

## CHAPTER 5

### EMBRACING PRIORITIZATION: WHY, HOW AND WHERE

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#### Abstract

We all have a fixed amount of time in a day but the list of activities to be carried out in the day is pretty long. So, prioritization of the tasks in the list is an imperative. Further, in any decision making exercise, we have criteria. We realize that, in general, all of these criteria are not of equal importance. Therefore, in order to make a good decision, we have to prioritize these criteria. In fact, we prioritize every day. The objective of this essay is to show how to perform prioritization scientifically using the Analytic Hierarchy Process (AHP). Finally, I have outlined ten areas in a university administration where AHP can be applied to do the task of prioritization.

**Keywords:** Prioritization, Analytic Hierarchy Process, Decision Making, University Administration

#### Introduction

This year (2021) Kulliyyah of Economics and Management Sciences organized its Ibadah Camp during 20-23 September. It is compulsory for all staff to attend in this annual event. Usually, in any day we have a list of tasks that we need to carry out. If attendance in Ibadah Camp

is not made compulsory, then it may be possible for some staff that he will not attend. This is not the case that he underestimates attendance in Ibadah Camp, rather in that day he has more urgent work to do. This can happen to anyone on any day. Inherently, we all prioritize our daily activities. Prioritization of tasks, our needs is something natural in our life. Then, what is prioritization? Prioritization is a process through which we assign priorities to a set of tasks or activities. Most urgent task is assigned highest priority; second most important task is assigned second highest priority, and so on.

### **Why Prioritization?**

Why do we need prioritization? Let us discuss something about this. Every year Kulliyyah selects best students for giving away Kulliyyah academic awards. If we consider CGPA as the only criterion, then selection of the best student is a trivial matter, we just select the student who possesses the highest CGPA. But the Kulliyyah administration has kept Extra-curricular activities as another criterion for the award. Here can we consider both the criteria as equally important? Most people will say in the negative. I presume, according to majority of people, CGPA will be given higher weightage, i.e., higher priority. But how much weightage is to be assigned to CGPA and how much to extra-curricular activities? That is an important question which requires answer.

When we apply for promotion, the criteria to be fulfilled are many, e.g., teaching, research, publications, consultancy, etc. We notice that publication has been assigned the highest weightage. In MyRA system, we all know differential (and sometimes controversial!) weightages are assigned to different items. In our life also, we have priority, for example, we may assign highest priority to our children's

education compared to other activities. Mother Teresa sacrificed her life for serving poor people as serving poor people was the highest priority in her life. Some people at some point of time quit their job citing the reason that they want to give more time to their families, so family precedes their job at that juncture of time. The list is endless. In a nutshell, we all assign priority to certain stuff at certain moment.

### **How to Prioritize?**

How do we assign priority? Most of the time we do it holistically, meaning we do some mental arithmetic and we carry out the stuff accordingly. Often this maybe alright, however, there are certain situations, we need to do it in a better way. Why? Let me explain this in the following.

The weighting scheme to the criteria set used in the QS World University Ranking system is the following:

- Academic Reputation (40%)
- Employer Reputation (10%)
- Faculty/Student Ratio (20%)
- Citations per Faculty (20%)
- International Staff Ratio (5%)
- International Student Ratio (5%)

How have these weights been generated? It is important to note that even there is slight variation in the weighting scheme, there could be significant change in the ranking of the universities. In the previously cited best student selection example, the weightage assigned to CGPA is 0.7 (70%) and that for extra-curricular activities 0.3 (30%). But the question is how do we get these percentages? Why not 75% and 35% or 68% and 32%? Obviously, we require some method to do it. Actually, in this regard, we need two ingredients: a method and

inputs. We use the method, then process the inputs and generate the priorities. This is the way we should be carrying out our prioritization tasks, especially when the matter is serious and warrants public justification.

A method that can be applied to do the prioritization is Analytic Hierarchy Process or AHP. The method was developed by Professor Thomas L. Saaty of University of Pittsburgh, USA in 1977. The methodological aspect of AHP has been shown in Figure 5.1, whereas a typical AHP hierarchy is shown in Figure 5.2.

The goal could be prioritization of a set of factors or making a decision involving multiple criteria.

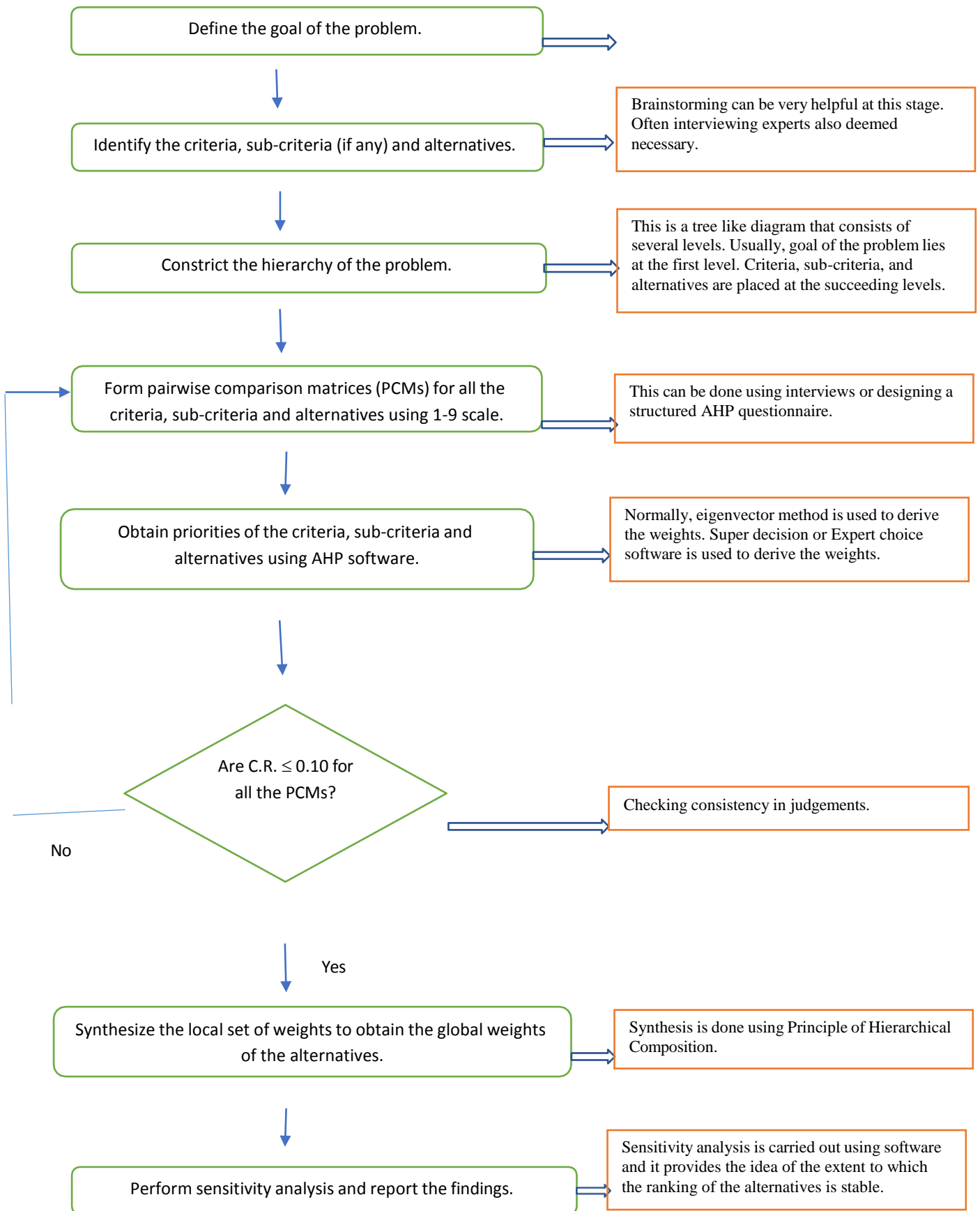


Figure 5.1: Flow chart of Analytic Hierarchy Process (Source: Author)

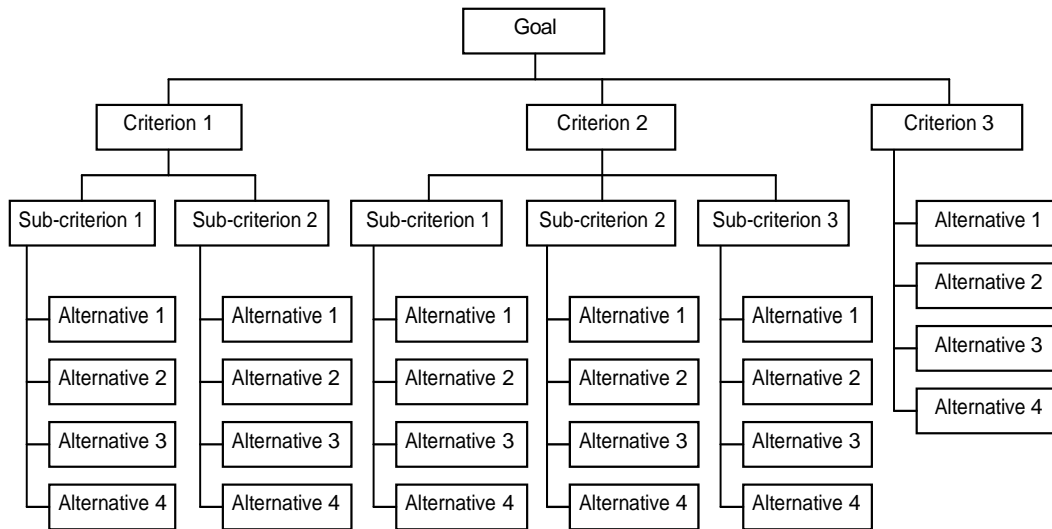


Figure 5.2: General structure of an AHP hierarchy (Source: Author)

### Where to Prioritize?

Since its introduction in 1977, AHP has been applied in diverse areas including Business & Management, Engineering, Sociology, Education, Conflict Analysis, Transportation, Environmental Science, Healthcare and so on. The main reason for this wide range of applications of AHP is its inherent simplicity and ability to quantify subjective factors. Note that in a typical recruitment exercise, if we have the criteria qualification, working experience and performance at interviews, then we can complete the exercise comfortably but if we add ‘attitude’ as an additional criterion, the exercise may turn out to be a complicated one. Any scientific decision requires conversion of subjective factor to an objective measure. AHP has the potential to do this kind of conversion in an elegant way. AHP uses the 1-9 ratio scale to capture dominance of one factor over another. It does not matter whether the factor is objective or subjective. At the end,

evaluation scores on all factors – objective or subjective come as numbers. From there, it is easy to make our decision. Since necessity of prioritization of factors arise in all walks of life and virtually in all fields of study, hence AHP’s applications cut across disciplines. The methodology can be learnt quickly by anyone. Possession of a sound mathematical knowledge is not a prerequisite to assimilate the steps of AHP. In the following, I have outlined ten areas in a university administration where AHP can be applied.

In a university setting, prioritization of factors is necessary in many important areas. Please note the following:

- i. Staff Recruitment:** Normally, a candidate’s academic qualification, working experience and interview performance are considered as the main criteria for recruitment. Some may argue for including –attitude of the candidate or any other highly subjective yet important criterion in the selection process. In any case, criteria should be finalized on a consensus basis and then due weightage must be assigned to those criteria, again taking inputs from relevant people. The performance of the candidate can be measured on those criteria using a rating scale (that itself requires prioritization) and then final decision can be made. This is a defensible and scientific way to make recruitment decision, not just in a university, but in any organization.
- ii. Students’ Selection:** The process is more or less same as the staff recruitment process described above. The matter should not be done on an ad hoc basis. For example, each year many reputed American and European universities receive hundreds of applications for MBA admission. If it happens to IIUM, then how are we going to select them? As the seats are limited, only deserving candidates should be offered. In fact, the selection can be easily done and in a scientific manner. Firstly, through brainstorming, we need to decide on the criteria of selection. Let

us say that the criteria are CGPA at the Bachelor level, Admission Test Result, Interview Performance, and Letter of Recommendation. Here is the time to assign priorities to these criteria and further process needs to be adopted to measure the performance of the prospective candidates and final selection can be made. Interestingly, the whole selection process can be automated.

**iii. Selection of Staff for Award:** In IIUM *Taqrim Day*, we see many staff are awarded for their outstanding achievements and contributions to the university. Notably, for every award, there is a set of criteria. For example, in 2021 the criteria for ‘The Most Promising Academic Award’ at IIUM are the following:

- The candidate should be aged under 40 years old on 1st January of the award year.
- The candidate has served as a lecturer at IIUM for at least five (5) years cumulatively in his or her academic career.
- The candidate has contributed expertise in academic/professional at national or international levels within the last five (5) years (including the year of assessment).
- The candidate has received awards or academic accreditation from professional and academic bodies at the national or international level.
- Showcases impact to the community through scholarly activities.
- Demonstrates continuous excellence in the field of expertise

How do we select the candidate ultimately for the award? To my feeling at IIUM, it is done more on holistic manner, without applying a scientific method. It is done more through mutual discussion among the group of selectors. Actually, the matter should be done following more analytic way. Each candidate



must obtain an overall score through an analytic process. Once again, I will say that the crux of the issue is prioritization of the criteria of selection. Note that any kind of selection process consists of four stages: Stage 1: Identification of the criteria on consensus basis. This is usually done using brainstorming involving 5 to 8 relevant people in a meeting room. Stage 2: Prioritization of the criteria, Stage 3: Evaluation of the alternatives with respect to the criteria one by one and obtaining their local weights, and finally Stage 4: Synthesizing the local set of weights and obtaining the global or overall weights of the alternatives. Usually ranking is made on the basis of the overall weights of the alternatives.

- iv. **Faculty Promotion:** Promotion exercise is carried out in all types of organizations including universities. Promotion exercise process must be valid and transparent. Usually, an academic staff needs to fulfill a number of criteria in order to get promoted. For example, at IIUM, in order to get promoted from an Associate Professor to the post of a Professor, the candidate needs to fulfill the criteria, *inter alia*, Teaching, Research, Publication, Consultancy and Societal Contribution. Usually, these criteria bear differential weightages. Hence here AHP can be applied to generate a defensible set of weights. These weights need to be determined taking inputs from expert academicians. Next, a candidate's performance on the criteria should be measured in a systematic way. In this case, the absolute measurement process of AHP can be elegantly applied. A number of case studies have been reported elsewhere where AHP has been applied to execute faculty promotion exercise.
  
- v. **Budget Allocation:** At IIUM, the task of budget allocation is done by the Finance Division. Each year the university obtains certain amount of money from the government. Afterwards, it is

the university which needs to allocate budget to various faculties. Since the amount is limited, the allocation is to be done prudently. Here also AHP can help in allocating budget among various faculties in a scientific way. At first weightages of various faculties have to be developed. These weightages usually depend upon the size of the faculty, their need and contribution to the university's vision and mission. Once weights are assigned to the faculties, then allocation of budget is a trivial matter. For example, let us assume that the weights of the five faculties are: Faculty A (0.24), Faculty B (0.13), Faculty C (0.32), Faculty D (0.20), and Faculty E (0.11). Suppose the total budget is RM 1,000,000. Hence the allocation for the five faculties are RM 240,000, RM 130,000, RM 320,000, RM 200,000, and RM 110,000 respectively.

- vi. **Research Proposal Evaluation:** Research proposals are invited by research organizations including universities. Ministry of Higher Education (MOHE), Malaysia has a number of research schemes such as FRGS, TRGS, and LRGS. Ministry of Science Technology and Innovation (MOSTI) has also a number of research schemes including Techno Fund. Every year numerous proposals are submitted by researchers. Evaluation of all these proposals is a daunting task. AHP can be of great aid in this regard too. Evaluation criteria are developed by the Ministries and weights are also assigned but it looks like lump sum weights are assigned to the criteria. AHP can be applied to redefine the weights by taking inputs from academicians. What is lacking in the process is defensible assessment of the proposal with respect to those criteria. AHP absolute measurement process suggests dividing each criterion into a number of Ratings or Intensities and these Ratings are also assigned weights. What remains to the assessors is to assign a Rating to a proposal with respect to a criterion. Finally, all these Ratings can be aggregated and overall score can be obtained for each proposal submitted. In the

final stage, the proposals that receive highest overall scores will only be selected. PhD or DBA research proposals also can be similarly evaluated. The process upholds transparency, accountability and guarantees fair selection/evaluation.

**vii. SWOT Analysis:** Strength-Weakness-Opportunity-Threat or SWOT analysis is an integral part of strategic planning for any organization. Figure 5.3 shows an example of SWOT for an anonymous organization.



Figure 5.3: An example of SWOT items

Source: <https://www.visual-paradigm.com/guide/strategic-analysis/what-is-swot-analysis/>

An organization needs to capitalize its Strengths and Opportunities and at the same time develop strategies to minimize negative effects of Weaknesses and Threats. However, any organization's resources are limited, so the individual items in the SWOT diagram should be prioritized. Once prioritization is made, the organization can capitalize its best strengths and pay attention to the threats which are of maximum concern.

AHP enabled prioritization process for SWOT items can help an organization use its resources that can bring maximum benefits to the organization.

- viii. Performance Measurement of Various Departments:** It is a common exercise to measure performance of various units or departments in an organization. Data Envelopment Analysis (DEA) is a very popular tool in this regard. But one problem with DEA is that it requires quantifiable inputs and outputs. However, not all inputs and outputs can be quantifiable. For example, as an output, a department's contribution to enhance the image of the organization's vision is difficult to quantify. Therefore, AHP can be a suitable method here, especially if the performance measurement system consists of subjective factors. Relative measurement process of AHP can be applied to prioritize the criteria of performance evaluation and absolute measurement process of AHP can be used to rate the departments which will ultimately generate the ranking of the departments.
- ix. Vendor Selection:** At IIUM, we have many vendors, registered with the Finance Division. Vendors are required for maintenance, cleaning services, book suppliers for library and printers for various faculties and divisions. In the past, we have regretted many times upon selection of vendors based upon cost only. Many times we select vendors who can provide services with the lowest cost. But at occasions it has been proved to be a wrong decision. There must be delicate balance between cost, quality and delivery time. Vendor selection is essentially a multiple criteria decision making problem. Priorities need to be assigned to the criteria, vendors should be evaluated based upon the weighted criteria and decision is to be made accordingly.

- x. **Cost-Benefit Analysis:** Cost-benefit analysis is a very well-known method to make certain organizational decisions. Many a times, in a university, we need to sort out the question: whether to sign an MoU or not, whether to hold a conference or not, whether a new branch campus to be opened or not and so on. Resolving this kind of dichotomous questions requires cost-benefit analysis. Note that there could be varieties of benefits and costs and many times these costs and benefits are subjective in nature. Furthermore, these costs and benefits are not all at the same level. That is, some benefit can be superior to other benefits. So is the case for costs. Hence, it requires prioritization of costs and benefits and once prioritization is done, cost-benefits ratios can be calculated for the two alternatives (sometimes more than two alternatives) and the alternative that receives higher ratio is selected.

## **Conclusion**

Humans face task of prioritization in all walks of life. The task of prioritization should be carried out scientifically, especially when we are making an important decision. The Analytic Hierarchy Process (AHP) is a suitable and proven tool for prioritization. In this essay, mainly I have illustrated in a university setting, where AHP can be applied. Due to space limitation, only outlines of the applications are provided.