Application of Mentoring and Entrepreneurship Management in Higher Education

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Abstract

Mentoring and entrepreneurship management are characteristics that must be promoted in the organization because the success of a business depends on them. Entrepreneurship is an innate quality of personality; however, it can be developed through education. This paper aims to show the initial steps to develop entrepreneurship and mentoring programs within today's Peruvian universities. For this, we count on the support of four specialists who determined the essential factors for designing academic entrepreneurship programs in Peru. They also serve to evaluate the importance of these concepts. From a quantitative point of view, we use the Neutrosophic AHP technique to calculate the weights to measure the importance of each of these factors in the teaching of these concepts on the university campuses of Peru. The Neutrosophic AHP method is the generalization to the neutrosophic framework of the well-known AHP, where indeterminacy is included within decision-making.

Keywords: Mentoring; Entrepreneurship Management; Analytic Hierarchy Process (AHP); Neutrosophic Analytic Hierarchy Process (NAHP); Group Decision; Single-valued triangular neutrosophic number

1 Introduction

Mentoring is a process in which a person with experience and knowledge in a specific area (the mentor) guides, advises, and shares their knowledge with another person (the mentee), who generally has less experience in that field. Mentoring can encompass several aspects, such as professional development, personal growth, decision-making, and the development of specific skills.
In the context of entrepreneurship, mentoring is especially valuable. An entrepreneur may face several challenges and difficult decisions throughout their entrepreneurial journey. A mentor with experience in the business world can offer guidance and practical advice on how to overcome obstacles, avoid common mistakes, identify opportunities, and develop a clear vision for the business.

Entrepreneurship management, on the other hand, refers to the activities and processes involved in the creation, development, and management of a business or company. This includes strategic planning, human resource management, financial management, marketing, operations, and much more. Effective entrepreneurship management involves making informed decisions, setting clear goals, allocating resources efficiently, and adapting to changes in the market and business environment. In Peruvian universities, mentoring and entrepreneurship management in university education can play key roles in developing business skills and fostering entrepreneurship among students.

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This entrepreneurial spirit generally does not arise spontaneously and can be developed through education. The psychological characteristics of the born entrepreneur are, among others, the need for achievement, propensity for risk, self-efficacy, tolerance for ambiguity, innovation, independence, autonomy, and optimism. It has been shown that there is a correlation between the entrepreneurial capacity and the individual's level of study. Even those with a university postgraduate level generally have greater entrepreneurship competencies than entrepreneurs with a bachelor's degree.

So, from undergraduate university studies, emphasis should be placed on these aspects in careers related to this concept. This should be further strengthened in postgraduate courses. Therefore, we recommend opening courses of this type in Peruvian universities.
This paper proposes to begin the study of the basic components of the implementation of mentoring and entrepreneurship management training in Peruvian universities. Firstly, we have a group of experts who determine the basic factors to develop and measure for the proposed implementation. Then, they determine the quantitative weight of these factors should have when measuring this implementation.

To determine the weights, we apply the Neutrosophic Analytic Hierarchy Process (NAHP) method that allows the quantification of the weights of each criterion, subcriterion, and alternative in complex decision-making for the selection of the alternative with the best results [1-4]. The classical technique is based on mathematical and psychological tools [5]. In the case of the NAHP, Single-Valued Triangular Neutrosophic Numbers are used, which has the advantage of incorporating indeterminacy in the mathematical modeling of this problem [6]. Other neutrosophic approaches to entrepreneurship can be read in [7-12]

The next section in this paper is Materials and Methods where the details of the NAHP technique are explained. Then Results section contains what we have obtained from the study. We end with a section dedicated to conclusions.

2 Materials and Methods

Definition 1 ([6, 13-15]): The *Neutrosophic set N* is characterized by three membership functions, which are the truth-membership function T_A, indeterminacy-membership function I_A and falsity-membership function F_A, where U is the Universe of Discourse and $\forall x \in U$, $T_A(x), I_A(x), F_A(x) \subseteq]^{-}0, 1^{+}[$, and $^{-}0 \leq \inf T_A(x) + \inf I_A(x) + \inf F_A(x) \leq \sup T_A(x) + \sup I_A(x) + \sup F_A(x) \leq 3^{+}$.
See that according to the definition, $T_A(x), I_A(x)$, and $F_A(x)$ are real standard or non-standard subsets of $]^{-}0, 1^{+}[$ and hence, $T_A(x), I_A(x)$ and $F_A(x)$ can be sub-intervals of $[0, 1]$. $^{-}0$ and 1^{+} belong to the set of hyperreal numbers.
Definition 2 ([6, 13-15]: The *Single-Valued Neutrosophic Set* (SVNS) A over U is $A = \{< x, T_A(x), I_A(x), F_A(x) > : x \in U\}$, where $T_A: U \to [0, 1]$, $I_A: U \to [0, 1]$ and $F_A: U \to [0, 1]$. $0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3$.
The Single-Valued Neutrosophic Number (SVNN) is symbolized by
$N = (t, i, f)$, such that $0 \leq t, i, f \leq 1$ and $0 \leq t + i + f \leq 3$.
Definition 3 ([6, 13-15]): The *single-valued triangular neutrosophic number*, $\tilde{a} = \langle (a_1, a_2. a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$, is a neutrosophic set on $\mathbb{R}$, whose truth, indeterminacy, and falsity membership functions are defined as follows:

$$T_{\tilde{a}}(x) = \begin{cases} \alpha_{\tilde{a}}\left(\frac{x-a_1}{a_2-a_1}\right), a_1 \leq x \leq a_2 \\ \alpha_{\tilde{a}}, x = a_2 \\ \alpha_{\tilde{a}}\left(\frac{a_3-x}{a_3-a_2}\right), a_2 < x \leq a_3 \\ 0, \text{otherwise} \end{cases} \quad (1)$$

$$I_{\tilde{a}}(x) = \begin{cases} \frac{(a_2-x+\beta_{\tilde{a}}(x-a_1))}{a_2-a_1}, a_1 \leq x \leq a_2 \\ \beta_{\tilde{a}}, x = a_2 \\ \frac{(x-a_2+\beta_{\tilde{a}}(a_3-x))}{a_3-a_2}, a_2 < x \leq a_3 \\ 1, \text{otherwise} \end{cases} \quad (2)$$

$$F_{\tilde{a}}(x) = \begin{cases} \frac{(a_2-x+\gamma_{\tilde{a}}(x-a_1))}{a_2-a_1}, a_1 \leq x \leq a_2 \\ \gamma_{\tilde{a}}, x = a_2 \\ \frac{(x-a_2+\gamma_{\tilde{a}}(a_3-x))}{a_3-a_2}, a_2 < x \leq a_3 \\ 1, \text{otherwise} \end{cases} \quad (3)$$

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Where $\alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \in [0,1]$, $a_1,\ a_2, a_3 \in \mathbb{R}$ and $a_1 \leq a_2 \leq a_3$.

Definition 4 ([6, 13-15]): Given $\tilde{a} = \langle (a_1, a_2, a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$ and $\tilde{b} = \langle (b_1, b_2, b_3); \alpha_{\tilde{b}}, \beta_{\tilde{b}}, \gamma_{\tilde{b}} \rangle$ two single-valued triangular neutrosophic numbers and λ any non-null number in the real line. Then, the following operations are defined:

1. Addition: $\tilde{a} + \tilde{b} = \langle (a_1 + b_1, a_2 + b_2, a_3 + b_3); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle$,
2. Subtraction: $\tilde{a} - \tilde{b} = \langle (a_1 - b_3, a_2 - b_2, a_3 - b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle$,
3. Inversion: $\tilde{a}^{-1} = \langle ({a_3}^{-1}, {a_2}^{-1}, {a_1}^{-1}); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$, where $a_1, a_2, a_3 \neq 0$.
4. Multiplication by a scalar number:
$$\lambda\tilde{a} = \begin{cases} \langle (\lambda a_1, \lambda a_2, \lambda a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle, \lambda > 0 \\ \langle (\lambda a_3, \lambda a_2, \lambda a_1); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle, \lambda < 0 \end{cases}$$
5. Division of two triangular neutrosophic numbers:
$$\frac{\tilde{a}}{\tilde{b}} = \begin{cases} \langle \left(\frac{a_1}{b_3}, \frac{a_2}{b_2}, \frac{a_3}{b_1}\right); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_3 > 0 \text{ and } b_3 > 0 \\ \langle \left(\frac{a_3}{b_3}, \frac{a_2}{b_2}, \frac{a_1}{b_1}\right); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_3 < 0 \text{ and } b_3 > 0 \\ \langle \left(\frac{a_3}{b_1}, \frac{a_2}{b_2}, \frac{a_1}{b_3}\right); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_3 < 0 \text{ and } b_3 < 0 \end{cases}$$
6. Multiplication of two triangular neutrosophic numbers:
$$\tilde{a}\tilde{b} = \begin{cases} \langle (a_1 b_1, a_2 b_2, a_3 b_3); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle,\ a_3 > 0 \text{ and } b_3 > 0 \\ \langle (a_1 b_3, a_2 b_2, a_3 b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_3 < 0 \text{ and } b_3 > 0 \\ \langle (a_3 b_3, a_2 b_2, a_1 b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_3 < 0 \text{ and } b_3 < 0 \end{cases}$$

Where, $\wedge$ is a t-norm and $\vee$ is a t-conorm.

The AHP technique starts with the designation of a hierarchical structure, where the upper elements of the tree are more generic than those corresponding to the lower levels. The parent leaf is unique and denotes the goal to be met in decision-making.
The level immediately below contains the leaves that represent the criteria. Immediately at the level below this, the leaves corresponding to the subcriteria appear, and so on. The level at the bottom represents the alternatives. See Figure 1.

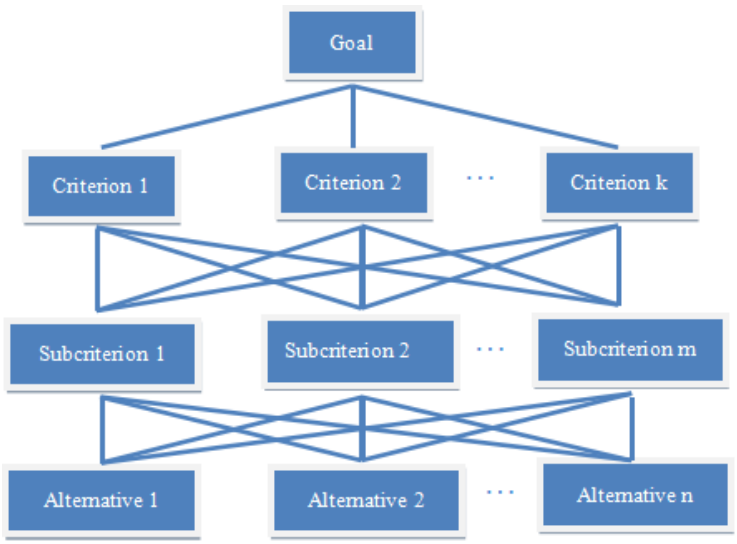

Figure 1: Scheme of a generic tree representing an Analytical Hierarchy Process. Source: [16].

Later, a square matrix is formed that represents the opinion of the expert or experts containing the pair-wise comparison of the evaluations of the criteria, sub-criteria, and alternatives.
T.L. Saaty, the founder of the original method proposed a linguistic scale that appears in Table 1.
Table 1: Intensity of importance according to the classical AHP. Source [16-19].

Intensity of importance on an absolute scale	Definition	Explanation

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1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance of one over another	Experience and judgment strongly favor one activity over another
5	Essential or strong importance	Experience and judgment strongly favor one activity over another
7	Very strong importance	Activity is strongly favored and its dominance is demonstrated in practice
9	Extremely important	The evidence favoring one activity over another is of the highest possible order of affirmation.
2, 4, 6, 8	Intermediate values between the two adjacent judgments.	When understanding is needed
Reciprocals	If activity *i* has one of the above numbers assigned to it when compared with activity *j*, then *j* has the reciprocal value when compared with *i*.	

On the other hand, Saaty established that the *Consistency Index* (CI) should depend on λ_{max}, the maximum eigenvalue of the matrix. He defined the equation $CI = \frac{\lambda_{max}-n}{n-1}$, where n is the order of the matrix. Additionally, He defined the *Consistency Ratio* (CR) with the equation CR = CI/RI, where RI is given in Table 2.

Table 2: RI associated with every order.

Order (n)	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

Table 2: RI associated with every order.

If $CR \leq 10\%$ we can consider that the experts' evaluation is consistent enough and hence we can proceed to use AHP.

The objective of the AHP is to establish a ranking between the criteria, sub-criteria, and alternatives according to a score. Can also be used in group decision problems. If this is the purpose, Equations 4 and 5 must be taken into account, where the weight of the expert is evaluated, based on his authority, knowledge, expertise, and so on.

$$\bar{x} = \left(\prod_{i=1}^{n} x_i^{w_i}\right)^{1/\sum_{i=1}^{n} w_i} \quad (4)$$

If $\sum_{i=1}^{n} w_i = 1$, i.e., when the expert's weights sum one, Equation 4 transforms into Equation 5,

$$\bar{x} = \prod_{i=1}^{n} x_i^{w_i} \quad (5)$$

The hybridization of AHP with Neutrosophic set theory was used in [16]. This is a more flexible approach to modeling the uncertainty in decision-making. Indeterminacy is an essential component to be assumed in real-world organizational decisions.

Table 3 contains the adaptation of the Saaty's scale to the neutrosophic field.

Table 3: Saaty's scale translated to a neutrosophic triangular scale. Source [16].

Saaty scale	**Definition**	**Neutrosophic Triangular Scale**
1	Equally influential	$\tilde{1} = \langle(1,1,1);0.50,0.50,0.50\rangle$
3	Slightly influential	$\tilde{3} = \langle(2,3,4);0.30,0.75,0.70\rangle$
5	Strongly influential	$\tilde{5} = \langle(4,5,6);0.80,0.15,0.20\rangle$
7	Very strongly influential	$\tilde{7} = \langle(6,7,8);0.90,0.10,0.10\rangle$
9	Absolutely influential	$\tilde{9} = \langle(9,9,9);1.00,1.00,1.00\rangle$
2, 4, 6, 8	Sporadic values between two close scales	$\tilde{2} = \langle(1,2,3);0.40,0.65,0.60\rangle$
		$\tilde{4} = \langle(3,4,5);0.60,0.35,0.40\rangle$
		$\tilde{6} = \langle(5,6,7);0.70,0.25,0.30\rangle$
		$\tilde{8} = \langle(7,8,9);0.85,0.10,0.15\rangle$

The neutrosophic pair-wise comparison matrix is defined in Equation 6.

$$\tilde{A} = \begin{bmatrix} \tilde{1} & \tilde{a}_{12} & \cdots & \tilde{a}_{1n} \\ \vdots & & \ddots & \vdots \\ \tilde{a}_{n1} & \tilde{a}_{n2} & \cdots & \tilde{1} \end{bmatrix} \quad (6)$$

$\tilde{A}$ satisfies the condition $\tilde{a}_{ji} = \tilde{a}_{ij}^{-1}$, according to the inversion operator defined in Definition 4.

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In Abdel-Basset et al. [20] two indices are defined to convert a neutrosophic triangular number into a crisp number. See Equation 7 for the *score* and Equation 8 for *accuracy*.

$$S(\tilde{a}) = \frac{1}{8}[a_1 + a_2 + a_3](2 + \alpha_{\tilde{a}} - \beta_{\tilde{a}} - \gamma_{\tilde{a}}) \quad (7)$$

$$A(\tilde{a}) = \frac{1}{8}[a_1 + a_2 + a_3](2 + \alpha_{\tilde{a}} - \beta_{\tilde{a}} + \gamma_{\tilde{a}}) \quad (8)$$

The algorithm to apply the NAHP is as follows:

Given the criteria, sub-criteria, and alternatives, the NAHP consists of the following steps:

1. To design an AHP tree. This contains the selected criteria, sub-criteria, and alternatives.

2. To create the matrices per level from the AHP tree, according to experts' criteria expressed in neutrosophic triangular scales and respecting the matrix scheme in Equation 6.

3. To evaluate the consistency of these matrices, convert the elements of $\tilde{A}$ into a crisp matrix applying either Equation 7 or 8 and then proving the consistency of this new crisp matrix.

4. To follow the other steps of a classical AHP.

5. Equation 7 or 8 is applied to convert, w_1, w_2, …, w_n to crisp weights.

6. If more than one expert makes the assessment, then w_1, w_2,…, w_n are replaced by $\overline{w}_1, \overline{w}_2, \cdots, \overline{w}_n$, which are their corresponding weighted geometric mean values, see Equations 4 and 5.

3 Results

This section contains an explanation of the factors that are relevant in the implementation of programs within Peruvian universities on mentoring and entrepreneurship. For this, the opinion of four specialists was obtained, who selected the most relevant variables in this aspect. These variables were the following:

1. Mentoring Programs: Universities can establish mentoring programs where successful entrepreneurs or professionals with business experience act as mentors for students interested in entrepreneurship. These mentors can provide guidance, share experiences, and give practical advice on starting and running a business.
2. Entrepreneurship Courses and Workshops: Universities can offer specific entrepreneurship courses and workshops covering topics such as business creation, business planning, product development, marketing, and financial management. These courses can be taught by professors with business experience or by guest entrepreneurs as part of business teaching programs.
3. Business Incubators and Accelerators: Some universities may have their own business incubators or accelerators where entrepreneurial students can receive additional support to develop their business ideas. These programs can offer financing, workspace, personalized advice, and access to a network of business contacts.
4. Entrepreneurship Events and Competitions: Universities can host events, such as entrepreneurship fairs, conferences, and business plan competitions, to foster entrepreneurial creativity, promote collaboration among students, and connect entrepreneurs with potential investors and mentors.
5. Integrated Entrepreneurship Subjects: Incorporating entrepreneurship and business management into the curriculum of various disciplines can be an effective strategy to prepare students for the business world. This may include electives or even integrate entrepreneurship concepts into courses in other areas such as engineering, social sciences, or humanities.
6. Identification of Success Indicators: Defines the indicators that will measure the success of the mentoring program. These indicators could include students' academic performance, graduation rate, student satisfaction with the mentoring program, and development of soft and professional skills, among others.
7. Definition of Objectives: Establishes the specific objectives of the mentoring program in the context of university education in Peru. These objectives could include the professional and academic development of students, improving student retention rates, and strengthening the university community, among others.

Then, each of the 4 specialists compared these 7 factors according to the scale that appears in Table 3. Each specialist was assigned the same weight or importance of their opinion equal to $w_i = \frac{1}{4}$. The steps we followed were:

1. Each specialist evaluated the 7 factors according to their neutrosophic pair-wise comparison matrix.
2. These neutrosophic matrices were converted to crisp matrices with the help of accuracy, Equation 8.
3. The CR of each of these matrices was determined.
   If all experts met an adequate CR, proceed to step 4.
   Those who did not comply, as usual, must repeat the evaluation.

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4. The weights assigned to each of the 7 factors by each expert are aggregated with the help of Equation 8. These will be the final weights sought.
Tables 4-7 contain the results of the neutrosophic pair-wise comparison matrix for experts 1, 2, 3, and 4, respectively.
Table 4: Neutrosophic pair-wise comparison matrix obtained from the expert 1.

Variable	**V1**	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	$\tilde{1}$	$\tilde{1}$	$\tilde{2}$	$\tilde{2}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V2	$\tilde{1}$	$\tilde{1}$	$\tilde{2}$	$\tilde{2}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V3	$1/\tilde{2}$	$1/\tilde{2}$	$\tilde{1}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{2}$	$\tilde{2}$
V4	$1/\tilde{2}$	$1/\tilde{2}$	$\tilde{1}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{2}$	$\tilde{2}$
V5	$\tilde{1}$	$\tilde{1}$	$\tilde{2}$	$\tilde{2}$	$\tilde{1}$	$1/\tilde{3}$	$1/\tilde{3}$
V6	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{2}$	$1/\tilde{2}$	$\tilde{3}$	$\tilde{1}$	$\tilde{1}$
V7	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{2}$	$1/\tilde{2}$	$\tilde{3}$	$\tilde{1}$	$\tilde{1}$

Table 5: Neutrosophic pair-wise comparison matrix obtained from the expert 2.

Variable	**V1**	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	$\tilde{1}$	$\tilde{2}$	$\tilde{3}$	$\tilde{2}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V2	$1/\tilde{2}$	$\tilde{1}$	$\tilde{2}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{2}$	$\tilde{2}$
V3	$1/\tilde{3}$	$1/\tilde{2}$	$\tilde{1}$	$1/\tilde{2}$	$1/\tilde{3}$	$\tilde{1}$	$\tilde{1}$
V4	$1/\tilde{2}$	$\tilde{1}$	$\tilde{2}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{2}$	$\tilde{2}$
V5	$\tilde{1}$	$\tilde{2}$	$\tilde{3}$	$\tilde{2}$	$\tilde{1}$	$1/\tilde{3}$	$1/\tilde{3}$
V6	$1/\tilde{3}$	$1/\tilde{2}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{3}$	$\tilde{1}$	$\tilde{1}$
V7	$1/\tilde{3}$	$1/\tilde{2}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{3}$	$\tilde{1}$	$\tilde{1}$

Table 6: Neutrosophic pair-wise comparison matrix obtained from the expert 3.

Variable	**V1**	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	$\tilde{1}$	$\tilde{1}$	$1/\tilde{3}$	$1/\tilde{3}$	$\tilde{1}$	$1/\tilde{2}$	$\tilde{1}$
V2	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$	$\tilde{1}$	$\tilde{2}$	$\tilde{1}$
V3	$\tilde{3}$	$1/\tilde{3}$	$\tilde{1}$	$\tilde{1}$	$1/\tilde{3}$	$1/\tilde{2}$	$1/\tilde{3}$
V4	$\tilde{3}$	$1/\tilde{3}$	$\tilde{1}$	$\tilde{1}$	$1/\tilde{3}$	$1/\tilde{2}$	$1/\tilde{3}$
V5	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$	$\tilde{1}$	$\tilde{2}$	$\tilde{1}$
V6	$\tilde{2}$	$\tilde{2}$	$\tilde{2}$	$\tilde{2}$	$1/\tilde{2}$	$\tilde{1}$	$1/\tilde{2}$
V7	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$	$\tilde{1}$	$\tilde{2}$	$\tilde{1}$

Table 7: Neutrosophic pair-wise comparison matrix obtained from the expert 4.

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Variable	V1	V2	V3	V4	V5	V6	V7
V1	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V2	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V3	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V4	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V5	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{1}$	$\tilde{3}$	$\tilde{3}$
V6	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{3}$	$\tilde{1}$	$\tilde{1}$
V7	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{3}$	$1/\tilde{3}$	$\tilde{1}$	$\tilde{1}$

The calculation of the CRs resulted in CR=6.8731% for Expert 1, CR= 6.9017% for Expert 2, CR = 7.4485% for Expert 3, and CR = 0% for Expert 4. So, always $CR \leq 10\%$.

The weights associated with each of the variables are shown in Table 8.
Table 8: Weights obtained for each of the variables by the experts.

Expert/Variable	V1	V2	V3	V4	V5	V6	V7
1	0.19807	0.19807	0.12252	0.12252	0.13473	0.11204	0.11204
2	0.225817	0.142051	0.082832	0.142051	0.154348	0.126451	0.126451
3	0.101632	0.181524	0.098080	0.098080	0.181524	0.157636	0.181524
4	0.162187	0.162187	0.162187	0.162187	0.162187	0.094533	0.094533

The weight vector of each of the variables for all experts, after applying Equation 5 is $(0.16478, 0.16965, 0.11272, 0.12899, 0.15730, 0.12054, 0.12487)$. Therefore, the ranking of the variables according to their importance is $V2 \succ V1 \succ V5 \succ V4 \succ V7 \succ V6 \succ V3$.

4. Conclusion

The objective of this research is to contribute to the construction of a model for evaluating the effectiveness of teaching mentoring and entrepreneurship management in Peruvian universities. To do so, it is important to consider the particularities of the Peruvian context and adapt the model to the specific needs and objectives of the educational institutions in the country. To meet this objective, four specialists were asked to select the variables that are relevant to accomplish this objective. Specifically, possible actions were chosen to be carried out as part of the project. Seven were selected, which are:
1. Mentoring Programs.
2. Entrepreneurship Courses and Workshops.
3. Business Incubators and Accelerators.
4. Entrepreneurship Events and Competitions.
5. Integrated Entrepreneurship Subjects.
6. Identification of Success Indicators.
7. Definition of objectives.

Each of these actions was assessed by the specialists in terms of their importance to create a project of this type. The tool chosen was the Neutrosophic AHP. The result was the following from most important to least important: “Entrepreneurship Courses and Workshops”, “Mentoring Programs”, “Integrated Entrepreneurship Subjects”, “Entrepreneurship Events and Competitions”, “Definition of Objectives”, “Identification of Success Indicators” and “Business Incubators and Accelerators”.

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