An Integrated Conceptual Model of Performance Appraisals and Succession Planning using Multi valued Evaluation

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ABSTRACT

The quality of Human Resource and leadership are the two important determinants that determine the success of an organization. Though many organizations asserts that people are their most valuable asset, still very few organizations follows a structured approach for proper talent management i.e. the anticipation of needed human capital in organization, with appropriate system for retaining and rewarding their workforce. The paper proposes a model for performance based Succession Planning(SP) and Performance Appraisals (PA) on the basis of ordinal scale of measurements using expert opinion in terms of linguistic variables such as excellent performance high performance, Moderate and poor performance. The model presented in this paper is an attempt to help organizations in identifying and developing successors for the key position using data gathered through performance appraisals that will help in evaluating the performance of an employee using specific performance appraisals criteria. The proposed model will be beneficial for organizations in strategically identifying and developing required talent pool within the organization for internal promotions through performance appraisal reviews and competency assessments using fuzzy logic, multi valued evaluation model.

Keywords: *Succession Planning, Multi valued evaluation, performance appraisal, Employee competence, competency, Fuzzy Logic, ordinal scale, linguistic variables*

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Section 1: Introduction:

Despite the emerging trend of corporate downsizing in organizations all over the world, the management and development of human talent and leadership is still a top priority for managers today. For maintaining and retaining talented and knowledged workforce, it is important to have a proper performance management specifically performance appraisals system and succession plan for the employees in order to ensure a smooth career path to employees within the organization. Performance appraisal of employee is beneficial in terms of doing planning for any specific position within the organization and is one of the key tasks towards managing workforce of the organization [1]. Performance appraisal is a systematic process that seeks to evaluate employees' performance and helps in identifying employee's potential for further growth and advancement within the organization's career ladder. The basic aim of performance appraisal system is to monitor employee performance, boost employee motivation that will in turn improve company morale and is a useful tool for understanding and assessing employee skill potential. Mostly supervisors are the immediate source of judging and evaluating the performance of their subordinates ,however in some recent methods of performance appraisal like 360˚ feedback employee is being evaluated by everyone that come in contact with him, be it a supervisor , colleague, customers, peer, subordinate managers, team members, suppliers and vendors. This type is different form other traditional method of performance appraisal as in this information about employee is gathered from all possible sources to sketch full picture of employee performance i.e. a full assessment of employee from multiple sources. On contrary, subordinate (appraises) are too now recognizing the importance of performance appraisals, since this tool of performance management affects their rewards and paves the way for further developmental opportunities like trainings, promotions , transfers, salary increases bonuses etc.

Similarly data gathered through Performance appraisal can also be used for identifying successors for key leadership positions in the organization, in order to have a strong HR supply of talent to fill positions as they become vacant

"Succession planning is the process of identifying and preparing internal staff with the potential of leadership to fill key leadership positions within the organization. [2]

Hence it's of immense importance that organizations should follow a proper structured approach or system for discovering and promoting the most qualified candidates as organization's success mainly depends upon the caliber of its workforce that ultimately determines the survival and growth of the organization and is the main source of building competitive advantage over other organizations.

Keeping in view the wide application of the concept of fuzzy set theory in the spectrum of performance appraisals and succession planning, this paper is an attempt to present an integrated model of

Performance appraisals and Succession planning using multi valued evaluation model which are often used vaguely in terms of linguistic variables.

The paper proceeds as follow. Section 1 present Introduction Section 2 Consist of developing a theoretical framework that gives a brief concept of

PA, SP and Fuzzy logic with its application in the field of HRM specifically PA & SP. Section 3 consist of methodology adopted in this paper. Section 4 presents An Integrated Conceptual Model of Performance Appraisals and Succession Planning using Multi valued Evaluation. Section 5 presents conclusion.

Section 2: Theoretical Framework

Human Capital of the organization is one of the most valuable assets of the organization. Human resource planning and performance management, both the functions of Human Resource Management are an important perquisite in developing and retaining a quality workforce within the organization. While Succession planning is a significant part and can be called as a subset of Human Resource Planning. Though performance appraisal is an important tool for the management of performance of employees, many Human Resource Management experts are now using Performance appraisals and Performance management, as the terms synonymous to each other as both deals with the evaluation of employee competence and performance in the organization. Performance appraisal and

succession planning, the key concepts that are adopted in the paper for the development of the model for internal promotions and performance management, leverages each other as the data collected through Performance Appraisals can be used for the identification of the successors for filling key positions (critical) and sometimes non critical positions in the organization. [3] Hence, Performance appraisals is an important tool, that can be used as an input to succession planning in discovering and identifying potential skill set and competencies for filling the future staffing needs of the organization that becomes vacant due to retirements, turnovers, or any unforeseen circumstances like death of the employees etc. Performance appraisal, in terms of planning for any key position in the organization, is an essential task towards the management of a work force in the organization as it also impacts employee's rewards and helps in defining his/her future career path with the organization.

2.1. Performance Appraisals (PA) Concepts

Performance Appraisals, the second important concept taken for the development of the model in the paper, is also known as Performance evaluation, a tool for providing Employees feedback about their performance. Performance appraisal is a systematic process that is done on the periodic basis i.e. annually or bi-annually in some organizations, the basic purpose is to assess individual employee's job performance and productivity according to certain pre-established criteria and organizational objectives. [4]

Performance appraisal takes into account the past performance of the employees and focuses on the improvement of the future performance of the employees. There are two basic purpose of conducting performance appraisals, Developmental purpose and Evaluative Purpose. Developmental purpose is used to identify the weak areas of employee's performance. The gathered data is than used to provide trainings and development opportunities to the employee. On the other hand evaluative purpose helps organizations /evaluators in informing employees about their performance and further in rewarding excellent performance and to punish poor performance. However the purpose

of the appraisal should be clearly communicated to both the rater and the employee, whose performance is being evaluated.

HR professionals are using various methods and techniques for evaluating the performance of the employees like 360˚ Feedback, Management by objective Graphic rating scale, Critical Incident Technique, Checklist Technique, Paired Comparison , Behaviorally anchored rating scale (BARS), Individual ranking, Comparative Standards or multi-person comparison, Group Rank Ordering. [5]

Performance appraisal is gaining importance as an important tool for not only managing the performance of the employees but also as a means for developing and rewarding employee performances and the data gathered can also be used for promoting staff on the basis of their performance, knowledge ,skills and attitude (KSA)

2.2. Succession Planning (SP)

Succession planning is an ongoing process of anticipating the future staffing needs mainly the identification of future leaders of the organization from within the organization, in order to select, train and develop internal human capital to assume key positions in the organizations as positions become vacant because of the retirements, general attrition or any other unforeseen circumstance. [6] It is a proactive approach of filling future organizational needs of internal supply and Promotions of employees and for ensuring the continuity of talent within the organization for all critical positions. [7] The main aim of succession planning that distinguishes it from workforce planning is to have right leadership at all key positions in all organizational levels.

It is a process which starts with the identification of key/critical positions throughout the organization. Key position /critical positions are the life blood of the organization, which include leadership positions or specialized position and roles that are considered vital for the success of the organization, specific department, and division to accomplish the goals of the organization. [8] Second step, consist of determination of competencies i.e. KSA (knowledge, skills and attitude) required to perform each position that selected successor

will going to fill in future through succession planning. At stage three of the process the identification of high potential employee as a possible Successor for the earlier identified key/critical positions takes

place. High potential employees are those who have an aptitude to take up or assume critical positions that requires high technical proficiency. In Step four i.e. Learning and development stage plans are developed for the successors according to their interest and skill set, to fill in the leadership roles when need arises, the basic intention of these identification of high potential employee as a possible Successor for the earlier identified key/critical positions is to adopt development plans to trim down the gap between current and desired competencies, through different employee development strategies like training, counseling, job rotation, coaching, job enrichment, mentoring, job shadowing etc. Finally in the last stage of the process implementation and evaluation of the process takes place to see the effectiveness and success of the process [9].Its an ongoing process that enables organizations to retain quality and knowledge workforce with the organization.

Replacement charts, Gap analysis, Projective Technique, Competency Mapping, Skill Inventory, Performance reviews, Talent review meetings are some the ways/methods organizations are using in doing succession planning. [10] Besides these methods succession planning can be done with the help of three basic models namely Succession Planning by Position (Management driven), Creating Succession planning "Pool" and Top-down/bottom-up
Succession Planning Model.

2.3. Application of Fuzzy based Methods:

In the following section the basic concept of fuzzy set theory and linguistic variable is presented. We will than present a ranking system based on the basis of linguistic variables.
There is a wide application of fuzzy logic and fuzzy based methods in Management Sciences. Several attempts have been made to apply Fuzzy based methods and multi

valued variable in the field of HRM specifically Performance appraisal and succession planning. The concept of Fuzzy logic was given by Lofti Zadah in 1965. Fuzzy logic is a type of Multi valued logic or probabilistic logic that deals with reasoning that is approximate rather than fixed and exact. It's a mathematical in which truth can assume a continuum of values between 0 and 1

The application of fuzzy approach in the domain of PA and SP, allows HR managers and organizations to take professional approach in evaluating and assessing their employees. Many researches have shown a successful use of fuzzy set theories to solve multiple criteria problems

As in many situations, appraiser uses vaguely terms qualitative criteria in evaluating and assessing their subordinate's perfomance.Therefore appraiser tends to face difficulty in precisely quantifying the scores of appraises. The application of Fuzzy group decision support system (FGDSS) will be helpful for decision maker in making better decision according to different situations and alternatives.

According to literature available on fuzzy logic, it has been observed that the idea of integrating PA and SP with fuzzy based Multi valued evaluation (fuzzy concept) is a good concept.

Section 4: Methodology

In this work we are going to present a Performance appraisals and succession planning process on the basis of linguistic variables measured on a scale from 1 to 8 (which can be further extended depending on the needs of the concerned organization) to grade criteria for each aspect of staff evaluation –which may be as follow

Employee Evaluation

(a) **Aspect # 1: Work output and**

   Productivity

   This aspect determines and evaluates the quality and consistency

   (Consistency= effectiveness +

   Punctuality) of the concerned staff.

(b) Aspect # 2: **Job Knowledge & Skill**

   Set:

   This aspect examines the job

   Knowledge and skills of the staff in

   His/her concerned area of work

(c) Aspect #3: Personal Attitude

   This aspect examines the personal

   attitude of the employee appreciable by the concerned organization, which includes

   employee personal behavior /discipline, employee initiative, innovation,

   cooperativeness and self reliance (Independence)

(d) Aspect # 4: Social Responsibility

   Which include employee's contribution to the organization, community, country and

   universally.

(e) Aspect # 5: Social Networking

   This aspect evaluates staff social networking in the profession and related

   communities.

Multi valued linguistic variables are defined on an ordinal of 1 to 8 that appraiser will use in evaluating and assessing employee performance. The linguistic variable for the scale of each aspect can be defined as given in the following table. Where 1 indicates employee's poor performance and 8 signifies that employee is rate excellent in performance.

TABLE # 1

LINGUISTIC VARIABLES
AND GRADE FOR EACH ASPECT

Linguistic Variable	Scale
Excellent	7-8
High	6-5
Moderate	4-3
Poor	2-1

We have taken less number of values of linguistic variables keeping in view the work rating situation in our country which might create unpleasant situation and a separate study is needed in this context.

Section 5: Performance Appraisal Model (AP-MEM)

The application of Multi valued Evaluation model in the performance appraisal system consist of five linguistic variables.

As illustrated in figure 1 (PA/SP Model) , each model indicates one single aspect After collecting the employees performance reports on each aspects from concerned managers, the employees overall rating can be computed using equations mentioned in figure 2 (see output boxes)

In figure 2, F is the factor to be evaluated in each aspect, whereas P (f) is the result of employee performance in a selected aspect.

The first evaluation formula in Figure 1 uses F_1 that is the factors in Aspect 1 (Work output/productivity) as its input. The basic factors under this aspect are b_1, b_2, b_3, b_4, b_5 which will use as sub criteria for this aspect and are defined as follows.

$b_{1=}$ Work output/productivity

$b_{2=}$ Job knowledge and Skills

$b_{3=}$ Personal Attitude

$b_{4=}$ Social Responsibility

$b_{5=}$ Social Networking

Therefore,

$$B = \{b1, b_2, b_3, b_4, b_5\}$$

The linguistic Variable values for appraisal are:

$V_{1=}$ Excellent

$V_{2=}$ High

$V_{3=}$ Moderate

$V_{4=}$ Poor

For an employee's performance in terms of working output and productivity, the one factor assessment for each aspect should be determined by the Assessment/ Evaluation section of the organization.

Now we can set weight age of b_1 {Work output and productivity as or one factor assessment vector R_1 (f)}

$$R_1 (f) = \{V_1, V_2, V_3, V_4\}$$

$$R_1 (f) = \{0.1, 0.4, 0.3, 0.2\}$$

Similarly weight age of b_i are given by

R_i (f), i= 2, 3, 4, 5

$$R_2 (f) = \{0.2, 0.5, 0.2, 0.1\}$$

$$R_3 (f) = \{0.5, 0.3, 0.1, 0.1\}$$

$$R_4 (f) = \{0.2, 0.5, 0.2, 0.1\}$$

$$R_5 (f) = \{0.2, 0.4, 0.2, 0.2\}$$

Note sum weights of each R (f) is 1

We may write these vectors R_1 (f), R_2 (f), R_3 (f), R_4 (f) and R_5 (f) in tabular form/ matrix as follows

$$R (f) = \begin{pmatrix} R_1 (f) \\ R2 (f) \\ R_3 (f) \\ R_4 (f) \\ R_5 (f) \end{pmatrix} = \begin{pmatrix} 0.1 & 0.4 & 0.3 & 0.2 \\ 0.2 & 0.5 & 0.2 & 0.1 \\ 0.5 & 0.3 & 0.1 & 0.1 \\ 0.2 & 0.5 & 0.2 & 0.1 \\ 0.2 & 0.4 & 0.2 & 0.2 \end{pmatrix}$$

Now we set W (f) is the weighting factors which is the appraiser's rating towards an employee for all criteria in a particular aspect for example, assume that appraiser's rating for weight vector corresponding to 5 factors in respect to aspects are 5.

W_1 (f) = {0.3, 0.2, 0.3, 0.1, 0.1}
W_2 (f) = {0.4, 0.3, 0.2, 0.1}
W_3 (f) = {0.2, 0.4, 0.2, 0.2}
W_4 (f) = {0.3, 0.3, 0.1, 0.3}
W_5 (f) = {0.2, 0.4, 0.2, 0.2}

Now the result evaluation can be computed as shown in figure 2 of our proposal model using

D (f) = W_1 (f).R (f) for aspect 1

And multiplication of matrices W_1 (f) and R (f) is computed on the min-max composition of fuzzy relations (see Wikipedia for that details on fuzzy relation) and result is obtained in the form of a fuzzy set D(f) = {d_1, d_2, d_3, d_4}

As for the Aspect 1 (Working output and productivity) linguistic variable has four values as given in a set V above which would be involved in the performance appraisal system, therefore the resulting assessment / evaluation is the form of fuzzy set D(f) computed as follows using min-max position of fuzzy relations

D (f) = W_1 (f).R (f) = {d_1, d_2, d_3, d_4)

$$= \{0.3, 0.2, 0.3, 0.1, 0.1\} = \begin{pmatrix} 0.1 & 0.4 & 0.3 & 0.2 \\ 0.2 & 0.5 & 0.2 & 0.1 \\ 0.5 & 0.3 & 0.1 & 0.1 \\ 0.2 & 0.5 & 0.2 & 0.1 \\ 0.2 & 0.4 & 0.2 & 0.2 \end{pmatrix}$$

$= \{0.3, 0.3, 0.3, 0.2\}$

Where d_1, d_2, d_3, d_4 could be computed using min-max composition of fuzzy relations.

$d_1 = (0.3\wedge0.1) \text{ V } (0.2\wedge0.2) \text{ V } (0.3\wedge0.5)$

   $\text{V } (0.1\wedge0.2) \text{ V } (0.1\wedge0.2)$

$= (0.1) \text{ V } (0.2) \text{ V } (0.3) \text{ V } (0.1) \text{ V } (0.1)$

$= 0.1\text{V}0.2\text{V}0.3\text{V}0.1\text{V}0.1$

$= 0.3$

Where ^ represents min. of numbers

And V represents max. of numbers.

Similarly we can compute d_2, d_3, d_4 as follows

$d_2 = (0.3\wedge0.4) \text{ V } (0.2\wedge0.5) \text{ V } (0.3\wedge0.3)$

   $\text{V } (0.1\wedge0.5) \text{ V } (0.1\wedge0.4)$

$= (0.3) \text{ V } (0.2) \text{ V } (0.3) \text{ V } (0.1) \text{ V } (0.1)$

$= 0.3\text{V}0.2\text{V}0.3\text{V}0.1\text{V}0.1$

$= 0.3$

$d_3 = (0.3\wedge0.3) \text{ V } (0.2\wedge0.2) \text{ V } (0.3\wedge0.1)$

   $\text{V } (0.1\wedge0.2) \text{ V } (0.1\wedge0.2)$

$= (0.3) \text{ V } (0.2) \text{ V } (0.1) \text{ V } (0.1) \text{ V } (0.1)$

$= 0.3\text{V}0.2\text{V}0.1\text{V}0.1\text{V}0.1$

$= 0.3$

$d_4 = (0.3\wedge0.2) \text{ V } (0.2\wedge0.1) \text{ V } (0.3\wedge0.1)$

   $\text{V } (0.1\wedge0.1) \text{ V } (0.1\wedge0.2)$

$= (0.2) \text{ V } (0.1) \text{ V } (0.1) \text{ V } (0.1) \text{ V } (0.1)$

$= 0.2\text{V}0.1\text{V}0.1\text{V}0.1\text{V}0.1$

$= 0.2$

D (f) has the largest components $d_1 = d_2 = d_3 = 0.3$ at the same time. Recall linguistic variable values for appraisals

V= {V_1, V_2, V_3, V_4}, the analyzed employees performance in terms of working output productivity assessed somewhere between V_1 and V_3, that is, between excellent and moderate then we apply the principle of biggest subject vector and we apply the principle of biggest subject vector and conclude excellent performance. [See GuoZhang et al]

Thus same computation procedure can be applied for F_1, F_2, F_3, F_4 and F_5, which are the aspect 2 Job Knowledge and skill set Aspect 3 Personal attitude, Aspect 4 Social Responsibility and Aspect 4 social Networking, respectively. Furthermore we can evaluate linguistic variable and weighting for each aspect and eventually employee's average performance can be computed which needs further in depth work and thus will be repeated later on.

Conclusion

We have developed a performance appraisal system which can be integrated with succession planning using subjective method of linguistic variable grades based on experts of the employee's performance assessment and competency mapping. This conceptual model covers performance evaluation and succession planning and demands for further work in this field of research keeping in view organizations and their administrative setup.

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Figure 1 - PA/SP MODEL
Figure 2 - PA/SP/MEM MODEL
(An Integrated Conceptual Model of Performance Appraisals (PA) and   on the basis of Succession Planning (SP) Multi valued Evaluation (MEM))

F_1	F_2	F_3	F_4	F_5
Data Attributes/ Factors for Aspect 1	**Data Attributes/ Factors for Aspect 2**	**Data Attributes/ Factors for Aspect 3**	**Data Attributes/ Factors for Aspect 4**	**Data Attributes/ Factors for Aspect 5**
$R(f) * W(f)$	$R(f) * W(f)$	$R(f) * W(f)$	$R(f) * W(f)$	$R(f) * W(f)$

Figure 1 PA\MEM

$D(f_1)$ Employee Performance Aspect 1	$D(f_2)$ Employee Performance Aspect 2	$D(f_3)$ Employee Performance Aspect 3	$D(f_4)$ Employee Performance Aspect 4	$D(f_5)$ Employee Performance Aspect 5
Employee Performance Aspect 1*40%	Employee Performance Aspect 2*20%	Employee Performance Aspect 3*20%	Employee Performance Aspect 4*10%	Employee Performance Aspect 5*10%

Accumulated Employees Performance Review, Competency Assessment (CA) & Report

Succession Planning (SP) for Immediate & Long-term Vacant Positions (Identification of Key Positions)

Figure 2 PA/SP/MEM MODEL

Step 1

Identification of key positions & Capabilities for key areas

Step 5

Successor Development knowledge transfer plans

Step 2

Employees Performance reviews (EPR) &Lists

2, 2

Step 3

Experts opinion on the basis of PA-MEM Model (EPR&CA) for Key position & Successor Selection

Step 4

Development of SP tools & Replacement Charts

Step 6

Evaluation and Monitoring process

An Ongoing Process after a certain duration of time as decided by the organization