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SELECTION OF INSTITUTE FOR PUBLIC HIGHER EDUCATION (IPTA) AMONG FIRST-YEAR STUDENTS USING FUZZY AHP

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1. Introduction

There are 20 IPTAs, or institutes for public higher education, in Malaysia. Institut Pengajian Tinggi Awam is referred to as IPTA in Malay. All students, whether Malaysian or international, are provided with tuition at the Institute for Public Higher Education. Each category of institution has a distinct specialty, such as research universities, comprehensive universities, or focused universities. In addition, there are some IPTAs just for Bumiputera students only (Khairul Azran Hussin, 2019). The students who wish to register in the Institute for Public Higher Education struggle to decide which IPTA is ideal for them because there are so many different groups of institutions. Then, to overcome this issue, we will use the Fuzzy Analytic Hierarchy Process (FAHP) technique. The Fuzzy Analytic Hierarchy Process (FAHP) is a fuzzy logic-based Analytic Hierarchy Process (AHP) (Santoso et al., 2016). The FAHP approach is comparable to the AHP method.

2. Methodology

This research will go through the entire procedure as shown in Figure 1. There are three (3) stages, the first of which is when we identify the issues and gather information. Then, using Chang's extent analysis we perform the calculation and perform the computation and analyze the outcomes

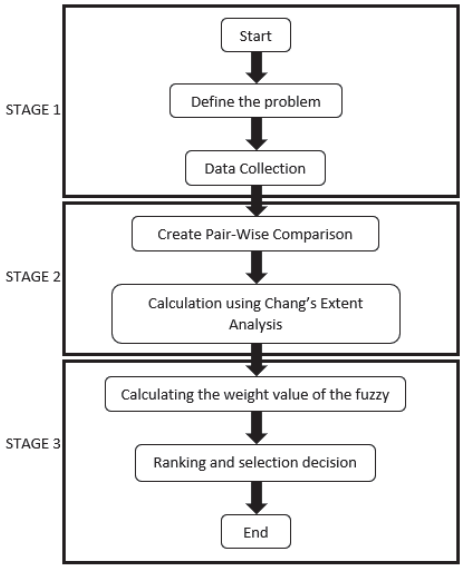

Figure 1: Process of the research

3. Results and Discussion

The application of the fuzzy AHP method is demonstrated by implementing actual data related to a case study about the selection of an institute for public higher education (IPTA). A set of questionnaires was administered to find out the best universities for first-year students. There are three main criteria, 11 sub-criteria, and six alternatives in this study.

Table 1: Final ranking for each criterion

C_n	Criterion	Weight vector	Ranking
C_1	Financial	0.7380	1
C_2	University Criteria	0.2620	2
C_3	External Influences	0	3

Table 2: Final ranking for each sub-criterion

C_n	Criterion	Weight vector	Ranking
C_{11}	Fee Structure	0.5676	1
C_{12}	Financial Condition	0.2247	2
C_{13}	Scholarship	0.2077	3
C_{21}	University's Reputation	0.6266	1
C_{22}	Course Offered	0.2855	2
C_{23}	Location of the University	0.0882	3
C_{24}	University's Infrastructure	0	4
C_{31}	Parental Factors	0.6266	1
C_{32}	Peer Influences	0.2855	2
C_{33}	Teacher Influences	0.0882	3
C_{34}	Media Influences	0	4

Table 1 shows that the ranking order for the criteria is given by $C_1 > C_2 > C_3$. Financial (C_1) is an absolutely important criterion. A study conducted by Aggarwal and Sharma (2018) found that cost and the availability of financial support are essential for all kinds of educational institutions. Besides, some institutions may provide financial support for various fee structures for some courses. Meanwhile, Table 2 shows that the ranking order for the sub-criteria is given by $C_{11} > C_{12} > C_{13}$, $C_{21} > C_{22} > C_{23} > C_{24}$, and $C_{31} > C_{32} > C_{33} > C_{34}$.

Table 3: Final ranking for each alternative

A_n	Alternative	Weight vector	Ranking
A_1	UiTM	0.3422	2
A_2	UIA	0.3570	1
A_3	UM	0.2447	5
A_4	UKM	0.1817	6
A_5	USIM	0.2528	3
A_6	UTHM	0.2501	4

The findings as depicted in Table 3 shows that the ranking order for the alternative is given by $A_2 > A_1 > A_5 > A_6 > A_3 > A_4$. The result for this study shows that International Islamic University Malaysia (IIUM) is the most preferred institute for public higher education.

4. Conclusion

The fuzzy AHP method is successful to rank and select the best institute for public higher education among first-year students. Fuzzy logic has shown its efficacy as an MCDM approach. It has more preferences for uncertain, imprecise, and complex conditions than AHP and other MCDM methods. Combining fuzzy methods with AHP is one technique for resolving the difficult problems of AHP (Afolayan et al., 2020). The combination of fuzzy logic with AHP eliminates the ambiguity and uncertainty of AHP by enabling decision-makers to express their evaluations in terms of a range of values on the fuzzy scale. Thus, this study can be taken as a platform for an exploratory investigation and further research to get a comprehensive understanding of the IPTA selection process.

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