Neutrosophic Sets and Systems

Volume 37 Article 27

1-1-2020

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Neutrosophic Sets and Systems
{Special Issue: Impact of Neutrosophy in solving the Latin American's social problems}, Vol. 37, 2020
University of New Mexico

Business Plan for Entrepreneurs, Actors and Organizations of Social and Solidarity Economy based on Neutrosophic AHP-SWOT

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Abstract. The main purpose of this research is to design a new business plan structure for entrepreneurs, actors and organizations of social and solidarity companies in the province Los Ríos, Ecuador. Thus, this paper aims to create a simple and rigorous guide designed upon the gathering of the necessary information from 24 entrepreneurs of the project "Young Impulse" led by the "Youth Technical Secretariat". We propose to use the neutrosophic AHP-SWOT technique as part of the business plan. We incorporate Neutrosophy because it allows us to explicitly model the indeterminacy that exists in experts' evaluation. On the other hand, the Analytic Hierarchy Process (AHP) and SWOT (Strengths, Weaknesses, Opportunities and Threats) techniques have proven to be effective in decision-making and planning. Social and solidarity economy constitutes a different way of managing economy, it is a sector of the economy that would be halfway between the private sector and business on the one hand, and the public sector and government on the other hand, and that includes cooperatives, associate labor companies, non-profit organizations, and charitable associations. Additionally, we present a study to determine the best strategy to start a business, according to the opinion of the aforementioned 24 entrepreneurs, based on neutrosophic AHP-SWOT.

Keywords: Business plan, entrepreneurship, social and solidarity economy, neutrosophic AHP-SWOT technique.

1 Introduction

Business administration is constantly evolving; companies seek to generate innovative activities not only in search of economic credits, but also in the generation of value added, with the purpose of becoming sustainable over time. This is why companies must determine strategies to differentiate the organization from the competition. This research aims to design the structure of a new business plan for entrepreneurs, actors and organizations of social and solidarity economy in the province Los Ríos, Ecuador[1].

The shortage of economic resources that the world is going through, especially in Ecuador, makes micro, small and medium-sized companies look for different ways to subsist. Therefore, it is essential to strengthen these sectors, because many of them show a productive, administrative, financial, and primitive technology, which affects their competitiveness.

It is necessary that the initiatives of actors of the social and solidarity economy consider indicators such as planning, human resources, environmental management, marketing, administration, accounting and finance to measure internal strengths and weaknesses in order to improve areas that affect their competitiveness.

For this reason, and in order to foster business growth in economic and social aspects, companies need to have an easy, simple, rigorous and accurate guide that allows them to prepare for a favorable change in the business world.

This guide should include effective mathematical models for planning strategies in decision-making, where the accuracy is given by the inclusion of indeterminacy due to ignorance, contradictions and inconsistencies of decision-makers. That is why Neutrosophy is included[2, 3].

A company is an organization that provides or produces goods and/or services demanded by customers, from

which it obtains economic benefits. To fulfil its objectives, the company requires material, technical, financial and human resources for its operations.

Entrepreneurial activity is an essential element to understand the economic development of any country. It helps to forecast and adjust public policies where it is necessary to impulse new projects and job creation. Undertaking is to start a new business project assuming the risk that this entails, in exchange for obtaining a business benefit. It is an engine of innovation, competitiveness and growth[4].

Every project to create a company has its starting point in the idea that its promoters consider. Starting from that moment, comes a process of analysis and planning which will lead to determine the viability of the project and the future configuration of the company. Issues such as the target market, its foreseeable evolution, competing companies, the commercial policy to follow, expected sales, the necessary technical and financial resources, should be analyzed [5].

Solidarity economy is a form of production, consumption, and distribution of wealth, focused on the valorization of the human being and not on the prioritization of capital. It promotes associability, cooperation and self-management, and is oriented to the production, consumption, and marketing of goods and services, in a mainly self-managed way, aiming at the expanded development of life, as well as the equality among its members. It advocates for understanding job as a mean of human liberation, within the framework of an economic democratization process, creating a viable alternative to the traditional dimension of capitalist labor[6].

We propose to use neutrosophic AHP-SWOT technique in the modelling [7]. One of its components is the mathematical and psychology-based tool called Analytic Hierarchy Process (AHP) introduced by Saaty [8-13] such that it starts from a hierarchical tree, where the first level consists of a single leaf that represents the objective. The second level contains the criteria that will be used to make the decision; in the even lower levels, the subcriteria for the criteria of the higher level are represented. The bottom contains the leaves corresponding to alternatives[14-16].

In the original method, experts assign a weight to each criterion and sub-criterion where the weight of the lower level depends on the weights of the higher levels. Finally, a weight is assigned to each alternative in relation to its importance. This tool is very useful, easy to apply and rigorous because it takes into account the relative importance of each element with respect to others at the same level. Moreover, this method ensures that inconsistency is small enough.

On the other hand, it is important for the design of a good business plan to determine what are the strengths (S), weaknesses (W), opportunities (O) and threats (T) that can be foreseen. This is modelled using the SWOT technique, named this way due to the aspects it calculates [17, 18]. This is also a simple and effective method.

Another contribution of this paper is that we propose one strategy for starting a business of social and solidarity economy in Los Ríos. The study was based on neutrosophic AHP-SWOT, according to the 24 entrepreneurs' criteria.

This paper consists of a first section, where we explain the main concepts of Neutrosophy and neutrosophic AHP-SWOT. Next, the following section introduces the business plan guide such that entrepreneurs, actors and organizations of social and solidarity economy should follow as well as the results for determining the best strategy to start a business. The article ends with the conclusions.

2 Preliminaries

This section summarizes some basic definitions of Neutrosophy as well as the algorithm of neutrosophic AHP-SWOT technique introduced by Abdel-Basset et al. [7].

Definition 1: [19, 20] The *Neutrosophic set* N is characterized by three membership functions, which are the truth-membership function T_A, indeterminacy-membership function I_A, and falsehood-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 $^-0 \leq \inf T_A(x) + \inf I_A(x) + \inf F_A(x) \leq \sup T_A(x) + \sup I_A(x) + \sup F_A(x) \leq 3^+$.

Notice 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 subintervals of [0, 1].

Definition 2: [19-21] The *Single-Valued Neutrosophic Set* (SVNS) N over U is $A = \{\langle x; T_A(x), I_A(x), F_A(x)\rangle : x \in U\}$, 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 represented by N = (t, i, f), such that $0 \leq t, i, f \leq 1$ and $0 \leq t + i + f \leq 3$.

Definition 3: [19, 20, 22, 23] the *single-valued trapezoidal neutrosophic number*,

$\tilde{a} = \langle (a_1, a_2. a_3, a_4); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$, is a neutrosophic set on $\mathbb{R}$, whose truth, indeterminacy and falsehood membership functions are defined as follows, respectively:

$$T_{\tilde{a}}(x) = \begin{cases} \alpha_{\tilde{a}}\left(\frac{x-a_1}{a_2-a_1}\right), & a_1 \le x \le a_2 \\ \alpha_{\tilde{a}}, & a_2 \le x \le a_3 \\ \alpha_{\tilde{a}}\left(\frac{a_3-x}{a_3-a_2}\right), & a_3 \le x \le a_4 \\ 0, & \text{otherwise} \end{cases} \quad (1)$$

$$I_{\tilde{a}}(x) = \begin{cases} \frac{(a_2 - x + \beta_{\tilde{a}}(x-a_1))}{a_2-a_1}, & a_1 \le x \le a_2 \\ \beta_{\tilde{a}}, & a_2 \le x \le a_3 \\ \frac{(x - a_2 + \beta_{\tilde{a}}(a_3-x))}{a_3-a_2}, & a_3 \le x \le a_4 \\ 1, & \text{otherwise} \end{cases} \quad (2)$$

$$F_{\tilde{a}}(x) = \begin{cases} \frac{(a_2 - x + \gamma_{\tilde{a}}(x-a_1))}{a_2-a_1}, & a_1 \le x \le a_2 \\ \gamma_{\tilde{a}}, & a_2 \le x \le a_3 \\ \frac{(x - a_2 + \gamma_{\tilde{a}}(a_3-x))}{a_3-a_2}, & a_3 \le x \le a_4 \\ 1, & \text{otherwise} \end{cases} \quad (3)$$

Where $\alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \in [0,1]$, $a_1, a_2, a_3, a_4 \in \mathbb{R}$ and $a_1 \le a_2 \le a_3 \le a_4$.

Definition 4: [19, 20, 22, 23] given $\tilde{a} = \langle (a_1, a_2, a_3, a_4); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$ and $\tilde{b} = \langle (b_1, b_2, b_3, b_4); \alpha_{\tilde{b}}, \beta_{\tilde{b}}, \gamma_{\tilde{b}} \rangle$ two single-valued trapezoidal neutrosophic numbers and λ any non-null number in the real line. Then, the following operations are defined:

1. Addition: $\tilde{a} + \tilde{b} = \langle (a_1 + b_1, a_2 + b_2, a_3 + b_3, a_4 + b_4); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle$
2. Subtraction: $\tilde{a} - \tilde{b} = \langle (a_1 - b_4, a_2 - b_3, a_3 - b_2, a_4 - b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle$
3. Inversion: $\tilde{a}^{-1} = \langle ({a_4}^{-1}, {a_3}^{-1}, {a_2}^{-1}, {a_1}^{-1}); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$, where $a_1, a_2, a_3, a_4 \neq 0$.
4. Multiplication by a scalar number:

$$\lambda\tilde{a} = \begin{cases} \langle (\lambda a_1, \lambda a_2, \lambda a_3, \lambda a_4); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle, & \lambda > 0 \\ \langle (\lambda a_4, \lambda a_3, \lambda a_2, \lambda a_1); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle, & \lambda < 0 \end{cases}$$

5. Division of two trapezoidal neutrosophic numbers:

$$\frac{\tilde{a}}{\tilde{b}} = \begin{cases} \langle \left(\frac{a_1}{b_4}, \frac{a_2}{b_3}, \frac{a_3}{b_2}, \frac{a_4}{b_1}\right); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_4 > 0 \; and \; b_4 > 0 \\ \langle \left(\frac{a_4}{b_4}, \frac{a_3}{b_3}, \frac{a_2}{b_2}, \frac{a_1}{b_1}\right); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_4 < 0 \; and \; b_4 > 0 \\ \langle \left(\frac{a_4}{b_1}, \frac{a_3}{b_2}, \frac{a_2}{b_3}, \frac{a_1}{b_4}\right); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, a_4 < 0 \; and \; b_4 < 0 \end{cases}$$

6. Multiplication of two trapezoidal neutrosophic numbers:

$$\tilde{a}\tilde{b} = \begin{cases} \langle (a_1 b_1, a_2 b_2, a_3 b_3, a_4 b_4); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, & a_4 > 0 \; and \; b_4 > 0 \\ \langle (a_1 b_4, a_2 b_3, a_3 b_2, a_4 b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, & a_4 < 0 \; and \; b_4 > 0 \\ \langle (a_4 b_4, a_3 b_3, a_2 b_2, a_1 b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}} \rangle, & a_4 < 0 \; and \; b_4 < 0 \end{cases}$$

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

Definitions 3 and 4 refer to *single-valued triangular neutrosophic number* when the condition $a_2 = a_3$, [24-26].

For simplicity, we use the linguistic scale of triangular neutrosophic numbers, see Table 1 and also compare with the scale defined in [7].

We can find in [7] the theory of AHP technique in a neutrosophic framework. Thus, we can model the indeterminacy of decision-making by applying neutrosophic AHP or NAHP for short.

Equation 4 contains a generic neutrosophic pair-wise comparison matrix for NAHP.

$$\tilde{A} = \begin{bmatrix} \tilde{1} & \tilde{a}_{12} & \cdots & \tilde{a}_{1n} \\ \vdots & & \ddots & \vdots \\ \tilde{a}_{n1} & \tilde{a}_{n2} & \cdots & \tilde{1} \end{bmatrix} \quad (4)$$

Matrix $\tilde{A}$ must satisfy condition $\tilde{a}_{ji} = \tilde{a}_{ij}^{-1}$, based on the inversion operator of Definition 4.

To convert neutrosophic triangular numbers into crisp numbers, there are two indexes defined in [7], they are the so-called score and accuracy indexes, respectively, see Equations 5 and 6:

$$S(\tilde{a}) = \frac{1}{8}[a_1 + a_2 + a_3](2 + \alpha_{\tilde{a}} - \beta_{\tilde{a}} - \gamma_{\tilde{a}}) \quad (5)$$

$$A(\tilde{a}) = \frac{1}{8}[a_1 + a_2 + a_3](2 + \alpha_{\tilde{a}} - \beta_{\tilde{a}} + \gamma_{\tilde{a}}) \quad (6)$$

Saaty's 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	$\tilde{2} = \langle(1,2,3); 0.40, 0.65, 0.60\rangle$
		$\tilde{4} = \langle(3,4,5); 0.60, 0.35, 0.40\rangle$
		$\tilde{6} = \langle(5,6,7); 0.70, 0.25, 0.30\rangle$
		$\tilde{8} = \langle(7,8,9); 0.85, 0.10, 0.15\rangle$

Table 1: Saaty's scale translated to a neutrosophic triangular scale.

Below, we explain the algorithm introduced by Abdel-Basset et al. [7].

Step 1 Select a group of experts at performing SWOT analysis.

In this step, experts identify the internal and the external factors of the SWOT analysis by employing questionnaires/interviews. Figure 1 shows the SWOT analysis diagram:

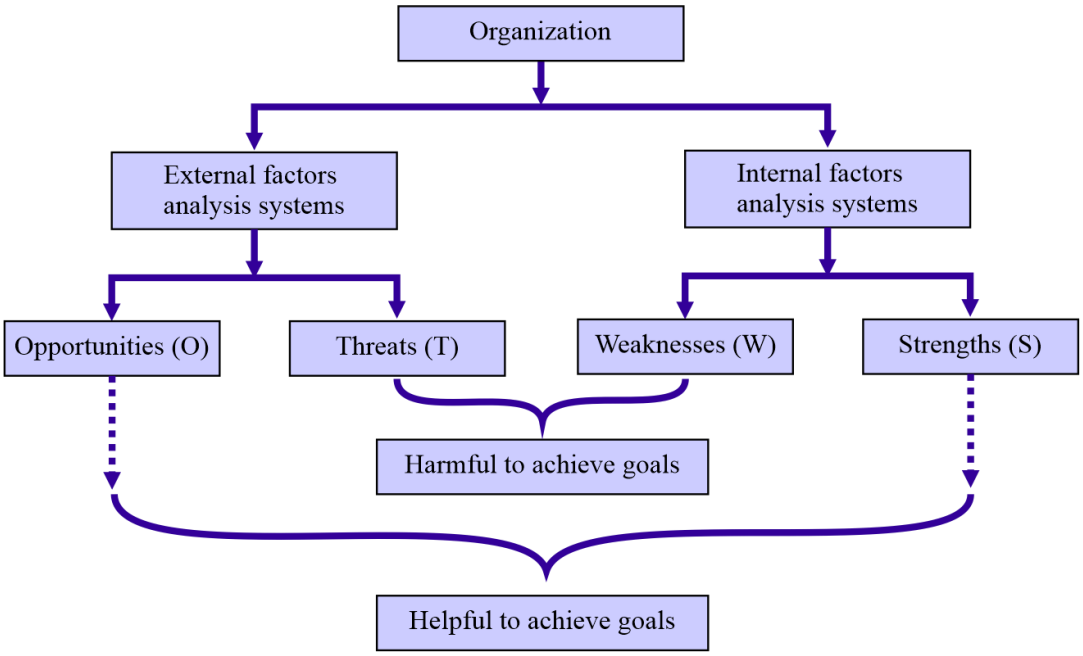

Figure 1: Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis diagram. Source [7].

Step 2 Structure the hierarchy of the problem.

The hierarchy of the problem has four levels:

- The first level is the goal the organization wants to achieve.
- The second level consists of the four strategic criteria that are defined by the SWOT analysis (i.e., criteria).
- The third level contains the factors that are included in each strategic factor of the previous level

(i.e., sub-criteria).

- The final level includes the strategies that should be evaluated and compared. The general hierarchy is presented in Figure 2.

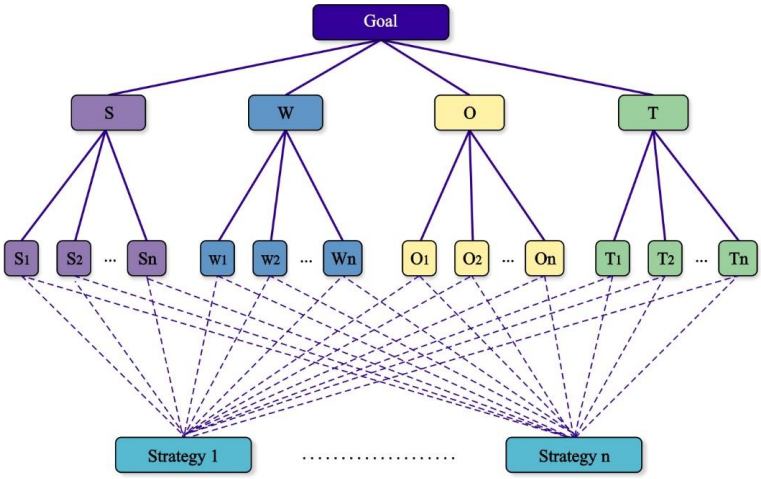

Figure 2: The hierarchy of a problem. Source [7].

Step 3 Structure the neutrosophic pair-wise comparison matrix of factors, sub-factors and strategies, through the linguistic terms shown in Table 1.

The neutrosophic scale is attained according to expert opinions[3]. The neutrosophic pair-wise comparison matrix of factors, sub-factors and strategies are as described in Equation 4.

Step 4 Check the consistency of experts' judgments.

If the pair-wise comparison matrix has a transitive relation, i.e., $a_{ik} = a_{ij}a_{jk}$ for all i,j and k, then the comparison matrix is consistent, focusing only on the lower, median and upper values of the triangular neutrosophic number of the comparison matrix.

Step 5 Calculate the weight of the factors (S, W, O, T), sub-factors $\{(S_1,...,S_n), (W_1,...,W_n), (O_1,...,O_n),(T_1,...,T_n)\}$ and strategies/alternatives $(Alt_1, ..., Alt_n)$ from the neutrosophic pair-wise comparison matrix, by transforming it to a deterministic matrix using Equations 7 and 8.

To get the score and the accuracy degree of $\tilde{a}_{ji}$ the following equations are used:

$$S(\tilde{a}_{ji}) = {}^{1}\!/_{S(\tilde{a}_{ij})} \tag{7}$$

$$A(\tilde{a}_{ji}) = {}^{1}\!/_{A(\tilde{a}_{ij})} \tag{8}$$

With compensation by accuracy degree of each triangular neutrosophic number in the neutrosophic pair-wise comparison matrix, we derive the following deterministic matrix:

$$A = \begin{bmatrix} 1 & a_{12} & \cdots & a_{1n} \\ \vdots & & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & 1 \end{bmatrix} \tag{9}$$

Determine the ranking of priorities, namely the Eigen Vector X, from the previous matrix:

1. Normalize the column entries by dividing each entry by the sum of the column.
2. Take the total of the row averages.

Step 6 Calculate the total priority of each strategy (alternative) for the final ranking of all strategies using Equation 10.

The total weight value of the alternative j (j = 1,..., n) can be n:

$$Tw_{Alt_j} = w_S * \sum_{i=1}^{n} w_{S_i} * w_{Alt_j} + w_W * \sum_{i=1}^{n} w_{W_i} * w_{Alt_j} + w_O * \sum_{i=1}^{n} w_{O_i} * w_{Alt_j} + w_T * \sum_{i=1}^{n} w_{T_i} * w_{Alt_j} \tag{10}$$

where (i = 1,...,n) and (w_S, w_W, w_O, w_T) are the weights of Strengths, Weaknesses, Opportunities and Threats; $(w_{Si}, w_{Wi}, w_{Oi}, w_{Ti})$ are the sub-factor weights; and w_{Altj} is the weight of the alternative j, corresponding to its sub-factor.

Note that Step 4 refers to consider the use of the calculus of the *Consistency Index* (CI) when applying this technique, which is a function depending on λ_{max}, the maximum eigenvalue of the matrix. Saaty establishes that consistency of the evaluations can be determined by equation $CI = \frac{\lambda_{max}-n}{n-1}$ [8], where n is the order of the matrix. In addition, the *Consistency Ratio* (CR) is defined by equation CR = CI/RI, where RI is given in Table 2.

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 to every order.

If CR≤0.1 we can consider that experts' evaluation is sufficiently consistent and hence we can proceed to use NAHP. We apply this procedure to matrix *A* in Equation 9.

3 Design of the business plan

This section contains two subsections, the first one explains the concepts of business plan we based on in this paper. In section 3.2 we describe the plan for the entrepreneurs, actors and organization of social and solidarity economy in Los Ríos province.

3.1 Concepts of business plan

A company is an organized human activity, which uses human and material means with the purpose of obtaining a benefit. If the main activity objective is to achieve economic benefits, and development responsibilities are acquired from them (vis-à-vis the state, citizens, consumers) we are talking about a company in the economic sense, [27].

The company is made up of a set of interrelated parts directly or indirectly achieving a purpose. This purpose is only to obtain outputs through a process of inputs transformations. Likewise, a feedback process is necessary for the company to adapt to the changes that have occurred [28].

Currently, it is not easy to undertake. There are many causes for this difficulty, including the lack of motivation and decision to create a business. Also, inadequate use of administrative tools, techniques for managing businesses, lack of knowledge of the advantages of association and scarce economic resources. All of which have important effects, such as unsuccessful business ideas due to need of trust and knowledge, ignorance of the competition and economic environment of the enterprises, inadequate use of the advantages of association for the enterprises development and the non-execution of a commercial activity [29].

Entrepreneurship can also be defined as the talent that a person has to generate a project or a business idea. It comes with great challenges, such as economic crisis, creation of a competitive advantage, good cash flow management and technological innovation.

For a business plan to be successful, it is necessary that the product or service offered by the company be accepted by the market to which it is directed. By doing so, it would produce an exchange relationship between what's offered and the product or service demanded. Buyers only acquire the products the company offers if they satisfy their needs, that is why the company monitors these activities, [30].

No business idea should be launched as a business project if an economic-financial plan has not been previously carried out to evaluate or validate whether the business, once started, will allow obtaining positive or beneficial results, indicating that it will be profitable for the promoters or shareholders who are going to invest their capital. That allows them to take their management towards positive financial and economic results, [31].

The business plan purpose is to determine the economic, technical, social and environmental viability of a project, taking into account the opportunities, threats, strengths and weaknesses of the company, as well as to analyze the environment in which it will take place, [32].

Zorita in [5] proposes a structure, but it must be taken into account that the models are generally adjusted according to the needs of the company, which would indicate that this structure is not always met.

- Introduction / presentation. Executive Summary,
- Description of the business,
- Market analysis,
- Analysis of the company,
- Analysis of the situation. Diagnosis,
- Strategic approach,
- Marketing and sales operational plan,
- Operations plan. Calendars and deadlines. Information systems,
- Corporate issues. Organization and human resources,
- Economic and financial study,
- Control systems. Dashboard and contingency plans,

• Conclusions.

Structuring a business plan includes all kinds of details that are required when starting a business, such as detailed planning of policies, strategies, prior research, action plans and financing [33].

There are different business plan structures designed by some authors, they all have points in common, but certainly when proposing a new design, we need to make adjustments in order to better access and understand the information.

3.2 Design of the business plan for social and solidarity economy businesses in Los Ríos province

The business plan structure will establish the key elements that will allow entrepreneurs to guide the course of their business in a comprehensive and simple way, allowing them to solve any problem that may occur in the future.

The proposed elements are:

1. Executive Summary

The most important aspects of the business plan are presented in the executive summary. This section should not be very long, it will have a maximum of two pages, and it should arouse the reader's interest. It is recommended to prepare this summary when the entire plan has been completed.

2. Company Description

It should briefly explain what are the functions of the company, what are the products or services it will offer. Here managers should express the purposes of the company and its contribution to the society. In addition, it is convenient to indicate the owner's information. It is important to specify the name of the company and its respective logo and slogan.

3. Strategic Plan

In this section managers must establish the company's goals and what are the strategies to achieve, therefore, it is essential to create the SWOT mission, vision, strategic objectives and analysis.

4. Marketing Plan

In this section, we must develop all the strategies to maximize sales, as well as to indicate how the product will be launched. For this reason, we need to ask ourselves: What is our potential demand? Who are our competitors? By what means advertising will be carried out? A pricing policy must also be set.

5. Administrative and Operations Plan

Operations plan must reflect the organizational structure the company will have. The positions and functions of each member must be included. In addition, managers must describe the production process that will be carried out and the equipment and supplies that the company will have.

6. Financial Plan

The financial plan must show all the financial projections essential to start the business: income budget, investment budget, purchasing budget, marketing and sales budget, administrative budget, financial expenses, income statement, cash flow and the financial evaluation.

To support with more detail social economy companies in Los Ríos province, 24 entrepreneurs from the province closely linked to this type of economy were surveyed. The survey was related to the above-mentioned point 3 about the creation of the SWOT matrix. As a result of the first approach to the subject, the following elements were determined for evaluation:

Strengths

S_1: There is a primacy of the people and the social purpose over the capital, which implies that people feel the company as a mean of personal growth rather than a way of life; therefore, they are motivated with the job.

S_2: It works through the equitable and social distribution of benefits; therefore, the members feel that there is justice in the distribution of profits, which strengthens trust among the members of the organization.

S_3: Solidarity is practiced, the community benefits because company invests in local social works, generating jobs among local workers, achieving social inclusion regardless of gender, race, ethnic origin, or any other discriminatory aspect.

S_4: There is independence of the company from the public powers, which guarantees that many times internal decisions do not depend on external factors.

Weaknesses

W_1: Company is sensitive of the good performance of its members, which is not always possible.

W_2: Usually there is no clarity about the legal status of some solidarity companies, which sometimes prevents making risky but profitable investments beyond the company.

W_3: Due to the size of the company, it may suffer from financial problems.

W_4: Its members may not have the educational level necessary to achieve company's development.

Opportunities

O_1: The members can lean on new information and communication technologies, which from a small budget give ostensible results, such as the use of telework, e-learning, among others.

O_2: They can take advantage of the weakness of traditional capitalist companies that cannot be inserted in

markets that include sectors traditionally excluded by society.

O_3: Different companies of this type can organize themselves into bigger associations that allow them to compete with big companies, where in the inside none of them constitutes a threat for the others.

Threats

T_1: This type of economy can be perceived as a threat by traditional companies, therefore it can suffer external aggression.

T_2: It may be sensitive to the economic crises that affect the country.

As a result of this analysis, we propose four strategies that can serve to any social economy company of the province. These can be expanded or decreased depending on the characteristics of the company. Below we detail them:

St_1: To propose and formalize an association of companies with social economy in Los Ríos province with the intention of generalizing it to the entire country.

St_2: To stimulate the implementation of distance work, the exchange of experiences through courses, seminars and scientific events.

St_3: To hire external or internal specialists who determine the legal and financial status of each social company in Los Ríos province, the experiences will be transmitted transparently between the different companies.

St_4: To determine and study alternatives to respond to situations of emerging threats for the company existence. Some of them may consist of finding alternative financial sources like external donations or the commercialization of by-products that allow additional profits for the company.

The evaluation of these strategies contains indeterminacies specific to decision-making and planning, since usually there is no complete certainty about the evaluations given by the experts. That is why the use of Neutrosophy is justified. Moreover, assessments are given in linguistic terms, thus, it is more comprehensible for users and decision makers than to use numeric terms.

24 entrepreneurs of the regional "Young Impulse" project were asked to evaluate the above four strategies applying the AHP-SWOT technique, the question is how they evaluate each strategy for starting a social economy business. This means that with the pass of the time, another strategy may be the more appropriate; therefore, it is convenient to apply this technique at different moments in the company's existence, especially during a crisis.

Table 3 contains the matrix of ratios among the four factors according to the median of entrepreneurs' criteria.

Factors	Strengths	Weaknesses	Opportunities	Threats
Strengths	$\tilde{\mathbf{1}}$	$\tilde{2}$	$\tilde{5}$	$\tilde{5}$
Weaknesses	$\mathbf{1/\tilde{2}}$	$\tilde{1}$	$\tilde{5}$	$\tilde{5}$
Opportunities	$\mathbf{1/\tilde{5}}$	$1/\tilde{5}$	$\tilde{1}$	$\tilde{1}$
Threats	$\mathbf{1/\tilde{5}}$	$1/\tilde{5}$	$\tilde{1}$	$\tilde{1}$

Table 3: Matrix of ratios of Strengths, Weaknesses, Opportunities and Threats according to the median entrepreneurs' criteria.

In Table 4, we summarize the crisp values obtained by applying Equation 6 to the elements in Table 3.

Factors	Strengths	Weaknesses	Opportunities	Threats
Strengths	1	1.7625	5.3438	5.3438
Weaknesses	0.56738	1	5.3438	5.3438
Opportunities	0.18713	0.18713	1	1
Threats	0.18713	0.18713	1	1

Table 4: Crisp matrix of ratios of Strengths, Weaknesses, Opportunities and Threats.

The weights vector of Strengths, Weaknesses, Opportunities and Threats is

$$W_F = \begin{bmatrix} 0.479820 \\ 0.363346 \\ 0.078417 \\ 0.078417 \end{bmatrix}$$ and CR = 1.5131%<10%.

Tables 5-8 show the crisp matrices of ratios among the Strengths, Weaknesses, Opportunities and Threats, respectively.

Strength	S_1	S_2	S_3	S_4
S_1	1	1	1	0.39506
S_2	1	1	1	0.39506
S_3	1	1	1	0.39506
S_4	2.5312	2.5312	2.5312	1

Table 5: Crisp matrix of ratios of Strengths.

$W_S = \begin{bmatrix} 0.18079 \\ 0.18079 \\ 0.18079 \\ 0.45762 \end{bmatrix}$ and CR = 0%<10%.

Weakness	W_1	W_2	W_3	W_4
W_1	1	0.18713	1	0.18713
W_2	5.3438	1	5.3438	1
W_3	1	0.18713	1	0.18713
W_4	5.3438	1	5.3438	1

Table 6: Crisp matrix of ratios of Weaknesses.

$W_W = \begin{bmatrix} 0.078817 \\ 0.421183 \\ 0.078817 \\ 0.421183 \end{bmatrix}$ and CR = 0%<10%.

Opportunities	O_1	O_2	O_3
O_1	1	0.56738	1
O_2	1.7625	1	1.7625
O_3	1	0.56738	1

Table 7: Crisp matrix of ratios of Opportunities.

$W_O = \begin{bmatrix} 0.26578 \\ 0.46844 \\ 0.26578 \end{bmatrix}$ and CR = 0%<10%.

Threats	T_1	T_2
T_1	1	1
T_2	1	1

Table 8: Crisp matrix of ratios of Threats.

$W_T = \begin{bmatrix} 0.5 \\ 0.5 \end{bmatrix}$ and CR = 0%<10%.

Finally, Table 9 contains the calculation of the weights of the strategies and their ranks.

Factors/Sub-Factors	Weight	Strategies			
		St_1	St_2	St_3	St_4
Strengths	0.479820				
S_1	0.18079	0.4	0.2	0.2	0.2
S_2	0.18079	0.33333	0.33333	0.16667	0.16667
S_3	0.18079	0.28571	0.28571	0.14286	0.28571
S_4	0.45762	0.083333	0.083333	0.416667	0.416667
Weaknesses	0.363346				
W_1	0.078817	0.33333	0.33333	0.16667	0.16667
W_2	0.421183	0.11111	0.11111	0.55556	0.22222
W_3	0.078817	0.11111	0.11111	0.22222	0.55556
W_4	0.421183	0.12500	0.62500	0.12500	0.12500
Opportunities	0.078417				
O_1	0.26578	0.14286	0.57143	0.14286	0.14286
O_2	0.46844	0.28571	0.14286	0.28571	0.28571
O_3	0.26578	0.37500	0.37500	0.12500	0.12500
Threats	0.078417				
T_1	0.5	0.214286	0.071429	0.357143	0.357143
T_2	0.5	0.1	0.1	0.3	0.5
Total		0.18917	0.24642	0.29282	0.27159
Rank of Strategies		4	3	1	2

Table 9: Ranking and weights calculations for the strategies with respect to SWOT factors and sub-factors.

According to the results in Table 9, the ranking of strategies is:
$\mathrm{St}_3 \succ \mathrm{St}_4 \succ \mathrm{St}_2 \succ \mathrm{St}_1$.

Therefore, the best strategy to apply before to starting a business is "to hire external or internal specialists who determine the legal and financial status of each social company in Los Ríos province, the experiences will be transmitted transparently between the different companies".

Conclusion

This paper summarizes the investigation on the design of a business plan for entrepreneurs, actors and organizations of social and solidarity economy in Los Ríos province, Ecuador, especially with respect to the project "Young Impulse". For this purpose, we used the criteria of 24 experimented entrepreneurs, which established the guide that every entrepreneur has to follow to formalize and design his/her business for social and solidarity companies. Among the useful tools for planning and decision-making, we selected the neutrosophic AHP-SWOT technique. This technique is simple to use, rigorous and accurate, since it includes the indeterminacy, which is typical of every decision-making. Finally, we applied this technique to determine the best strategy to follow to start a business. According to the 24 entrepreneurs' opinions, the selected one is "to hire external or internal specialists who determine the legal and financial status of each social company in Los Ríos province, the experiences will be transmitted transparently between the different companies"

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Received: April 02, 2020. Accepted: August 05, 2020