

TRAINING AND DEVELOPMENT OF HUMAN RESOURCES IN SUDANESE CONSTRUCTION INDUSTRY

Dr. Awad Saad Hassn

Abstract— The Construction Industry, particular the Building Industry, is considered as the largest industrial sector that has a direct effect on the national economy. Construction is the only sector of economic, which appears twice in the national accounts presented according to the United Nations recommendations. Finally, construction appears a separate entry in labor statistics reported by the International labor Organization (ILO).

The management of present day construction projects is becoming increasingly complex and challenging due to many factors. To meet this challenge it is of the utmost importance to provide efficient management throughout projects. There is a widespread consensus that training should be encouraged, since it has a desirable effect on productivity and improves national economic performance.

This paper investigates the process involved in the development of human resource in the Sudanese Construction Industry (SCI). A questionnaire was thus designed and used as the main tool for data collection. It was distributed to construction companies with the aim of getting an insight about the appraisal of human activities in construction industry, which are important for understanding development objectives and for evaluating the effectiveness of current development practices. Lastly, conclusions, recommendations will require for the adoption of human resources management principle, and to develop a training policies and practice.

Index Terms— Sudanese Construction Industry, Human Resource Management, Training and Development.

I. INTRODUCTION

Within recent years, human resource management (HRM) has assumed considerable importance in the theory and practice of management of construction projects. This paper is an empirical study of HRM in the Sudanese Construction Industry (SCI). The semi-structured interview was chosen as a main research instrument for data collection. 19 contractors were randomly selected within the Sudanese construction industry. The study contributes to the body of knowledge on training and development. Also presents a HRM model for improving the performance in the Sudanese

Construction Industry (SCI). The implementation of this HRM model could give a new dimension and benefits to the SCI.

II. CONSTRUCTION INDUSTRY: ITS SIGNIFICANCE AND ROLE IN DEVELOPMENT

A. Definition and Characteristics of Construction Industry

Construction is one of the major industries in the global world- it is the creator of the built environment within which most other economic activities take place. Providing work for a significant proportion of the labour market and accounting for a significant share of the world Gross Domestic Product (GDP). Offori (1990) suggest a broad definition that reads: "The construction industry is broadly defined as the total industry, which involves the utilization of human, natural and economic resources in the conception of design, maintenance or demolition of buildings and civil engineering's works" [1].

Construction, from simple to complex, is fundamental to all societies. The vast majority of construction projects are unique, and ordinarily, they are delivered by a temporary, multi-organizational coalition specifically set up for the purpose of project delivery [2]. Such coalitions, whether they exist just for the length of the project or are more enduring alliances or partnering arrangements, must address a fundamental characteristic of the industry – that it is fragmented, with individuals from different organizations which are geographically and temporarily dispersed involved in the construction process.

B. The Place of Construction in the National Economy and its Importance

The construction industry accounts for a sizeable proportion of worldwide economic activity. In Europe, it accounts for some 10% of Gross Domestic Product (GDP), and in Australia it employs about 8% of the nation's workforce [3]. Productivity and profitability increases within construction would therefore have substantial benefits to the broader economy. Stoeckel et al. (1990) reported that if the construction industry increased its effectiveness by 10% this could lead to an increase of up to 2.5% in GDP. As well, construction is one of the sectors of the economy covered by the quarterly and annual statements of national accounts [4]. Turin (1980) states that:

Manuscript received September, 2015.

Assoc. prof. Awad Saad Hassn, Architecture and planning Dep, SUST/ College of Architecture and planning, Khartoum, Sudan, Mobile No:00249912353614.

"Construction is the only sector of economic, which appears twice in the national accounts presented according to the United Nations recommendations. It is one of the eleven sectors of analysis of Gross Domestic Product (GDP) at the factor cost by industrial origin; but construction is also a component of fixed capital formation in the composition of Gross Domestic Capital Formation (GDCF) by the type of assets. Finally, construction appears as a separate entry in labor statistics reported by the International Labor Organization."

The construction industry itself is a major generator of jobs and contributes an important component of the gross domestic product (GDP) [5]. In 2007, almost 11 million people, about 8 percent of the total U.S. workforce, worked in construction. The value of the buildings and infrastructure that they constructed was estimated to be \$1.16 trillion [6]. Construction is relatively labour-intensive in the sense that it uses a larger number of workers per unit of output than that of most other industries. In the strict sense of the term, employment- or labour-intensive projects are all those projects where labour is the dominant resource.

However, the physical nature of the work makes construction unattractive to the bulk of the workforce. Construction work takes place in the open. Extreme weather conditions have been found to have severely adverse effects on construction productivity.

III. HUMAN RESOURCE MANAGEMENT

A. Overview and definition

Bratton and Gold (1999) propose a definition: *"The part of the management process that specializes in the management of people in work organization, HRM emphasizes that employees are critical to achieving sustainable competitive advantage, that human resource practices need to be integrated with the corporate strategy and that human resource specialists help organizational controllers to meet both efficiency and equity objectives"* [7].

According to the ILO (1989), the overall goal of global economy should be to provide opportunities for all people with freedom, equity, security and human dignity. This requires the attainment of four strategic objectives that are vital to social progress: employment creation, increased and effective investment in human resources development, provision of learning and training opportunities, competitiveness, growth, and social inclusion of all, promoting human rights at work, improving social protection and promoting social dialogue [8]. However, the problems and challenges facing organizations today in the area of human resources management are manifold. They are found in selection, promotion, appraisal, compensation, training and development, labor relation, job design, productivity and many other areas. Thus, an appropriate definition of HRM could be:

"A managerial perspective, with theoretical and perspective dimensions, which argues for the need to establish an integrated series of personnel policies consistent with organization strategy, thus ensuring quality of working life,

high commitment and performance from employees, and organizational effectiveness and competitive advantage." [9].

In the construction industry, human resource planning is relatively underdeveloped, yet employment planning is crucial to the successful performance of the construction organization. Four majors' issues characterize the approach of the industry to employment matters: casual labour, high labour turnover, inadequate selection processes and training, and the absence of specialist personnel managers and developed personnel system [10].

B. Human Resources Development, Selection and Productivity in the Building Industry

Human resources development (HRD) and training play a major, if not decisive, role in promoting economic growth with equity; they benefit individuals, enterprises, and the economy and society at large; and they can make labour markets function better. It is understood that (HRD) and training are to be the activities of education, initial training, continuous training, and live long learning that develop and maintain individuals employability and productivity over a life time. Training provides knowledge and skill required to perform the job. Accordingly training can be viewed as a job oriented leading to an observable change in the behavioral of the trainee in the form of increased ability of to perform the job.

As mentioned before in the above definition of the construction industry inputs are utilization of human resources, natural resources and economic resources, which are the major factors of production. The construction process consists mainly of the assembly on site of large number and variety of building materials and components. The industry labour content is also high, like in other similar large-scale assembly operations. The variety of materials and components used in the construction implies corresponding variety of techniques and procedures for their assembly.

The key factors which attract recruits to the construction industry are the levels of craft wages and the long-term prospects of the industry [11]. However, young people's (and perhaps more significant, their parents') perceptions of the industry are also important. If the industry's image is one of insecurity, low pay, low status, poor career prospects, and dirty and dangerous working conditions, it is not likely to attract potential employees.

Several training and recruitment strategies have been identified as necessary for the industry if it is to achieve a sufficient supply of skilled site labour in the future. These include [12]:

- 1) Upgrading the skills of the existing workforce through retraining of craft and operative workers.
- 2) Creating a more positive public image for the industry to attract school - leavers, recruiting more women and ethnic minority trainees.
- 3) Attracting adult workers who have left construction back into the industry for retraining in modern skills.
- 4) Recruiting the long-term unemployed and training them in modern skills.

C. Education and Training In the Building Industry

The complexity of many current construction projects is requiring a redirection and focusing of various aspects of performance. Herein lies the need for a careful evaluation of the entire education and training process. There are many individual perspectives on the concept of the proper training for each position within the construction process, but most will agree on the requirement to develop and encourage the development of certain abilities so that each individual can perform at the peak of his own capability. After the quality of personnel nothing is more important than the future of the construction industry, including the professions than their education and training at all level.

Ray Pitcher recommended to possible avoids many of the abstract philosophical theories since construction is essentially a professional and practical subject, define education as the provision of a liberal intellectual training for both professional skills and wider issues of social responsibility, more specifically training will be used to describe the process of imparting a facility in a particular skill by instruction and practice [13].

Hall (1959) has identified two basic ways or channels by which knowledge and culture are transmitted;

- 1) Formal methods of learning and knowledge transfer;
- 2) Informal methods of learning and knowledge transfer.

Formal training is broadly confirmed to off-the-job training of apprentices and trainees at technical colleges. Apprenticeship in the U. Kingdom for example provide the construction with most of the major craft skills, such as those of carpenters and joinery, plumber, bricklayer and so on. It is often argued that an apprenticeship takes too long and the consideration given to reducing the period is welcomed. However it is far from clear whether such a reduction would affect the quality craftsmanship or not. In fact, there has little research dealing with quality of apprentice training, either on the job or in the classroom [14].

At present major changes are occurring in the nature of construction work. Nowadays it is a production-oriented industry requiring the minimum of on- site working of materials and an increase in installation and fixing of elements with greater use of mechanical aids and machine. The changes in manpower have led the industry to begin a re-assessment of its occupational structure and the traditional basis of training. Bering this in mind makes it all the more important for the industry to develop a soundly based education and training programmes. When applying such a programmes, there are indirect outcomes:

- 1) Better quality is often quoted as a benefit of improved training methods,
- 2) Training can reduce waste, increase output, reduce equipment maintenance and improve quality,
- 3) Proper training in safe work methods significantly reduces accident.
- 4) Dissatisfaction, complaints, absenteeism and turnover can be reduced when employee are so well trained,
- 5) Also, motivates employees to work hard [15].

Although many countries may have a training policy statement and even more specifically programmes, the beliefs and assumption on which training is based appear in many cases based on rather generalized and unclear nations.

Samples are:

- 1) Training contributes towards organization success or survival;
- 2) Training is an integral part of the organization's overall manpower policies;
- 3) Training is provided to meet individual employee needs for growth and development;
- 4) Training is part of the change process in the organization;
- 5) Training is undertaken primarily in response to pressure imposed by external bodies such as the Construction Industry Training Board (CITB);
- 6) Training is seen as a means of maintaining or improving the company's images;
- 7) Training is provided as an act of faith or training per se is seen as a good thing;
- 8) Training is undertaking for reasons of social responsibility [15].

IV. SUDAN: SOCIO-ECONOMY OVERVIEW

A. Introduction

In the Eastern Africa, Sudan is a country with the largest land area on the African continent comprising 2.5 million square kilometers, and the ninth largest in the world in terms of area. It shares extensive borders with nine countries. It is also a land of great diversity: ethnically, geographically and ecologically, and it faces the challenge of utilizing/capitalizing on such diversity to achieve development and eradicate poverty. Because of its vast area, the country embraces many climatic and ecological zones. Diversity is also reflected in its people; and as a result, the country is multi-cultural, multi-ethnic, multi-lingual and multi-religious. The population consists of several ethnic groups and cultures, with immense diversity of social and culture backgrounds, manifested in the numerous spoken languages and dialects, of which Arabic is the national language. Agriculture is the most important resources supported by irrigation from the abundant waters of the Nile (the Blue and the White Niles join at Khartoum, the capital, and form the Greater Nile). Agriculture forms the backbone of the economy of the Sudan, after 1969 there were major problems contributed to the declining output of the agriculture sector. The population of the Sudan, currently estimated at 42 million, is made of approximately 19% urban dwellers, 70% rural and sedentary and about 11% nomads. Added to this is a considerable population influx that is due to large numbers of refugees (1.1 million in 1986) [16]. A factor, which tends to counterbalance this flux, is the emigration of skilled and unskilled Sudanese labour. Comprehensive data are not available on the current labour force in Sudan. Overall, Sudan may be characterized as a

country with a potentially dynamic human resource given equal and appropriate educational opportunities, endowed with vast natural resources and capable of feeding the whole Middle East, but beset with chronic economic difficulties and a weak internal administrative and managerial system.

B. The Construction Industry in Sudan

The contribution of the construction industry to the Sudanese national income has fluctuated considerably during the past twenty years but has averaged about 4 % of the Gross Domestic Product G.D.P (the value of one's year production of goods, and services by the nation compared to 10 % of the G.D.P. accounted for the manufacturing industry, the contribution of the construction amounts to one third of the total industrial output. It is therefore a major source of employment in construction amount, to one third of employment in the entire industrial sector as whole. Increasing to 10.9% in the year 2008 due to recent developments in Sudan relate to infrastructure, especially road and energy, and agricultural sector development through irrigation and increased foreign investment [17]. Construction Industry is considered as the largest industrial sector that has a direct effect on the Sudanese economy. About 50% of the national income is directed toward this sector where 20% of the country workforce is working in this sector. The construction industry employs a large proportion of the civilian labor force in countries in all levels of economics and social development [18].

V. HUMAN RESOURCES AS A ROUTE TO IMPROVED PERFORMANCE

A. Discussion of Study

The study has explored many aspects of human resource management function and has applied them to the construction industry. Despite numerous studies into the nature of HRM and what it represents, it still remains a widely criticised and ambiguous concept. Most importantly, its contribution to organizational performance remains unclear and is not understood. Included here are models that emphasize the organization as a system and attempt to assess the effectiveness of the system in terms of its input, transformation, and output. Models that fall into this category include the resource model which views effectiveness, efficiency, and productivity as the ability of the organization as a system, to exploit its environments; the internal process model where effectiveness is judged by the efficiency of the process inside the system; the strategic adaptation model (as shown in fig. 1) which recognizes and judges effectiveness by the degree of adaptability to external forces, and the open system model which views the organizations as an open system. Effectiveness here is indicated by the ability to meet internal and external challenges. The system approaches was chosen as a valid configurationally approach on which to identify criteria of effectiveness for the developed method. The reasons are two-fold. First, a key concept in the system approach is the idea of modelling. Models have become widely accepted tools for studying complex phenomena. Second, system theory

itself is not new. The system approach to management is relatively new and different from other approaches.

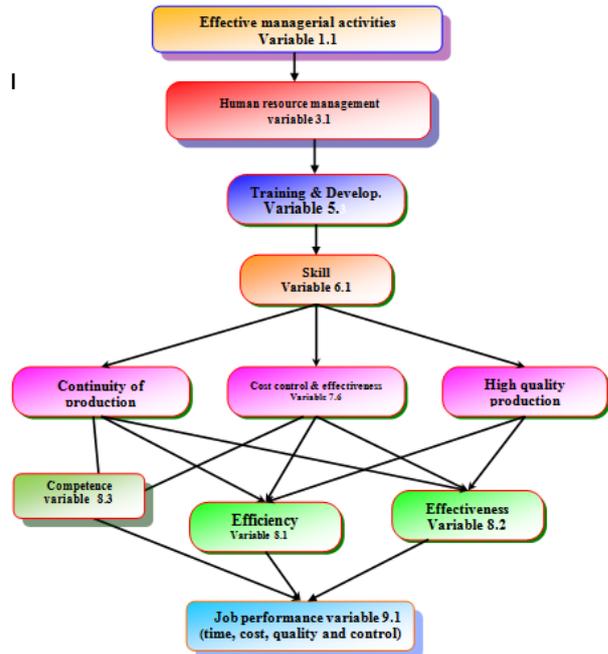


Fig. 1 The project managerial sample for the conceptual system causal research model.

The human element represented by the construction workforce is the main catalyst/determinate of construction efficiency or productivity. Efficiency of workforce in converting resources into a built product is largely dependent on both technology and the sociological environment of the contracting organization and the construction site. Of the 19 contractors who responded to the questionnaire, the workforce composition was as follows: 8.8% were administrative, 14.9% were engineering, and 28.8% were skilled labour, whilst 48.3 are unskilled labour 80% agree that there are skill gaps in their company. Although, recent labour-market statistics in many countries have suggested that skill shortages are becoming a reality, at both craft and professional levels, any significant increase in the industry's output is likely to cause predicated skills shortages to become a reality for many organizations [12].

The Sudanese construction workforce is ageing, and the number of new recruits has been declining dramatically. Moreover, there has been reduction in company in-house training. Construction firms largely rely on recruiting new entrants with low educational qualifications. Unsafe, untidy and unpleasant work environments and unstable employment opportunities contribute to a poor image which is often blamed for putting off higher calibre recruits. This requires that companies implement new strategies attractive to younger employees, and attempt to recruit employees or influence their choices of careers at an earlier age. How to attract, motivate and retain these young employees will be a major challenge facing organizations in the future. A positive quality of work life leads to a positive organizational outcome e.g. reduced absenteeism and staff turnover, greater job satisfaction, etc. Therefore, the quality of work life is a major determinant of an organization's ability to recruit, motivate and retain skilled workers. 68.1% of the respondents agree that recruitment occurred in the same

geographical area of the project, 21.3% from the same industry, and 10.6% from relative workers.

Safety is an issue associated with skills. Accidents rates may rise as less skilled, under-qualified and less knowledgeable operatives do work they are not trained for and are not familiar with. Lack of skills and knowledge increases risks associated with the personnel safety of the operatives in a risk-laden environment such as the construction site. 90% of the respondents agree to such an argument that training minimizes site accidents).

Table 1 presents the craftsmen's training and educational backgrounds. Ranges of 3.7% to 37.0% were trained through technical institute, an indication that there has been awareness by the youths in technical education. However, a sum total of the operatives that passed through the apprenticeship schemes surpass those trained through the technical institutes. Craftsmanship is acknowledged to be maintained through one generation passing skills on to the next. For this reason a high percentage (ranging from 3.7% to 44.5%) of basic skills is available in the respondent companies.

Table 1 Shows the Skill Levels of the Workforce

	0-20%	21-40%	41-60%	61%-80%	81%-100%
literacy & education	17.9%	3.5%	25.0%	32.2%	21.4%
basic skill	3.7%	18.5%	14.8%	44.5%	14.8%
technical training	18.5%	21.5%	18.6%	37.0%	3.7%
non-technical training	40.0%	12.0%	12.0%	32.0%	4.0%

96.6% agree that training of workers will minimize wastage of construction materials, 100% agree that training will reduce completion time of project due to increase in worker output, 90% argue that training will minimize site accidents, and 86.3% agree that training will reduce frequency of breakdown of construction equipment, tools and machines.

Also 76% of the respondents agree that training will increase the productivity and 96.7% agree that training will increase the quality of production, whilst 89.3% agree that training will increase the performance of workers. Productivity is, therefore, closely related to skills – without skill there is no way for a worker to be productive.

82.6% of the respondents argue that the most effective training in their company is the on-site training, while 17.4% off-site say off-site training is more effective. The relatively high per cent of on-site training may be due to the fact that operatives during the course of training are equally productive. The study argued that most training is aimed at increasing the abilities and skills of workforce and leads to expectations that the industry will be more effective and productive. These findings agree with the argument of Noe et al. (2000) that stated: “on-the-job training offers a significant advantage over off-the-job training and is used for more than 60% of training provision in the construction industry [19].

The result of the surveys indicates that 54.2% of the respondents say that training is unavailable in their company, 13.6% say that training is available but not related to work needs. Unfortunately, as Drucker et al. (1996) found that most construction companies are far from being learning

organizations, there is no evidence to suggest that the same is not true for construction projects [20]. Results coinciding with what Drucker et al. (1996) also discovered that training was in decline within the construction industry. He found little evidence of old training initiatives being replaced with new ones [20]. Nevertheless, training is still a fundamental requirement for improving organizational performance and filling skills gaps.

Most respondents hold that the following is specified measure for improving the human resource aspects (recruitment, selection, training and development) which contribute to project performance:

86.7% agree about the improvement of cost control and effectiveness of project, 11.8% agree about the improvement of machine utilization, 11.5% agree about the improvement of the safety of site, 10.4% agree about the reductions in the frequency of labours' turnover, 7.2% agree about the reduction of the frequency of absenteeism, 12.9% agree about the better continuity of production, 12.2% agree about the improvement in performance time, 7.9% agree about the reduction in the duration of the project, and 12.2% agree about the highly motivated and satisfied labour. 81.1% of the respondents see that the following aspects including providing health security and insurance to worker, and providing food, water and other service to worker will increase productivity.

Also, the most effective method for motivating workers as respondents indicate are promotion (66.7%), financial reward (93.3%), certificate of appreciation (40%), and care to labour's family (50%) which is an effective method of motivation.

The balance of both intrinsic and extrinsic rewards and their perceived equity to individuals is also crucial. The match between individual needs and expectations, and factors such as work conditions, relationship, salary, job design and the manner in which these factors are balanced, can lead to high levels of motivation amongst individuals. Finally, motivation is a vitally important concern to both employees and employers within an organization. Its importance arises from the simple but powerful truth that poorly motivated people are likely to perform poorly at work and gain little satisfaction from their job. As offered by the great Aristotle himself:

“All men seek one goal: success and happiness. The only way to achieve true success is to express yourself completely in service to society. First, have a definite, clear, practical ideal – a goal, an object. Second, have the necessary means to achieve your ends – wisdoms, money, materials, and methods. Third, adjust your means to that end.”

The data shows that 19.6% of the respondents agree that working in Ramadan will affect the performance of the workers, 24.6% agree about the bad weather, 37.0% about the bad environment and 18.8% agree about working at night. These findings coincide with the argument of Suraji and Duff (2000) in which they stated that: “the reasons provided for this lamentable performance have been numerous, and they include the industry's ‘macho’ culture, time and cost pressures, the uncertain and technically complex nature of construction work, the fragmented organizational structure, and the relatively hostile and

uncontrollable production environment, etc.” [21]. Many organizations found that by working towards providing better working conditions, improved career opportunities and more equitable workplace environments they are receiving greater loyalty, better productivity and more added values from their employees. This in turn helps them to achieve improved levels of performance for clients and hence greater profitability.

VI. CONCLUSION

The study draws a number of important conclusions:

- 1) Most importantly, there must be a greater emphasis in the Sudanese Construction industry on Human Resource Management (HRM) as a key enabler of organizational objectives. Without a sustained effort to improve the industry's treatment of people it will keep its negative public image, and remain unattractive to the highest performers, holding back the future development and growth of many organizations. The construction industry must also seek to identify better ways of managing the HRM functions in order that it retains the best employees and ensure a safe, healthy, and motivated workplace.
- 2) Training should shorten the learning time for a particular skill by being paced and organized to deal with essential elements in step-by-step or logical ways. Results from the questionnaire reveal that low rates of production might be due to the lack of skills by those carrying out the tasks. Also, it reveals that the skills of those involved are generally too low, or alternatively that the skills are inadequate to undertake a particular task. In order to improve performance the following steps may be taken:
 - a. Improving methods of workers selection so that skills and abilities better match job requirements,
 - b. Undertaking more thorough training in order to develop worker skills and abilities,
 - c. Restructuring the work in order to get a better match between job requirements and existing workers skills and abilities,
 - d. Improving worker motivation.
- 3) Skill grading has long been a major challenge for different reasons. The situation can be improved only by a three pronged approach: (a) restricting the practice of unqualified workers; (b) motivating the work force to acquire such qualifications by providing sufficient compensation in terms of increased wages; and (c) facilitating existing workers to take up the trade test. Career guidance and models are the two areas which have not received attention in any of HRD programmes in Sudan.
- 4) One of the key issues to maintaining a qualified and skilled force is the ability to attract and retain candidates of acceptable calibre. Low public perception of construction career discourages young aspirants.

- 5) It is obvious from the results of this study that safety system management alone cannot ensure safety on site. The establishment of good relationships with operatives, unions, safety officers and subcontractors are essentials if safety is to be improved. The research has indicated that co-operation between team members, co-ordination of safety systems, particularly on multi-occupied sites, is important. The concept of safety by group effort is one that should play a vital role in safety improvement. Pay and rewards systems are seen to be major factors in risk taking. Safe working and productivity must go hand in hand, and rewards that compensate the worker for safe working whilst achieving desired levels of productivity must be devised.
- 6) By recognizing the value of human resource, construction companies can motivate and assist operatives to work more safely. In order to do that, these companies must maintain and update their workers' skills and knowledge by training, skill updates and effective on site communication. In view of the peculiar nature of the construction industry and its skill requirements, it is not surprising that the government mainly provides the training facilities and also pays for training, although some collaborative schemes makes it possible for workers to be trained and/or tested within some companies. Given the general and peculiar characteristics of the Sudanese Construction Industry, it appears that it is appropriate for the government to use the levy-grant system rather than the more popular State training model to develop skill and hence to tackle productivity-impending problems, as in the UK construction industry, they retained a central organization which takes responsibility for overseeing training in the industry. The majority of the CITB' funding comes through a levy contribution from all the construction firms with a turnover above a certain level. The money is paid back to firms which provide training demand to be at an appropriate standard, as well as being used to subsidise new-entrant training for those without employed status. It appears that much more needs to be done in the construction productivity development programme in Sudan, and in the area of construction HRD, to support this programme. In this respect, the Sudanese experience is not very different from that of other countries.

VII. CONCLUDING REMARKS

Currently in the construction industry, there are very few structured workforce management programs. If any human resource development is conducted on a project, it is usually in the form of on-the-job training, with very few resources available at the project level for further training and development of the workforce. There are extensive strategies and programs available in the Human Resource Development industry. There is a need for a structured

workforce management strategy in construction that can be used to effectively manage a workforce regardless of its skill level. The construction industry has experienced a shortage of skilled craft workers and will continue to experience the shortage unless revolutionary methods are put in place to address the problem.

As the study discussed, the training should go hand-in-hand with wider Human Resource Management (HRM) practice, if it is to be effective in delivering better performance. A former chief executive of the CIBA, states:

"Attaining, maintaining, and improving performance, productivity, profitability; that is what management is all about; that is what training is all about," [22]-[23].

It is important to note that training should be viewed as a means to an end and not an end in its own right. An organization that invests in HRD will derive organizational performance benefits only to the extent that it facilitates learning and the development of teamwork and knowledge.

Training and development are key aspects of the HRM practice, but are often overlooked as a mechanistic activity within many organizations. This is dangerous, since it grossly oversimplifies one of an organization's primary routes to competitive advantages. By defining the competency and development requirements of the individual employee in a team context and targeting the achievement of these competencies through training, construction organizations can ensure that their employees have the requisite skills to cope with a dynamic industrial environment.

REFERENCES

- [1] Offori, G., *The Construction Industry: Aspects of Its Economics and Management*, Singapore University Press, 1990, pp.23-24.
- [2] Green, S. D., *The Management Of Projects in the Construction Industry: Context, Discourse and Self-Identity*, 2006, pp.1.
- [3] Poverbs, D., Holt, G. and Olomolaiye, P., "European construction Contractors: a productivity appraisal of institute concrete operations", *Construction Management and Economics* 17: 30-221, 1999.
- [4] Stoeckel, A. and Quirke, D., "Services: setting the agenda, report No. 2", *Center for international Economics*, DITAC, 1990.
- [5] Turin, D.A., "The construction industry: its economics significance and its role in development U.C.", *Environment Research Group*. p. 27, 1978.
- [6] U.S. Bureau of Labor Statistics Office of Occupational Statistics and Employment Projections, (2008) <http://www.bls.gov/oco/cg/>.
- [7] Bratton, J and Gold, J., *Human Resource Management. Theory and practice*, Basingstoke RG21 6XS: Macmillan Press Ltd, 1999.
- [8] International Labour office, "Employment-intensive investment in infrastructure". *Jobs to build society*. Geneva. ILO. pp. 21, 1999.
- [9] Huczynski, A. and D. Buchanan, *Organizational Behaviour: An Introductory Text*, Harlow, London: Pearson Education, 2001, pp. 673.
- [10] Ford, J., Jepson, M., Bryman, A., Keil T., Bresnen M., and Beardsworth A., "Management of recruitment in the construction industry", *Journal of Project Management*, Building, 1 (2), 76-82, 1982.
- [11] Agapiou, A., Price, A. D. F. and McCaffer, R., "Forecasting the supply of construction skill in the U.K.", *Construction Management and Economics*, 353-64, 1995b.
- [12] Agapiou, A., Price, A. D. F. and McCaffer, R., "Planning future construction skill requirements: understanding labour resource issues", *Construction Management and Economics*, 13:149-61, 1995a.
- [13] Pitcher, Ray, Education and Training, Rapporteurs Report-B2, *The CIB*, W, Vol. IV. Dublin, Ireland, 1981.
- [14] Hall, E.T., *The Silent Language*, Doubleday, 1959.
- [15] Shaddad, M.Y., *The influence of management on construction productivity at the project level*, Ph.D. thesis, University of Manchester, 1993.

- [16] Osama, S., *Overview of Sudanese women status with emphasis on empowerment profile of Sudanese women*, 2005.
- [17] Salim, B.A., *Towards the Optimization of Construction Industry in Sudan*, M.Sc., Sudan University Of Science and Technology, Nov.2000.
- [18] Ministry of Finance and National Economy, *Economic Review –Annual Reports (1995, 1996, 1997, 1998, 1999, 2000)*.
- [19] Noe, R. A., Hollenbeck, J. R., Gerhart, B., and Wright, P. M. *Human Resources Management: Gaining a Competitive Edge*, 3rd ed., Irwin, McGraw-Hill, Boston, 2000.
- [20] Drucker, J., White, G., Hegewisch, A. and Mayne, L., "Between hard and soft HRM: human resource management in the Construction industry", *Construction Management and Economics*, 14:405-16, 1996.
- [21] Suraji, A., Duff, A.R., Peckitt, S.J., "Development of a causal model of construction accident causation. submitted to ASCE", *Journal of Construction Engineering and Management*, 2000.
- [22] Brech, E.F.L., *Construction Management in principle and practice*, Longman, London, 1971, pp. 341.
- [23] Shaddad, M. Y., *The Influence of Management on Construction System Productivity at the project level*, of Ph. D. thesis, Manchester, 1983.

Authors Bibliography

Dr. Awad Saad Hassn

Associate professor at Sudan University of science & technology (SUST) passed BSc. MSc, and PhD. He has 30 years of teaching experience in different engineering colleges at Sudan and now working as Associate Professor and Dean of college of Architecture and Planning. He has published about 16 researches in international journals and conferences.