International Journal of Multidisciplinary Research and Growth Evaluation.

A matrix analysis on human resource management: Recruitment of unskilled personel

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Article Info

ISSN (online): 2582-7138
Volume: 04
Issue: 01
January-February 2023
Received: 21-11-2022
Accepted: 13-12-2022
Page No: 10-13
DOI:
https://doi.org/10.54660/anfo.2022.3.6.23

Abstract
We propose a model recruitment process using step wise performance test via matrix eigenvalue method. In this process an initial recruitment and training are expressed in terms of matrix. The corresponding eigenvalues are noted in each case.

Keywords: Recruitment process, matrix, eigenvalue, academic, non- academic

1. Introduction

In any under developed country, there is plenty of unskilled or partially skilled personnel are easily available. Since these people are semiskilled or unskilled, they are unable to or find difficult to earn their livelihood in a decent manner. Subsequently, they are becoming a burden to the society. This generates socio-economic problem to the society and so also to the country. The every purpose of this communication is to make them skilled for a standard company. Considering this, we propose a matrix model analysis via eigenvalue estimation.

2. Matrix and eigen value model

Consider a model matrix consisting of 4 (four elements) only [1]

$$A = \begin{bmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{bmatrix} \quad (1)$$

The corresponding Eigen values relation can be obtained solving the relation as

$$|A| = \begin{bmatrix} A_{11-}\lambda & A_{12} \\ A_{21} & A_{22} - \lambda \end{bmatrix} = 0 \quad (2)$$

The above relation implies there are only two Eigen values say λ_1 and λ_2. Depending on the value of elements $A_{i,j}$, the value of $\lambda_{1,2}$ are regulated [2]. The above analysis can be applied to any square matrix consisting of any no of eigenvalues.

3. Selection of elements via recruitment process

Let us consider that on organization desires to recruit 4 (four) unskilled persons and to train them for making skilled persons.

A. Educational qualifications

Here we consider different types qualifications as follows.

B. Additional computer-based qualifications: Software knowledge

C. Proficiency in language

Here, we consider the candidates ability to understand the process by virtue of communication.

Table 1: Basic Educational Qualifications

Basic Degrees/Diplomas	First class	Second class	Third class
H.S.C	10	8	6
Degree	15	10	8
P.G Sc/Engg	20	15	10
P.G. Arts/Com	12	8	4
Diploma	8	6	4

Table 2: Software knowledge

Knowledge	Successfully	Partial knowledge
Training/	Completed	not-completed
Certificate	8	4

Table 3: Language known

Languages	Read	Write	Speak
English	10	10	10
Japanese	10	10	10
Korean	10	10	10
French	10	10	10
Germany	10	10	10

4. Matrix analysis on initial recruitment

Here, we consider that an organization wants to recruit 4(four) no of candidates in one batch and impart internal training. Summarizing the above procedures, we tabulate their marks as follows.

Table 4: Matrix model on initial recruitment

Candidates	A	B	C	D
S_1	30	20	25	**0**
S_2	50	20	25	0
S_3	40	40	25	0
S_4	35	20	25	0

Let us consider that, above numbers are the elements of matrix S i.e.

$$S = \begin{bmatrix} 30 & 20 & 25 & 0 \\ 50 & 20 & 25 & 0 \\ 40 & 40 & 25 & 0 \\ 35 & 20 & 25 & 0 \end{bmatrix} \quad (3)$$

In a pictorial mode this can be represented as
The corresponding Eigen values of S are

$$\lambda_1 = 0; \lambda_2 = 89.1567;\ \lambda_3 = 8.9240; \lambda_4 = 5.3948 \quad (4)$$

Below, we present a pictorial view of Eigen values of matrix *S* as

5. Training period and corresponding matrix

In this section, we discuss training period matrix analysis. All the trainees are given rigorous training for a period of three months followed by an assessment as given below.

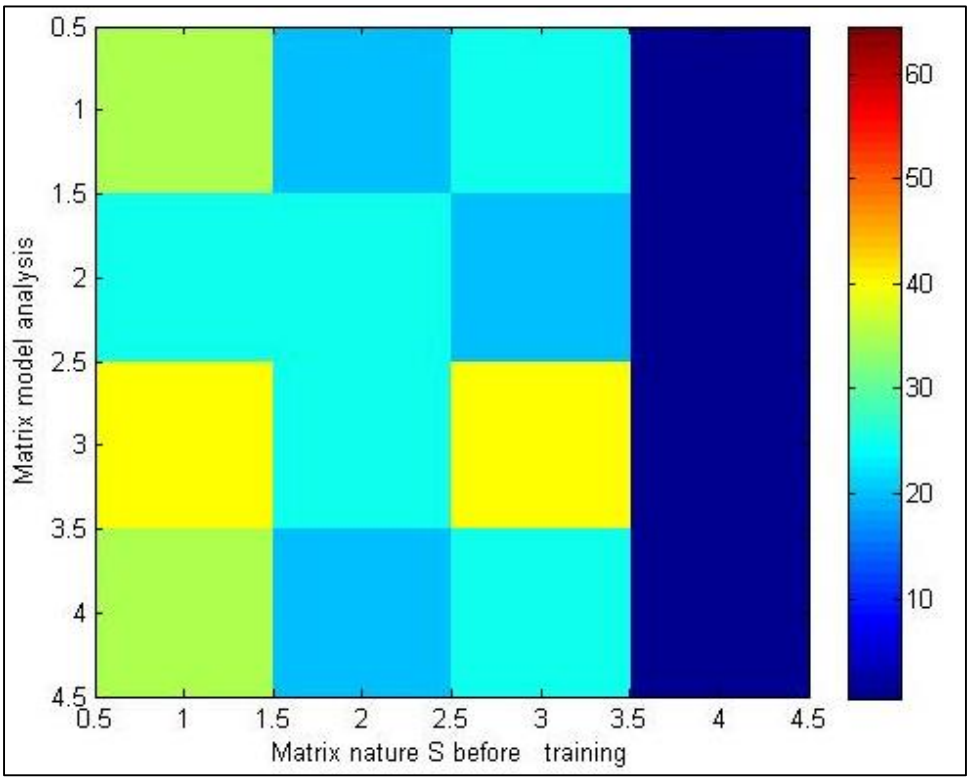

Fig 1: Pictorial view of Recruitment system

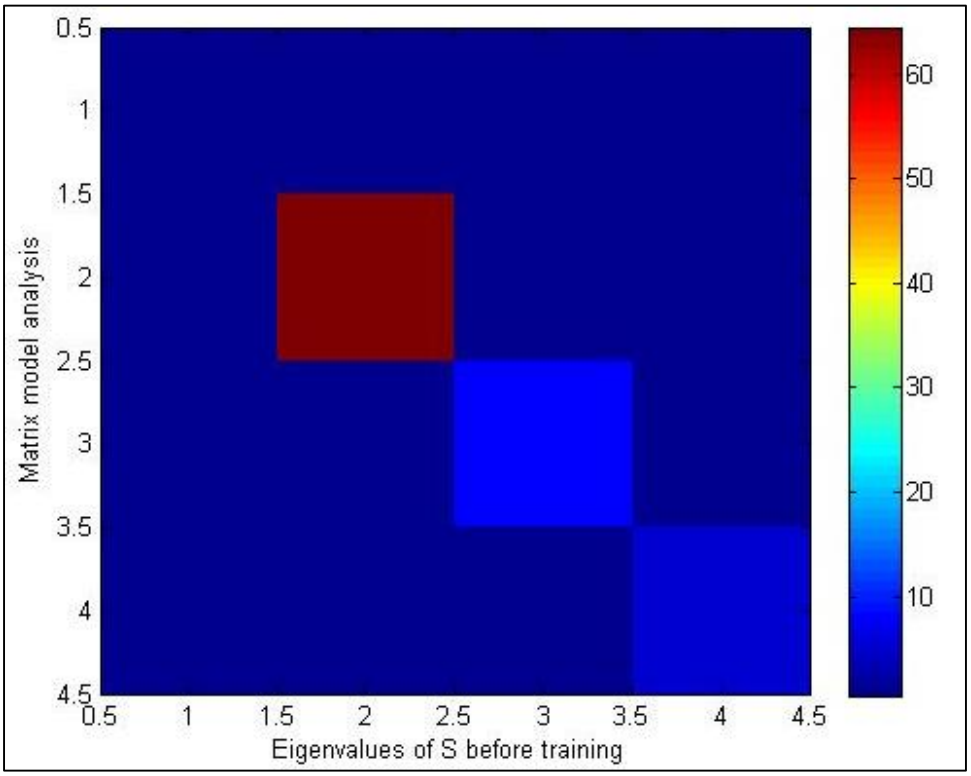

Fig 2: Pictorial view of Eigen values of S

Table 5: Assessment during training

Excellent	Good	Mediocre	Poor
20	15	10	5
S_1	15		
S_2	20		
S_3	10		
S_4	15		

After the training period, the corresponding matrix becomes.

$$S_T = \begin{bmatrix} 3 & 20 & 25 & 15 \\ 25 & 25 & 20 & 20 \\ 40 & 25 & 40 & 10 \\ 35 & 20 & 25 & 15 \end{bmatrix} \quad (5)$$

A pictorial of present matrix after training is given below.

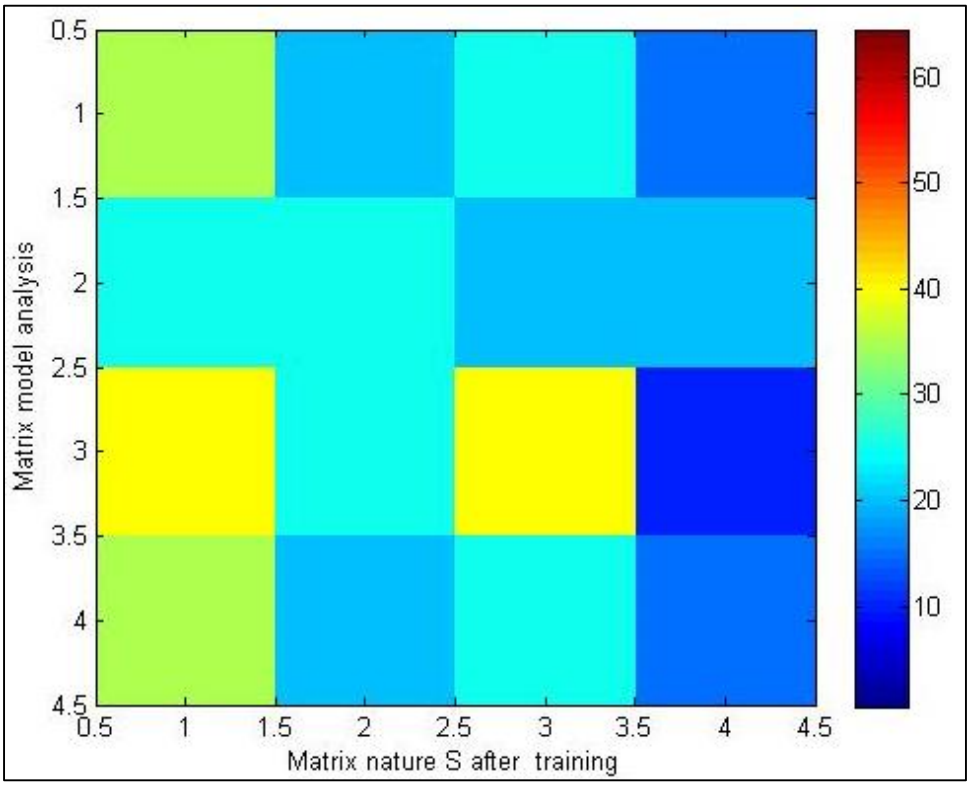

Fig 3: Pictorial view of matrix of S_T

The corresponding Eigen values are the following; $\lambda_1 = 99.5153; \lambda_2 = 0; \lambda_3 = 8.6951; \lambda_4 = 6.7896$. The corresponding pictorial view of eigenvalue is given below.

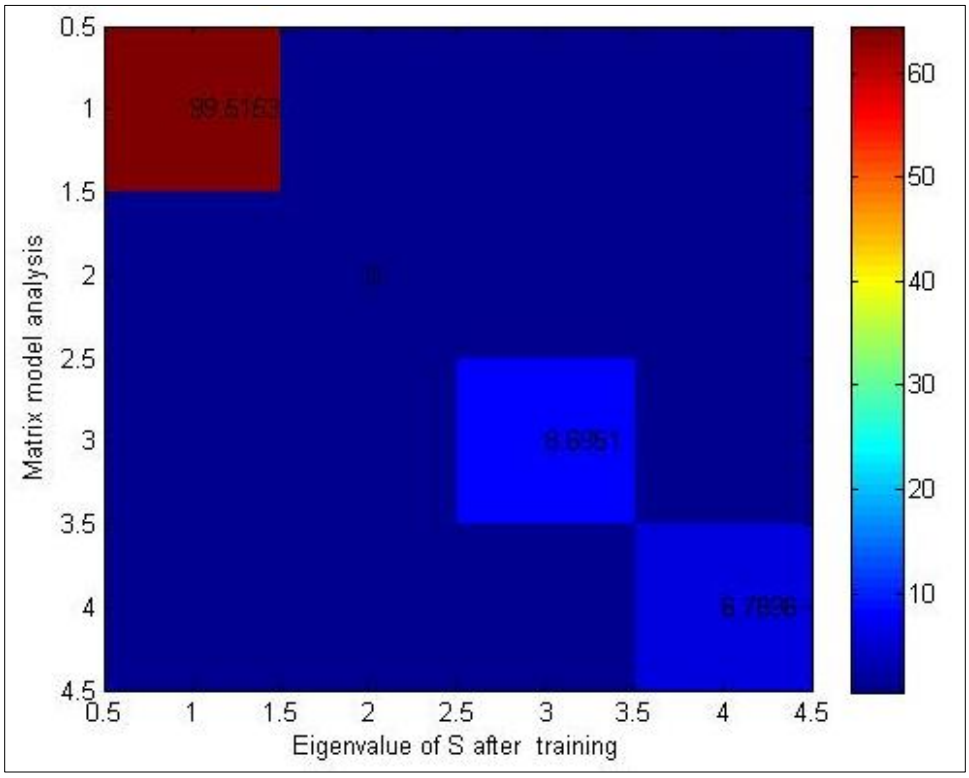

Fig 4: Pictorial view of Eigen values of S_T

6. Conclusion

In conclusion, we have suggested a matrix analysis for the recruitment unskilled personnel considering four candidate models. In fact the above analysis can be extended to any no of candidate. Hope, this new model will find new way to recruitment in any companies like Amazon, Tisco, Google, Wal-Mart, Microsoft, Steel-pant, Cotton factory, Sugar-cane factory and Fertilizer industry, etc. In fact, the present model is not available in any of the models [2-7].

7. Conflict of interest

Author declares there are no conflicts of interest.

8. Data Requirement: No additional data of any kind is required.

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