

CHANGING CRAFT SKILLS IN THE KENYAN CONSTRUCTION SECTOR

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The skills required of construction craftsmen are determined by factors related to their work environment such as the prevailing technology, materials and methods of work, and their employment relationships. As these factors change over time, it follows that the skill sets of the craftsmen will also change. An argument put forward by several writers is that the traditional classes of skills are inadequate to cope with the range of work required in today's construction sector. In addition, these changes, which create new knowledge, skills and attitudes that the craftsman requires for adequate work performance, highlights the crucial role of training in ensuring that the craftsmen are equipped with the appropriate skills. The Kenyan construction sector has experienced dramatic changes in the work environment of craftsmen over the last 20 years, driven mainly by the decline of the formal sector, the increased casualisation of operatives, and the growth of informal procurement. This has arguable led to equally significant changes in the nature of and demand for crafts skills. This paper reports on the findings of a pilot study that sought to investigate the type of skills that Kenyan craftsmen are acquiring. The results show that, in addition to the traditional trade skills, the craftsmen are acquiring generic skills e.g. material specification, estimation, supervision and costing. These new skills are driven mainly by changing employment relationships, particularly between the craftsmen and employers utilising informal procurement rather than the skills required by the formal construction sector. Consequently, the changing skills requirement among craftsmen highlights the need to overhaul the existing training programmes to meet the changing needs of the construction sector.

Keywords: craftsmen, Kenya, skills, training.

INTRODUCTION

Skill refers to the ability of a worker based on dexterity, practical knowledge, theoretical knowledge and social ability (Winch and Clarke, 2003). Skill is possessed via qualification, experience and expertise and enables the worker to fulfil the tasks associated with his respective occupation (Grugulis, 2007). Accordingly, the skill of a craftsman entails all he requires to meet his work responsibilities. As these work responsibilities change over time, the skills required are redefined necessitating continual training. Amongst the craftsmen, changes in skill requirements are exemplified by the continuing erosion of the demarcation lines of existing trades, increasing need for specialisation or multiskilling and the growth of new classes of skills (CIB, 1998).

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FACTORS AFFECTING CRAFTSMEN SKILLS

Changes in craft skills are driven by many factors. Firstly, the construction sector introduces changes in the technology used in site production in pursuit of better methods of construction and greater efficiency e.g. prefabrication. These changes in technology impact craftsmen skills by changing the nature of their work (Clarke, 1992; CIB, 1998; Gann and Senker, 1998). For example, the increased use of concrete frames requires craftsmen with steel fixing skills to work with steel reinforcement. Secondly, the increasingly diverse selection of materials and components used in the contemporary construction sector is altering the skills required from each craft (Ibid.). In plumbing, the traditional plumber worked mainly with copper and lead but currently plumbing works also encompass items made of copper, steel and plastic using different non-traditional jointing methods, hence demanding new skills to work with all these materials, whilst at the same time making the old skills less critical. Moreover, craft skills are affected by the widespread adoption of new materials that create new trades in the construction sector e.g. the introduction of asphalt gave rise to the asphalt trade (Clarke, 1992). Likewise, changing work methods (which may well be driven by new production technologies) give rise to new site work practices that impact upon craftsmen skills (CIB, 1998; Gann and Senker, 1998). The increasing degree of mechanisation in site production works requires craftsmen with more technical and knowledge-based skills. Craftsmen skills are in addition impacted by the changing employment relationships which modify their work responsibilities. For instance, some employers are demanding soft skills like customer focus from the craftsmen (Dainty *et al.*, 2005). Other drivers of changes in skills requirements include inadequate training causing craftsmen to get employment in markets that differ from the skills they have acquired and the increase in maintenance works that are increasingly demanding multiskilled craftsmen (CSSC, 1989).

As a consequence of the changing work environment of the craftsmen, the knowledge, skill and attitudes they require to do work have altered (Clarke, 1992; CIB, 1998). Accordingly, contemporary craftsmanship has tended to emphasise proficiencies in job organisation, safety and health, quality control, principles and properties of diverse materials rather than mastery of specific work techniques (Clarke, 1992); a difference in philosophy reflected in many craft training systems such as the integrated training scheme of Germany (Streck and Hilbert, 1991). In addition, craftsmen increasingly require an underpinning general knowledge to cope with changing work responsibilities and to comprehend the interfaces between the various site production tasks e.g. applied mathematics, setting out, reading drawings, environmental studies, power tools, organisation and structure of the sector (CIB, 1998; Clarke and Christopher, 2004). Many writers have thus argued that traditional craft skills can no longer meet the demands of contemporary construction which demonstrably has a need for continuous training (Clarke, 1992; CIB, 1998; Fowler, 1998; Gann and Senker, 1998).

KENYAN CONSTRUCTION SECTOR

The Kenyan construction sector, like that of many other countries, has experienced major changes in the work environment of craftsmen over the last 20 years. These changes have been driven primarily by the decline of the formal sector which has resulted in a trend in the casualisation of operatives, and the growth of informal procurement (ROK, 1980 - 2007; Wells, 1998; Wells and Wall, 2003; Wachira *et al.*, 2007). The decline in the formal sector has mainly affected the building subsector as

exemplified by the decline in public expenditure from Kenya Shillings (KS) 199 million (US\$ 2.84 million) in 1985 to KS 51 million (US\$0.72 million) in 2006 (ROK, 1980 - 2007). The most important cause of this decline was the harsh economic environment that prevailed in Kenya over this period, occasioned by, *inter alia*, the Structural Adjustment Programmes (SAPs) that led to a decline in public sector development expenditure (ROK, 1980 - 2007; Mitullah and Wachira, 2003; Wells and Wall, 2003). Moreover, private sector formal investment had been depressed during this period as a result of the uncertainty associated with the clamour for change of government which was realised at the end of 2002, as well as the high interest rates. Additionally, there was a decline of foreign investment from development partners due to various governance issues (for example, corruption) associated with the Moi Regime and lack of accountability in public expenditure. In response, construction firms took the well-trodden path of construction sectors in many of the developed and developing world of shedding most of their labour obligations by increasing subcontracting through unregulated labour-only subcontractors (ILO, 2001; Wells, 2001; Dainty *et al.*, 2005; Wells, 2007), thus increasing the casualisation of craftsmen.

Over the same period, there was substantial growth of private sector participation in the building subsector, mainly in housing and in small commercial buildings, which increased expenditure from KS 598 million (US\$ 8.54 million) in 1985 to KS 2,699 million (US\$ 38.6 million) in 2006 (ROK, 1980 - 2007). However, whilst there was major growth, private sector clients overwhelmingly use informal procurement as a way of obtaining construction services whereby self-employed craftsmen are engaged directly by the client to accomplish the construction in the absence of a general contractor (Wells, 2001; Wells and Wall, 2003; Wachira *et al.*, 2007).

These changes have altered the craftsmen's employment relationships. The increase in casualisation transformed their terms of employment from direct engagement to informal employment by the general contractors where they are hired only when work is available on a casual basis. Likewise, under the informal procurement system craftsmen are hired intermittently, depending on the availability of funding which dictates the pace of project delivery (Wachira *et al.*, 2007). As a consequence, the majority of the craftsmen are informally employed (typically self-employed) and find work in both sectors moving between the two depending on demand. Given that the informal procurement system assigns the craftsmen work responsibilities that are quite different from those of the formal sector in that the general contractor's activities are split between the lay client and the artisan, it is plausible that there have been changes in the portfolio of crafts skills acquired by Kenyan craftsmen. Accordingly, a study was conducted to identify the existence of any such changes in the craft skills in Kenya and their causes.

METHODOLOGY

The study utilised a positivist approach which is based on the premise that regularity exists in human behaviour, and it manifests as cause-effect relationships which can be tested empirically to establish associations and generalisations (Wing *et al.*, 1998). This approach was chosen because the nature of the problem, which entailed the establishment of the norms and emerging training structures in the Kenyan construction sector, was inherently objective. To establish the typical skills requirements in the sector, it was necessary to collect data from a significant sample of the target population to make generalisation feasible. The inductive methodology

therefore offered the most appropriate means of capturing the emerging process of informal training amongst construction craftsmen.

In view of the informal employment relationships the unit of analysis in this study is the craftsman rather than the employer. Data were collected by administering a semi-structured questionnaire to craftsmen using a face-to-face survey at construction sites in Nairobi, the major urban centre of Kenya. On-site face-to-face surveys were used because of the low levels of education among the respondents and the lack of a proper sampling frame (the absence of a craftsmen register or the existence of any comprehensive or reliable lists of addresses and contacts) precluded other forms of data collection. The questions were designed to obtain information on the types of skills the craftsmen practised and the motives and mechanisms behind their acquisition. The data reported here are from the pilot study consisting of 43 craftsmen from Nairobi although subsequently, a larger field study comprising a sample size of 498 craftsmen was undertaken.

FINDINGS

The technical skills acquired by the craftsmen are indicated in Table 1 below. These skills follow the norms existing in the construction sector and mainly revolve around traditional crafts trades. The trade classifications were borrowed from the traditional trades in the UK training system which was adopted in Kenya as a result of its colonial relationship to the UK. This system had its roots in the feudal craft era where the skills practised were simply defined by the type of material used e.g. carpenters used wood and bricklayers used clay (Clarke, 2005). The tasks that the craftsman learns and subsequently practises are thus dictated by the use of the relevant material in the various elements of the building.

Table 1: Respondents' trade classifications

Trade	Frequency	Percent
Mason	12	27.9
Carpenter & joiner	8	18.6
Electrical wireman	5	11.6
Plumber pipe fitter	4	9.3
Painter decorator	4	9.3
Steel fixer	5	11.6
Plasterer	5	11.6
Total	43	100

Some craftsmen had specialised in specific tasks like steel fixing and plastering, representing a form of deskilling of the masonry trade which traditionally included these tasks. Deskilling in this instance is the separation or taking away of some skills from a trade and allocating them to others thereby fragmenting and degrading the craft (Clarke, 1992). Steel fixing developed due to the popularity of *in-situ* reinforced concrete particularly in high rise buildings, where the bending and fixing of reinforcement is done manually, hence encouraging the development of steel fixing into a significant and much demanded skill. Plastering, which is a common internal finish in Kenya, has over time become a specialty demanding more precision than other masonry work such as wall construction. Its growth has been driven by competition in the market place where some masons sought to differentiate themselves from their peers by providing a higher quality finish (through specialization) and through it attract a higher wage rate. The deskilling of the masonry trade was thus driven by the prevalence of particular technology in the

construction sector (*in-situ* concreting and plastering) which allowed craftsmen to specialise in certain trade tasks and through this find continuous work.

In addition to the trade skills, craftsmen were also acquiring ‘generic’ skills. Generic skills are skills that take on different meanings in different work contexts but are broadly transferable (Stasz, 2001). The common types of generic skills acquired by the craftsmen include: specification of materials, costing, preparation of quotations, and supervision of the construction work (Figure 1).

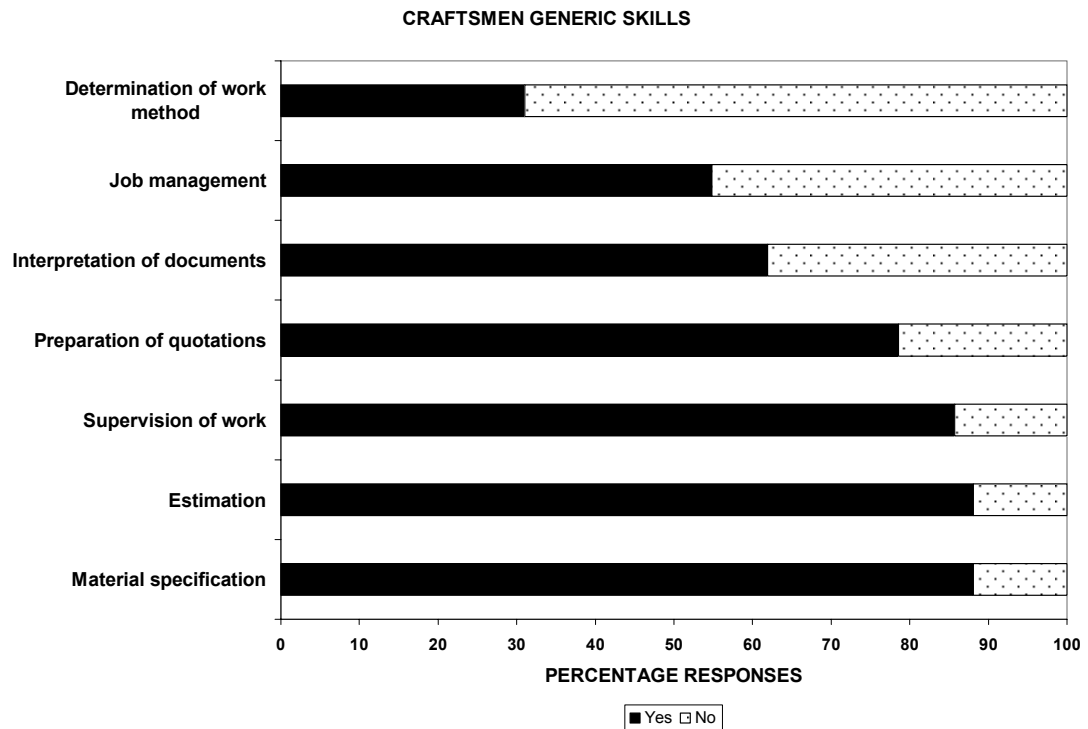


Figure 1: Craftsmen generic skills

Generic skills are practiced mainly by craftsmen engaged under the informal procurement system and informal subcontracting. Conversely, in the formal procurement system, these skills lie in the realm of the general contractor who employs the artisans. These generic skills were practised within the limits of the craftsman’s trade e.g. a plumber could only specify plumbing materials while a painter could only supervise painting works. However, for the lead craftsman who oversees the whole construction process under the informal procurement system, these generic skills extend to all the building trades e.g. he would prepare quotations for works of all the trades and supervise all trades. This suggests that the acquisition of generic skills is part of the progression of the craftsmanship subsequent to the attainment of trade skills.

Evidently, many of these generic skills are inspired by the new work environment of the craftsmen, particularly the engagement under the informal procurement system coupled with the increased informalisation of the construction process. For example, preparation of quotations, supervision, interpretation of documents, job management, and determination of work method are all traditionally executed by the general contractor in formal procurement. However, the absence of the general contractor, coupled with the inexperience of clients in construction matters (Masterman and Gameson, 1994) under the informal procurement mode of construction, creates a skills

gap in the site production process which the craftsmen are satisfying. In doing so, the craftsmen are acquiring skills that are provided by the consultants in the formal construction process e.g. specification of the type and quality of materials which, in the formal sector, is in the responsibility of architects and estimation of resources which is the traditional role of the quantity surveyors. Thus the craftsmen are filling the gap created by the declining engagement of contractors and professionals since, in comparison to their inexperienced clients, craftsmen afford the best alternative. Skills change amongst the craftsmen is thus driven by changes in the workplace that result in changing work responsibilities.

The vast majority of craftsmen, (93%), acquired generic skills through watching others and experience as indicated in Table 2 below. The older, more experienced craftsmen pass on the skills to their apprentices who perfect the same over a period of time through trial and error. This format of learning is enabled by the inexperience of the informal procurement clients, in addition to the absence of professionals to monitor and identify any errors, which allows the craftsmen much leeway to make and correct mistakes without too much fuss from the clients.

Table 2: Method of acquiring generic skills

How did you learn generic skills?	Frequency	Percent
Watching others/Experience	40	93
Do not practice any generic skills yet	3	7
Total	43	100

Additionally, the absence of a legally enforceable contract between the clients and the craftsmen implies that the latter's legal/professional liability is minimal. This, coupled with their low economic status, avails the clients little recourse against the craftsmen when things go wrong. The only recourse for the client is to terminate the services of the respective craftsman and hire another to make good any deficiencies and to proceed with the outstanding work. In addition, generic skills are not included in the craftsmen's formal training curriculum since they are not expected to execute such tasks in their traditional formal employment under the general contractor. Therefore, the craftsmen have no option but to learn the skills informally.

Studies across a range of construction sectors have shown that craftsmen learn additional skills for a variety of reasons, including increased potential earnings, more continuous employment, more challenging work, reduced physical work, and an interest in new skills (Alster, 1989; Burleson *et al.*, 1998; Gomar *et al.*, 2000; Haas *et al.*, 2001; Carley *et al.*, 2003). In contrast and in tandem with the changing work responsibilities, Kenyan craftsmen in the trial sample reported that the overriding reason (98%) for acquiring generic skills is to meet the demands of the clients who informally procured them (see Figure 2 below). This clearly indicates that the informal procurement system is significantly impacting the set of skills required from the craftsmen. The other significant reason (but to a much lesser degree) was higher pay (27%). Discussions with the craftsmen in the sample indicated that those who learn generic skills are in a better position to negotiate a premium wage because they can demonstrate that they are providing additional value to the client by providing more than just the traditional trade skills. Additionally, these craftsmen have a greater likelihood of being appointed lead craftsmen (the client's chief advisor) which is typically accompanied by higher pay (Wachira *et al.*, 2007). The other reasons

identified from the literature of other construction sectors were not rated as being of significant importance to these craftsmen.

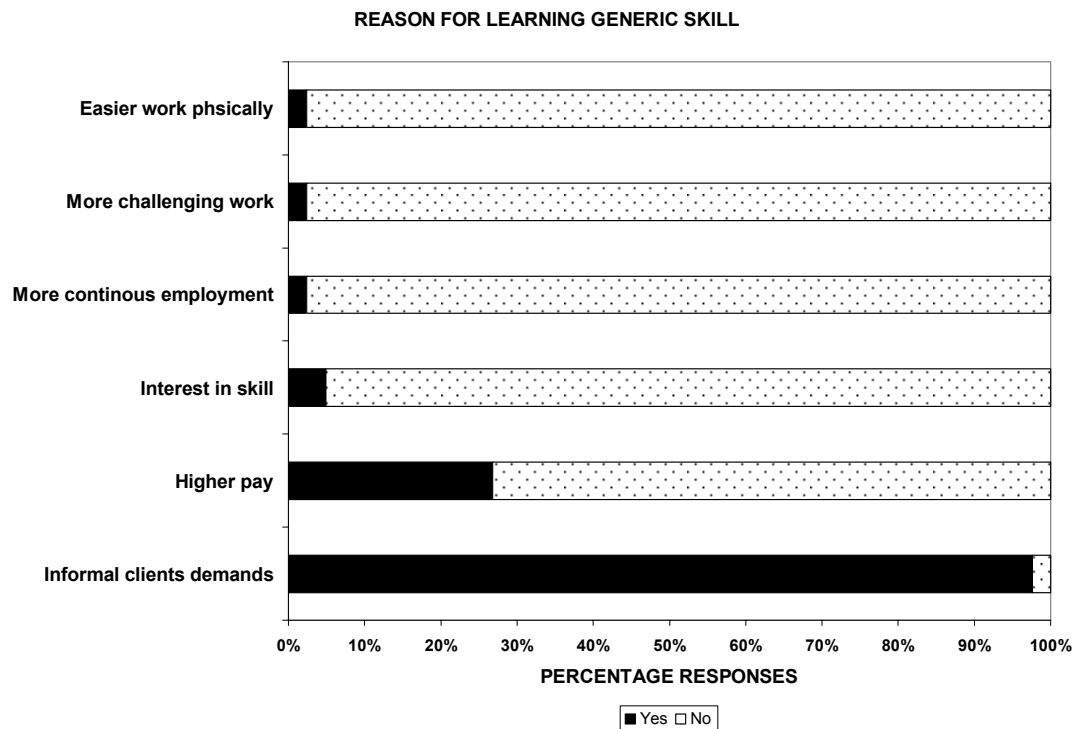


Figure 2: Reason for craftsman learning generic skills

CONCLUSION

From this limited sample, it would appear that Kenyan craft skills are changing from purely trade skills to incorporate increasingly important generic skills. The changes are driven mainly by the increased informalisation of the construction process, particularly under the informal procurement system. Given that the conditions causing the changes are likely to persist, the new set of skills will continue to be in demand. Accordingly, the existing training system which was designed to meet the needs of the formal sector where craftsmen work under the direction of the general contractor appears increasingly out of step with the needs of the market. There may therefore be a need to overhaul the training system to make it more responsive to the changing market requirements by accommodating these new skill demands.

This preliminary study has subsequently been followed up by a comprehensive study involving a larger sample of approximately 500 craftsmen in Kenya. Data analysis of the larger sample is expected to allow further exploration of the changing craft skills. Additionally, the research aims at investigating the methods of skilling amongst the craftsmen and the interventions that stakeholders can make to encourage more appropriate training in the construction sector. Although the research is not necessarily intended to provide a solution, the findings will be useful in developing viable policy interventions to enhance the training of construction craftsmen both in Kenya and other developing countries with similar experiences. Accordingly, studies in other African countries e.g. South Africa and Namibia are planned to facilitate comparison of the data.

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