption has always been that supply of manpower will match demand, the market compensates by paying higher wages to attract skills in times of boom, and using sub-contracting and outsourcing of labour helped in times of a bust; rarely has there been an acute skills gap.

The industry has changed significantly over the past decade, with new forms of procurement, partnering arrangements, increasing use of design and build with more integration between design and production, greater use of off-site pre-fabricated components, customisation of standard components, a new culture of health and safety, more use of product skills as opposed to trade skills, and more specialisation. Overlaying the changes has been ever-increasing governance and bureaucracy; barely a week goes by without more regulations and red tape. The workforce has changed to meet the new demands, but a skills gap is emerging with fewer young people seeing the construction sector as the employer of choice.

The skills gap and labour shortage is a threat to the industry if it wants to remain competitive and improve its productivity and business performance. In the UK, the construction industry has the second highest level of skill shortages as a percentage of total workforce vacancies. It is suffering recruitment problems with its traditional source of labour - young men aged 16-19. Efforts are being made to recruit young women into the workforce, but with limited success. In the short term, the industry is filling the skills gap using workers from low wage economies. What is needed is a skilled workforce that sees its long term future in the UK construction industry. To meet the challenge of the skills gap the recruitment of women is no longer simply a nice thing to do; it has become a necessity.

Continued growth within the sector, fuelled by increases in government expenditure, has placed a strain on the construction labour market to keep up with increasing skills demands. This labour demand threatens the industry's ability to deliver projects on time and budget to clients' satisfaction over the next few years. Thus the Government's pledges on improving the industry's performance (as detailed within Egan's (1998) *Rethinking Construction* report and the subsequent *Accelerating Change* (2002) consultation document) are unlikely to be met unless there is a stable, skilled, motivated, and available workforce.

As Britain gets ready to host the 2012 Olympics, the industry will face its toughest test. While the London Olympics are likely to create a large number of projects for the construction industry, the specialist workforce required to deliver those projects does not currently exist.

It has been estimated that 35,000 extra construction jobs will be created over the years leading up to 2012, with the peak year for employment being 2010. Government ministers have estimated that 90,000 new recruits are needed in construction each year (*Goodwyn, E. and Munn, K. 2006*). This has changed from the previous Construction Industry Training Board (CITB) forecasts which estimated that around 76,000 new recruits would be required each year for the period 2002-2006. The shortages predicted are not just in labour, but also in those managing labour.

A further problem is the ageing workforce. The proportion of people aged over 65 is projected to increase from 16 per cent in 2004 to 23 per cent by 2031, an inevitable consequence of the age structure of the population today, in particular the ageing of the large numbers of people born after the Second World War and during the “baby boom”. As a result, age dependency ratios will fall to 2.62 people of working age for every person of state pensionable age by 2031, from 3.33 in 2004 (ONS 2006a).

Construction employers will therefore need to recruit and rely increasingly on workers coming from overseas, either inside or outside the EEA (“European Economic Area”). This will give rise to immigration issues with an increasingly diverse workforce.

The construction industry cannot afford to ignore key sectors of the workforce. As a core industry that underpins all others, construction needs to access a wider pool of talent from a more diverse range of people in terms of age, gender, and ethnic origin in order to recruit and develop a high quality workforce that is motivated and skilled to meet growing construction needs.

“The concentration of women and men in different kinds of jobs - described as gender or occupational segregation - is a key issue for Government, employers and individuals in Britain today. It is damaging the UK’s economy and competitiveness by contributing to skills shortages and the gender pay gap, as well as restricting individuals’ life choices, but it remains hidden and under-researched, hence its effects are not widely recognised.” (EOC 2004b). Skills shortages have recently been reported in four of the industrial sectors with construction having the second highest proportion of skill-shortage vacancies out of 28 industries (38.2 per cent against an average of 19.9 per cent).

Expanding inclusivity, which includes attracting and retaining more women in the construction sector, is therefore a key priority for the UK and many overseas construction sectors facing skill and labour shortages, where increasing the number of women in the workforce would go some way to solving the problem.

1.2 Need for women

For a number of years women have been moving into professional work such as law, accountancy and medicine, all of which require high-level qualifications and are considered attractive because of the perceived high level of social status. Today, numbers of women and men are almost equal in these sectors. But occupational sectors such as engineering and construction have not seen a corresponding change in the make-up of the workforce (EOC 2004b).

Women’s labour market participation has increased over recent years and their employment rates have risen, whereas men’s participation in the labour market has declined slightly. Girls now perform better than boys in education and in getting qualifications (Hibbett, and Meager 2003)). In spite of constituting nearly 50 per cent of the population, more than 46 per cent of the labour market, and more than 50 per cent of the entrants into higher education, women account for just 10 per cent of the construction workforce (EOC, 2005i; EOC2005j). This breaks down as 1 per cent of trades people, 10 per cent of those working in professional occupations (such as design and management), 84 per cent secretarial, 2 per cent are sole traders and 4 per cent are micro-enterprises (employing 1-10 people). These figures have remained relatively static for the last few years (CITB, 2004a).

Construction needs diversity to sustain development and growth. Ethnic minorities and women have a lot to contribute as members of the workforce and as clients. Demand for construction has experienced steady growth over the past five years. The industry cannot afford a skills shortage at such a time. With a strong economy, construction is in competition with other industries for non-traditional groups,

as seen by the number of high-profile campaigns, for example the police, the army, nursing, teachers, banking, IT, etc.

The Equal Opportunities Commission (EOC) investigation into the segregation of men and women in training and work found a strong correlation between sector-specific skills shortages and the under-representation of women. Under-representation of women in sectors experiencing skills shortages is exacerbating these shortages. The EOC says breaking gender barriers will help solve skill shortages (EOC, 2004b). Construction, engineering, plumbing and childcare are among the most strongly gender segregated sectors of the workforce in Britain.

1.3 Aim of the report

The research collates the key issues surrounding the low percentage of women in the construction industry. It explores the myths surrounding women in the industry and the apparent unattractiveness of the industry to them.

It will look at the bigger picture, grounding the changes within the construction sector over the years to where it stands today in order to develop a deep understanding of the changing role and need for women in the industry. This research increases understanding in the subject of inclusivity and assesses the issues and barriers women face today.

1.4 Structure, Research and Methodology

The report is divided into six sections. Section 1 gives an introduction to the topic, describing the current state of the industry, basic statistical data and the need to incorporate more women in the industry. Section 2 gives statistical data of women in the UK with regards to population, economic activity and education. Section 3 describes the current position of women in the labour market and the construction industry. Section 4 explains sex, gender and patriarchy in the context of their influences on women's subordination. It also explains key theories associated with male dominance and female subordination, segregation and segmentation of the labour markets which could offer possible explanations for the culture and macho image of the construction industry.

Section 5 reviews perceived challenges to women. The final section questions the quality, depth and appropriateness of research that has been undertaken so far and the success of implementation of recommendations. It assesses the current status of the industry, its views towards women and explores the myths about the industry.

The research method undertaken is a secondary analysis of the literature review and existing studies. The research review is multidisciplinary examining social and psychological factors influencing the culture and environment of the construction industry. Extensive use has been made of work undertaken by EOC, CITB, DfES and relevant organisations, involving secondary analysis of census data, especially demography, economic activity, employment, educational choices, and segregation and segmentation within particular occupations.

The literature review shows the subject has been under-researched, yet is of vital importance to the competitiveness of the construction industry and the country. This research describes the current position of the industry in terms of its female workforce, and how this has been reached. This research is important for the advancement of the subject of inclusivity, accessing the relevant barriers of the day and discussing means to redress the balance and improve the inclusivity of the industry.

2

WOMEN IN THE UK: KEY FACTORS AND FIGURES

The purpose of this discussion is to make the case for attracting women into construction using available statistical information.

2.1 Trends in the United Kingdom:

2.1.1 Population

The UK population stands at over 60 million in 2006. Figure 1 shows more boys than girls, are born each year, although there are more women than men overall in the UK population: 30.6 million females compared with 29.3 million males according to official figures (ONS 2005a; ONS 2006d).

By the age of 30, the number of young women overtakes the number of young men, partly because of higher net in-migration among women than men in recent years and partly due to death rates from accidents and suicide, much higher for young men than for young women. The narrowing of the gap for those in their 40s is mainly due to higher net in-migration among men in the older working ages.

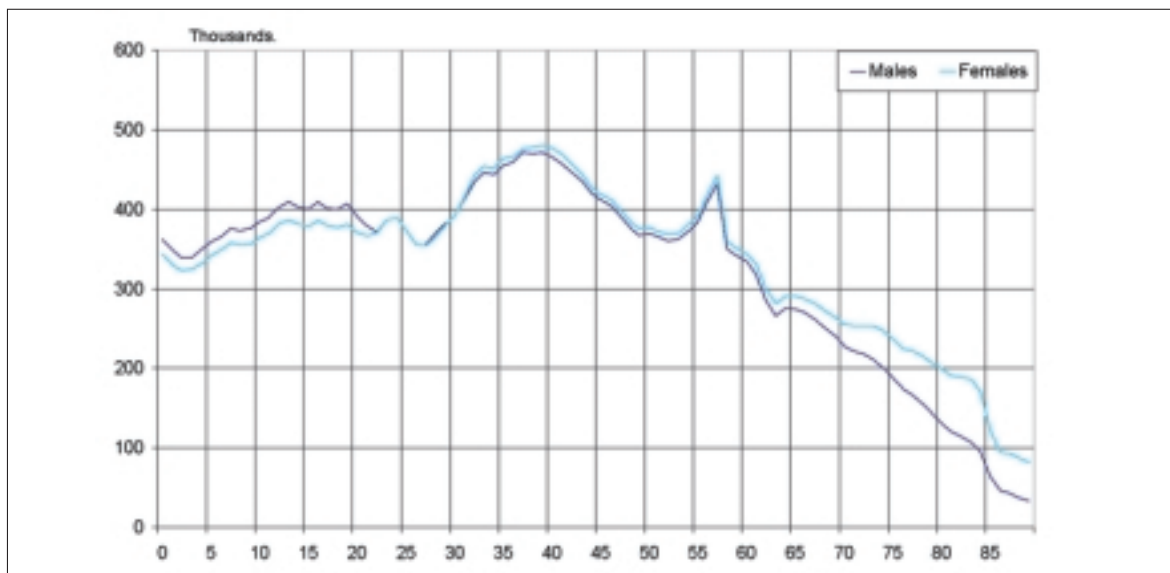


Figure 1: Population: by age and sex, 2004, UK

(Source: Population estimates - Office for National Statistics; General Register Office for Scotland; Northern Ireland Statistics and Research Agency)

For people in their late 50s and onwards, the difference between the sexes increases, most pronounced in the very elderly, as women tend to outlive men; over 60 per cent of those aged 70 or over are women. The Second World War had an impact on the number of men aged over 80 with three and half times as many women as men aged 90 or over.

Women have a longer life expectancy and this is reflected in the average (median) age which is 40.3 years for women and 37.8 years for men. This pattern of women outnumbering men is projected to continue in the future, although the gap is expected to narrow slightly over the next 25 years as mortality rates among men continue to improve (Hibbett, and Meager 2003).

The population pyramid (Figure 2) shows the age-sex structure of the UK population in 2004 in more detail. The population of the UK is steadily ageing with increasing numbers of people aged 65 and over and declining numbers of children under 16. The mean age is predicted to rise from 39.5 years in 2004 to 43.3 years in 2031. From 2007 the population of state pensionable age is projected to exceed the number of children and, by 2031, is projected to exceed it by almost 4 million (34 per cent) (ONS 2006b). This significant demographic trend affecting the labour force over the next 15 years is a combined effect of the overall trend towards higher life expectancy as well as the transition of the 'baby boom' generation to the 50 and over age group (ONS 2006c).

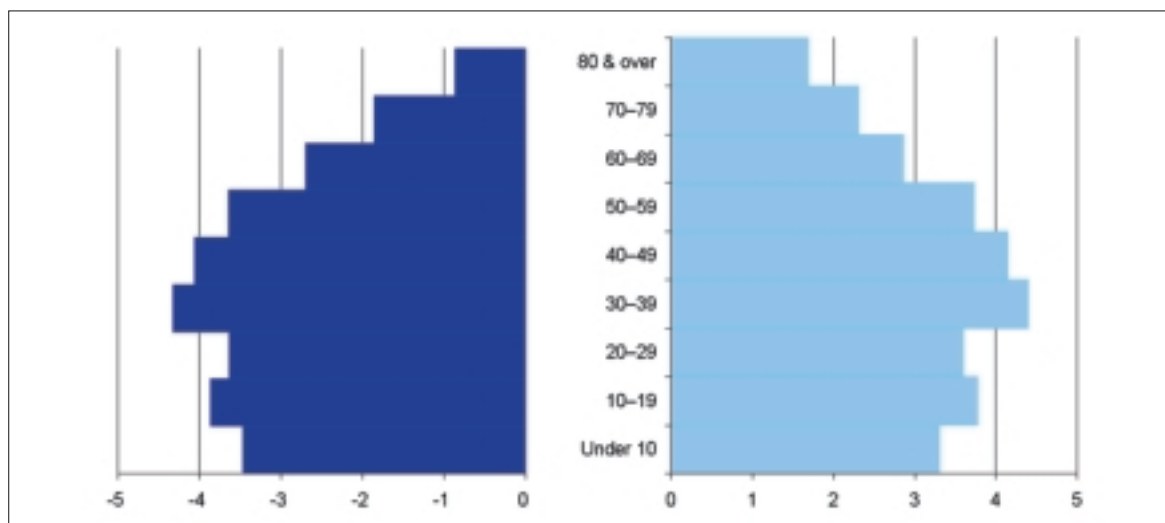


Figure 2: Population structure: by sex and age, 2004 (thousands)

(Source: Office for National Statistics; General Register Office for Scotland)

The ratio of men to women varies across the ethnic groups. There are more women than men in the White, Black and Indian groups in England and Wales. By contrast, there are more men than women in the Pakistani, Bangladeshi, Chinese, and Other groups.

Looking at the working age population in figure 3 (defined as 16-64 for men and 16-59 for women), just under 18 million women were of working age, compared with just over 19 million men with a sex ratio of 1.02 male(s)/female for the period 2000-2005 (CIA 2005, Hibbett, and Meager 2003).

The Government has announced that the state pension age for women will increase from 60 to 65 over a ten year transition period (from 2010 to 2020) (ONS 2006a). This would shift the balance even for today's population where women would exceed men in the working age population group. Currently 46 per cent of people in the labour market are women (EOC 2005i).

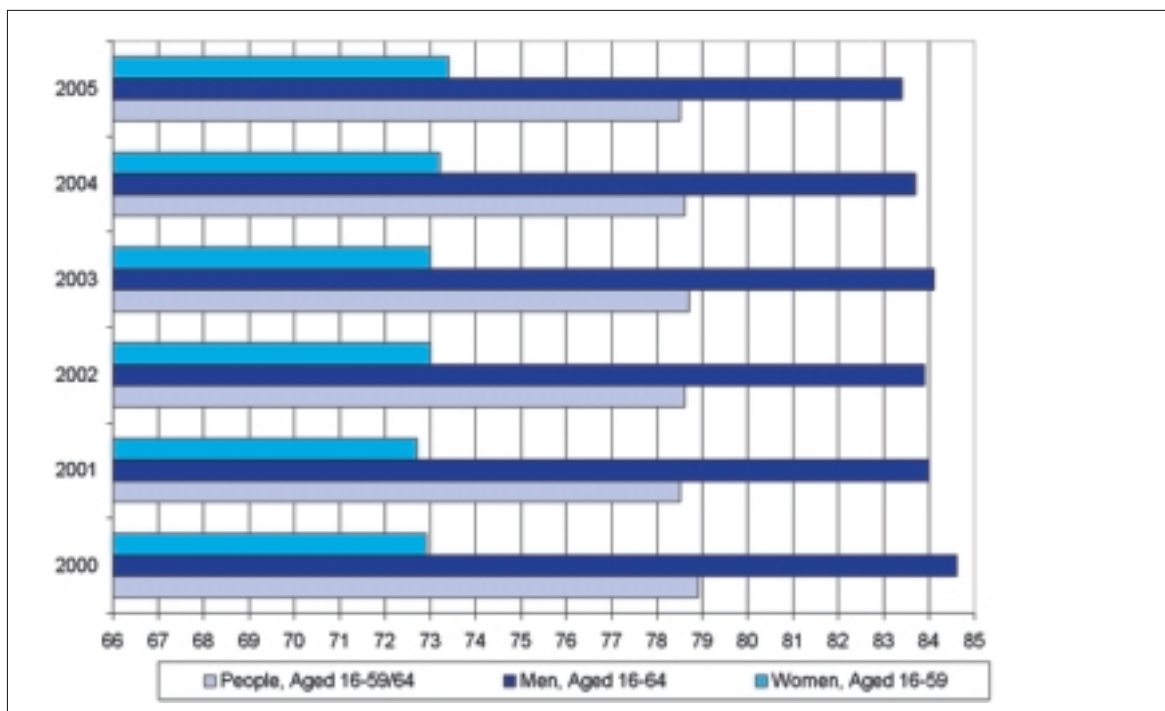


Figure 3: Comparative for working age population: thousands

(Data Source: ONS - Labour Force Survey, Labour Forces Projections 2006-2020, GAD)

2.1.2 Economic activity and employment

The economic activity rate is the proportion (per cent) of all people of working age who are either in employment or unemployed/looking for work and is interchangeable with the term 'labour force participation'. Women's labour force participation (Figure 4) has increased over recent years and their employment rates have risen, whereas men's participation in the labour market has declined slightly. The gender gap in economic activity and employment rates has been narrowing.

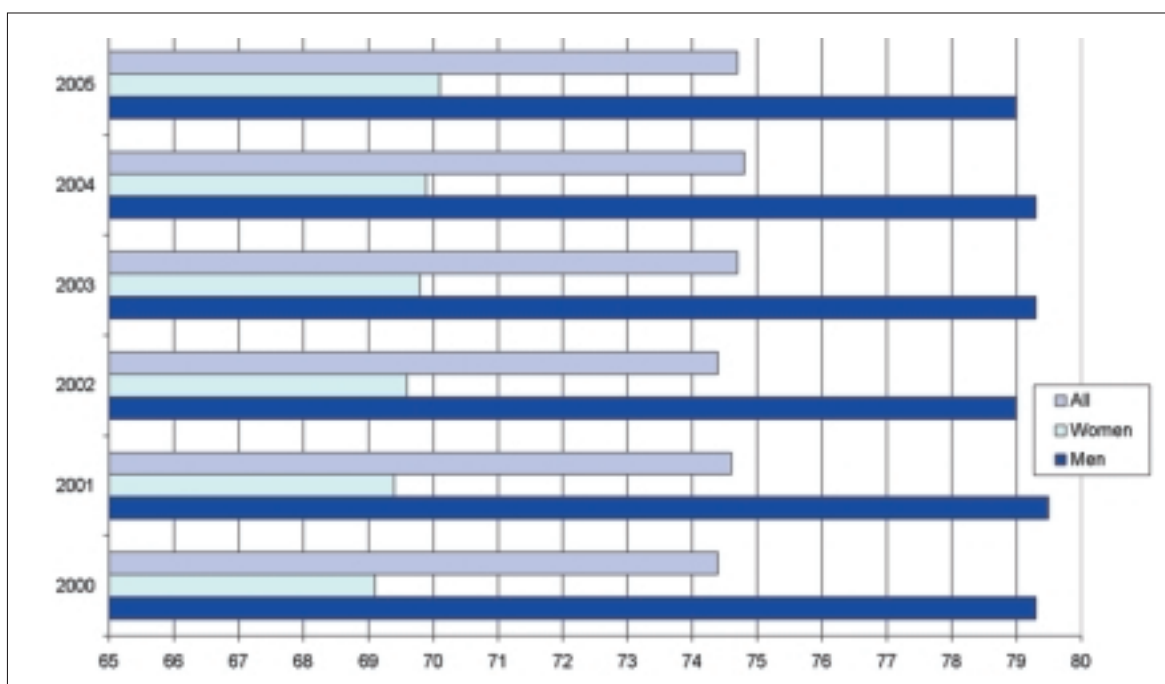


Figure 4: Comparative for economic activity rates by age: percentage

Source: ONS - Labour Force Survey, Labour Forces Projections 2006-20, GAD)

Between 1984 and 1999 the proportion of women in the labour market increased from 66 to 72 per cent, up to 73.4 per cent in 2005 (LFS) whereas the proportion of men who were economically active declined from 88 to 84 per cent down to 83.4 per cent in 2005 (Figure 5). *(All data refer to the working age population, i.e. women aged 16-59 and men aged 16-64, unless stated otherwise; ONS 2006a).*

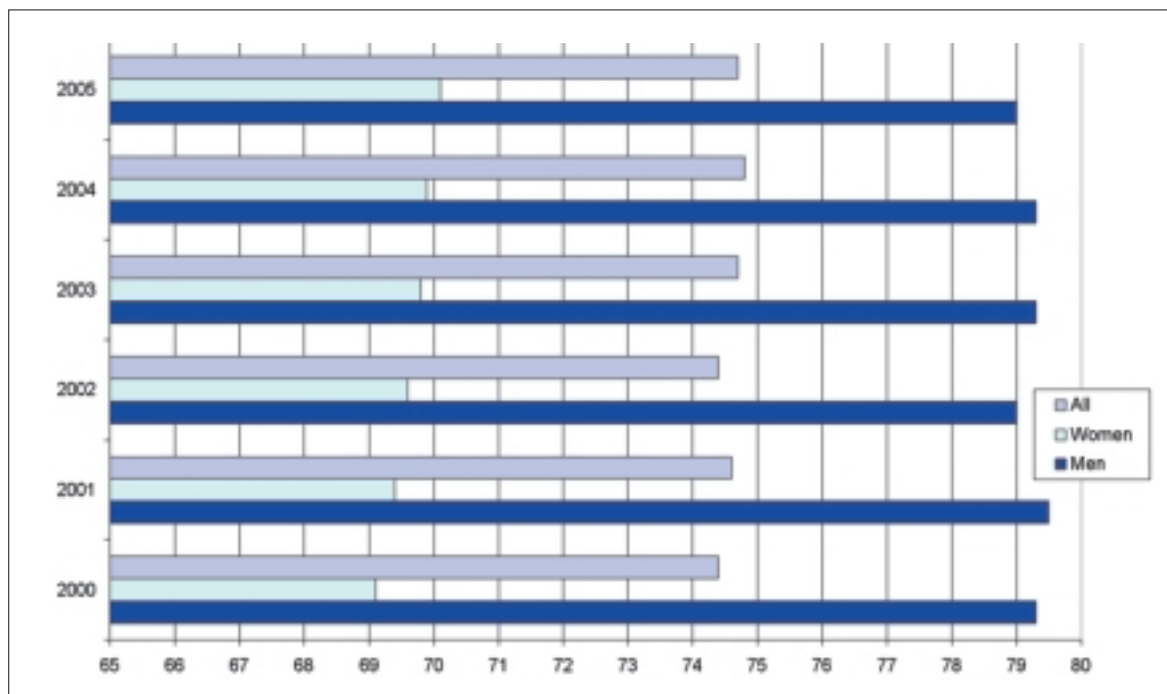


Figure 5: Comparative for employment rate by age: percentage

(Data Source: ONS - Labour Force Survey)

The proportion of males of working age in employment fell from 92 per cent in 1971, to 79 per cent in spring 2005, having reached a low of 75 per cent in 1993, while the proportion of females of working age in employment rose from 56 per cent to nearly 70 per cent for the same period.

Women are less likely than men to be in employment: 70 per cent of all working age women are in work, compared with 83 per cent of all working age men. The employment rate for women with children is lower: it is lowest for those with children aged under 2.

Only 53 per cent of working age women with a youngest child aged under 2 are in employment, compared with 88 per cent of men whose youngest child is under 2. Overall, 64 per cent of mothers with children aged under 16 work, compared with 82 per cent of fathers (ONS 2004b; ONS 2006a).

More than two-fifths (44 per cent) of women in employment work part-time. Part-time working is much more common for mothers: around two thirds of women with children under 5 who are in employment work part-time (65 per cent). Overall, 60 per cent of working mothers with children aged under 16 work part-time, compared with just 9 per cent of working fathers (EOC 2005i; EOC 2005j).

According to the Institute for Employment Research (IER) projections for the general labour market prospects between 1999 and 2010, there will be over 2 million additional jobs of which two-thirds are expected to be taken by women.

2.1.3 Education:

One of the reasons for women's increased labour market participation and their entry into higher level occupation is the rising levels of educational attainment. The difference in achievement between the sexes starts at an early age.

2.1.3.1 Compulsory Education

In 2005, within England from key stage 1 (5-7 years old) through to key stage 4 (14-16 years old) girls score consistently higher than boys. However, the difference is much less marked in maths, where boys performed slightly better in tests, and science, where the results are relatively equal unlike English.

The proportion of girls in England reaching the required standard for reading and writing at Key Stage 1 and English at Key Stages 2 and 3 was higher than that for boys. Seventy per cent of boys reached the expected standard in English teacher assessments at Key Stage 2 compared with 81 per cent of girls. Similarly in science teacher assessments, 82 per cent of boys and 84 per cent of girls at Key Stage 2 reached the expected level, compared with 70 per cent and 73 per cent, respectively, at Key Stage 3 (ONS 2006d).

2.1.3.2 Qualifications gained

At GCSE level girls are outperforming boys, and more significantly in IT and English subjects. Girls generally perform better than boys at GCSE and at GCE A level (or equivalent) in the UK in terms of teacher assessment and test results (Figure 6). In 2002/03, 59 per cent of girls in their last year of compulsory education achieved five or more GCSE grades A*-C, compared with 48 per cent of boys (Figure 6). The subjects for GCSEs are roughly balanced for boy and girls at this level. Girls are opting out of chemistry and physics subjects at GCSE level and are choosing science. In England (2001) 233,800 girls opted for GCSE science double award compared to 230,600 boys; there were 16,000 entries from girls for chemistry compared to 22,800 boys; and 15,400 entries from girls for physics compared to 23,000 boys (DTI 2003a).

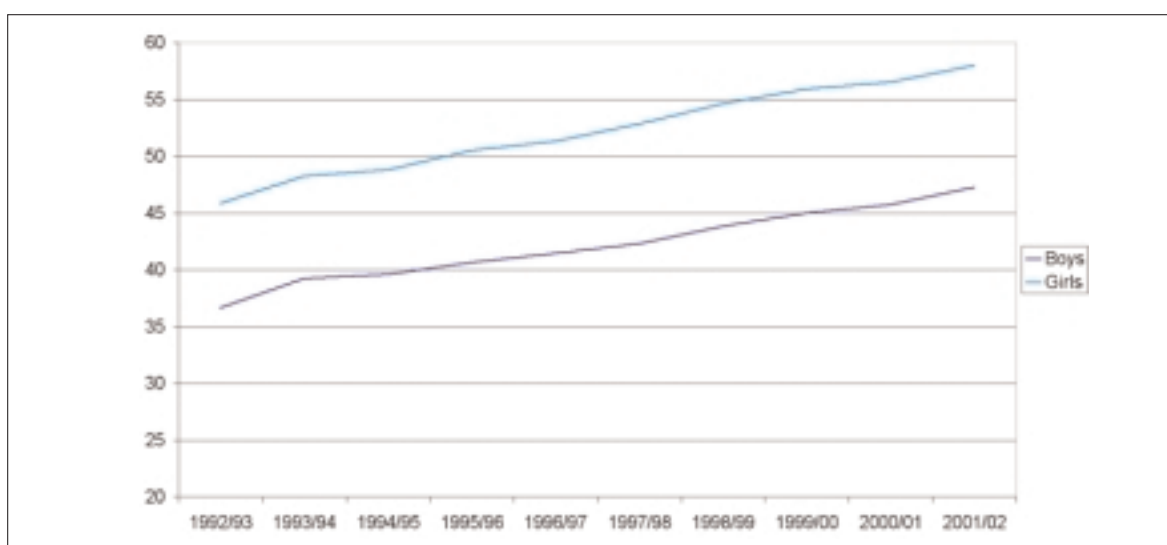


Figure 6: Pupils achieving five or more GCSE grades A*-C or equivalent, UK

(Source: Education and Training Statistics for the UK, 2003, Office for National Statistics)

The proportion of young women who achieved two or more GCE A levels (or equivalent) increased from 20 per cent in 1990/91 to 44 per cent in 2003/04 (Figure 7) compared to an increase from 18 per cent to 35 per cent over the same period for young men as seen in Figure 6. Thus the performance gap between the sexes has increased from 2 percentage points in 1990/91 to 9 percentage points in 2003/04. There are differences in subject choice between males and females. In 2003/04, male-dominated subjects included physics (76 per cent), computer studies (73 per cent), economics (70 per cent), and design and technology (65 per cent). In comparison, females made up around 94 per cent of those entered for home economics and 70 per cent of those entered for religious studies, social studies, English literature, modern languages, drama, and art and design (ONS 2006d).

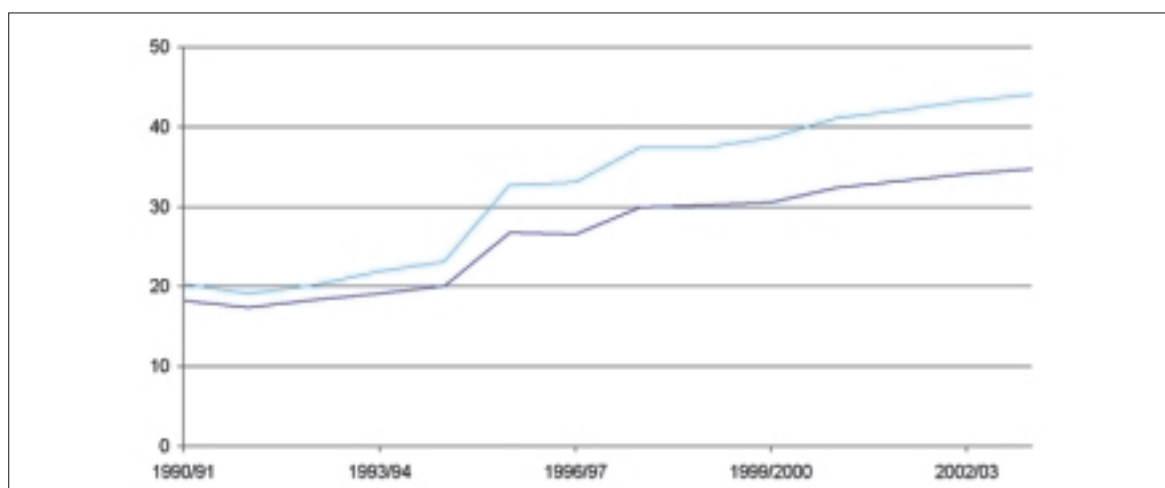


Figure 7: Young people achieving two or more GCE A-levels or equivalent, UK

(Source- Office for National Statistics, Source: Department for Education and Skills; National Assembly for Wales; Scottish Executive; Northern Ireland Department of Education)

2.1.3.3 Vocational Qualification

In 1987, National Vocational Qualifications (NVQs) were introduced as an alternative to the more traditional and academic GCE A levels (or equivalent); over 4 million NVQs and Scottish Vocational Qualifications (SVQs) had been awarded in the United Kingdom since.

More women get NVQ/SVQs than men (Figure 8), particularly for higher levels where nearly two-thirds of the awards are to women at level 3. Women outperform men in vocational qualifications - 29 per cent of young women in schools and colleges gained a distinction for their Advanced General National Vocational Qualification (GNVQ) in 2000/01, compared with 17 per cent of young men. More women get Vocational Related Qualifications (VRQs) than men - unlike NVQs, men are more likely to get the higher level (2 and 3) awards. 63 per cent of all VRQ level 1 awards are to women (ONS First release-Vocational Qualifications in the UK: 2003/04, Department for Education and Skills).

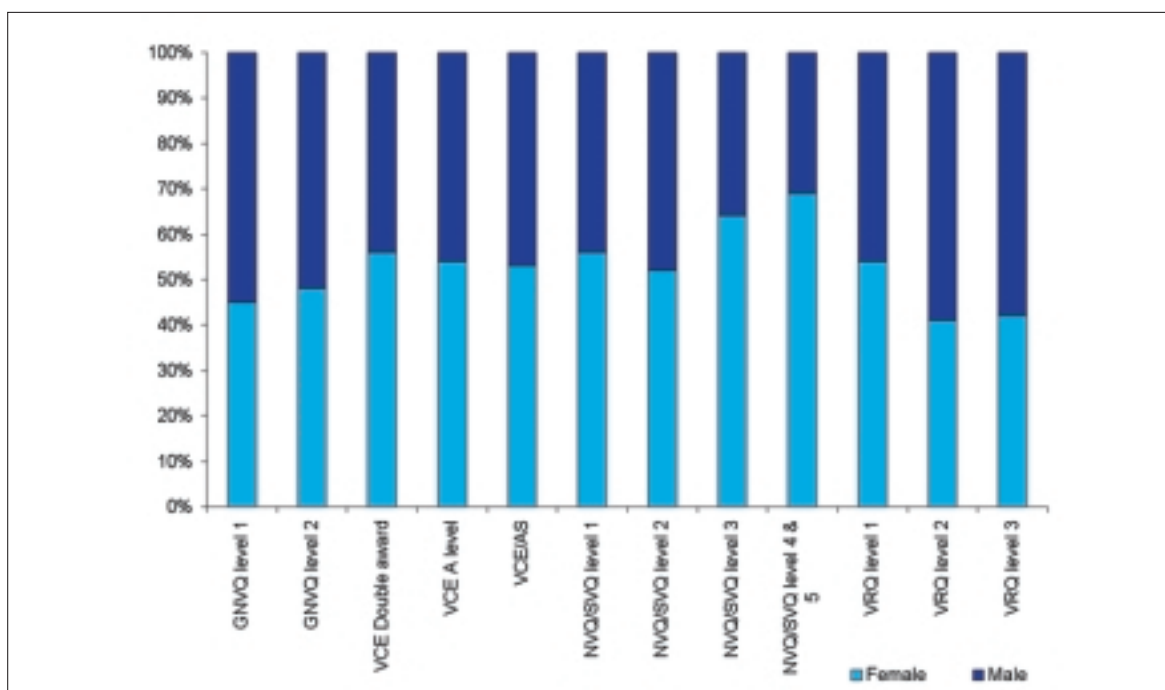


Figure 8: Vocational qualifications awarded, by qualification type, level and gender, United Kingdom, 2003/04 (percentages)

(Source: DfES, Department for Education and Skills)

In skill-based (vocational) qualifications the largest gender difference between men and women attaining SET vocational qualifications and starting apprenticeships in SET related sectors are observed. More men are attaining vocational qualifications in engineering (95 per cent), construction and property (95 per cent), and science and mathematics (54 per cent). More women are attaining vocational qualifications in information technology (61 per cent), education, training and teaching (75 per cent), arts and crafts (56 per cent) and health care, medicine, and health and safety (90 per cent) (*DTI 2003a*).

25 per cent of women took health and social care compared with 1 per cent of men, whereas 22 per cent of men took information technology compared with 4 per cent of women. Among those who took first degrees in 2002, men and women were almost equally likely to gain a first - 10 per cent of men compared with 9 per cent of women. However, a greater proportion of women achieved an upper second - 49 per cent of women compared with 40 per cent of men.

2.1.3.4 Post-Compulsory Education

Young people at the age of 16 can choose to continue in further education. There were 4.9 million further education students in the United Kingdom in 2003/04. During this period, the proportion of female further education students was four times that in 1970/71, but there were only twice as many male students (Figure 9). In 1970/71, 58 per cent of further education students in the UK were men; however by 2003/04, 59 per cent of further education students were women: 2.9 million compared with 2 million men (*ONS 2006d*).

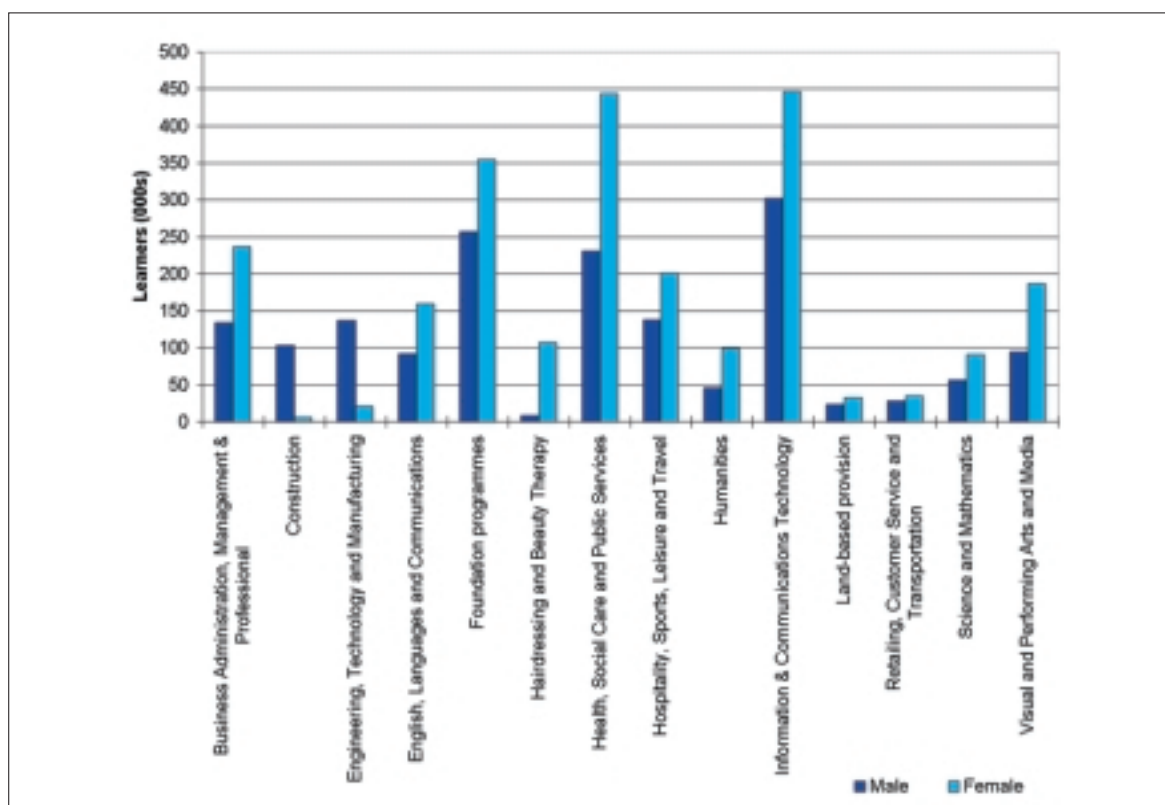


Figure 9: Enrolments in further education: learners on council-funded FE provision, by area of learning and gender, England, 2004/05

(Source: DfES, Department for Education and Skills)

Construction and engineering, technology and manufacturing are the most segregated areas of learning with 90 per cent of learners being men, whilst hairstressing and beauty therapy are dominated by women who make up 91 per cent of learners (EOC 2005i).

There have been substantial increases in the number of students in higher education in the UK, with numbers rising from 0.6 million in 1970/71 to 2.4 million in 2003/2004. The ratio of women in higher education for the corresponding period increased from 33 per cent to 57 per cent. Enrolments have increased for both sexes over the last 30 years (Figure 10). For women, there were almost seven times as many enrolments in higher education in 2003/04 than in 1970/71. For men, enrolments increased by two and a half times over the same period. Women represent a significantly greater share of entrants to UK degree courses (ONS 2006d). Female students made up 58 per cent of the first year student population, unchanged from 2001/02 (source: Higher Education Statistics Agency).

The exceptions in higher education dominated by male students are computer science (80 per cent) and engineering and technology (85 per cent). Female-dominated subjects include education and subjects allied to medicine, such as nursing, physiotherapy etc, where 81 per cent of students are female.

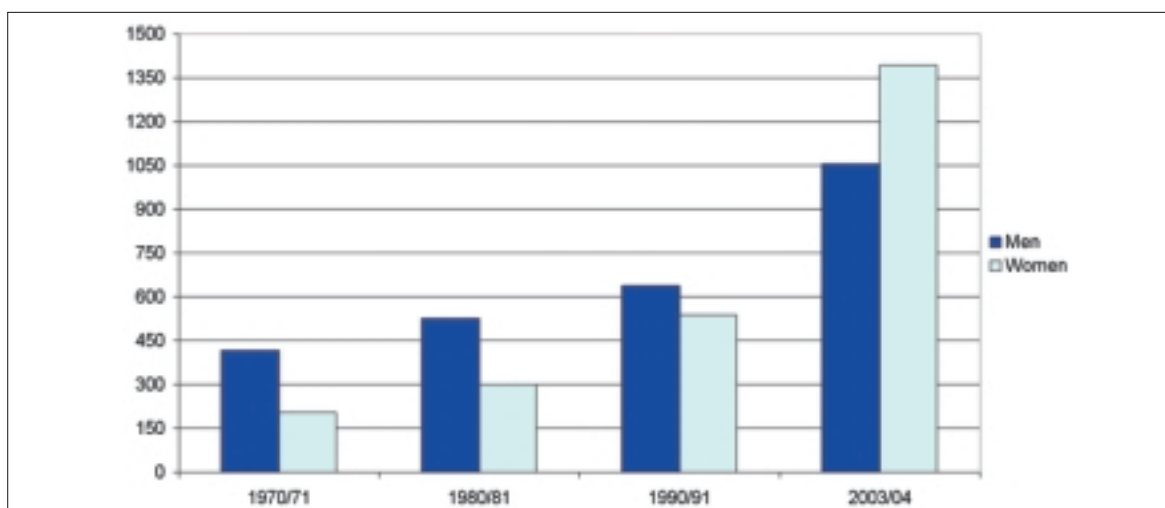


Figure 10: Students in higher education by sex

(Source- Office for National Statistics, Source: Department for Education and Skills; National Assembly for Wales; Scottish Executive; Northern Ireland Department of Education)

2.1.3.5 Science, Engineering and Technology (SET)

More men apply for, accept and obtain, higher education qualifications in SET and SET-related subjects than women. The number of female SET graduates is increasing. Over the period 1992-2002, female SET graduates have increased by 55 per cent compared to a 29 per cent increase in male SET graduates (Figure 11). However, only one in every three SET graduates in 2002 were women. Over the period 1994/95-2000/01 the percentage of females undertaking postgraduate qualifications in SET subjects has increased from 35 per cent to 55 per cent. Until 2000/01 more men had undertaken SET doctorates than women. The number of male SET doctoral students has decreased by 30 per cent for full-time students and by 21 per cent for part-time students over the period 1994/95-2000/01. The number of full-time and part-time female doctoral students has increased by 56 per cent and 42 per cent, respectively, over the same period (DTI 2003a).

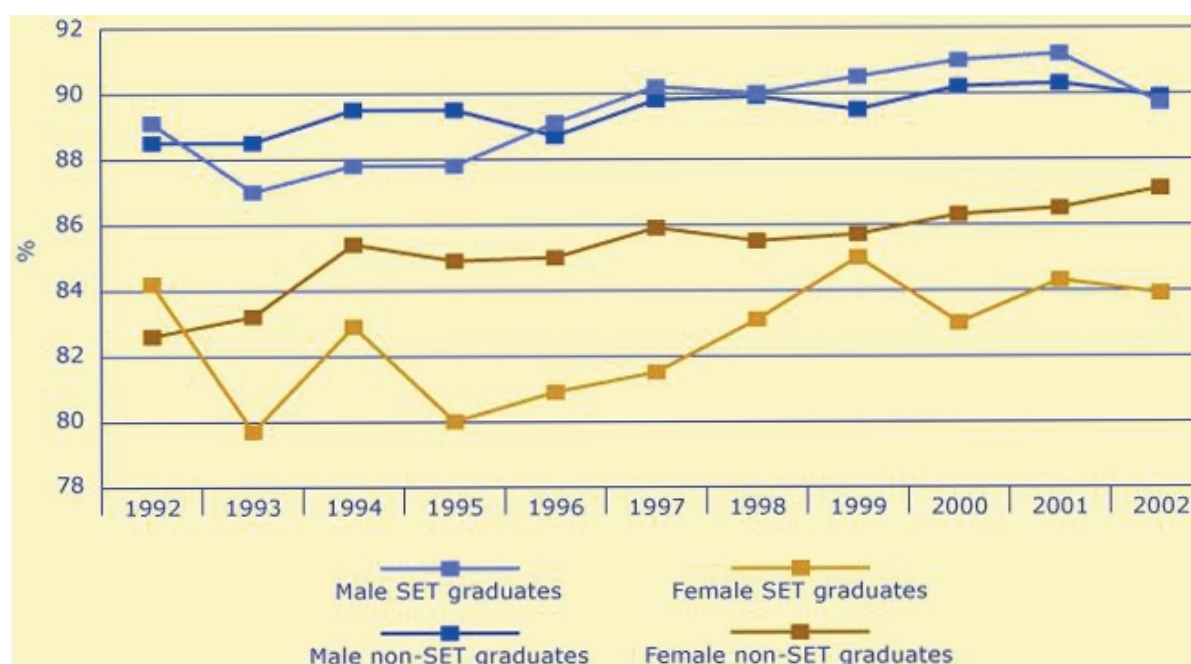


Figure 11: Percentage of SET and non-SET graduates by gender, 1992-2002

Source: (DTI, gender + innovation LFS, Spring Quarter 1992-2002)

In 2002/3, 2291 women started construction related degrees such as building and architecture, a 9 per cent increase on the 2001/2 figure of 2,103 (figures from HESA) (CITB 2003a).

2.1.4 Employment in SET

2.1.4.1 Employment Status of SET Graduates

The number of women with a first degree or a postgraduate degree in an SET subject entering full-time employment has increased by approximately 19 per cent over the period 1995/96-2000/01; employment of male SET graduates in SET occupations has increased from approximately 341,500 to 412,000 over the period 1992-2002, representing a 21 per cent increase in the number of men. Employment of female SET graduates in SET occupations has increased from approximately 49,500 to 81,000 over the period 1992-2002, representing a 64 per cent increase. Over the period 1992-2002, the percentage of female SET graduates in SET occupations, as a percentage of all graduates, has only increased from 1 per cent to 27 per cent, whilst there has been a decrease of 3 per cent to 40 per cent for male SET degree holders in SET occupations over the same period (*DTI 2003a*).

Over the period 1992-2002, there has been a 2 per cent increase in the number of male SET graduates in engineering and technology occupations, whereas the number of female SET graduates in the same occupations has trebled. In 2002, there were approximately 169,000 male engineers and technologists compared to approximately 18,000 female engineers (*DTI 2003a*).

2.1.4.2 Men and Women Employed in SET Occupations

Over the period 1991-2001, there have been higher percentages of men employed in SET occupations than women: on average 9 per cent of all employed men and 2 per cent of all employed women were employed in SET occupations. Over the period 1991-2001, there has been an increase of 1.7 per cent to 2.1 per cent in women employed in SET occupations as a percentage of total female employment (*DTI 2003a*).

Whilst the percentage of men employed as engineers and technologists (as a percentage of all occupations) has decreased from 3.3 per cent to 2.8 per cent over the period 1991-2001, the percentage of women has remained relatively stable at 0.2 per cent (*DTI 2003a*).

2.1.5 International comparison:

In Eastern Europe women accounted for a higher proportion of engineers and scientists as compared to the UK and Western Europe. This is also reflected in countries like the USA, France and Egypt where the proportion of women in engineering is higher than the UK (*Court and Moralee 1995*). India, a developing country, has the world's largest number of professionally qualified women with more female doctors, surgeons, scientists and professors than the United States.

3.1 Women in the occupational hierarchy

The labour market is such that men and women work within specific occupations and hierarchical levels which conform to societal expectations of their gender (*Dainty 1998*). There are consistent differences in the occupations entered by women and men. The under-representation of women in the occupational hierarchy shows in two ways:

1. The traditional gender split in the sectoral pattern of employment, i.e. segregation of women into traditional roles ,”the glass wall”, with women being more likely to work in administrative and secretarial, personal services and sales occupations, and men more likely to work in manufacturing and production, has persisted for a long time.

Women are much more likely than men to work in public administration, education and health, which account for 41 per cent of women’s employment and only 15 per cent of men’s, and distribution, hotels and catering, which account for another 23 per cent in comparison to 18 per cent of men’s employment. Service sector work has generally increased, while work in manufacturing and production has decreased over the past decade. The main growth in service sector jobs has been in public administration, education and health for women, for men it has been in banking and financial services. Around 10 per cent of women worked as managers or senior officials in 2003, compared to 18 per cent of men. Looking at the larger public/private sector split, women in employment are twice as likely to work in the public sector as men (*Hibbett and Meager 2003*).

2. The representation of women in many industries decreases with an increase of seniority of the position. Women occupy junior and supporting positions within high status professions (*Dainty 1998*). The “glass ceiling”, the situation where women can see, but not reach, higher level jobs and are prevented from progressing in their careers, still exists in many occupations and industries.

3.1.2 Proportions of people in employment by occupation

Figure 12 shows a fairly even distribution of people in employment across the occupational groups. Labour Force Survey 2004 data show that twice as many women as men are employed within administrative and secretarial , personal service, and sales occupations, whilst in skilled trades occupations and process plant and machine operatives there are many more men. The three occupation groups of personal service, sales and process plant and machine operatives employ 8 per cent of those in employment, while the remaining six occupation groups employ between 12 and 15 per cent of those in employment (*Begum, N. 2004*).

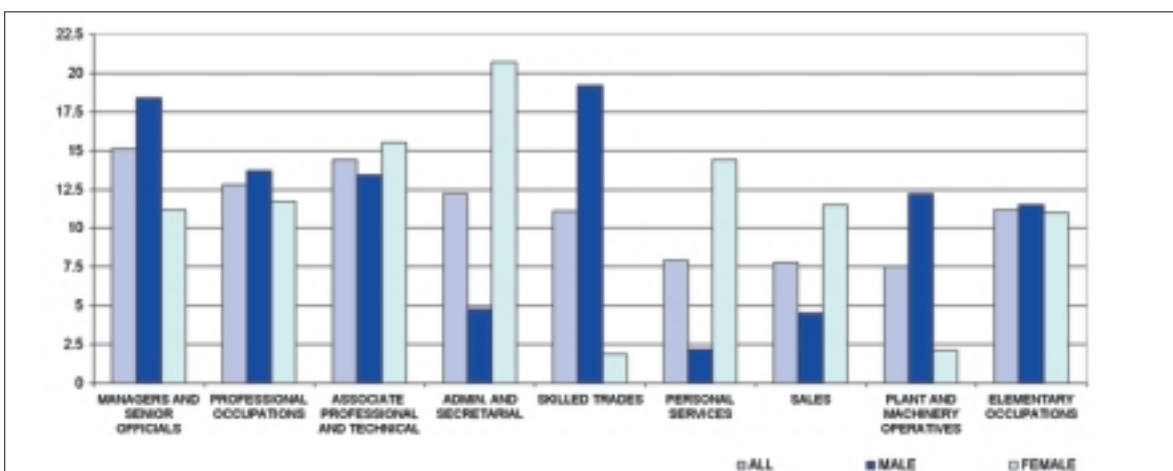


Figure 12: Proportions of people in employment by occupation

(Source: ONS Labour Force Survey winter 2004, winter 2005, not seasonally adjusted)

The structure of women's employment over different occupational groups has changed little over recent years, with the increase in women's employment distributed fairly evenly across the whole range of occupations.

The most significant difference between the sexes is the pronounced pattern of gender segregation in different industrial groupings and occupations. The labour market continues to include strongly gender segregated industries; some are heavily male-dominated such as engineering, whilst others are mainly female-dominated such as hairdressing. New industries show no sign of breaking the mould (EOC, *Women and Men in Great Britain - The Labour Market 2004*).

Women are moving into higher growth sectors of the economy to a larger extent than men, although in terms of occupations, hierarchies and power relations, the mechanisms of segregation in the workplace are changing very slowly (Gonas, L. 1999).

3.1.2 Proportions of people in employment by industry

Public administration, education and health, and distribution, hotels and restaurants account for almost half the people in employment (28 per cent and 20 per cent respectively). Women are more than twice as likely to be working in public administration, education and health as men (42 per cent of women compared with 16 per cent of men). Banking, finance, insurance etc. and manufacturing employed 16 per cent and 14 per cent of those in employment respectively. Other services, transport and communications, and construction employed between 6 and 8 per cent of those in employment each. Energy and water, and agriculture and fishing employed the lowest proportion of people at 1 per cent each (Begum, N. 2004).

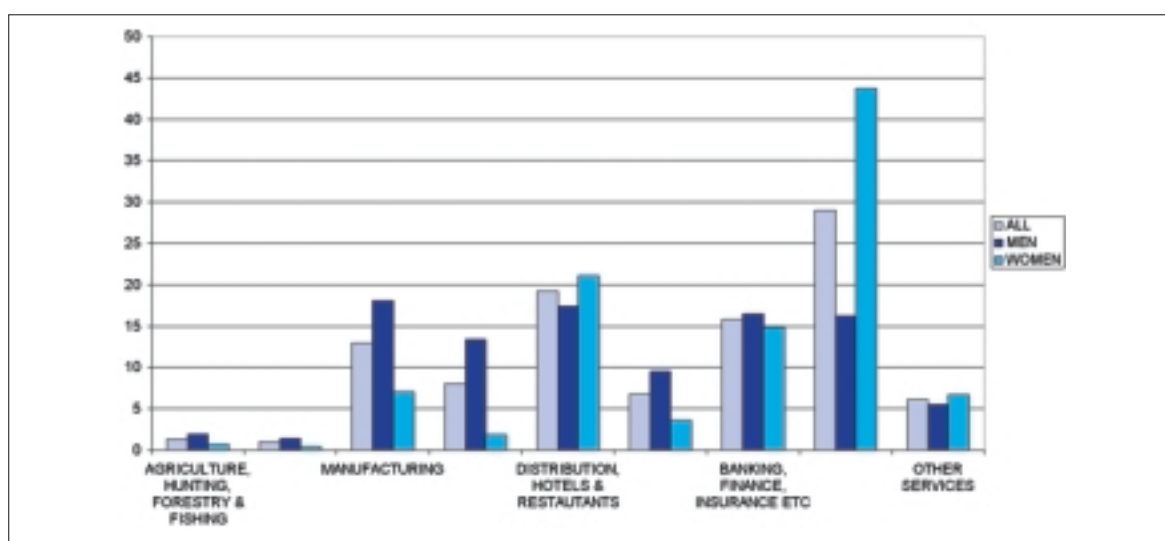


Figure 13: Proportions of people in employment by industry

(Source: ONS Labour Force Survey, *Employee jobs by industry winter 2005, not seasonally adjusted*)

3.2 Women in the construction industry

Women in construction - a summary of facts and figures

- Records show that in medieval times, at least four trades involved women workers: carpentry, shipwrighting, plastering and plumbing. Construction is not the only industry in which women have



Figures 14-21: Skilled manual jobs left vacant by men in World War 1 and World War 2, filled by re-trained women (source: *The Imperial War Museum*)

historically done heavy work; women were down the pits with men in the 19th century. Thousands of women were re-trained to fill skilled manual jobs left vacant by men in WWI and WWII. The small proportion of women working in the industry proved that they are capable of handling the work (*CITB*).

- Women account for around 9 per cent of the construction workforce (2002/03), broken down as 1 per cent of tradespeople, 10 per cent of those working in professional occupations such as design and management, 84 per cent secretarial, 2 per cent are sole traders and 4 per cent are micro-enterprises (employing 1-10 people). These figures have remained relatively static for the last few years.
- In spring 2003, there were 198,790 women working in construction (180,595 professional/technical and 18,275 manual trades). This compares to 193,842 working in construction in 2002 (178,816 professional/technical and 15,026 manual trades) showing a 4,948 increase between 2002 and 2003 (source: *CITB-Construction Skills , LFS*).
- Women made up 3 per cent of all trainees entering craft and technical construction courses in September 2002.
- In 2002/3, 2,291 women started construction related degrees, such as building and architecture, which was a 9 per cent increase on the 2001/2 figure of 2103 (figures from HESA)
- UCAS data shows that on average women make up only 11 per cent of all applications for higher education courses leading to a professional qualification in construction subjects (*Briscoe 2005*).

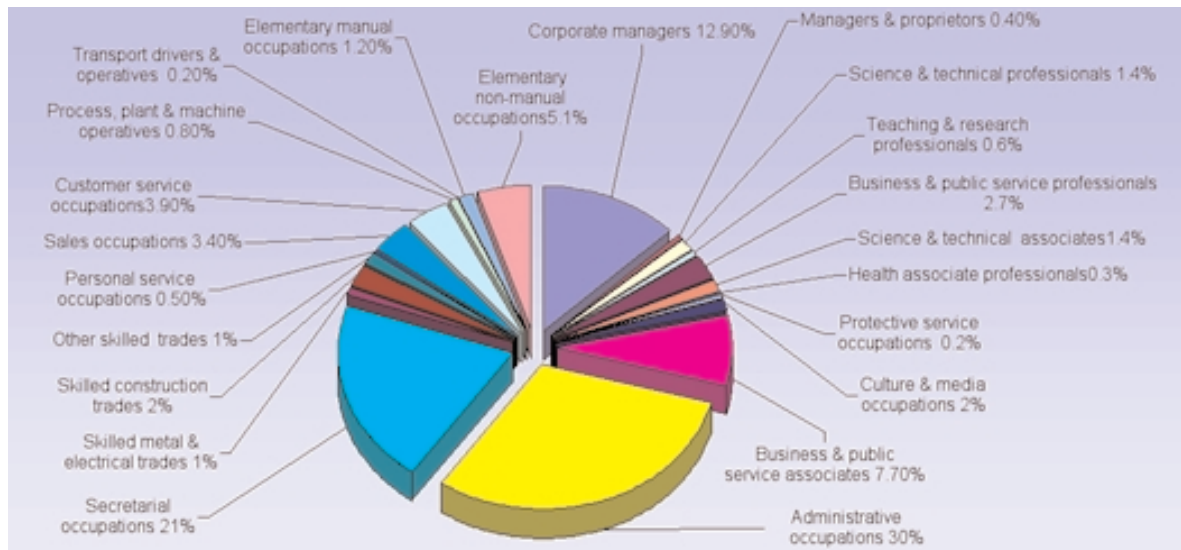


Figure 22: Women in construction by occupation

Source: original data is derived from the 2002 Labour Force Survey. Data analysis is provided by Institute for Employment Research at University of Warwick. Geoff Briscoe 2005)

Figure 14 shows the occupational distribution of women in construction according to the Standard Occupational Classification (2000), using the LFS 2002. 80 per cent of the women work in the skilled administrative, professional, technical and clerical occupations while the remainder work in sales, customer service or unskilled administrative occupations. 93 per cent of women were in non-manual occupations, with only about 1 per cent working in the manual trades (Briscoe, 2005). About 50 per cent of all women in construction work in administrative and secretarial occupations, whilst 14 per cent are employed in professional and associate occupations. 13 per cent are employed as managers and, of these, a small number are self-employed and managing micro enterprises. Less than 5 per cent of all women are employed in skilled construction and related trades, and this proportion is mirrored by the relatively small number of women trainees in the manual trades (Briscoe, 2005).

4.1 Gender divisions and subordination

Women do two-thirds of the world's work, receive 10 per cent of the world's income and own 1 per cent of the world's resources. This information regarding the importance of women's work, paid or unpaid, was encapsulated during the UN decade for women (*Charles, 1993*).

The Second World War proved beneficial for women in terms of breaking down job barriers and creating new openings. The 1960s saw women taking control over their fertility, the 1970s brought about the equal opportunities and equal pay act and in the 1980s the principle of non-discrimination between men and women - equal pay for equal work - was recognised. Post-war developments created new and beneficial social and economical situations for women, shifting towards the services sector industries (*Hakim, 1996*).

Today, women constitute above fifty per cent of the labour market. This increased representation may be attributed to the following reasons:

1. Deskillling of historically male jobs
2. Demographics: increased life expectancy and having few children
3. Restructuring of psychological expectations towards self expectancy
4. Economic necessity: rising cost of living and thus need for second income
5. Rising levels of educational attainment

Although women have been gaining economic equality with men, women continue to remain disadvantaged and dissatisfied on the work front. Men and women are segregated into different occupations with women concentrated in what may be described as a 'job ghetto' of low paid work and the difference in pay continues to exist though by narrower margins. Men continue to have the upper hand while women continue to work twice as hard to prove themselves in 'male-dominated' industries. This segregation of women into traditional female occupational sectors and hierarchical positions by women occupying only junior and supporting positions results in their apparent under achievement in the labour market relative to men.

4.2 Explaining women's exclusion, underachievement and subordination

4.2.1 Sex and gender

Distinguishing between gender and sex, people can be biologically sex typed as male or female, but a gender role is learnt or socially determined. Children develop ideas about the roles of men and women even before they start school and these are often reinforced by many different influences including parents, teachers and the media. As a result, subject and career choices may be shaped from an early age.

Gender is fundamental to the culture of organizations according to known studies within other sectors (see *Ledwith and Colgan, 1996* in *Dainty et al., 2000*). Organizations also form 'gender cultures' known to be hierarchical, patriarchal, sex-segregated, sexually divided, sex-stereotyped, sex discriminatory, sexualized, sexist, misogynist, resistant to change, and to contain gendered power structures (*Newman and Itzin, 1995*). Masculinity forms a key element of any corporate culture (*Dainty et al., 2000*).

It can be more difficult for women to gain promotion and enter higher level occupations than men, a common case for both atypical and typical areas of work. This phenomenon has been called '**the glass ceiling**' and has been described by the Glass Ceiling Commission in the USA as:

“...invisible, artificial barriers that prevent qualified individuals from advancing within their organisation and reaching their full potential. The term originally described the point beyond which women managers and executives, particularly white women, were not promoted. Today it is evident that ceilings and walls exist throughout most workplaces for minorities and women. These barriers result from institutional and psychological practices, and limit the advancement and mobility opportunities of men and women of diverse racial and ethnic backgrounds” (Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a).

An occupational stereotype is a form of sex-role stereotyping, that is, a set of assumptions about the sorts of activities and interests that are associated with the roles of men and women in society. Sex segregation effectively creates a class of jobs which is then subject to societal stereotypes (Gutek, 1988 in Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a). Segregation takes place first and is then embodied within stereotypes and cultural norms and expectations, which then serves to underpin the process of segregation. Individuals by and large perceive an occupation as being performed principally by men or by women, and then believe it must require masculine or feminine attributes in order for an individual to be effective within that role.

Two different forms of occupational segregation by sex are observed. Horizontal segregation refers to the distribution of men and women across occupations, for example women may be perceived to work as maids, caretakers, nurses and secretaries and men as truck drivers and doctors. Vertical segregation refers to the distribution of men and women in the same occupation but with one sex more likely to be at a higher grade or level, for example men are perceived as more likely to be production supervisors and women production workers, and men are more likely to be senior managers and women junior managers. In nursing, despite women dominating the field, male nurses were twice as likely to be found in higher grade nursing posts, although females had better post-basic qualifications (Finlayson and Nazroo, 1998 in Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a; Hakim, 1992 in Anker, R. 1997).

A number of theories have been put forth over the years to explain such widespread gender segregation of occupations. The basic principle of gender theories is that women's disadvantaged position in the labour market is caused by, and is a reflection of, patriarchy and women's subordinate position in society and the family. The most frequently cited theories include, among others: Human Capital, Statistical Discrimination, Labour Market Discrimination, and Socialization theories (Becker, 1971; Mincer & Polachek, 1974; Blau, 1984; Corcoran, Duncan, & Ponza, 1984; Marini & Brinton, 1984; Mason, 1984; Strober, 1984; Reskin & Hartmann, 1986 in Gatton, D.S. and DuBois, C.L.Z. et al. 1999).

4.2.2 Feminist/gender theories and related explanations:

Theories of patriarchy

The key explanation offered by the patriarchy theories for women's subordination is that segregation by occupation is used to restrict women to the 'ghetto' of low paid work, restricting competition by raising/building glass walls and resulting in women invariably earning less than men.

Steven Goldberg's theory of the inevitability of male dominance and patriarchy based on psycho-physiological processes argues that testosterone and other differences in male psychological development makes men generally more aggressive, self assertive, dominant and competitive and are a source of sex differences in motivation, ambition and behaviour. Consequently, they invariably seek to obtain the top

position in any hierarchy, be it workforce, sport, politics, crime or any other area of social activity with a hierarchy of status and power that prompts competitive behaviour. He also states that men may not be necessarily able, competent or effective in using positions of power and authority, only that they are motivated to seek such positions with greater determination and persistence than women, and are more prepared to make sacrifices to get there, in terms of forgoing other activities or benefits (*Hakim, 1996*).

Hartmann's theory of patriarchy, male organisation and job segregation defines patriarchy as men's domination of women; specifically men's control of women's labour with explicit emphasis on occupational segregation as the key mechanism used by men to restrict and constrain women's access to income and earnings, forcing domestic division of labour with a disproportionate share of housework and childcare responsibility thus excluding them from paid work; rendering them dependent on men. This may be simply stated as male organisation to further their interests against those of women, especially to control women's work wage which remains the basis for most formulations today (*Hakim, 1996*).

Becker's theory of rational choices within families argues that the sexual division of labour results in men investing more in their human capital: education, training, career development and work experience. Women tend to prioritise family and choose jobs that are less demanding and compatible with domestic responsibility. This results in occupational segregation as women tend to seek jobs that are less demanding or require less responsibility (*Hakim, 1996*).

4.2.3 Theories of occupational segregation

Theories that attempt to account for the establishment and maintenance of segregation include those based on individual differences, including human capital theory; those that are based on ideas of discrimination by employers, including labour market discrimination and rational bias theories; and those that take as their central premise, the notion of systemic barriers within organisations, including intergroup and dual labour theories. While no one theory accounts single-handedly for the establishment and continuance of gender segregation, together they help to make sense of these employment phenomena. There has been relatively little empirical research to test these theories at organisational level.

There are, therefore, a number of influences which affect occupational segregation, the research shows that these are mutually reinforcing. Decisions made by individuals certainly contribute to the perpetuation of occupational segregation, but perceived occupational segregation in turn influences individuals' choices (*Miller, L., Neathey, F. Pollard, E. and Hill, D. 2004a*). Occupational gender-stereotyping is important to consider because of labour market outcomes especially in terms of recruitment, hiring, pay, promotion, etc. that may result from them. Further, gender-stereotyping of occupations may discourage individuals from pursuing careers in occupations typed as gender-inappropriate for them, even though they may actually be well-suited for such careers (*Gatton, D.S. and DuBois, C.L.Z. et al. 1999*). Descriptions of these theories are a summary of articles authored by Miller, Neathey, Pollard and Hill, EOC, Working Paper 15, Gatton and DuBois et al. 1999 and Anker, 1997.

The various theories put forward to account for continued gender segregation, restricted career advancement and lower wages for women at work may be grouped into three different categories:

- Those that focus on individual, objective differences between the sexes that account for women's relative lack of success compared with men.
- Explanations based on discrimination by employers.
- Explanations based on the existence of systemic barriers structural discrimination).

Individual differences theories suggest that objective differences between the sexes; factors such as women's attitudes, traits and behaviours prevent them from succeeding at the same rate as men. They also propose that women and men do different jobs because women and men themselves are different. However, studies that have examined characteristics which are relevant to work have in fact found few gender differences. Research (Eagly and Johnson in Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a) has focused on managers has showed that gender differences in management style revealed very few differences between male and female managers with one key exception: when democratic/participative management style was compared with autocratic/directive, women showed more participative behaviour. Secondly, working in particular jobs, individuals are constrained by socialisation into the norms and expectations of that job, substantially reducing the scope for any individual differences.

Human capital theory advocates that skills gained through education and training (opportunity cost) can alter the wages individuals receive. There is a more specific version of the individual difference theory that contends that people are rewarded for their previous investment in their own education and training. With qualifications and experience held constant, as in the case of the nursing profession, there remains an advantage for men relative to women that cannot be accounted for by differences in human capital. Therefore human capital theory clearly does not fully account for the differences in present-day patterns of employment of women and men. Women tend to prioritise family or domestic work, choosing to limit labour participation resulting in lowering their skills, qualification and experience and thus lowering their human capital value.

4.2.4 Explanations based on discrimination by employers

This group of theories is based on the principle that occupational segregation derives from the beliefs held by employers that differences exist between the sexes that make one sex less suitable for employment. There are two theories that explain or predict the hiring of women or other minorities where individuals or organisations condone discrimination: the labour market discrimination theory (Wells and Jennings, 1983 in Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a) and the rational bias theory (Larwood, Gutek and Gattiker, 1984; Larwood et al., 1988a, 1988b in Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a).



Figure 23: "Yes, this is a two career household. Unfortunately I have both careers."

Source: Carol Simpson Design Works for Labour and Non profit Organisations, <http://www.cartoonwork.com/archive/discrimination.htm>

Labour market discrimination suggests that, where employers, customers and/or employees have discriminatory tastes that is preference for either sex as employees, they hire a member of the less favoured group if they can do so at a wage discount sufficiently large to compensate for the perceived loss of utility and/or discomfort associated with employing them (Miller, L., Neather, F. Pollard, E. and Hill, D. 2004a).

Rational bias suggests that a manager's decision to discriminate in favour of one gender or the other in hiring or promoting employees is influenced by whether such discrimination would be viewed positively by superiors or colleagues; that is, if there is a possibility of a manager being viewed positively by directors for choosing to hire a male rather than a female, then this is likely to increase the likelihood of the discriminatory decision being made.

4.2.5 Explanations based on systemic barriers

Systemic barriers may be described as structural discrimination within an organisation and include two main theories:

Intergroup theory has been used by organisational psychologists to explain the relationships, i.e. actions and interactions of groups within organisations. The adapted theory proposes that there are two types of groups within organisations; 'organisation' groups, which are based on common work tasks and positions within the organisational hierarchy, and 'identity' groups, which are based on characteristics such as gender, age or race. The large overlap between these groups results in segregation. Perceptions can be further distorted when the patterns of the groups reflect those of society as a whole, for example, if women are concentrated in the low status job groups or the management consists entirely of men.

Dual labour market theory says that there are two labour markets the primary and secondary labour markets. The primary labour market comprises unionized or professional jobs, with high wages, benefits, good working conditions and chances for advancement. It is generally closed to external competition or highly limited by qualifications with men predominating within this sector. The secondary labour market is low wage with few benefits and is open to external competition. Women in part-time unstable jobs predominate in this market, where the large pool of unemployed workers keeps wages down. Poverty is generally associated with the secondary labour market.



Figure 24: Discrimination - negative stereotypes and employment barriers limiting employment opportunities (Source: 2003, Steven Hick, Carleton University, <http://socialpolicy.ca/52100/m5/m5-t10.html>)

Women are under-represented with their distribution highly skewed within the construction industry, suffering from both occupational and organisational segregation. Two-thirds work in secretarial or clerical roles with significant under-representation in the engineering and technical occupations compared to their male counterparts (*Fielden et al., 2000*). The barriers that prevent the entry of women into the industry begin in early socialising and education, and continue throughout training and recruitment. These barriers are further exacerbated by the industry as it continues to foster a male only image and remains entrenched in a culture which undermines the value of women (*Fielden et al., 2000*). Factors affecting the retention of women after their entry into the industry may be classified into two dominant categories: private life demands and working environment (*Gilbert and Walker, 2001*).

Theoretical rationalisation has been discussed, entailing social and psychological perspectives and explaining male dominance and women's subordination leading to theories of occupational segregation and market segmentation. The most effective mechanism for *subordinating women* is neither exclusion from the workforce nor segregation within it, but the ideology of the sexual division of labour in the home and the ideology of sexual differences. Prisons of the mind are always more effective than prisons of the body (*Hakim, 1996*). Women feel forced to make a choice between career or family (*Dainty et al., 2000*) with an implication that they have no real choice, rather one that is dictated by society. This leads to market segregation created by forced choice for women where wage work becomes an extension of domestic work, not an alternative.

The construction industry needs to find ways to balance its requirements, as an employer, if it wants to get the best out of people with childcare responsibilities. The working hours culture needs to be replaced with flexible working. Better work-life balance is being demanded by both men and women as men now take part in child care responsibilities (*Zara Lamont*). The construction industry currently fails to address issues combining work and family commitment, treating them as separate.

The construction industry is facing a 'demographic time-bomb' - that is, the pool of traditional male applicants is contracting and the current workforce is ageing leading to problems of skill shortages and recruitment. Therefore, there is a need to tap into the talents of the 'other half' of the workforce; women and ethnic minorities. This appears to be the driving force to encouraging women into the industry rather than equal opportunity.

The Latham Report, reinforced by the Egan Rethinking Construction Report, affirms that construction clients are demanding industry change. They want different skills and traits, maybe inherent more in women than men. They want less confrontation and more of a 'can do' approach. They want a safe work site with zero accidents. They want a skilled workforce that cares about the quality of the product. The need is for customer-focused customer care, people with good interpersonal, understanding, empathy, facilitation and listening skills, trust, and openness. Women also possess fine motor skills and attention to detail. The Rethinking Construction Report felt that the industry was underachieving, with too many dissatisfied clients and unpredictable projects in terms of time, cost and quality. The industry has to radically change how it does business, finding the right balance between masculine and feminine traits. Thus, more women can add value in the construction industry. The supposition is that the industry must change to attract more women, but this is not necessarily correct. The industry may have to recognise and build upon the strengths and characteristics of women; this does not necessarily mean it has to change. Women are needed at all levels, in management, in design, in trade skills, and in all the various parts of the supply chain.

Recruitment is only one side of the coin; the issue of retention is the other. There are two dimensions to the issues of women in the construction industry: firstly, a woman's apparent reluctance to enter the industry and secondly, the experience and opportunities for progression on entry.

The predominant *image of construction* is that of a male-dominated industry requiring brute strength and a good tolerance for outdoor conditions, inclement weather and bad language. Reconciling this image with women's participation in the construction industry is problematic (Agapiou, 2002). The poor image of construction, a lack of role models and knowledge, poor careers advice, gender-biased recruitment literature, practices, peer pressure, and poor educational experiences are cited as having a negative impact to women entering the industry (Gale and Skitmore, 1990).

Other structural and image related barriers militating against the entrance of women into this industry include: the dominant male workforce; exclusive networks; informal recruitment; discriminatory sexist behaviour; attitudinal barriers; long hours culture; competitive and adversarial ingrained culture characterised by masculinity; conflict and crisis; challenging, dangerous and hostile environment; facilities; training; career progression; and the present level of their participation (Dainty et al. 2004; Sommerville et al, 1993). The construction industry has a poor public image, synonymous with high cost, low quality and chaotic working practices. Women therefore tend to choose not to enter an industry that fails to acknowledge their ability, and all too often places them in a hostile and threatening environment.

The barriers encountered by women at every stage of their progression effectively inhibit the number of women entering the industry, through poor imagery and inadequate marketing, while others serve to prevent women rising up the career ladder to positions which would afford them the power of change. 'Tokenism' is a common occurrence whereby women, as a result of industry initiative, are brought in job-winning teams but do not get job-running opportunities.

Gender-based notions of the construction workplace still persist amongst men at large. Some perceived apprehensions of men towards women entering the working environment include not being equally suitable for the work or having the innate ability to use tools, understand buildings, lift heavy materials, possess natural strength and handle direct criticism or 'straight talking'. They feared trouble in the form of distraction at the job, sexual harassment litigation, and the potential for women to overreact. On the other hand, they believe that certain jobs were particularly appropriate for women like finishing jobs, plastering, tiling, joinery etc. This was based on women's aptitude for attention to detail, and good sense of design and colour and reliability. They are tidier and more careful, they tend to be more organised and work well together (Agapiou, 2002).

Men who have had experience of working with women find they are capable, they fit in well with male colleagues and they contribute to a quality outcome. Agapiou's study indicates the existence of a *cultural shift* with a growing acceptance by men of women in non-traditional construction occupations: cultural values are changing and patriarchal traditions are successfully being challenged. The findings also indicate that young women are becoming more confident about entering construction craft occupations and being accepted for their contribution on an equal, but different, footing with their male colleagues. Culture change is considered a key issue crucial to attracting and retaining women within the industry.

Men's perception of women entering the industry is equivocal with some men being territorial and reluctant to accept women's abilities and skills, while others through experience are confident of women's abilities and have a protective and welcoming attitude.

Traditional recruitment practices such as 'word of mouth' recruitment and unfair onerous terms and conditions like mobility, lack of part-time work, advertisements and brochures displaying images which reflect masculine values and interests, unstructured interviews, discriminatory selection criteria, and sexist attitudes, account for limited participation of women in the industry. The composition of the existing workforce is a result of the traditional recruitment practices. Therefore, recruitment and its gender inequalities are the responsibility of management and the continuous re-creation of an all-male

workforce is questionable. It is then a very interesting question to ask whether the attitudes of the existing workforce create a real limit to what could be implemented by a management that seeks to create diversity. Support and advice to minors, parents and teachers, use of web portals, and job fairs are effective communicators in this regard.

Furthermore, the UK education system fosters a gendered route through education. Most routes into construction are via crafts and trades, higher education and professional qualification. But the educational routes require qualifications in science, engineering, and technology subjects where women are under-represented. Thus, education becomes a gatekeeper dissuading women entrants right at the start of their careers. (Fielden et al., 2000).

The UK construction industry recently has become more proactive in retaining women in order to avoid the 'revolving doors syndrome', that is attracting people only for them to exit shortly. Part of the fault may lie in opportunities over-sold by recruitment campaigns, sheltered academic environments and an unrealistic interface between careers choice and working life within the industry. The lack of employment opportunities and limited promotion prospects contribute towards reasons for women leaving the industry. Inter-organisational mobility was seen as a necessity to circumvent barriers obstructing progress thus slowing down their career development. Women were isolated in positions of authority and over-represented in supporting roles. Cultural change in the construction workplace is also inter-linked with investment in training. Clarke et al. in *Agapiou, 2002* found close relationships between firms that invest in the development of equal opportunities and development of training. Women do not enjoy career success commensurate with their male counterparts. Women entrants are, by nature of their non-traditional choice, an atypical group. They tend to be ambitious and high academic achievers, therefore a lack of progression quickly leads to disillusionment and dissatisfaction leading to their exit from the industry. They progress at slower rates and are confronted by a number of obstacles to their development. Other elements like communication, management of human relations, gender issues, business awareness etc. need to be integrated in training to help women meet the added pressures of the workplace, which would help improve overall working practices and performance in the industry.

The role of educational institutions as gatekeepers should be critically reviewed to encourage future entrants into the industry, making construction a career choice for everyone, including women. Men in the industry who act as gatekeepers, resisting changes that threaten their organisational powers, should be made aware of the potential benefits that follow from allowing a mix of perspectives. Raising standards right across the industry is the only way to change the industry in terms of image, reputation, working environment, health and safety, recruiting and retaining the best.

This research reviews the apparent barriers women face from and within the construction industry. The following section assesses the current status of the industry, its views towards women and explores the myths about the industry.

6.1 Conclusions reached on the under-representation of women:

The under-representation of women in the occupational hierarchy manifests in two ways:

1. "Glass Wall" - the traditional gender split in the sectoral pattern of employment. The segregation of women into traditional roles has persisted for some time, with women being more likely to work in administrative and secretarial, personal services, and sales occupations, and men more likely to work in manufacturing and production.
2. "Glass Ceiling" - the representation of women in many industries decreases with an increase of seniority of the post or position.

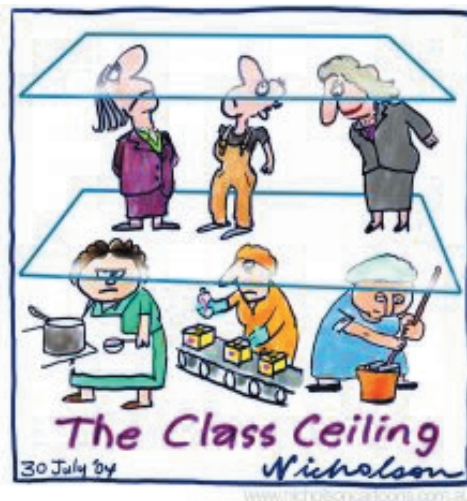


Figure 25: The 'Glass Wall' or 'Glass Ceiling' - sectoral pattern of employment

(Source: www.nicholsoncartoons.com)



Figure 26: The 'Glass Ceiling' - phenomenon - women can see the opportunities but are unable to progress in their careers

(Source: *Norwich Union News* March 98, *Lewis Peake Illustrations and Design*)

Women are moving into high growth sectors of the economy to a greater extent than men. However, the workplace culture is changing very slowly with women still not rising rapidly to senior positions.

The barriers that prevent the entry of women into the industry begin in early socializing and education, and continue throughout training and recruitment. These barriers are further exacerbated by the industry as it continues to foster a male-only image and remains entrenched in a culture that undermines the value of women (Fielden *et al.*, 2000). Factors affecting the retention of women in the industry may be classified into two dominant categories: private life demands and working environment (Gilbert and Walker, 2001).

Studies of the role of women in construction in developing countries have examined the cultural dimensions of women in the workforce. They show that the role of women in construction in developing countries is completely different to the UK; the situations are not comparable. With up to 50 per cent of the production workforce being female, women in these countries constitute the informal economy and are generally integrated into the workforce at the bottom end of the job hierarchy, as unskilled helpers or "head-load carriers" within construction.

In developed countries the initiatives for women entering the construction industry are driven by issues of equality and predictions of a shortage of traditional skilled white male entrants, whereas in developing countries women are involved in construction trades as unskilled labourers. They work to alleviate poverty and the employer gains by operating with reduced costs; these women are under-paid or sometimes not paid at all because the payment is given to the husband.

6.2 Complexities of the issues of women in the construction workforce:

Image

The perception and image of the industry is still deeply rooted in the past. The image of the industry is associated with bricklaying, deeming it dangerous, hard working and macho, despite years of positive image campaigning (*Jones, 2005*). There is little realisation that the industry is becoming high-tech, no longer simply requiring brute strength; it is more about mental strength, commitment and the determination to succeed. The general image is equated with site work and physical labour; instead it is a complex industry with many sub-sectors such as consultancy, design, manufacturing and supply.

The discussion on demographics of the female population in the second section of this report shows the image campaign has not targeted the entire audience. Besides the young school leavers and university students there are other populations of women - those returning to work from career breaks and those changing careers.

So are we looking at the wrong picture, and where are we going wrong? The starting point for changes has been the launch of various positive image campaigns to a targeted audience, including bursaries and scholarships for construction-related courses, but this raises a number of questions:

- How specific can the targets be and who are these targets?
- Are we talking about school leavers and university graduates?
- What then happens to the rest of the population of women?

There have been reports by UCAS of an increase in the number of women in some sectors of engineering and construction-related degrees, but this does not translate to employment. Merely increasing their numbers at the bottom does not necessarily translate into an increased number of women within construction. Other factors such as age, qualification, skills, abilities, motivation, and stage of career also need to be considered.

This brings forth the 'leaky pipeline' concept that was put forward in the 'Developing Female Engineers' Salford University study. It would be normal to assume that increasing the number of women at one end of the pipeline would result in an increased output at the other end. But that would only happen if no losses were experienced along the way, for example students dropping out or getting siphoned off into other industries and sectors. The drop-out rate of science and engineering students in the UK is often in excess of 20 per cent (*Jensen, K.S.H., Takruri-Rizk, H. and Crossley, L. 2005*).

Four aspects of the 'leaky pipeline' concerning women in scientific employment in New Research on women, science and higher education outlined by Judith Glover (2005) are:

- Qualifying - getting the qualifications
- Translating - qualifications into employment
- Persistence - in employment (retention)
- Advancement - (career progression).

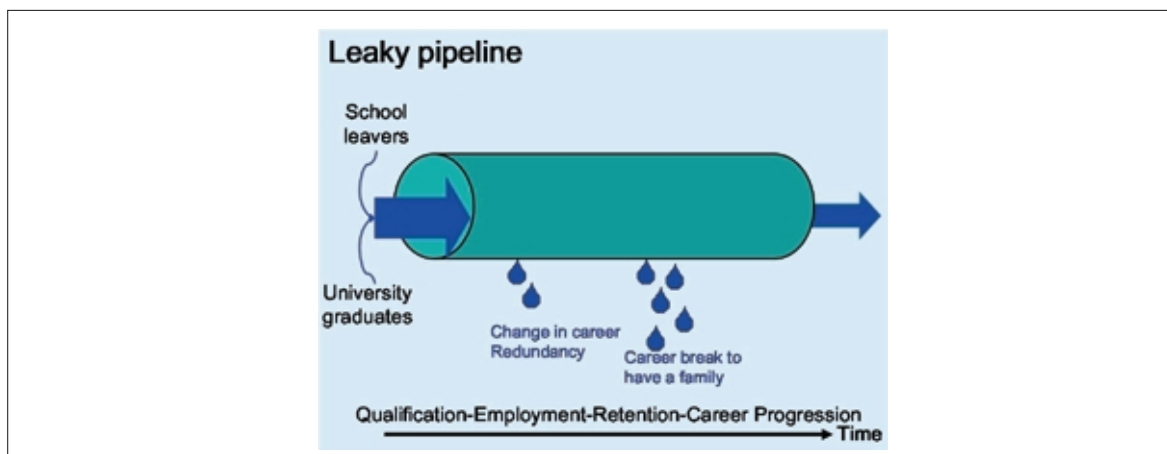


Figure 27: “The Leaky Pipeline “

(Based on the Salford Study)

Qualifying, translating, recruitment and retention

Getting women into the pipeline via education, training and apprenticeships seems to be the primary issue being tackled, but would the aspect of moving from the education system into employment and remaining there for the duration of their economically active life contribute more to the increase of women within the industry? Colleges are happy to take on more women, but what happens when they go out to seek employment? If and when the number of women in construction increases, how are they going to be incorporated within the system? Are they able to secure work placement and infiltrate the industry and how easy is this transition? Building (Link, 2006) described difficulties in obtaining sponsorship from employers for course enrolment on construction-related training courses in local colleges. It reported that jobs are hard to get. Once off the construction ladder, it proved particularly hard to get back on.

Translating qualifications into employment seems to be the biggest barrier to entry into the sector (Link, 2006). EOC research shows that about 30,000 women leave their jobs annually on account of poor maternity rights. Both the manufacturing and construction sectors stand out with their lower than average provisions of maternity and child care benefits. The DTI (2003b) report showed that only 15 per cent of construction employers give female workers more than 18 weeks statutory maternity leave, compared to the national average of 27 per cent. Just 28 per cent operated a “keep in touch” scheme as compared to a national average of 59 per cent. These contribute to barriers of retention and career progression. Furthermore, maternity benefits are found to be directly linked to rates of retention with companies like HSBC improving retention rates from 30 per cent up to 85 per cent after implementation of full pay for 26 weeks. This option was also proven by Bovis Lend Lease to be cheaper than recruiting and training new staff. The “leaky pipeline,” that is the tendency of dropping off the career ladder as a result of policies of firms, may have more to do with the decreasing percentage of women in construction thus contributing to shortage of women in the industry.

The length of service seems to be a stepping stone towards career advancement. Studies indicate a loss of earning power that relates to the length of break The biggest step in career progression is the challenge of re-entry. Various bodies recommend that:

- Companies should keep in touch with employees on leave, offering or assigning part-time projects of interest to them.
- Considerable efforts should be made to offer retraining to bring employees up to the level prior to their break in order to update their skills.
- Flexible working hours and carer allowances should be provided as incentives.

The recommendations were for all sectors, not just construction, looking to promote women to higher levels of the executive echelons. Research in the USA, UK and Scandinavia show a strong relationship between shareholder returns and the proportion of women in higher executive echelons (*The Economist*, 2005), suggesting that corporate cultures that foster women's careers can also foster profitability.

According to the British Social Attitudes survey 2004, the three important considerations in making career choices by most people were job security (one in three), interesting work (one in four), and good work life balance (one in five). These were followed by good pay and opportunities for promotion (ONS 2006d).

The way forward

Steps are being taken to make the construction industry more inclusive, ranging from examples, such as Bovis Lend Lease's action on maternity benefits, to smaller contractors like Durkan Construction and Derwent Build that seek female apprenticeships (Jones, 2005).

The chairman of the Simons Group felt that men and women had different talents and the company was missing out by not recruiting more women. So, four years ago, he set a target of the '50:50 Vision' - a 50 per cent female workforce in the next 10 years. He wrote in *Building* magazine that when men got together they tended to be competitive, loud, physical steamrolling objectors and weaker members, but the introduction of women could alter this behaviour. He added that women were better at finishing things, juggling many different issues at once and helping the team to work as a whole.

The aim was to bring a better balance to business and create a more diverse workforce, strengthening customer focus through improved internal and external communications. Sandi Rhys Jones was appointed non-executive director of the group board to help implement the 50:50 Vision.

Three teams of women were drawn from across the Simons Group of companies to boost confidence and spearhead research in three areas:

- Career development, investigating working with schools etc.
- Working environment, focused on work life balance issues
- Client relations, building relations with Simons' clients, with women playing roles in construction procurement.

This enabled them to achieve information and good practice examples, links with schools and colleges, an employee helpline, communication networks and easy access to training and courses (*Construction Manager* July/August 2005).

Willmott Dixon, primarily a contracting management company, has two major divisions (Housing and Construction), nationwide offices and 900 employees. It witnessed a major growth in this capacity with over 100 new employees, 250 employees having been with the company for over ten years. 8.2 per cent of the company's professional construction employees are female; twice the industry average.

This may be attributed to Willmott Dixon's history of training and development schemes, including their highly regarded management trainee scheme, a well structured personal and professional training and development programme which meets the business need; promotion to senior management; and a high level of staff retention, business success and staff satisfaction (*Construction Productivity Network CIRIA* 2005).

The ESF-funded Dido project provides an opportunity for women to meet and share experiences, and helps them find new and exciting careers in construction and property. Piloted in East Suffolk, it aims to give women the information and opportunity to explore working as engineers, building technicians or

other craft workers, and lorry drivers. The project helps women receive taster sessions, work experience, personal development, transition of employment, mentoring and networking with organisations like the CITB or IPSENTA etc. It aims to reach 100 women and offers a combination of taster sessions, work experience, and personal development. It will end in November 2006.

6.3 A closer look at construction - a changing industry

Previous sections have outlined the barriers facing the industry for the recruitment and retention of women. However, it is important to understand the nature of the industry; in particular the supply of and demand for its workforce, and its supply chain. The construction industry has changed significantly over the last 20 years.

Construction has undergone significant changes in process and technology. Procurement has changed with the introduction of partnering, build-operate-transfer (BOT) arrangements and framework agreements with continuity of work. Some organisations are reverting back to direct employment of the workers from a culture of self-employment. There is greater mechanisation, and site-activities have changed with more standardisation, off-site manufacture and use of customised standard components. There have been improvements in supply chain management, quality assurance and partnering, with clients seeking to create a climate of more innovation. Industrial changes have consequences for the workforce in terms of different skill requirements, moving away from manual labour towards white-collar/technical work. Brute strength and manual labour are no longer the requirement of the day.

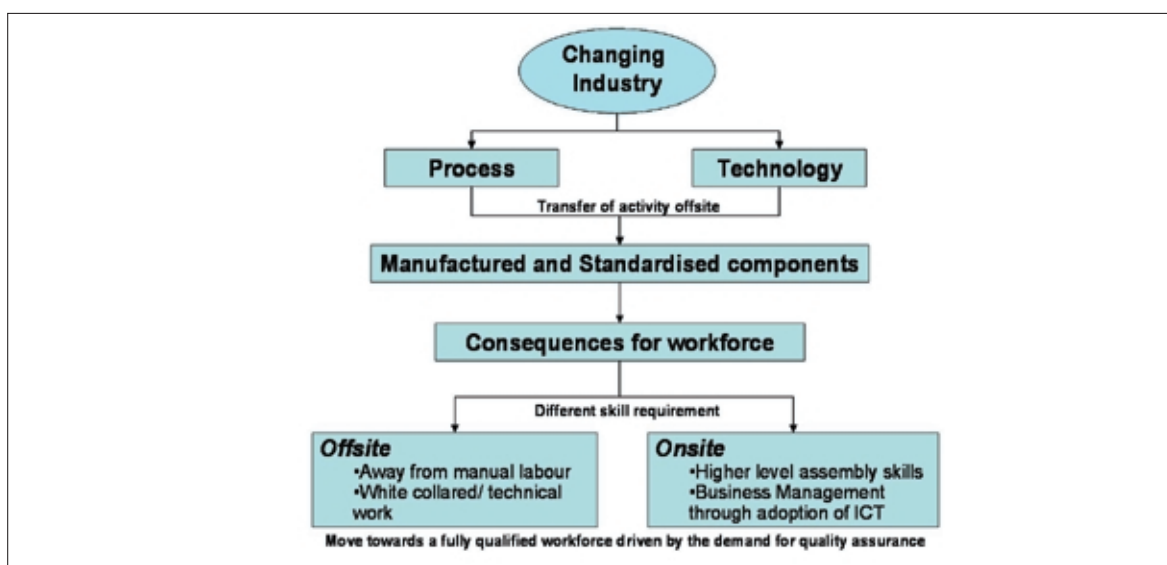


Figure 28: The Changing Industry

The industry is highly fragmented with a large number of SMEs and a small number of large companies. It is made up of contractors, designers, consultants, specialist contractors and specialist suppliers and extends from housing, commercial, non-residential, and infrastructure to repair and maintenance.

The fragmentation, combined with the complex construction process makes it difficult to pinpoint where action should be taken, in what form and by whom. The problem lies in SMEs not being able to recruit easily due to lack of resources, type of work or lack of security and entrepreneurial spirit to make such changes. Larger companies and mega service providers are involved in organisational and business roles whilst sub-contracting other tasks to SMEs.

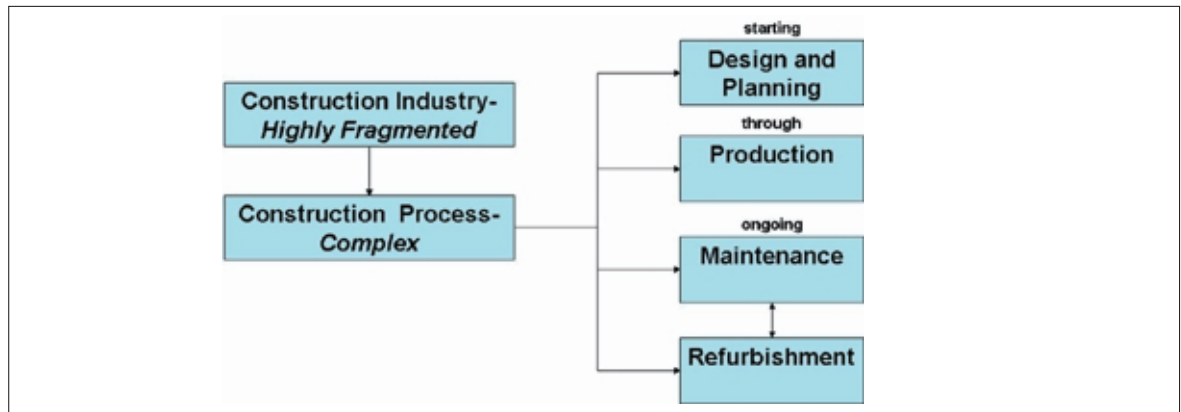


Figure 29: The Fragmented Industry

The image of the industry seems to be fixated on just two aspects, namely the site and head office, yet the industry has a complicated supply chain which entails significant prefabrication and manufacturing sectors and it is unclear how many women work across the supply chain as this area is often disregarded.

6.4 Conclusions

This research shows that there are ongoing studies on how the industry can become more inclusive, but the focus so far has been on attracting more women (positive image campaigns). Whilst recruitment remains important, there is a gap in the knowledge in translating qualifications into employment, and employment into retention. This is described by the 'leaky pipeline' concept developed for the project 'Developing Female Engineers'.

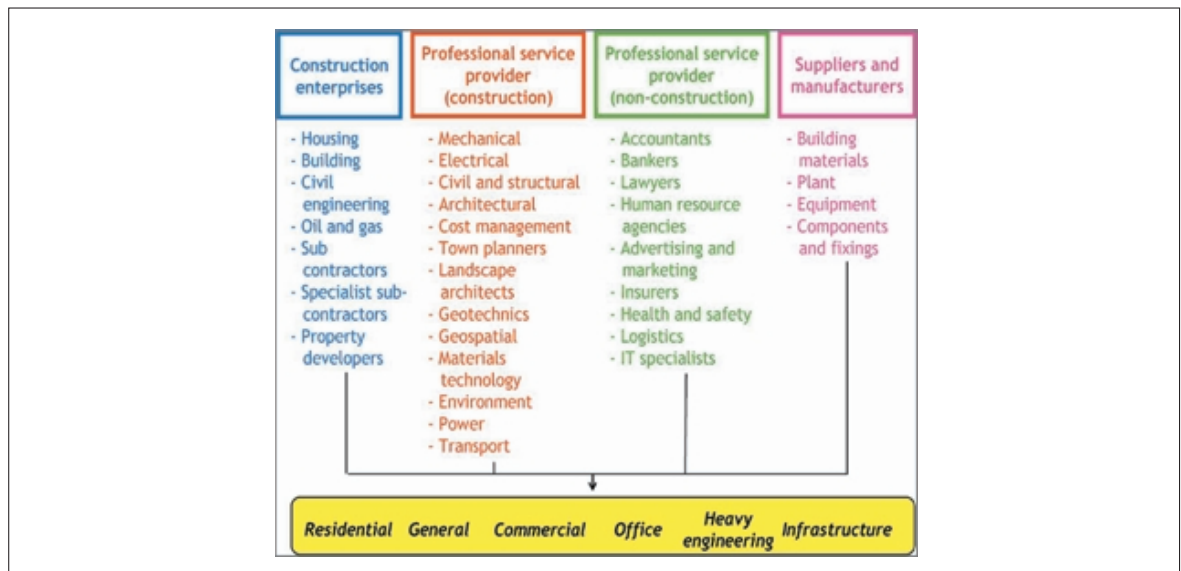


Figure 30: The Construction Road Map (Jewell, C)

Attraction by itself is not the key to increasing women in the construction workforce. Recruitment must be followed by induction of the new employee in order to improve retention levels. Job satisfaction as a result of opportunities like training and development, and promotion is more likely to retain staff. For women in older age groups/mature women, part-time and flexible working women, the real barrier is the balancing of work and family life, just like other industries.

Attraction is currently aimed at school leavers and university graduates. Women returnees remain a partially untapped workforce resource - 'returnees make up a quarter of the female labour force in the UK' (Tomlinson, et al, 2005). In addition, the composition of the population structure is predicted to change; the working age population will become much older towards 2020. The pensionable age of women for this period is also set to increase to 65 years.

Lack of part-time quality work reinforces the "glass ceiling", leading women to seek employment in the "5 C's", namely caring, cashiering, catering, cleaning and clerical work which are the low paid, under-valued occupations. Women are doubly discriminated by the loss of earnings they face for taking time out of the labour market, and the pay penalty for part-time work.

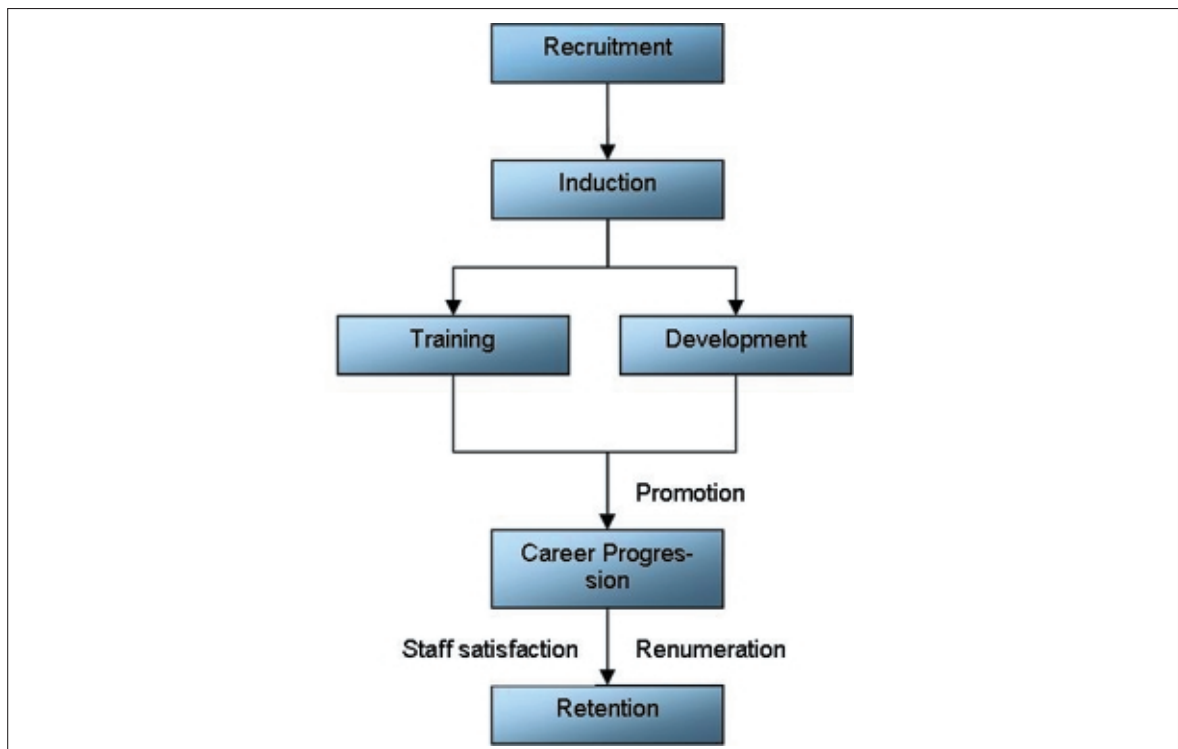


Figure 31: The complete recruitment and retention process

44 per cent of female employees work part time compared with 11 per cent of males (ONS 2006b), yet in UK construction, part-time working only accounts for 5 per cent of all construction jobs, thus employment opportunities through this route are denied to them (Briscoe, 2005).

Construction has a high proportion of self-employed workers (about 37 per cent of the total workforce). In Spring 2005, 64 per cent of employees and self-employed people 'working at home' were women, but most self-employed workers are manual operatives. Only a small number of women follow this route to employment; women have very low representation in this occupational category (Briscoe, 2005).

The long-hours and "presenteeism" (need to be seen at the job) culture, proves difficult for female employees with childcare responsibilities, making work-life balance a serious barrier to remaining the construction sector. Women returnees, who have taken time out to raise a family, find it difficult to re-enter the construction industry.

Increasingly, construction employers will have to implement creative solutions, such as re-training to update skills, flexitime, part-time working, working from home, and job sharing in order to recruit and

keep much-needed female employees across all levels of construction work. SMEs form a major part of the construction industry and additional costs involved in setting up flexible or part-time employment.

The Women and Work Commission recommends the DTI and HM Treasury examine the case for fiscal incentives targeted at these SMEs. In response to this the 2006 Budget announced a package of measures to enhance lifelong learning opportunities for women in training and work. Funding is for doubling the number of existing Skills Coaching pilots to 16 and the number of pilots delivering level 3 skills, with an additional pilot focused on helping women return to work, and helping Sector Skills Councils in industries with skills shortages to test new recruitment, training and career pathways for over 10,000 low skilled women. The construction sector should grab the opportunity and funding to get more women into construction.

There remains the question of where action should be taken and who it should be taken by, for example by companies or by government (positive image campaign). More importantly, any action must take account of the fragmentation of the industry and the barriers to be addressed - attraction, recruitment and retention. Lessons can be learnt from other industries, such as banking and ICT where organisational changes have contributed to an increase in retention and returnees to work, saving millions on additional recruitment and increasing productivity.

The myth is that the construction industry is all about the site and the head office; in reality it is highly fragmented with a long and complicated supply chain with significant off-site prefabrication and manufacturing sectors.

The public image of construction is deeply rooted in the past even today. The industry has a long and complicated supply chain with significant off-site prefabrication and manufacturing sectors. During the two world wars, a significant number of women were employed in construction. In addition there is a raft of small self-employed sub-contractors. The reality is the construction industry is complex; it would be hard to define where the construction industry jobs start and end, making it difficult to account for all the people employed within it. The contributions of women in the supply chain like administration, legal areas (e.g. specialist lawyers), manufacturing distribution-design and fixing etc. need to be recognised.

Is there a shortage of women in the industry? The difficulty in mapping the jobs that the construction sector entails makes the statistical figures of women in the industry unreliable. The tendency is to look at a small picture of the industry, those like the architectural, engineering, and surveying professions and the construction trades like electrical and plumbing or in areas of management, where the low percentage of women is apparent. In these areas the statistics for women are not very different from other sectors, like the senior judiciary (9 per cent), senior police officers (10 per cent), editors of national newspapers (13 per cent) and other executive echelons (*EOC 2006a*).

Whilst it is not clear how many women work in the whole industry, it is abundantly clear that there could be many more if the industry adopted better recruitment and retention policies. The main factor that unequivocally hinders the absorption of women in the construction sector remains the organisational work culture of the industry, which needs to become more flexible to encompass a good work-life balance. The 2012 London Olympics will bring about many job opportunities with a huge potential for women to train in skills required for these jobs, which would go some way to ease perceived skill shortages exacerbated by the ageing population.

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