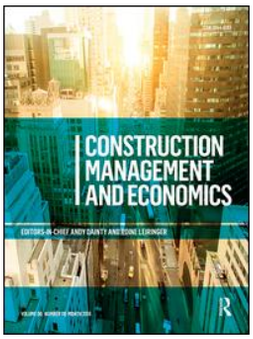

Routledge
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Construction Management and Economics

ISSN: 0144-6193 (Print) 1466-433X (Online) Journal homepage: https://www.tandfonline.com/loi/rcme20

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To cite this article: S. MacKenzie , A. R. Kilpatrick & A. Akintoye (2000) UK construction skills shortage response strategies and an analysis of industry perceptions, Construction Management and Economics, 18:7, 853-862, DOI: 10.1080/014461900433131

To link to this article: https://doi.org/10.1080/014461900433131

Construction Management and Economics (2000) **18**, 853–862

UK construction skills shortage response strategies and an analysis of industry perceptions

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Received 2 November 1999; accepted 25 May 2000

The construction industry is heavily dependent on the adequate supply of a skilled labour force, and as a result the skilled labour shortage in the UK has received considerable attention in recent years. With the current economic recovery the industry is expected to experience considerable skills shortages in both traditional and new skills areas. This paper analyses the views of construction employers in relation to the response strategies promoted by industry and government and identified in previous research which tackle elements of the skills shortage problem within the UK construction industry. The paper describes seven existing industry and government schemes, and a further nine alternative response strategies to the construction skills shortage. The survey analysis demonstrates that construction employers support: (i) the Construction Skills Certification Scheme, (ii) the Investors in People standard, (iii) economic stability within the industry; (iv) long term industry-wide training plans, (v) a return to direct employment; and (vi) the development of new technologies and construction techniques. It is concluded that the effectiveness of alternative response strategies is linked to the traditional approach of most contractors.

Keywords: Labour shortage, skills, response strategies

Introduction

The UK construction industry is currently experiencing a rapid recovery, and workloads are predicted to grow by an average of 3% per annum until the year 2001 (Sall, 1997). As a result of this growth the industry is expected to experience considerable skills shortage in both traditional and new skill areas.

The causes of the skills shortage in the UK construction industry are well documented and are attributed to a number of factors, primarily: (i) the demographic decline in the number of young people available to enter the labour market, which has increased competition for new entrants to the labour pool (Ashworth and Harvey, 1994; Drucker and White, 1996); (ii) the changing nature of construction markets and the demand for skills, which has been attributed to a reduction in construction operatives with many traditional skills (CITB, 1991); (iii) the introduction of new technologies, requiring new skills, and in some instances a higher level of new entrant training and the continual development of existing labour pools (CITB, 1991; Agapiou *et al.,* 1995; Gruneberg, 1997); (iv) the cyclical nature of the construction market, which historically has resulted in extreme fluctuations in construction output, employment and training levels (Agapiou *et al.,* 1995; Morton and Jagger 1995; Drucker and White, 1996; Gruneberg, 1997); (v) the growth of self-employment and the use of specialist/labour-only subcontractors (Clarke, 1992; Agapiou *et al.,* 1995; Fellows *et al.,* 1995); (vi) the fragmentation of the industry (Rainbird, 1991); and (vii) the decline in construction training and training resources (Agapiou *et al.,* 1995; Morton and Jagger, 1995; Thomson, 1996).

The traditional response to shortage of any type of skilled labour is to increase remuneration; however, any up-turn in demand will not be satisfied solely by this response strategy. This is because labour losses are contributed by retirement, movement to other

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ISSN 0144–6193 print/ISSN 1466-433X online © 2000 Taylor & Francis Ltd
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industries or construction industries in other countries, previous reductions in new entrant intake levels, and the fact that many operatives drawn from the ranks of the unemployed may not possess the necessary skills. The primary effect of these factors is that construction employers poach labour from each other, leading to inflationary rises in the cost of construction. This in turn reduces demand, which temporarily contributes to reducing the labour shortage (Agapiou *et al.*, 1995).

From the literature nine response strategies have been identified in addition to seven schemes or initiatives developed by industry and government. The aim of this paper is to analyse, in isolation, the views of construction employers in relation to the identified response strategies. Due to the complex nature of many of the response strategies presented it is necessary, for the purposes of clarity, to make limited reference to the interrelationship of the strategies which propose to tackle different aspects of the skills shortage within the UK construction industry.

Industry and government response strategies

In the following section seven industry and governmental response strategies are presented. These strategies range from attempts to improve the construction industry's image, through the Considerate Constructors Scheme and the National Construction Week, to the changes made by the Construction Industry Training Board (CITB) to their trainee recruitment strategies, which now place greater emphasis on adults, women and people from ethnic minorities as potential sources of new entrant trainees.

The Considerate Constructors Scheme

The aim of the Scheme was to outlaw unsafe and untidy construction sites and improve the image of the industry by improving the standard of site management and the behaviour of site operatives. Member contractors and clients (constructors) promise to show respect for people who live and work near sites (Cronin and Coates, 1997) by implementing the Scheme's eight special codes. These are based on managing and designing the work process with positive consideration for those outside the scheme.

The National Construction Week

This is organized by the CITB with sponsorship from British Telecom. Throughout the week the public is given the chance to see the whole production cycle of construction, encompassing innovations in technology, management techniques, and professional practices. The aim is to challenge the public to imagine life without construction (D'Arcy, 1997).

The Construction Skills Certification Scheme

Launched in 1995, the scheme is administered by the CITB, and controlled by a management board comprising the main employers' bodies and the trade unions within the industry. At present, the scheme provides a voluntary register of the skills, competence and qualifications of individual workers within the industry. The benefits of the scheme for the individual are recognition for skills, competence and qualifications, and the promotion of greater heath and safety and personal training awareness. For employers, the benefits of the scheme are the identification and recruitment of the right people, improved standards of health and safety awareness, and raising quality standards. These are intended to give clients greater confidence when awarding contracts. The scheme's promoters want clients to set a deadline after which they would allow only certificated workers on their sites (Sherrington, 1997).

The Investors in People initiative

The UK government has not ignored the opinion that human resources are the key to competitive advantage. A White Paper was published in 1988, produced by the National Training Task Force. The Task Force spent a year 'listening' to businesses throughout the country and examining the people factors that made one company more successful than another. The findings formed the basis for the development of a national standard aimed at motivating UK companies to invest in the training and development of their staff. Entitled 'Investors in People', the standard was officially launched in 1990 (Beckingsdale and Dulaimi, 1997).

Beckingsdale and Dulaimi (1997) have argued that, given the low penetration of the standard into the UK construction industry, construction firms are either unwilling or unable to meet the criteria for becoming 'Investors in People'. They concluded that the ability of construction companies to embrace the concept and the practices of the learning organization is limited, and that the training and development of employees is largely of secondary importance within the industry.

The New Deal employment scheme

The Welfare to Work programme, lately renamed 'New Deal' by the government, could provide industry with a fresh pool of labour. It offers employers an attractive financial incentive (depending on the length of unemployment and the age of the new recruit), a direct training grant and access to CITB training grants if employers choose to retain new entrants. According to Knutt (1997), at a time of rising workloads, threatened skills shortages and a shift to direct employment, the initiative has the potential to fill gaps in contractors' worksheets.

The CITB equal opportunities initiative

Due to the under representation of women and people from ethnic minorities within the industry, the CITB has set national and regional targets for recruitment from these potential labour pools. To achieve these targets the CITB has established both national and regional Equal Opportunities Working Groups and developed both national and regional action plans that detail equal opportunities programmes to be implemented. At a local level the CITB helps to fund collaborative work with other organizations on equal opportunities in construction training (Drucker and White, 1996).

The CITB trainee recruitment strategy

The CITB is planning to change its recruiting strategy and focus on helping contractors attract more adults into the industry through the payment of grant support for training costs. This is in addition to the to the support traditionally designated for the 16–17-year-old labour market. This strategy follows a steady rise since the mid-1980s in the dropout rate among young trainees; in some parts of the country the dropout rate was as high as 50%. The *Contract Journal* reported that in 1997 the CITB found that many 16-year-olds simply went through the motions of a few months of training and then dropped out. It suggested that this was costing the industry £7 million in wasted resources (*Contract Journal*, 1997). In general, CITB found adult recruits more enthusiastic and committed than most young people.

Alternative response strategies to the skilled labour shortage

In the following section nine skills shortage response strategies are presented: these range from the short term option of greater utilization of alternative sources of construction labour to the medium/long term options of redesigning the construction process and the development of industry-wide training plans.

Women and ethnic minorities as alternative sources of construction labour

It has been argued that women and ethnic minorities are severely under-represented in the industry. Agapiou *et al.* (1995) stated that in 1989 only 1.6% of the CITB apprentice intake was female, and Drucker and White (1996) reported that in 1991 only 1.1% of apprentice intake was from an ethnic minority background.

Drucker and White (1996) and Clark and Wall (1998) proposed that the reluctance of women and ethnic minorities to enter the industry meant that a significant source of labour was being neglected.

Adult trainees as alternative sources of construction labour

The National Contractors Group (NCG) (1990) in their report *Building Towards 2001* recommended that, as the number of school leavers falls, much greater use should be made of adult training and the training of the long term unemployed, both for people who may not have had any opportunity to train because of the effects of the recession on the industry and for people who are out of work or seeking to change direction in their careers.

New technologies and construction techniques

New technology tends to reduce the demand for labour (Gruneberg 1997) because often new inventions and innovations are labour saving. McAlpine (1997) has emphasized the benefits of investing in new technology and construction techniques: 'The building industry needs to develop more efficient building techniques that, as in other industries, rely less on people. Every other industry is pouring money into developing technology that moves away from its reliance on people at certain skill levels'.

The NCG (1990) also stated that improved production must be the next major challenge for the industry. The goal is to double manpower productivity in the next five years; then, by improving the productivity of the existing labour stock, the need for additional labour resources will be lessened. The NCG emphasized that this would be possible by only research and development into new construction technology and construction techniques.

Greater use of prefabrication

Agapiou *et al.* (1995) were of the view that the pace of technological change in the construction industry combined with increased specialization would focus more attention on the pattern of future skills requirements. In particular, the use of prefabricated components would eliminate the need for traditional craft skills, and the skills required by craft workers in the future would be determined primarily by changes in management practice and technology.

Gruneberg (1997) noted that the greater use of prefabricated components can result in a substantial reduction in site labour and the speeding up of the site construction process, with as much as 60% of the value of construction work carried out off-site by suppliers. However, he argued that the increasing use of prefabricated components was a reflection of the shortage of skilled labour and the associated increased costs.

Automating construction sites

The *Contract Journal* (1998) reported that robots on the construction site were a reality, although implementation in the sector has been limited. Information presented at the 15th International Symposium on Automation and Robotics in Construction indicated that significant progress is being made in practical implementation.

Boch (*Contract Journal*, 1998) argued that, in Japan, the development of systems is motivated partly by an expected shortage of skilled labour, but that over time there will be economic and quality advantages similar to those of an automated factory, with about 90% of present labour requirements replaced by automation. However, it is evident that in the construction sector automation using flexible robot systems has been largely overlooked when compared with progress made in other industries. This is due largely to the complexity of products involved, site topography, and the one-off nature of many construction projects.

The authors concur with the CITB (1991) view that research programmes geared at developing robotics as a panacea for skills shortage are unlikely to succeed. The CITB advanced the case for more modest changes to existing plant and equipment, together with the development of simple, task-specific micro-electronic controlled equipment to provide a sound basis for realistic benefit.

Greater economic stability within the industry

During previous recessions construction workloads collapsed, thousands of construction workers lost their jobs, and large numbers of firms went to the wall. The history of the construction industry underlines what the industry and those that work in it need today – stability (*Construction News*, 1997).

Latham (1994) was in agreement with the importance of stability. In *Constructing the Team* he expressed the view that government remains vital to construction. If the economy is weak the industry will suffer and its participants will try to alleviate that suffering at the expense of others (including clients). He concluded that if the economy is 'going wrong' little will 'go right' in the construction industry. Latham proposed that government policy directly affects construction workload through (i) financing of public projects, and (ii) influencing the general level of demand in the economy. The argument is that greater economic stability can overcome many of the problems associated with a skills shortage by: (i) allowing the industry to formulate long term training plans; (ii) stabilizing the working practices of the construction work force; (iii) stemming the migration of skilled UK construction labour to other countries or industries, and possibly encouraging operatives to return to the UK construction industry; and (iv) stabilizing employment levels, rates of pay, and therefore project costs in the long term.

A return to direct employment

Morton and Jagger (1995) presented the argument for a return to direct employment, proposing that a project that offers continual employment has several advantages: (i) it enables employing contractors to use workers more efficiently and therefore less expensively, and (ii) it is more likely to generate a sense of commitment to the job from the people employed and shared pride in the work. It is generally recognized that the major disadvantage of employment instability is the effect it has on training and skills. The characteristic method by which construction workers are employed has reduced the level and availability of skills and made the control of quality on sites and the allocation of responsibility more difficult.

Greater labour only subcontractors involvement in operative training

Those within the industry generally agree that the growth in labour only sub-contracting and self-employment has led to a decline in training, and that there is a direct correlation between the fall in trainee numbers (both in absolute terms and as a proportion of total employment) and the numbers of self-employed (Rainbird, 1991; Clark, 1992). According to Morton and Jagger (1995), the growth in self-employment resulted in many directly employed operatives being shed, leading in turn to the loss of the traditional apprenticeship training ground.

Fellows *et al.* (1995) and Syben (1998) have indicated that the skills of the labour force are not developed because formal training is seldom carried out by labour only subcontractors or the self-employed, as these groups usually do not usually have the facilities, the funds or the inclination for training.

Long term industry wide training plans

The belief that it is beneficial for contractors to promote the training of skilled staff through good and bad times and to employ them directly has received the backing from major UK contractors such as Amec, Tarmac and Kvaerner (see Gordon, 1998), and industry bodies such as the CITB (Glackin, 1997) and the Chartered Institute of Building (Sherrington, 1997). They suggest that long term industry-wide training plans need to be practical, broadly acceptable to all parties, and capable of early implementation if they are to be successful.

However, according to Gordon (1998), previous attempts have resulted in ineffective training plans, mainly because of the diversity of construction training requirements, the complex funding structure associated with construction training, and the traditionally adversarial nature of the industry.

Clarke and Wall (1998), in their paper 'UK construction skills in the context of European developments', suggested that a construction training framework exists which, if built on, would allow the formulation of an effective long term industry-wide training plan. They describe how many factors contributing to the occurrence of a construction skilled labour shortage, and long standing barriers to the provision of a skilled UK construction labour force may be overcome.

Research methodology

The perception of the construction industry to the skills shortage response strategies identified were investigated through a one-page postal questionnaire survey sent to 130 construction organizations, administered during January–March 1998. The organizations were selected on the basis of the top 100 contractors operating in the UK, by profit and turnover, as published in *Construction News* (1997); with a further 30 construction organizations which advertised in *Contract Journal* through January and February 1998. The latter group was included in order to broaden the sample and to include additional organizations active in the market. The questionnaires were accompanied by a letter indicating the aim of the study, and were addressed to the director of personnel.

Overall, a total of 68 organizations returned completed questionnaires in a usable format, representing a 52% response rate. The response rate was considered high compared with the norm of 20–30% for most postal questionnaire surveys of the construction industry (Akintoye and Fitzgerald, 2000). Of the 68 respondents, approximately 3 were construction directors and 65 were directors of personnel. Due to the low representation of the construction directors group a comparative analysis between the two was not performed.

The respondents' organizations were classified into three groupings, based on the number of employees directly or indirectly employed during the 1996–1997 financial year within the organization. Group 1 was organizations with more than 500 employees, group 2 organizations with 200–500 employees, and group 3 organizations with less than 200 employees; the frequency distribution of the groupings is shown in Table 1.

The data are skewed towards large organizations due to their majority in the survey, more than 50%, although in reality, small and medium contractors account for approximately 95% of the construction market (Key Note Report, 1997). However, there is sufficient representation of each grouping to allow a meaningful analysis of respondents perceptions to the response strategies presented based on categorization by organization size.

The organizations in the sample were separately classified by their main geographical operational location: group A was organisations located in South East England, group B organizations located in the rest of England, and group C organizations located in Scotland. The frequency distribution of groupings is shown in Table 2. The three location groupings were expected to exhibit different responses to the skill shortage initiatives. South East England is associated with significantly greater construction activity, while Scotland is generally perceived to have better skill training programmes through the CITB Scotland.

Table 1 Frequency distribution by organizational size in-relation to number of employees

Group	No. of employees	Frequency	Per cent	Designation
1	Over 500	39	57.4	Large
2	200–500	18	26.5	Medium
3	Less than 200	11	16.2	Small
	Total	68	100.1	

Table 2 Frequency distribution by organizations' main geographical operational location

Group	Location	Frequency	Per cent
A	S.E. England	27	39.7
B	Rest of England	22	32.4
C	Scotland	19	27.9
	Total	68	100

The questionnaire was divided into two main sections. The first dealt with the main schemes and initiatives developed by the government and industry bodies (Tables 3–4). The second dealt with the main alternative solutions available to the industry (Tables 5–6).

However, because of the widespread doubt within the industry in relation to the 'New Deal' initiative it was decided to differentiate between the respondents' reaction to utilization of the long term unemployed as a supplementary labour pool and the 'New Deal' initiative. The CITB's equal opportunities initiative and their changes in recruitment practice were evaluated on the basis of (i) a greater use of women and ethnic minorities, and (ii) adult training schemes, respectively (see Tables 5 and 6).

The respondents were also asked whether they perceived a balance between direct and self-employment as a solution to the preferable alternatives: (i) of a return to direct employment, or (ii) greater labour only subcontractor involvement in craft operative training. This division of the questionnaire resulted in the industry and governmental response strategies being reduced from the seven, as discussed in the previous sections, to the five strategies contained in Tables 3 and 4 (i.e. excluding the CITB trainee recruitment strategy and the CITB equal opportunities initiative). The alternative strategies increased from nine to eleven to include consideration of both the long term unemployed and a balance between direct and self-employment.

The respondents were asked to rank responses in both sections on a 6-point Likert scale: 6 indicating 'the highest importance' and 1 indicating 'the lowest importance'. Additionally, they were asked to indicate the order of preference for their response, and to rank their preferred solutions for the industry. The analyses focused on ranking the alternative response strategies based on their mean values. Additionally, based on the data groupings, analysis of variance F statistics were applied to investigate whether the perceptions of the respondents differ with the size or location of the companies. Preliminary analysis showed that, at the 10% level of statistical significance, there were differences in all of the parameters examined.

Construction organizations perception of industry and government response

From the respondents' perceptions by organization size (Table 3) it is clear that they view the Construction

Table 3 Perception of industry's and government's response (by organization size)

		Group				
Response description	Total	1	2	3	F stat.	Sign.
The Construction Skills Certification Scheme	3.849	4.364	3.389	3.919	2.342	0.106
The Investors in People initiative	3.522	3.437	3.556	3.636	0.073	0.930
The 'New Deal' employment scheme	3.030	3.051	2.889	3.200	0.149	0.862
The Considerate Constructors Scheme	2.923	2.972	2.833	2.909	0.881	0.916
The National Construction Week initiative	2.682	2.622	2.611	3.000	0.562	0.573

Table 4 Perception of industry's and government's response (by organization location)

		Group				
Response description	Total	A	B	C	F stat.	Sign.
The Construction Skills Certification Scheme	3.849	3.619	3.808	4.158	0.959	0.389
The Investors in People initiative	3.522	3.455	3.769	3.263	0.880	0.420
The 'New Deal' employment scheme	3.030	3.000	3.037	3.056	0.007	0.993
The Considerate Constructors Scheme	2.923	2.952	2.923	2.889	0.015	0.985
The National Construction Week initiative	2.681	2.762	2.615	2.684	0.103	0.902

Table 5 Perception of the alternative solutions (by organization size)

Solution description	Total	Group 1	Group 2	Group 3	*F* stat.	Sign.
Greater economic stability within the industry	4.956	5.000	5.000	4.727	0.327	0.722
Long term industry-wide training plans	4.603	4.872	4.167	4.364	2.616	0.081
A return to direct employment	4.076	4.162	4.056	3.818	0.232	0.794
New technology and construction techniques	4.046	4.000	4.167	4.000	0.158	0.854
Greater labour only subcontractor involvement craft operative training	3.892	4.000	3.611	4.000	0.621	0.541
A balance between direct employment and self-employment	3.818	3.759	3.944	3.818	0.119	0.889
Adult training schemes	3.627	3.868	3.222	3.455	2.526	0.067
A greater use of prefabrication	3.212	3.054	3.278	3.636	1.118	0.334
A greater use of women and ethnic minorities	2.758	2.865	2.556	2.727	0.380	0.685
The use of the long term unemployed	2.716	2.947	2.222	2.727	2.566	0.082
The automation of construction sites	2.031	2.057	1.944	2.091	0.084	0.919

Table 6 Perception of the alternative solutions (by organization location)

Solution description	Total	Group A	Group B	Group C	*F* stat.	Sign.
Greater economic stability within the industry	4.956	5.091	4.815	5.000	0.467	0.629
Long term industry-wide training plans	4.603	4.682	4.629	4.474	0.168	0.846
A return to direct employment	4.076	4.143	3.577	4.684	3.426	0.039
New technology and construction techniques	4.046	3.909	4.120	4.105	0.269	0.765
Greater labour only subcontractor involvement craft operative training	3.892	4.095	3.600	4.053	1.118	0.333
A balance between direct employment and self-employment	3.818	3.429	3.963	4.056	1.377	0.260
Adult training schemes	3.627	3.773	3.846	3.158	3.055	0.054
A greater use of prefabrication	3.212	3.182	3.200	3.263	0.027	0.974
A greater use of women and ethnic minorities	2.758	3.000	2.615	2.684	0.609	0.547
The use of the long term unemployed	2.716	2.767	2.741	2.632	0.074	0.929
The automation of construction sites	2.031	2.300	1.720	2.158	1.877	0.161

Skills Certification Scheme as the best approach to tackling the construction industry skills shortage. Large organizations view the scheme as most important, followed by the Investors in People initiative (mean value = 3.522). The overall rating of 3.030 for the 'New Deal' employment scheme was lower than 3.522 for the Investors in People initiative at the 10% significance level (p = 0.000). Therefore the remaining initiatives, namely the 'New Deal' employment scheme (mean value = 3.03), the Considerate Constructors Scheme (mean value = 2.923) and the National Construction Week initiative (mean value = 2.682) were regarded as being less important in contributing to the resolution of the construction skills shortage. The analysis indicated that there was no difference of opinion on the initiatives based on the size of organization at the 10% level of significance. Although not statistically significant, it does appear that small organizations view the National Construction Week as slightly more important when compared with both large and medium sized organizations.

An analysis of the respondents perceptions based on the location of the organization (Table 4) indicates that, contrary to expectation, there was no difference of opinion at the 10% level of significance. Although not statistically significant (p = 0.389), the Construction Skills Certification Scheme was considered to be more important by organizations located in Scotland than those located in England. This tends to support the level of importance attached to skill certification in Scotland. However, the construction organizations in England attached more importance to the Investors in People standard compared with those in Scotland.

Construction organizations perceptions of the alternative solutions

The majority of the respondents identified greater economic stability within the industry as the most important approach (Table 5). This is followed by long term industry-wide training plans, a return to direct employment, and new technology and construction techniques as primary solutions to the skills shortage. The respondents did not favour the greater use of women and ethnic minorities (mean value = 2.758) or the long term unemployed (mean value = 2.716) as alternative sources of construction labour. Automating construction sites as a possible substitute for construction labour was considered least important of the eleven factors listed.

At the 10% level of significance, long term training plans (F statistics = 2.616, p = 0.081), adult training schemes (F statistics = 2.526, p = 0.067), and the use of the long-term unemployed (F statistics = 2.566, p = 0.082), were considered by large firms most favourably and by the medium size firms least favourably. When categorized by location (Table 6), there is stronger agreement between the firms at the 10% level of significance with the exception of a return to direct labour (F statistic = 3.429, p = 0.039) and adult training schemes (F statistic = 3.055, p = 0.054). Organizations located in England view adult training schemes as more important than do those located in Scotland. With respect to a return to direct employment, organizations operating in Scotland view the solution with a greater preference, compared with those located in England.

Discussion

Despite the relatively slow penetration of the Construction Skills Certification Scheme into the ranks of site operatives (Cronin, 1997), the opinions of senior management within the UK construction industry indicated that there is growing support for the scheme. The survey indicated that the strongest support for the scheme came from large organizations and organizations located in Scotland. The results imply that the scheme's promoters may have a difficult task convincing the majority of small to medium size organizations to utilize only certificated operatives. However, if the scheme gains the backing of the government, the support of the industry's major clients, or becomes a statutory requirement (Cronin, 1997) those organizations who do not view the scheme favourably may be forced to review their current stance.

The Investors in People standard was strongly favoured by the majority of the respondents, contradicting the findings of Beckingsdale and Dulaimi (1997). This implies that the Investors in People standard and the training and development of employees is gaining recognition by construction employers. The potential benefits of the standard as described by Beckingsdale and Dulaimi (1997) should be communicated to those organizations which have not as yet adopted the standard.

The relatively poor response to the New Deal employment initiative corroborates the findings by Sall (1997), which indicated the construction industry was not prepared to be used as a dumping ground for the unemployed population. However, construction employers should not disregard the initiative. It could provide a means for overcoming the 'skills gap' (Morton and Jagger, 1995) by subsidizing the retraining and employment costs of operatives who were lost during the recession and who are lured back by a construction recovery but do not posses the necessary modern construction skills. The apprehensions expressed by the construction organizations and companies must first be addressed, and overcome, if the semi-skilled or unskilled unemployed population is to be utilized as an alternative construction labour source.

Construction employers perceived the National Construction Week and the Considerate Constructors Scheme, as 'not important'. This is despite the attempt of both initiatives to tackle the poor public image of the construction industry and, indirectly, to strive to overcome aspects of the construction skilled labour shortages.

Greatest preference was expressed for increased stability within the construction industry. This is not surprising given that the cyclical nature of the industry has historically been seen as one of the key factors contributing to the UK construction industry's skilled labour shortages. Previously it has been argued that governments' central economic decisions play a major role in determining the level of demand for construction related services and products (Latham, 1994). Therefore the UK construction industry may have three options available to address this. First, construction industry leaders could seek representation during the formulation of governmental economic policies which invariably affects the level of demand for construction services. Second, government action could be sought to stabilize future workloads. Finally, the industry could develop training plans which are more responsive to the cyclical nature of the construction market.

The relatively high ranking of long term industry-wide training plans suggests that construction organizations would be receptive to the development of such plans. Historically, the industry has been slow to develop such plans due to a number of factors, namely: the diverse, complex and changing skills needs of the

industry; the adversarial nature of the industry; the perceived lack of coordination between employers, unions, the various training agencies and education establishments; and the lack of long term commitment by those within the industry to developing or sustaining an adequate supply of skilled construction operatives.

A return to direct employment received strong support from the majority of the respondents, by comparison with the other alternatives (the greater involvement of LOSC in craft operative training or a balance between direct and self-employment). It may be argued that it is unlikely that any future changes in construction employment practices will dramatically improve the current skills crisis without the active involvement and participation of all parties (contractors, subcontractors, and the self-employed) in training. It has been argued that direct employment practices, when coupled with greater industry stability, can provide a more favourable basis for both new entrant training and the retraining of the existing workforce in traditional and modern construction methods (Clarke, 1992; Fellows *et al.*, 1995; Morton and Jagger, 1995).

Although the respondents strongly promoted the development of new technologies and construction techniques as a solution to the skills shortage, the extensive use of prefabrication or the automation at construction sites was not considered part of this development. An element of caution is necessary because new technologies and construction techniques take both time and money to develop. It has also been argued that while new technologies and construction techniques may eliminate the need for particular construction skills they require operatives to receive continual re-training and 'topping up' in new technology skills. Historically the retraining of construction operatives is not a common practice (CITB, 1991), and therefore it may be argued that the current construction workforce may be ill equipped to cope with rapid technological change.

The construction employers did not consider the alternative construction labour sources important. Therefore it may be concluded that the current under-representation and under-utilization of women, ethnic minorities, and potential adult recruits, including the long term unemployed is likely to continue. This suggests that construction organizations views have not changed from those identified in previous research when presented with non-traditional sources of construction labour (Agapiou *et al.,* 1995; Drucker and White, 1996; Clark and Wall, 1998). This tends to suggest that the 'New Deal' employment scheme, the changes in the CITB's recruitment policy and the CITB's equal opportunities initiative will encounter only limited success unless the attitudes of construction employers change dramatically in the near future.

Conclusions

The cyclical nature of the UK construction industry presents one of the greatest barriers to construction-related training and stable employment patterns, a view supported by the construction organizations' clear identification of the need for economic stability within the industry.

There is clear evidence that the growth of labour only subcontracting and self-employment has led to a decline in the level of training undertaken within the industry and has contributed to the subsequent loss of the traditional apprentice training grounds.

There is strong support by many within the industry for a return to direct employment. Changes to the rules governing self-employment status may prompt many self-employed operatives and construction employers to revert back to direct employment. Nevertheless current employment practices suggest there is a need to ensure greater representation and involvement of labour only subcontractors and the self-employed in both current and future training frameworks. In practice this would require the formulation of training frameworks which are accessible and more responsive to the industry as a whole, and which ensure the participation of all firms irrespective of size.

If the construction industry hopes to sustain or increase the number of people entering the industry in future years, construction employers must be actively encouraged to reconsider their current approach to alternative labour sources. The construction industry must draw from all labour sources irrespective of construction-related experience, age, gender, ethnic or social background.

It is concluded that the success of any schemes, initiatives or changes in training organization recruitment strategies which aim to facilitate the use of these alternative labour sources is dependent wholly upon construction employers changing their current employment policies.

The proposed development of long term industry-wide training plans has received strong support from many of the industry's senior representatives and construction organizations. This support must be acted upon and harnessed before the construction skills shortages are allowed to reach crisis levels. However, any plans developed must be able to accommodate rapid technological change and the continuous development of the construction workforce. These plans must be more responsive to industry requirements and react to the needs of the industry as a whole in order to overcome the disincentives and barriers to construction training and to ensure the commitment of all construction organizations. The implementation of a statutory scheme along the lines of the Construction

Skills Certification Scheme may be required to ensure the participation of many construction organizations. However, the integration of the Investors in People standard is also recommended to ensure organizations' training programmes are economically and efficiently implemented while achieving the organizations' corporate aims and objectives.

For long term training plans to be successful the industry must ensure that there is an adequate supply of people entering and encouraged to remain in the industry. This requires the development of some effective and efficient workforce models which accurately predict the availability and demand for all construction labour resources on a regional and occupational basis.

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