

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: [www.ijirset.com](http://www.ijirset.com)

Vol. 6, Issue 1, January 2017

## Human Performance Factor in Construction

Chetan M. Sakhare, D.R.Vaidya, J.P. Patil

P. G Student, Department of Civil Engineering, RMD Sinhgad School of Engineering Warje, Pune, India

Associate Professor, Department of Civil Engineering, Sinhgad College of Engineering Vadgaon, Pune, India

Assistant Professor, Department of Civil Engineering, RMD Sinhgad School of Engineering Warje, Pune, India

**ABSTRACT:** Construction industry is one of the labor intensive industries where human capital is considered as the greatest asset of the organization. However it has been observed since long that human workforce in an organization also represent the most complex resource to manage compared to any other resources that are required for satisfactory completion of a project. In general construction industry often experiences complexities in meeting project completion schedule and finance due to non availability of sufficient number of skilled labors and staff to carry out the planned work. This kind of intricacy can be managed and it efficiently possible to handle such issues with proper utilization of human resource management techniques to avoid shortage of labor. This research focuses on collection multiples site surveys of human resources with different classes and experiences. On collection of the data it is evaluated using AHP approach to find the better human resources in construction.

**KEYWORDS:** Construction firm, Human performance factor, Analytical hierarchy process.

### I. INTRODUCTION

Human resource is one of the most vital resources involved in the proper functioning of an organization. Human resource can also be referred to as human capital. The term capital denotes wealth, money, property owned by an individual or an organization. Human capital refers to overall skill and knowledge of the total workforce of an organization that can be utilized to achieve long term goals. An employee is a rare resource, immutable, non-substitutable and a valuable. There is a requirement for managing human resources according to the stage of growth in the organization. Thus effective management of human capital improves the productivity and overall wealth of an organization. In modern era the Human Resource Management plays an important role in motivating the labor force to work in a productive manner. Since Construction industry is having an extremely large work force, it is a tedious job to identify various facts that affect the human performance so this study aims at identifying the factors that affect the actual performance of human force and the various tools for evaluation.

### II. LITERATURE SURVEY

[1] Varun .V et.al. proposed Factors and Methods for Performance Evaluation of Human Resource in Construction Industry in International Journal of Scientific Engineering and Research (IJSER) in 2016.

Author discussed effective management of human capital to improve the productivity and wealth of organization as well as to maintain equilibrium between the workers and management. The study identifies the factors that can be used for evaluation of human capital in construction industry and various Multi Criteria Decision Making Techniques used for performance evaluation of Human Resource. Human resource management is an art of motivating the human force for achieving the organizational goals. However construction industry with its extremely large work force identification of the needs of the workers and its fulfillment is a tedious job. The study aimed at identifying the various factors that affects the actual performance of workforce in the construction industry and the various methods of analysis used for their evaluation.

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: [www.ijirset.com](http://www.ijirset.com)

Vol. 6, Issue 1, January 2017

**[2] Antonio Aragon et al. proposed The mediating effect of strategic human resource practices on knowledge management and firm performance in AEDM. Published by Elsevier 2014.**

Author explained an integrative model that examines strategic human resource practices as a catalytic mechanism influencing the effectiveness of knowledge management. The findings confirm that knowledge management strategies positively influence firm performance through certain high work performance practices selective staffing, intensive training, active participation, comprehensive performance appraisal, and performance-based compensation highlighting the mediating role of human resource management in this relationship and the need to align human resource practices with organizational strategies. This study provides empirical evidence to support the idea that a knowledge management strategy, acting as a coordinating mechanism, indicates the need for enterprise-level strategic human resource practices..

**[3] V. Shahhosseini et al. proposed Competency-based selection and assignment of human resources to construction projects in Elsevier B.V. 2011.**

Author explained human resource management policies and practices, construction firms need to define competency requirements for project staff, and recruit the necessary team for completion of project assignments. Traditionally, potential candidates are interviewed and the most qualified are selected. Precise computing models, which could take various candidate competencies into consideration and then pinpoint the most qualified person with a high degree of accuracy, would be beneficial. This paper presents a fuzzy adaptive decision making model for selection of different types of competent personnel. For this purpose, human resources are classified into four types of main personnel: Project Manager, Engineer, Technician, and Laborer. Then the competency criteria model of each main personnel is developed. Decision making is performed in two stages: a fuzzy Analytic Hierarchy Process (AHP) for evaluating the competency criteria, and an Adaptive Neuro-Fuzzy Inference System (ANFIS) for establishing competency IF-THEN rules of the fuzzy inference system. Finally, a hybrid learning algorithm is used to train the system.

**[4] Akiko Ueno proposed Developing a conceptual model illustrating how HRM practices support each other in order to improve service quality Published by Elsevier Ltd. This is an open access article under the CC BY-NC-N in 2014**

Author explained six HRM practices, which are most crucial in supporting service quality. The purposes of this paper are, firstly, to clarify the individual relationships among the six HRM practices and to examine how those practices support each other, and secondly, to develop a model which incorporates all the inter-relationships among the six HRM practices. Previously, each individual relationship has tended to be considered in isolation in the literature. Therefore, in this paper, the various inter-relationships were unified into a single model. In this new conceptual framework, the six HRM practices are inter-linked so that each of them may have a joint function in supporting service quality.

**[5] Jason E. Barg et al. proposed review on Motivating Workers in Construction in Hindawi Publishing Corporation Journal of Construction Engineering Volume 2014**

This review found fifty two published articles that addressed worker productivity in close context to construction. Twenty two of these works were not presented in this paper because they did not directly relate to construction worker motivation. The thirty articles that did address this topic were tabulated, categorized, and reviewed. Of these articles, nine addressed motivation models, five addressed worker environment/culture, nine addressed worker incentive and empowerment, and seven addressed worker management.

## III. HUMAN PERFORMANCE FACTORS

### 3.1 Adaptability

Adaptability is a predisposition to consciously maintain an integration of person and the environment and constitutes the attitudes, competencies and behaviors that individuals use to fit into different professions. Career adaptability

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: [www.ijirset.com](http://www.ijirset.com)

Vol. 6, Issue 1, January 2017

relates to the professional duties, traumas, events, situations and transitions that individuals find themselves having to deal with, as well as the psychosocial strategies needed to cope.

### 3.2 Job knowledge

Job knowledge can be referred as a specific set of responsibilities to a particular job. The collective job knowledge of an organization is a human resource asset which has an immense value. Employees who do not have proper knowledge of how their job fits into overall picture of their organization show carelessness and inability to take clear decisions.

### 3.3 Judgment

Judgment is defined as the application of the accumulated knowledge and experience gained through a relevant accounting or auditing training, by making use of the ethical standards, resulting in making informed decisions about the courses of action that are appropriate in specific circumstances.

### 3.4 Productivity

Productivity is a measure of the efficiency of a person, machine, factory or system in converting inputs into useful outputs. Productivity is an average measure of efficiency of production it can be expressed as the ratio of output to input used in the production process. The operational procedure of construction industry is complicated in nature. This industry consists of professionals involved in different phases of construction project like development, finance, concept development and review, detailed engineering, procurement, construction and startup.

### 3.5 Motivation

Motivation is intangible, a hypothetical construct that is used to explain human behavior. Motivation is commonly sourced from intrinsic or extrinsic motives. Intrinsic motivation involves people doing an activity because they find it interesting and derive spontaneous satisfaction from the activity itself. Extrinsic motivation, in contrast, requires an instrumentality between the activity and some separable consequences such as tangible or verbal rewards; hence, satisfaction comes not from the activity itself but rather from the extrinsic consequences to which the activity leads.

## IV. ANALYTICAL HIERARCHY PROCESS

A structured technique for dealing with complex decisions. Based on mathematics and psychology, it was developed by Thomas L. Saaty in the 1970s and has been extensively studied and refined since then. The AHP provides a comprehensive and rational framework for structuring a decision problem, for representing and quantifying its elements, for relating those elements to overall goals, and for evaluating alternative solutions. It is used around the world in a wide variety of decision situations, in fields such as government, business, industry, healthcare and education.

The purpose of the AHP is to assist people in organizing their thoughts and judgments to make more effective decisions. The Analytic Hierarchy Process (AHP) provides the objective mathematics to process the inescapably subjective and personal preferences of an individual or group in making decisions. Fundamentally, the AHP works by developing priorities for alternatives and the criteria used to judge the alternatives. First priorities are derived for the criteria in terms of their importance to achieve the goal, and then priorities are derived for the performance of the alternatives on each criterion. These priorities are derived based on pair-wise assessments using judgments, or ratios of measurements from a scale if one exists. Finally, a weighting and adding process is used to obtain overall priorities for the alternatives as to how they contribute to the goal.

## V. CONCLUSION

Human performance factors were identified by studying the papers. Evaluation of these factors is then done by Analytical Hierarchy Process. From analysis the most important factor which is preferred by all construction firms can be worked out.

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: [www.ijirset.com](http://www.ijirset.com)

Vol. 6, Issue 1, January 2017

## REFERENCES

- [1] Varun .V et.al. proposed Factors and Methods for Performance Evaluation of Human Resource in Construction Industry in International Journal of Scientific Engineering and Research (IJSER) in 2016.
- [2] Antonio Aragon at. al. proposed The mediating effect of strategic human resource practices on knowledge management and firm performance in AEDEM. Published by Elsevier 2014.
- [3] V. Shahhosseini at. al. proposed Competency-based selection and assignment of human resources to construction projects in Elsevier B.V. 2011
- [4] Akiko Ueno proposed Developing a conceptual model illustrating how HRM practices support each other in order to improve service quality Published by Elsevier Ltd. This is an open access article under the CC BY-NC-N in 2014
- [5] Jason E. Barg at. al. proposed review on Motivating Workers in Construction in Hindawi
- [6] Eugenijus Chlivickas, "International cooperation and innovation for developing human resources system", *Procedia –social and Behavioral sciences*, 110, 276-283, 2014.
- [7] Thomas L. Saaty, "Decision making with the analytic hierarchy process", *International journal Services and science*", vol-1, 2008.
- [8] M. Rashid Tariq, Mr. Sohail, Dr. Muhammad Aslam," Impact of Employee Adaptability to Change Towards Organizational Competitive Advantage", *Global Journal of Management and Business Research* Volume 11 Issue 7 Version 1.0 (July 2011).
- [9] Ionela Ivan," The importance of professional judgment applied in the context of the International Financial Reporting Standards", *Audit financier*, XIV, Nr. 10(142) 1127-1135 ISSN: 1583-5812; ISSN on-line 1844 8801 (2016).
- [10] Abzari, M., and H. Sadri," Factors Affecting Employee Motivation in Isfahan Electricity Distribution Company", *Proceedings* 8, no. 19, (2011).
- [11] Seyed Abdol Rasoul Hosseini," Factors Affecting Employee Motivation", *Management and Administrative Sciences Review* [www.absronline.org/journals](http://www.absronline.org/journals) e-ISSN: 2308-1368, p-ISSN: 2310-872X Volume: 3, Issue: 4 (Special Issue), Pages: 713-723 (June 2014).