Determinants for Selecting Higher Education Institutions in India: A Fuzzy Analytical Hierarchical Process Approach

Abstract

Purpose: This study investigates and unravels the factors upon which students base their choice of institutions for pursuing postgraduate education in management.

Design/methodology/approach: A mixed method combining qualitative and quantitative analysis is used. In the first phase, an exploratory factor analysis (EFA) was undertaken to identify the factors students consider when selecting an educational institution. The fuzzy analytical hierarchical process (FAHP) technique was used in the second phase to rank the identified factors.

Findings: The results indicate that placement prospects ranked first, followed by friends' references, inclusivity, hostel or dormitory facilities, ecosystem, peer group, college faculty, international outreach, cost of education, research facilities, accessibility, safety and security, and sports facilities.

Practical Implications: The study provides information and cues to university administration, and education managers as to the main factors on which they should configure their organization. In a world where branding and promotion drive consumption, the study will help the marketing and branding team in deciding the content and the target segment of the communication strategy.

Originality: The uniqueness of this study is in the employment of the FAHP technique to study and rank the factors based on which students make their choice of management Institutes.

Keywords: Higher education; University choice; FAHP; MCDM; College choice; Indian students.

1. Introduction

Higher education is important in shaping the knowledge and skills of future generations to understand and interpret the phenomena to adapt their behaviour and lifestyle on an efficient, effective and sustainable basis (Mehmood *et al*., 2024). In professional institutions, programmes, courses and overall education play another and more vital role; they determine the career prospects and influence the consequent life chances of the student participant (Kankal *et al.,* 2023). However, not all colleges, programmes and courses are equal, perceived or otherwise, in terms of their ability to facilitate the career prospects of their students (Kautish *et al*., 2021). Some of them are more aligned with the needs and wants of the profession and industry for certain competencies and skills as well as the expectations and aspirations of the students. Today, the conundrum of choosing the right institution has become more complicated, complex and challenging (Kautish *et al*., 2022; Sim *et al.,* 2021). It is just not about the decision to attend a specific college which is a rather complicated and lengthy process influenced by various factors (Kusumawati *et al.,* 2010). It is more about the fact that the higher education sector has become increasingly diverse and competitive amidst demanding career prospects in the 21st century (Han, 2014). According to UNESCO (2023), there are more than 235 million students enrolled in more than 2,000 institutions worldwide. In India, just in the highly esoteric management education in 2019-20, there were more than 7 lakh students enrolled in the undergraduate programme (indiastat.com, 2023). The problem which needs to be explored is the criteria on which students base their choice of educational institution for pursuing higher studies. Unravelling the factors, which comprise students' consideration set and final choice is extremely important for educationists, policymakers, institution builders and marketing and branding specialists (Soni *et al*., 2018).

In a study conducted by the University of Waterloo (2023), it was found that the factors which undergraduate students take into consideration while selecting a university are academics, location, campus look and feel, hostel facility, campus life, diverse menu for food, finances, location and career options and job opportunities. Various researchers (Meddour *et al.,* 2016; Yamamoto, 2006, Kanduri and Radha, 2023; Schmidt *et al.,* 2019) have identified factors such as academic, family, social, and physical factors, economic considerations, and facilities as significant in the choice of college by undergraduate students for higher education.

Nearly one out of every eight graduate students (Ministry of Education, 2020-2021) enrol for postgraduate education in India. The All-India Survey on Higher Education is conducted annually, offering updated insights into the current state and developmental trends concerning students, faculty, academic disciplines, infrastructure, and other critical aspects of higher education across the nation. As reported in the All-India Survey on Higher Education, published by the Ministry of Education of India, the country boasts the world's second-largest higher education system, encompassing more than 58,000 institutions (British Council, 2024). The report indicates that in 2024, 43.3 million students were enrolled in higher education, with 79% pursuing undergraduate courses and 12% at the postgraduate level. Within postgraduate studies, Social Science emerges as the most popular discipline (21%), followed by Science (15%) and Management (14%). The Department of Higher Education, under the Ministry of Education, Government of India, has launched several initiatives to enhance and promote higher education in the country. These initiatives include the Education Quality Upgradation and Inclusion Program (EQUIP), the Technical Education Quality Improvement Programme (TEQUIP), the Institute of Eminence (IoE), the Rashtriya Uchchatar Shiksha Abhiyan (RUSA), the Prime Minister's Research Fellows (PMRF), the National Research Professorship (NRP), the Scheme for Promotion of Academic and

Research Collaboration (SPARC), and e-PG Pathshala (Vajiram and Ravi, 2023). However, there is hardly any study on this theme in the Indian context (Srivastava and Dhamija, 2022; Rajput and Chouhan, 2021; Shirole, 2020; Dhaliwal *et al.,* 2019). Further, among these few studies, none have employed MCDM techniques to understand the factors that count in the complicated decision-making process. The present study is the first attempt to (a) uncover the factors considered by undergraduate students while selecting a college for their higher education, and (b) rank these factors by adopting the MCDM technique. To achieve this, the following research questions have been formulated:

1. *What factors do undergraduate students in India consider when selecting an institution for their postgraduate studies?*
2. *How do undergraduate management studies in India rank the factors influencing their choice of higher education institutions for postgraduate studies?*

The first part of this endeavour attempts to identify the factors that undergraduate students consider when choosing a postgraduate college. In the second part of this paper, an attempt is made to rank these factors. The data for the study has been collected from undergraduate management students across India. The choice of the MBA programme for the deep dive is prompted by the fact that in India, not only is it one of the most coveted educational programs, but also because the very choice by the student determines, to a great extent, their career prospects. This study uses a survey method to uncover 88 variables which enter into the consideration set of the prospective candidates. It then proceeds to apply the FAHP method to identify the crucial factors on which students base their choices. The results provide valuable information to promoters of higher education institutions, policymakers, and the leadership at the helm of higher education institutions in India. Given the

recent policy initiatives for globalizing the Indian education sector, the findings of this research would be of immense importance to investors and entrepreneurs from India and abroad who may be desirous of setting up management institutes in India.

2. Theoretical background and literature review

It is crucial for students' overall development to select the right institution for higher education (Kautish, 2010). A large number of young people mistakenly attend colleges, unaware that there are almost as many types of institutions as there are individual personalities and needs (Halle, 1928, p.5). There have been many studies on how students select a higher education institution as well as on the factors and the situations that influence its selection process. Complex and dynamic psychological factors play a role in the choice of higher education institution. These can be classified into two broad categories: "push" and "pull" (Maringe, 2006). Push factors are the intrinsic part of a student's needs and wants and are usually intangible. Accessibility and the quality of academic programmes belong to this category. On the other hand, pull factors are visible and situationally driven (Sim *et al.,* 2021). They comprise factors such as language, proximity to home, prestige of the institution, and availability of preferred academic programmes. Yamamoto (2006), while examining the criteria students employed to choose a university in Turkey found that student clubs, sports facilities, social fabric, scholarship opportunities, number of students, library, friendly environment, tuition fees, dining and canteen facilities, campus infrastructure and quality of academic staff played a significant role in the selection process. Budiono and Suntana (2018), in their study of factors influencing university selection, identified several significant determinants, including the opportunity for personal contact with faculty, campus reputation, availability of religious facilities, academic reputation, availability of dormitories, opportunities for religious

activities, access to higher levels of education such as postgraduate and doctoral programs, the potential marketability of the degree, availability of sports and cultural activities, flexibility of the registration process, proximity of the campus to the student's residence, availability of reference materials and libraries, family advice, and the provision of night classes. Another study conducted in the context of Asia found that reference groups such as friends, siblings, teachers, relatives, peers and other people had quite an influence on the student's choice of university (Kusumawati *et al.,* 2010). Institutional characteristics like library, computer facilities, geographic location, administrative support, proximity to home, extracurricular facilities like sports, leisure, canteen etc, and campus life were other factors apart from reputation and brand, availability of exchange programs with foreign universities, cost of education, courses and specialization offered, job prospects, quality of academic programme and faculty which have been found to influence the choice of the university among students (Dawes and Brown, 2005). Several authors have also identified factors influencing students' university choice, including institutional and academic quality, infrastructure and administration, distinctive academic programs, degree program quality, the presence of friends studying the same degree, employability prospects, campus environment and facilities, university reputation, geographic location, family and peer influences, course accreditation, and parental influence (Budiono and Suntana, 2014; Rynearson, 2014; Antonio *et al*., 2013). All in all, researchers have cited various reasons for selecting a college or university by undergraduate students. They can be summarized to be as follows:

Cost of education: Financial concern is a significant factor for most parents in selecting a university for their wards (Husain *et al.,* 2018). In particular, students from poor economic backgrounds look for universities offering scholarship facilities or providing some financial assistance to cover the costs of higher education (Husain *et al.,* 2018).

Location and accessibility: Location in terms of convenience and accessibility is a pivotal factor in potential students' decision to apply and enrol in any university (Ming, 2010). Parents and students prefer universities close to their homes (Han, 2014) as it reduces travelling time and renting costs. Distance from home greatly concerns students, especially those from low socio-economic classes (Li, 2020). Sim *et al*. (2021) point out that "location" is a multi-attribute consideration embracing dimensions of proximity from home, accessibility, travel time and costs.

Academic quality/quality of curricula: Then Academic quality is determined by the availability of specialist programs, faculty qualification, faculty contact time, International exchange programs, degree flexibility and program structure. Sidin *et al*. (2023) further add that it is a surfeit of choices among the courses which weighs in the assessment by the students about the academic quality of an educational institution.

Prestige/reputation of the university: According to Pampaloni (2024), university reputation and image are significant factors which influence students in the university selection process. Hussain *et al*. (2018) point out that a university's reputation should be seen in terms of its ability to provide skills to its students which are considered premium by the market (Kautish *et al*., 2022).

Infrastructure/library/computer facilities / extracurricular factors: Educational infrastructure is not just about classrooms, laboratories, library collection, books and other reference materials, sports facilities, computers, transportation, accommodation, campus size and layout. More crucial is the quality of the facility, its maintenance, attractiveness and availability. This is especially true about recreation facilities which are not only to be of the latest technology but also must be of high quality, clean, safe, accessible and not difficult, if not easy to use by the students (Husain *et al.,* 2018; Ming, 2010; Sidin *et al.,* 2003).

Residential life/campus life: The academic journey of a student is not just about the curriculum, co-curriculum and extra-curriculum aspects provided by an academic institution. It is about campus life, and for a lot of students who prefer to stay in the hostel, it is about the quality of living experience. As students stay 24/7 on campus for several months, it is essential for them to feel comfortable there (HESC, 2011). Hence, they are concerned about laundry facilities, security, computer network availability, shopping facilities nearby, and the socio-cultural fabric of the local community.

Parents/friends/teachers/family influence/relatives/peer effect: Several researchers have found that school personnel such as teachers, counsellors, and opinion leaders influence student decision-making (Husain *et al.,* 2018; Bryan *et al.,* 2017-18). Students also seek advice from their peers and seniors and probably value them more than any other. They have also been found to consult resourceful people like academic advisors from whom they extract relevant university information. It is true that Parental education strongly influences the college selection process, albeit the fact that this influencer is more correlated with income. Several researchers have found that parents' expectations, experience of financing their college study, involvement in information search, knowledge and understanding of college cost and financial aid, and willingness and ability to provide financial support strongly affect students' college decisions (Sim *et al.*, 2021; Husain *et al.,* 2018)

Academic reputation and programs: Academic reputation refers to the prestige of the degree obtained in terms of whether it has national or international recognition (Sidin *et al.,* 2003). The objective of programs of study, the flexibility of degree programs and the content of alternative or competing degree options are vital factors for students in the selection of higher education

institutions (Ming, 2010). A positive image of a university is a critical intangible asset, making the institution unique and obtaining attention from prospective students and their families (Han, 2014).

Job prospects/placement/employability: Employability is a crucial factor in selecting a university. Students look for universities that nurture and hone their capabilities and skills through practical experiences aided by the latest technology. This, however, does not ensure that students would be fit to be employed by future employers (El Mansour and Dean, 2016).

Culture fit: Students prefer colleges where the medium of instruction is the same as the language spoken at home (Prakasam *et al.,* 2019). This choice is also determined by food and the degree to which they are used to it (Stanojević *et al.,* 2022).

Safety: Safety and security issues include the presence of emergency phones, signages, ample lighting, systematic and regular patrolling and the presence of security guards. Much more important is the track record and reputation of the school in handling incidents of violence, assault, theft, harassment and bullying on campus (Fletcher and Bryden, 2007).

Table I displays the contribution of contemporary literature on students' reasons for choosing a college or university.

----------Insert Table I----------

In the Indian context, few researchers have explored and identified the significant factors impacting students' choice of institutions for higher studies. Yadav *et al.* (2024) identified key indicators of university attractiveness for Indian students, highlighting teaching quality, research productivity and publications, institutional branding and promotional efforts, and the diversity of academic programs offered as the most significant factors. Srivastava and Dharmija (2022) found that career advisor influence, societal norms, social platforms, and cohort influence affect students' decision-making in selecting institutions for higher studies, employing factor analysis. Rajput and

Chouhan (2021), using factor analysis, identified eight factors influencing students' choice of higher education institutions in India: past placement records and program design, college working hours and well-resourced library, co-curricular activities and alumni feedback, faculty expertise, benefits and expenditure, state-of-the-art facilities, supportive staff, and additional facilities. Researchers have identified job prospects, educational quality, availability of sports and cultural facilities, faculty attributes, campus environment, cost, opportunities for language learning, academic reputation, and institutional reputation as significant criteria influencing the selection of higher education institutions (Pawar *et al.,* 2020; Annie and Kamalanabhan, 2015). Chhabra and Wani (2016) found that fees and job prospects were the two important factors management students considered while choosing an institute. Authors have identified key factors influencing undergraduate management students' selection of colleges or universities in India, including family background, financial status, decision-making autonomy, faculty characteristics, social influences, campus environment and cost, academic reputation, institutional equity, as well as the skills, competencies, and abilities acquired from the institution (Mahesh and Sriram, 2021; Sapra *et al*., 2021; Agrawala, 2008).

An extensive literature review, as well as the data presented in Table 1, clearly indicates that numerous studies have investigated the factors influencing the selection of institutes or universities for higher education (Shirole, 2020; Sahney & Thakkar, 2016). However, there is a notable lack of studies that analyze and rank these factors specifically within the Indian context (Gupta *et al*., 2023; Biswas *et al*., 2019), particularly concerning the selection of universities for higher education in the management discipline. This study aims to identify and rank the significant factors that management students consider when selecting universities or institutions for their postgraduate studies.

3. Methodology

A mixed-method approach was employed in this study, integrating both quantitative and qualitative techniques. Figure 1 illustrates the research steps adopted. First, professionals from higher educational institutions were consulted to provide their insights on 88 predetermined variables. These variables were derived from an extensive literature review. Data were collected from 883 respondents using a 7-point Likert scale through convenience sampling [Appendix I]. Undergraduate students from five disciplines—management, technology, law, commerce, and pharmacy—were approached in person to ensure that each student was fully informed of the research objectives and conceptualization while maintaining anonymity. The selection of respondents targeted students who aspired to pursue higher education, specifically postgraduate studies, in the coming years. Cross-sectional data were collected from a private university in a major city on the western coast of India, between December 2022 and June 2023. Exploratory Factor Analysis (EFA) was conducted on the 88 variables to reduce the data and extract factors for further analysis, specifically the Fuzzy Analytic Hierarchy Process (FAHP). The data reduction process through EFA resulted in 13 factors and 34 items. In the second stage, ten experts from India's top management institutions, including Directors, Deans, Senior Professors, and Professors, were consulted to assess the relevance of the 13 criteria (CR) and 34 sub-criteria (SB) obtained from EFA. These experts provided their evaluations using linguistic variables on a nine-point scale based on Satty's (1990) model. Following the data reduction and identification of constructs from the EFA, FAHP analysis was conducted to rank the factors [Appendix II] Finally, sensitivity analysis was performed to ensure the robustness of the results obtained through FAHP.

----------Insert Figure I----------

4. Analysis and results

4.1 Exploratory factor analysis

EFA is a powerful multivariate tool (Guru *et al.,* 2023) for data reduction. This study employed this technique on data received from 883 respondents on 88 variables (Appendix III). The brief profile of respondents is provided in Table II. Bartlett's Test of Sphericity was initially conducted to assess the factorability of the correlation matrix. In the present study, the test produced a p-value of 0.000 (< 0.05), indicating that the correlation matrix significantly deviates from an identity matrix and is, therefore, appropriate for factor analysis. The Kaiser-Meyer-Olkin (KMO) test was conducted to assess sampling adequacy. The KMO statistic ranges from 0 to 1 and evaluates whether the sample size is sufficient for factor analysis by measuring the proportion of variance among variables that might be common variance. (Guru *et al.,* 2021). For this study, the KMO value obtained was 0.957, which is above 0.6, meaning that the data sample size was viable for conducting EFA. For this study, the total variance explained by the extracted factors was 69.56%. Additionally, the determinant values of the correlation matrix in this study were greater than 0.00001, indicating the absence of multicollinearity and confirming the suitability of data for factor analysis. Varimax rotation, one of the most commonly used orthogonal rotation methods, was applied in this study Guru *et al.,* 2021) based on the assumptions of conceptual independence among constructs. This approach yielded a clear and interpretable factor structure with minimal cross-loadings, aligning with our theoretical framework. The criterion of eigenvalues greater than 1 along with the examination of the screenplot, resulted in the extraction of 13 factors, as presented in Table III. These were labelled as placement prospects, international outreach, research facilities, sports facilities, college faculty, peer group, safety and security, ecosystem, cost of education, hostel or dormitory facilities, Inclusivity, friends reference and accessibility. In this study, factor

loadings ranged from 0.601 to 0.818, indicating acceptable relationships between items and their respective factors. A cross-loading threshold of 0.30 was employed to evaluate the distinctiveness of items across factors. No substantial cross-loadings exceeding this threshold were observed, thereby supporting the discriminant validity of the extracted factors. Cronbach's alpha, which is a test of the reliability of the scale used, for these items were 0.933, 0.887, 0.798, 0.919, 0.817, 0.852, 0.752 and 0.857 respectively, all of which were above 0.7 the minimally acceptable cut-off suggested by Nunally (1978) for a reliable instrument. Factors 5, 7, 11, 12, and 13, as presented in Table III, comprise only a single item each; therefore, Cronbach's alpha is not reported for these factors. As noted by Cortina (1993), Cronbach's alpha cannot be computed for single-item measures, as reliability coefficients require at least two items to assess internal consistency. However, these items were retained due to their strong theoretical relevance and conceptual clarity, as supported by prior studies (Sim *et al*. (2021).

----------Insert Table II and Table III----------

4.2 Application of FAHP

Although it was found that many critical factors are considered by students while selecting a university, they all may not hold the same significance. Further, the extent of importance these factors may have would vary from student to student. One of the aims of this paper is to determine the most influential factors that contribute to the selection of college or university by Indian students who wish to continue higher education within India.

Multi-criteria decision-making (MCDM) techniques deal with complicated and multi-dimensional decisions (Guru *et al.,* 2023; Ho *et al.,* 2023). Various strategic problems, including strategy selection in higher education (Ekinci *et al.,* 2022), assessing regional education development levels

in Myanmar (Myint and Thein, 2020), assessment of competitive and collaborative education (2018) and ranking universities on performance assessment (Wu *et al.,* 2012) have been analyzed by several researchers using MCDM tools.

There are several MCDM techniques like DEA, ANP, fuzzy set theory, DEMATEL, ELECTRE, PROMETHEE and VIKOR to rank the CR, SB and alternatives. AHP is one of the most efficient and adopted MCDM techniques, as proposed by Thomas Saaty (1990), for ranking CR, SB and alternatives. This approach combines quantitative and qualitative methods to identify and rank options in complex scenarios, while also assessing the weights of criteria (CR) and sub-criteria (SB). However, in complex and multifaceted situations, the decision maker's assessment of subjective linguistic interpretations relies on their cognition and experience (Szatmári, 2021). The concept of fuzzy set theory is integrated with traditional AHP tools to address ambiguous and uncertain issues in rank assignment (Zadeh, 1965).Various authors have employed FAHP to deal with complicated and multifaceted situations, such as evaluating students' performance in a course (Zhu *et al.,* 2022), evaluating teaching performance for higher education institutions (Chen *et al.,* 2015) and assessing innovation education excellence of higher education institutes (Hezhan, 2012). In so much as the FAHP is arguably the best tool for ranking criteria and sub-criteria, it has also been employed in our research.

Figure II illustrates the hierarchy of CR and SB in the current study. Academic experts from top B-schools, such as Directors, Deans, Senior Professors, and Professors, were approached to evaluate the significance of identified CR and SB obtained from secondary research and EFA. Their recommendations were followed in the preparation of the final hierarchical structure (Figure 2). The finalized 13 criteria and sub-criteria were assessed using linguistic variables mapped onto

a 9-point scale, based on Saaty's (1990) scale. To aggregate expert feedback, a systematic approach was employed, where linguistic evaluations were converted into fuzzy numbers and synthesized using fuzzy aggregation techniques. Specifically, the fuzzy weighted average method was applied to combine individual expert judgments into a collective fuzzy evaluation for each criterion and sub-criterion (Thakkar, 2021; Zadeh, 1965A). This approach captured both the central tendency and the level of agreement among experts. Following aggregation, defuzzification was conducted using the centroid method to derive a crisp value for each criterion and sub-criterion, representing the final expert consensus. This method ensures a balanced synthesis of expert opinions, minimizing the impact of outliers or extreme views. After finalizing the FAHP scale, ten management undergraduate students who had already finalized some higher education institutions for postgraduate study were invited to rank the identified CR and SB. The researcher conducted data collection in person to make sure every student was fully aware of the objectives and research concept while maintaining anonymity. Cross-sectional data was collected from June 2023 to July 2023. A brief profile of the respondents is provided in Table IV. This method is inappropriate with a larger sample because of high inconsistency (Gupta *et al.,* 2024; Pun and Hui, 2001).

----------Insert Table IV and Figure II----------

The appropriateness of FAHP diminishes with larger samples because the method's complexity and the cognitive demands on the decision-makers increase exponentially (Oyefusi *et al.,* 2024). This results in higher inconsistency, making it difficult to derive reliable and accurate priorities from the process. Therefore, FAHP is better suited for smaller, more manageable samples where consistency can be maintained more effectively (Guru *et al*., 2023). The responses provided by these ten undergraduate management students initially expressed in linguistic variable (LV) terms, were subsequently transformed into triangular fuzzy numbers. (TFN) These numbers ranged from

the value denoted as "equally important" to that labeled as "extremely important.". These LVs were converted into TFN ($\widetilde{t_{ij}} = (a_{ij}, b_{ij}, c_{ij})$, as illustrated in the table below (Guru *et al*., 2022) (Appendix IV). Then, the geometric mean approach was employed to formulate the pairwise comparison matrices from the obtained responses. Through this process, it was demonstrated that it is capable of demonstrating unanimity, consistency and reparability when combining individual judgements.

Following were the key steps in the FAHP method employed in our study (Kong and Zhang, 2024).

1. The objective and problem are defined.
2. The hierarchical structure is developed which includes goal at the zero level and CR and SB at the intermediate levels.
3. Fuzzy-relative importance matrices were constructed for each hierarchical level. By employing the FAHP scale, the relative importance matrix was formulated, as outlined in Appendix IV. Subsequently, these matrices were converted into fuzzy matrices using the formula provided below

   $\overline{Z_\alpha} = [z-\alpha, z+\alpha\ ; \frac{1}{\bar{z}} = [\frac{1}{z+\alpha}, \frac{1}{z-\alpha}]$.... (1)

   In the above equation, α ranged from 0 to 1. Higher values of α indicated greater uncertainty, while lower values indicated less uncertainty. By applying Equation (1), the relative importance of the criteria (C) and sub-criteria (SB) for the determinants of higher education selection was converted into fuzzy matrices. Six distinct α values—0, 0.2, 0.4, 0.6, 0.8, and 1.0—were employed for analyzing the decision-making outcomes. The following discussion outlines the various steps pertaining to fuzzy AHP analysis for α = 1 (steps 3 to 6). Sensitivity analysis was conducted, taking into account the 6 different values of α mentioned earlier. The fuzzy pairwise comparison matrix is calculated as follows: (Appendix V)

$$)\tilde{T} = (\tilde{t}_{ij})_{n\times n} = \begin{bmatrix} (1,1,1) & (d_{12},e_{12},f_{12}) & \cdots & (d_{1n},e_{1n},f_{1n}) \\ \vdots & \vdots & \ldots & \vdots \\ (d_{n1},e_{n1},f_{n1}) & (d_{n2},e_{n2},f_{n2}) & \ldots & (1,1,1) \end{bmatrix}$$

Where, $\widetilde{t_{ij}} = (d_{ij},e_{ij},f_{ij}) = (t_{ij})^{-1} = \left(\frac{1}{d_{ij}},\frac{1}{e_{ij}},\frac{1}{f_{ij}}\right), i,j = 1,\ldots n; i \neq j$

4. Calculation of Fuzzy geometric mean value $(\widetilde{v_i})$ (Appendix VI)

$$(\widetilde{v_i}) = \left[(d_{i1} \times e_{i2} \times \ldots \times f_{in})^{\frac{1}{n}}, (d_{i1} \times e_{i2} \times \ldots \times f_{in})^{\frac{1}{n}}, (d_{i1} \times e_{i2} \times \ldots \times f_{in})^{\frac{1}{n}}\right]$$

5. Calculation of Fuzzy weights $\widetilde{V_i}$ (Appendix VII)

$$\tilde{V}_i = \widetilde{v_i} \otimes (\widetilde{v_1} \oplus \widetilde{v_2} \oplus \ldots \oplus \widetilde{v_n})^{-1}$$

6. Computation of de-fuzzified and normalized weights**:**

de-fuzzification is computed as follows:: $\tilde{V}_i = \left(\frac{d_i+e_i+f_i}{3}\right)$

7. Consistency verification

Step 7.1: Conversion of fuzzy matrices

By applying the formula below, a crisp comparison matrix is derived from the fuzzy comparison matrix.

$T = \widetilde{t_{ij}} = \left(\frac{d_i+e_i+f_i}{3}\right)$

Step 7.2: calculation of λ_{max}, consistency index and consistency ratio

$$\lambda_{max} = \frac{1}{n}\left(\frac{B_1^{'}}{B_1} + \frac{B_2^{'}}{B_2} + \cdots \frac{A_n^{'}}{A_n}\right).$$

Here

B'= AB

Consistency Index (CI)= $\frac{\lambda_{max} - n}{n-1}$

Step 8: Relative weights, local weights, global weights and ranking of criteria (CR) and sub-criteria (SB) are calculated (Table V). Finally, the global priority score of the alternative is obtained by summing the product of the weights of the alternatives with respect to the sub-criteria and the local weights of the sub-criteria. The global weights of alternatives and ranking are given the Table V:

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4.1 Sensitivity analysis

Sensitivity analysis was performed by varying the fuzzification factor(α) and decision-making (λ). The results clearly indicated that by varying the α and λ from 0 to 1, the ranking did not change (Guru *et al.,* 2023; Balusa and Gorai, 2019). Results obtained from Table VI and Figures 3,4,5 confirm the robustness of FAHP results.

----------Insert Table VI----------

----------Insert Figure III, IV, V----------

5. Discussion

The research findings encompass both quantitative and qualitative dimensions. The quantitative aspect involves data collected from ten management students concerning the factors influencing their selection of universities or institutions for postgraduate studies. The qualitative dimension includes in-depth interviews with ten experts from India's premier management institutions in higher education, conducted to validate the results. Insights from these experts are integrated with the research outcomes. The present study endeavors to resolve prioritization by ranking factors influencing management students using the Analytical Hierarchy Process approach within a fuzzy environment, informed by theoretical frameworks of expectation confirmation.

Findings derived from the FAHP

Results of relative weights of CR and SB obtained from FAHP are given in Table V. Amongst the criteria divided into push and pull factors as per the theoretical background of the study, placement prospects ranked first, followed by friends' reference, inclusivity, a hostel or dormitory facility,

eco-system, peer group, college faculty, international outreach, cost of education, research facilities, accessibility, safety and security and sports facilities. Similar results were found by the authors. Studies by Dhaliwal et al. (2019), Husain et al. (2018), and Agrey and Lampadan (2014) found that placement prospects are a crucial factor in selecting a university or college for higher education. Dhaliwal et al. (2019) identified employability as a highly significant factor, alongside location, public image, fee structure, and the quality of academic programs, in influencing Indian students' choice of higher education institutions. Similarly, Husain et al. (2018) determined that employability significantly impacts students' preferences for private university colleges in Malaysia. Agrey and Lampadan (2014), in their study on factors contributing to student choice in selecting universities in Thailand, found that peer references are an important factor. Additionally, Ray et al. (2020), in their examination of factors influencing career choices in India, found that inclusivity was a significant factor.

Findings derived from the Narrative analysis

Narrative analysis of in-depth interviews with top management academicians suggests similar findings, as substantiated by previous research (Jung and Lee, 2019). We utilized a well-established coding framework informed by existing literature and emergent themes from the data. To enhance reliability and minimize bias, multiple coders were involved, and regular debriefing sessions were conducted to resolve discrepancies. This iterative process allowed us to refine our codes and ensure they accurately captured the nuances of participants' responses, thereby substantiating the validity and robustness of our coding methodology.

Our first respondent, a Professor from one of the top-tier MBA colleges in India, did not find the first rank according to the placement prospects surprising. He averred, "Good universities or

colleges are big attractions for students to get assured and good campus placement. This is more so when placements outside the campus are neither easy nor high paying. Further, entrepreneurship as a career option in India is still not so highly preferred and widely prevalent." Another respondent, who is the CEO of People Lab, an entity involved in leadership training in colleges and which, a few years back, used to do ranking of Business schools on behalf of the National HRD Network, authoritatively pointed out that, "In India, MBA education is pursued largely by fresher or students having few years of work experience and their tangible short-term goal is just to get good placements". The third respondent, a Vice-chancellor of a prominent private university, explained the emergence of placements as the top-ranked criteria: "Earlier rich and upper middle class were pursuing higher education for the sake of knowledge. They were not desperate for jobs. Besides, the cost of education was not much. Employment or the need for a job played a secondary role. All this has changed in the 21st century. Students now have to pay a lot for their studies, so concepts foreign to knowledge acquisition, such as cost-to-company (CTC), return on investments, and pay-back period, have become crucial for the students. I am not at all surprised that placements have occupied center stage in the selection concerns of the students". Their arguments are in conformance with the findings of other scholars who have worked on similar themes. Gati and According to Kulcsar (2021), job prospects play a crucial role in making career decisions. The decision of students to pursue a master's degree in South Korea was greatly influenced by job prospects, as found by Jung and Lee (2019). Husain *et al.* (2018) also found that employability was a crucial factor which affected the choice of college by students in Malaysia. The findings are in tandem with the present study.

Rank 2: Friend's reference emerged as a second-ranked criterion in the decision-making by Indian students. When presented with this finding, the Professors belonging to the top-tiered MBA

colleges contended that this cannot be true when a student has to choose from the country's top-notch institutes. Instead, he argued, this finding is valid for institutions which are either private or second-tier. Peer reference assumes an essential role in the selection process only when there is a paucity of publicly available data on universities thus making objective evaluation and informed decision difficult. Hence, "if you know people who are in a similar profession or have graduated from this institution or are familiar with other competing institutions, you rely on their advice". Another respondent shared a similar viewpoint. He said that in India, many rankings are done by different agencies, and all of them include many parameters that may not be relevant to the student as a stakeholder. This leaves many questions unanswered or not satisfactorily answered for the students. Hence, students seek to validate whatever little information they can get or acquire from people known to them. This gives them trust and provides firsthand experience. Another doyen of management education also made this point on information asymmetry and its impact on student choice. Indeed, educational institutions, especially those in higher education in India, provide minimal information to the public at large. The result is that students look forward to the most authentic information about any university or college from their friends whom they trust. Yamamoto (2006) found that friend reference was a significant factor in the student's selection of a university in South Korea. Sidin *et al.,* (2003) also found that friends influenced student's choice of colleges in Malaysia.

Rank 3: Inclusivity as the third-ranked criterion was puzzling and required an elaborate and persuasive explanation. A respondent, the CEO of People Labs, who has worked closely with academic institutions, stated his thoughts on inclusivity as the third-rank criterion. He says, "The fact that girls are allowed to go to boy's hostel or vice versa at certain hours is significant and symbolic". It is not just about gender parity and treating people with dignity associated with

adulthood and autonomy to determine what is good for them. It is also about facilitation required for group discussion, collaborative academic projects and peer-to-peer learning, which is vital in the MBA program's teaching-learning process and pedagogical mix. Also, a gender-diverse environment is more vibrant and wholesome. The study therefore provides an empirical argument in favour of gender sensitivity in the higher education sector (Sim *et al.,* 2021). This does not imply that to create student diversity, extra marks or any other privileges should be accorded to female candidates. One of the respondents, the Director General of a top private B-school, pointed out, "Females are progressing in probably every discipline and are becoming increasingly assertive about their protection and safety, which was not the case 20-25 years ago. Social reality in India, especially with regard to women's education and mixed workforce, has recently changed. Not only have the walls crumbled, even the glass ceilings are being broken."

Rank 4: A respondent who is a Professor in one of the top-tier MBA colleges in India, shared his viewpoint on hostels or student residency on campus. "In ancient India, students used to stay in dormitories far away from the city and their homes, and that tradition has continued. Most of the top colleges and universities have residential campuses". Another respondent explained, "For a typical MBA student, real and meaningful education derives from learning outside the confines of the classroom. Besides, for many MBA students, this will be the last degree in their career. As such, they participate enthusiastically in co-curricular and extra-curricular activities organized by student-managed clubs and committees. This enhances the learning process and makes their life beyond academics vibrant and colorful. A hostel or residency on campus plays a significant role in a student's life and development. The Director General of a private B-school did not find the ranking of hostel as a criterion surprising, and mentioned, "Students in the undergraduate programs are hardly 17–18 years old at the time of joining, and their parents have tremendous anxiety about

their safety. It is for these all-top institutions to provide hostel facilities to first-year students". Scholars (Agrey and Lampadan, 2014) also found that residential accommodation was a significant factor in selecting a university for higher education in Thailand.

Rank 10: The 10th rank of research, as one of the respondents opined, is on the expected lines. This is because research facilities matter to faculty only and not as much to students, especially undergraduate students. Students are neither aware nor interested in knowing things that do not affect their academics or life. Another respondent clarified, "Research facility in the institute is for the faculty and not for students at large. Only a few students who are curious to know more utilize research facilities provided by the institute. On the contrary, Musa and Ahmad (2012) found that the involvement of students in research activities is crucial as it enhances the learning environment in higher educational institutions.

Rank 13: Sports as the last criterion in students' decision-making is largely due to the lack of sporting tradition in the country. The respondent professor from a top-tiered management institute promoted by the Government of India stated that there is a categorization of institutions in India. Those who want to make sports their career tend to join sports academics or institutions that are known to support sports and sportsmen. They even offer educational programs and degrees that facilitate students keen on sports, the time and opportunity to pursue their passion. Sports in India are still considered secondary as well as risky as an occupation. Despite the recent commercialization of some games like cricket, many students do not join sports at university and are not encouraged to pursue sports as a career option by their parents and well-wishers. Hence, candidates aspiring for higher education do not choose colleges based on sports facilities. The respondent CEO shared, "Students of this generation believe more in a virtual world, and perhaps

they cannot appreciate the sports facilities much. Furthermore, many of these students unfortunately did not have access to sports facilities in colleges throughout their growing up period. That is why they cannot appreciate the sports facilities and their importance in selecting colleges for higher education. Finally, the respondent Director General clarified, "India is not a sports nation; countries like Australia have world-class facilities from the school stage. Though there has been a change in perception about sports as a career in India, it is still a slow process. Even parents encourage their children to invest more time in study than sports in India". This finding was quite in contrast to the students of Thailand who place a lot of premium on good sports facilities as a factor in selecting a university for higher education (Agrey and Lampadan, 2014).

----------Insert Table V----------

5.1 Significance and implications

Selecting an institution for higher education in India is a multifaceted decision shaped by a wide array of factors that are of critical importance to students. The Indian higher education market, particularly at the postgraduate level, is highly competitive, with numerous universities and institutions vying for student enrollment. This study has identified 13 key factors from an initial list of 88 that significantly influence the selection of institutions and universities. These insights are crucial for universities and higher education institutions seeking to enhance their academic programs and increase their appeal in this competitive landscape. By integrating these factors into their promotional strategies and effectively communicating them to prospective students, institutions can build a strong reputation, support informed educational choices, and ultimately enhance student satisfaction and career success.

In the context of postgraduate education, placement prospects stand out as a major priority for students, underscoring the importance of employability and future-oriented career opportunities. Establishing strategic partnerships with industry leaders, offering internships, and providing robust career counseling services can greatly improve student outcomes. Additionally, organizing workshops, seminars, and guest lectures featuring industry experts enhances students' professional preparedness and positive outlook, while simultaneously boosting the institution's standing in the market.

Social influences also play a significant role, as recommendations from peers, friends, and acquaintances shape students' perceptions of academic quality and campus life during their programs. The influence of testimonials and social media further amplifies an institution's attractiveness to potential applicants. In addition to these factors, fostering inclusivity and providing high-quality hostel accommodations are vital for creating a conducive learning environment. Inclusive policies and secure, well-equipped living spaces contribute to students' well-being and academic success, which are essential for a successful academic journey and professional career. By prioritizing these elements, institutions can more effectively meet the diverse needs of higher education students, thereby enhancing their competitiveness and advancing the quality and inclusivity of postgraduate education in India.

Identifying and ranking these influential factors not only benefits prospective students by providing clarity on key considerations such as employability and campus experience but also enables higher education institutions to tailor their programs more closely to student expectations. This, in turn, enhances institutional competitiveness and student satisfaction. Governments, too, can leverage these findings to allocate resources more efficiently, improving the overall quality of

higher education in the country. Employers stand to benefit from a better-prepared and more skilled workforce, while families gain confidence in supporting their children's educational aspirations. Ultimately, this study contributes to the development of a more responsive and successful higher education system in India, producing skilled graduates and fostering economic growth.

6. Limitations and future research scope

Sample respondents selected for FAHP were from undergraduate management disciplines only. Similar studies may be carried out among the other non-management disciplines, providing a high level of depth across different disciplines. Secondly, further investigation may be conducted considering the postgraduate students to understand what they look for in college for higher education like PhD or post-PhD. Thirdly, factors which affect student institution choice differ from one country to another because of cultural differences. Hence, further studies may be carried out by conducting cross-cultural comparisons between students from different countries.

The study was conducted in only one private university. Hence the sample is not representative of the entire student population in India. Further analysis can be conducted by taking into consideration public universities in India as well as universities located in other parts of India.

For this study, Varimax rotation was employed based on the conceptual independence of the factors. However, we acknowledge that some constructs may plausibly be correlated, which may represent a limitation of the present analysis.

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