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A Multi-Criteria Decision Making for Non-academic Staff Promotion in Higher Education by Using Analytical Hierarchy Process (AHP)

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Abstract: Other than Academician, non-academic staff are the main assets in education sector. The quality of education is primarily determined by the academician expertise, skills, abilities and competences with supported by motivation of non-academic staff. Poor quality of the non-academic staff often leads to the poor management and procurement aspect. It is very important to enhance the education system in local higher education standard to an international education standard. To ensure the quality of service given by non-academic staff, the recognition and reward system should be transparent and fair decision to employees. Non-academic promotional system varies according to the nature of the work and designation within an organization. In Universiti Kuala Lumpur (UniKL); performance within three years, service period, Dean/ Director or General Manager's recommendation, Harrison Profiling Test score and contribution to university are the main criteria being considered in appraising staff. The purpose of this study is to improve the method of non-academic staff promotional system by using the Analytic Hierarchy Process (AHP). The finding shows that the new method is more systematic and reliable in selecting candidates to be rewarded. This method employs both quantitative and qualitative multi-criteria decision-making approaches. The right candidates will be based on the global priority index. The reliability level of priorities index obtained in this study is less than 0.1 of the inconsistency ratio (CR).

Keywords: Non-academic Staff Promotional System Criteria, Analytic Hierarchy Process (AHP), Pair wise comparison, Inconsistency ratio (CR).

1. INTRODUCTION

Generally, performance appraisal aims to recognize employees' contribution to an organization depending on each individual rating . In an education institution, both academic and non academic staff are complementing each other, in bringing success. If the academic are involved in activities like teaching, research and professional work, the non academic also play a vital role in the administrative, secretarial, technical as well as professional work. According to Dey and Ghosh (2015), the poor of the non-academic staff often leads to the poor procurement and of other assets. It is impossible to deny that the non academic are the backbone to the quality of teaching through their competences, skills, abilities plus the motivation. So, when it comes to select the best candidate to be promoted for the non academic, it is almost as important as choosing an academic. (Salmuni *et al*., 2007) asserted that recognition and attractive reward will give staff motivation to perform well in their work.

Sytematic performance appraisal and rating of candidates applying for promotion is very important in strategic human resource Many higher education institutions in Malaysia have changed the instrument of staff promotional system to ensure complaints and dissatisfaction among the staff can be reduced. Low morale and productivity, and backstabbing could be the negative values that are caused by an ineffective appraisal system. If the appraisal system used is fair, then staff will most likely can accept their performance rating result. In this perceptive, staff promotion appraisal system can be considered as a tool that can measure and suggest on how to improve efficiency (Vallance, 1999; Nasution, Marzuki, 2016). Promotion appraisal based on the changing and globalization requirement needs a variety of criteria which should cover all the tasks, activities and contributions. The analytic hierarchy process (AHP) minimizes a multidimensional problem into a single dimensional which the decisions are decided by one number for the best outcome (Saaty, 1988). In addition, AHP is a mathematically-based technique that is very effective in organizing and analyzing a various of problems and has assisted many decision makers (DiNardo *et al.*, 1989). It is also a multi-criteria decision making (MCDM) method that helps the decision-maker dealing a complex problem with multiple conflicting and subjective criteria (Liberatore and Nydick, 1997; Ishizaka *et al*., 2009; Wu, 2005). (Sidin *et al*., 2003) have emphasized that for any kind of evaluation exercise, the identification of the principal and

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significant criteria are the most crucial part. (Ablhamid *et al*., 2013) in their study have illustrated the criteria in six main categories namely quality/quantity of work, planning, commitment, cooperation, communication and external factors.

In this study, a new method of evaluation is proposed in which its prioritization methodology is based on the Analytic Hierarchy Process (AHP). Besides it is a popular method used worldwide in solving problems related to decision-making, AHP is also used to resolve the ambiguity of concepts that are associated with human being's judgments. The model offers easy to-use, versatile, and objective methodology to prioritize members inside a discipline or major for excellence awards, merit pays, tenure decisions, or other recognition schemes. On a university-wide level, the model could be used to identify the best candidate that can be rewarded.

2. SCOPE AND OBJECTIVE OF STUDY

This study focuses on the non-academic staff promotion. A new method has been proposed to UniKL to improvise the non-academic staff's promotional system by using Analytic Hierarchy Process (AHP).

3. DATA AND METHODS

Nowadays, Universiti Kuala Lumpur (UniKL) has practicing once a year promotion exercise. Staff will be promoted when he/she has met the promotion criteria and is deemed suitable and has the capability and competency to perform the job of a higher grade. group or non-academic staff will be divided into 4 categories of promotion namely;

- **Senior Officer and below**
- **Executives and Senior Executives**
- **Assistant Managers and Managers**

Fig.1 illustrates the promotion category of non-academic staff.

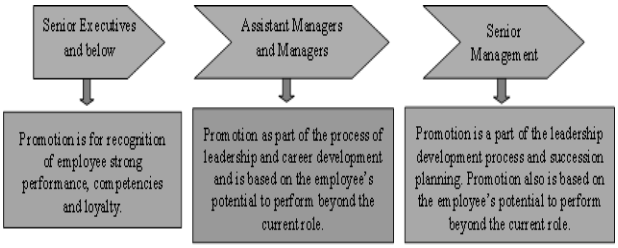


Fig-1. Category of promotion for non-academic staff

Several criteria have been fixed to be the domain in the promotional system. All the levels of non-academic staff use the criteria namely:

- **Performance within three years**
- **Service period**
- **Dean/ Director or General Manager's recommendation**
- **Contribution to university**

Harrison Profiling test will be conducted for critical positions such as Assistant Manager and Manager and Senior

Analytical Hierarchy Process (AHP) method by Saaty (2008) has been adapted in this study to select non-academic staff for promotion. AHP is decision making approach that involves structuring of multi-criteria into hierarchy by accessing the relative importance of every criterion to determine an overall ranking of the alternatives. AHP use qualitative as well as quantitative multi-criteria decision-making approaches. Five samples from every level of promotion (Senior Officer and below, Executive and Senior Executive, Assistant Manager and Manager, Senior Manager and above) have been considered in this study.

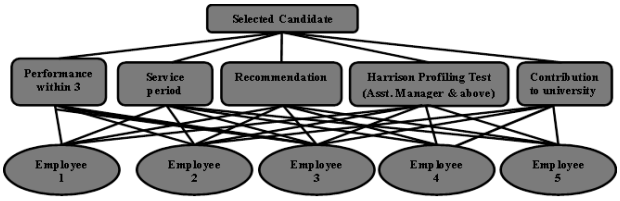


Fig-2 The Framework of AHP

The framework of the hierarchy is shown in Fig 2. There are 3 levels of hierarchy;

- **Level 1: The goal of the decision.**
- **Level 2: Multiple-criteria that define alternatives in the middle.**
- **Level 3: List of alternatives.**

The implementation of the AHP can be illustrated in **Fig.3**:

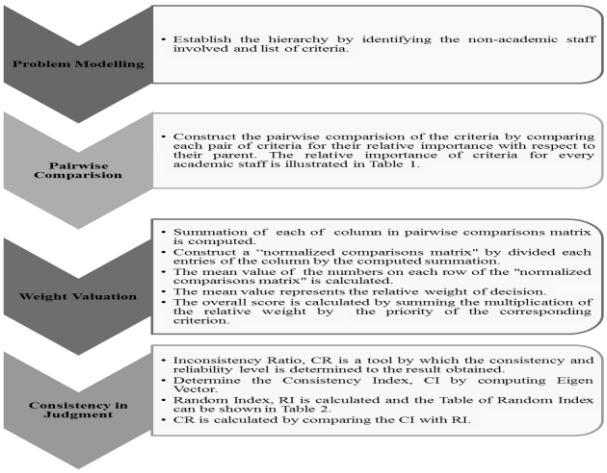


Fig. 3. AHP steps by Saaty (2008)

Table-1: Saaty's scale of relative importance

Intensity of relative importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgment slightly favor one over another
5	Essential or strong importance	Experience and judgment suggest a strong favor over another
7	Very strong importance	An activity is strongly favored and its dominance is demonstrated in practice
9	Absolute importance	Evidence favoring this activity is of absolute affirmation
2,4,6,8	Intermediate values	When compromise is needed
Reciprocals:	If activity I has one of the above numbers assigned when compared to J; then J has the reciprocal when compared to I	

Table-2: Saaty's Random Index Table

Matrix Order	1,2	3	4	5	6	7	8	9	10
RI	0	0.52	0.89	1.12	1.26	1.36	1.41	1.46	1.49

4. RESULT AND DISCUSSION

The UniKL top has decided the weightage of the criteria in every promotion exercise. The weightage will be based on the university requirement. The criteria and weightage are stated in **(Table-3)**.

Table-3: Criteria and Weightage

No	Main Criteria	Weightage Senior Exec & below	Weightage Assist. Managers and Managers	Weightage Senior Management
1	Performance within three years	0.50	0.40	0.35
2	Service period	0.20	0.15	0.15
3	Dean/ Director or General Manager's recommendation	0.25	0.20	0.20
4	Harrison Profiling Test	-	0.15	0.20
5	Contribution to university	0.05	0.10	0.10
	TOTAL	1.00	1.00	1.00

Table-3 shows that performance within three years is considered to be most important criterion with a weight of 0.5, 0.4 and 0.35 for Senior Executive and below, Assistant Manager and Managers and Senior respectively. This criterion is very important to evaluate candidates on job performance to ensure they have demonstrated the competency at proficiency levels, which are expected at current level and perform on goals and targets which are set based on current role and responsibilities. The promotion committee members will evaluate all the shortlisted candidates. They were invited to judge every candidate based on the record compiled by Human Resource Division. The pairwise comparison will be constructed based on the results gathered. The relative weight from each of the criterion was computed. The overall priority score and inconsistency ratio are provided in **(Table-4**, **--7)**.

Table-4: Score for Senior Officer and Below Candidates

CR	0.096	0.076	0.063	0.050		
Staff	Performance within 3 years (0.50)	Service period (0.20)	Recommendation (0.25)	Contribution (0.50)	Overall score	Ranking
A	0.3594	0.4020	0.4036	0.4257	**0.3823**	1
B	0.2305	0.2375	0.2801	0.2412	**0.2449**	2
C	0.1815	0.1668	0.1491	0.1777	**0.1703**	3
D	0.1005	0.1350	0.0968	0.0681	**0.1048**	4
E	0.1280	0.0588	0.0704	0.0873	**0.0978**	5

Table-5: Score for Executive and Senior Executive Candidates

CR	0.070	0.076	0.077	0.080		
Staff	Performance within 3 years (0.50)	Service period (0.20)	Recommendation (0.25)	Contribution (0.05)	Overall score	Ranking
F	0.4026	0.4424	0.3947	0.3460	**0.4057**	1
G	0.2618	0.2662	0.2559	0.3008	**0.2631**	2
H	0.1637	0.1261	0.1714	0.2055	**0.1602**	3
I	0.0969	0.1224	0.1138	0.0961	**0.1062**	4
J	0.0751	0.0430	0.0642	0.0515	**0.0648**	5

Table-6: Score for Assistant Managers and Managers Candidates

CR	0.040	0.037	0.080	0.075	0.003		
Staff	Performance within 3 years (0.40)	Service period (0.15)	Recommendation (0.20)	Contribution (0.10)	Profiling Test (0.15)	Overall score	Ranking
K	0.4059	0.3548	0.4414	0.3951	0.3897	**0.4018**	1
L	0.3116	0.2280	0.2134	0.2535	0.2760	**0.2683**	2
M	0.1345	0.2295	0.1679	0.1747	0.1715	**0.1650**	3
N	0.0928	0.1294	0.1109	0.1183	0.0913	**0.1042**	4
O	0.0552	0.0583	0.0663	0.0585	0.0715	**0.0607**	5

Table-7: Score for Senior Candidates

CR	0.063	0.076	0.089	0.050	0.080		
Staff	Performance within 3 years (0.35)	Service period (0.15)	Recommendation (0.20)	Contribution (0.10)	Profiling Test (0.20)	Overall score	Ranking
P	0.4059	0.3548	0.4354	0.3951	0.3642	**0.3947**	1
Q	0.3116	0.2280	0.2121	0.2535	0.2973	**0.2705**	2
R	0.1345	0.2295	0.1844	0.1747	0.1721	**0.1703**	3
S	0.0928	0.1294	0.1035	0.1183	0.0944	**0.1033**	4
T	0.0552	0.0583	0.0645	0.0585	0.0721	**0.0612**	5

The finding showed that staff A, H M and Q attained the highest score to be promoted for the position of Senior Officers and below, Executives and Senior Executive , Assistant Manager and Managers and Senior respectively. The inconsistency ratios for every criterion are in between 0.003 to 0.089. The ratio is less than 0.1 as proposed by Saaty (2008). Hence, the comparison matrix was considered consistent.

5. CONCLUSION

The AHP incorporates qualitative and quantitative factors that contribute to the transparency, objectivity and easy implementation in selecting staff to be promoted. The calculation of inconsistency ratio is very important features to ensure the decision made cannot be disputed in the outcome. An effective and fair appraisal system that is acceptable by the employees can enhance an institution's overall achievements and has long-term implication. Staff will remain motivated and recognized for their contribution to the company's objectives. UniKL should consider the new method of non-academic staff selection by using AHP. It is hope that, by implementing the new system, UniKL will be able to produce non-academic staff who are responsive to the mission and vision of university.

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