



Model of Tax Culture Impact on the Financial Sustainability of Small and Medium Enterprises in Ecuador Based on Neutrosophic HyperSoft Sets

Valderrama Barragán Gloria Angelica ¹, Valderrama Barragán Edwin Favio ², Viteri Miranda Víctor Manuel ³, Castro Valderrama Dessire Amandiz ⁴, and Palacios Anzules Italo del Carmen ⁵

¹ Milagro State University, Milagro, Ecuador. E-mail: gvalderramab@unemi.edu.ec

² Milagro State University, Milagro, Ecuador. E-mail: evalderramab@unemi.edu.ec

³ Milagro State University, Milagro, Ecuador. E-mail: vviterim@unemi.edu.ec

⁴ Milagro State University, Milagro, Ecuador. E-mail: dvalderrama@unemi.edu.ec

⁵ Milagro State University, Milagro, Ecuador. E-mail: ipalacios2@unemi.edu.ec

Abstract. The tax culture of a country consists of several factors to take into account. Tax evasion is a widespread problem in the world today. Ecuadorian Small and Medium Enterprises (SMEs) as a whole have a great impact on the country's economy and have a weight to consider. This is why it is important to measure the tax behavior of Ecuadorian SMEs. This paper aims to propose a neutrosophic model to measure the tax culture of SMEs in Ecuador. To do this, we base on a model designed from the Neutrosophic theory and HyperSoft Sets. Hypersoft Sets extend Soft Sets from a single parameter to multiple parameters. On the other hand, when it is hybridized with the Single-Valued Neutrosophic Sets theory allows the inclusion of indeterminacy in this model. The article illustrates the model with an example.

Keywords: Tax Culture, Financial Sustainability, Small and Medium Enterprises (SMEs), Single-Valued Neutrosophic Set, Hypersoft Set, Neutrosophic Hypersoft Set, Decision-Making.

1 Introduction

The study of the impact of tax culture on the financial sustainability of small and medium-sized companies in Ecuador is crucial for several reasons. Firstly, SMEs represent a significant part of the Ecuadorian economy and their financial stability is essential for economic growth and job creation. In addition, the tax culture influences the investment decisions, competitiveness, and compliance capacity of these companies. Understanding how tax culture affects SMEs will identify barriers and opportunities to improve their economic performance, and promote a more sustainable and prosperous business environment in Ecuador.

Defining tax culture implies having several definitions. It refers to the attitudes, beliefs, and social norms of a population regarding the payment of taxes. It includes the perception of the fairness of the tax system, trust in tax authorities and the willingness to voluntarily comply with tax obligations. A strong tax culture can promote voluntary tax compliance, while a weak culture can lead to high levels of tax evasion.

Tax culture can also be understood as the set of values, norms and attitudes shared by the members of a society with respect to taxes and their role in public life. This includes the perception of taxes as a fair and necessary contribution to social well-being, as well as confidence in the government's ability to use fiscal resources efficiently and equitably.

To evaluate the tax culture of medium and small companies in Ecuador, it is necessary to take into account a group of indicators. By evaluating these dimensions, we can obtain a complete vision of the level of tax culture in Ecuadorian SMEs and its impact on their financial sustainability. This can serve as a basis for identifying areas of improvement and designing strategies to strengthen the tax culture and optimize the financial situation of SMEs in Ecuador.

On the other hand, there are diverse and dissimilar components within this single concept. In addition, to measure the behavior of the tax culture, the legal, and psychological part of the taxpayers, social, economic, and financial, among many others, must be taken into account. The combination of all these factors makes the study of this concept complex. From the epistemological point of view, its study must encompass the components of uncertainty and indeterminacy that characterize it.

The purpose of this article is to design a model to measure how tax culture impacts the financial sustainability of Ecuadorian SMEs. To achieve this, we apply Neutrosophic Hypersoft sets [1-4]. Neutrosophic Sets were first

defined by Professor F. Smarandache to generalize the theories of Fuzzy Sets, Intuitionistic Fuzzy Sets, Interval-Valued Fuzzy Sets, among other similar theories of uncertainty [5]. Smarandache's contribution is in the explicit incorporation of a membership function of indeterminacy that does not necessarily have a restrictive condition with respect to the membership and non-membership functions. The types of Neutrosophic Sets that have practical importance are the Single-Valued Neutrosophic Sets and Interval-Valued Neutrosophic Sets.

On the other hand, Professor Molodtsov defined Soft Sets that generalize fuzzy sets, where a soft set is a parameterized family of subsets of an initial set [6, 7]. This theory has applications in both pure mathematics such as topology and applied mathematics such as decision-making. There were already hybrid theories where soft sets were combined with fuzzy sets, among others [8-13].

Smarandache also defined Hypersoft Sets that extend the approximation function from a single attribute to multiple attributes [14-16]. The Neutrosophic Hypersoft Sets assign to each element of the Hypersoft Set a set of neutrosophic truth values to each element for each attribute [1-4, 7]. This is the tool we selected to model this problem.

The paper consists of the following structure, a Preliminaries section where the basic foundations of Neutrosophic theory and Hypersoft Sets are summarized. The next section contains the details of the proposed model and an illustrative example. The paper ends with the conclusions.

2 Preliminaries

This section contains the fundamental definitions of Neutrosophic Hypersoft Sets.

Definition 1: ([5, 18]) Let X be a universe of discourse. A *Neutrosophic Set* (NS) is characterized by three membership functions, $u_A(x), r_A(x), v_A(x): X \rightarrow]^{-}0, 1^{+}[$, which satisfy the condition $^{-}0 \leq \inf u_A(x) + \inf r_A(x) + \inf v_A(x) \leq \sup u_A(x) + \sup r_A(x) + \sup v_A(x) \leq 3^{+}$ for all $x \in X$. $u_A(x), r_A(x)$ and $v_A(x)$ are the membership functions of truthfulness, indeterminacy and falseness of x in A , respectively, and their images are standard or non-standard subsets of $]^{-}0, 1^{+}[$.

Definition 2: ([5, 18]) Let X be a universe of discourse. A *Single-Valued Neutrosophic Set* (SVNS) A on X is a set of the form:

$$A = \{ \langle x, u_A(x), r_A(x), v_A(x) \rangle : x \in X \} \quad (1)$$

Where $u_A, r_A, v_A: X \rightarrow [0, 1]$, satisfy the condition $0 \leq u_A(x) + r_A(x) + v_A(x) \leq 3$ for all $x \in X$. $u_A(x), r_A(x)$ and $v_A(x)$ denote the membership functions of truthfulness, indeterminate, and falseness of x in A , respectively. For convenience, a *Single-Valued Neutrosophic Number* (SVNN) will be expressed as $A = (a, b, c)$, where $a, b, c \in [0, 1]$ and satisfy $0 \leq a + b + c \leq 3$.

Definition 3: ([18]) Given U is the initial universe set and E is the set of parameters. A pair (F, E) is called a *soft set* (over U) if and only if F is a mapping of E into the set of all subsets of U .

That is to say, having a set E of parameters and fixing a parameter $\varepsilon \in E$, then $F(\varepsilon) \in \mathcal{P}(U)$, where $\mathcal{P}(U)$ denotes the power set of U and $F(\varepsilon)$ is considered the set of ε -elements of the Soft Set (F, E) or the set of ε -approximate elements of the Soft Set.

It is not difficult to realize that fuzzy sets are soft sets, this is a consequence of the α -levels definition of a membership function μ_A where we have the following:

$F(\alpha) = \{x \in U \mid \mu_A(x) \geq \alpha\}, \alpha \in [0, 1]$. Thus, if we know the family F , then we can reconstruct the function μ_A by using the following formula:

$$\begin{aligned} \mu_A(x) &= \sup \alpha \\ \alpha &\in [0, 1] \\ x &\in F(\alpha) \end{aligned}$$

Thus, a fuzzy set is a $(F, [0, 1])$ soft set.

Given a binary operation $*$ for subsets of the set U , where (F, A) and (G, B) are soft sets over U . Then, the operation $*$ for soft sets is defined as follows:

$(F, A) * (G, B) = (J, A \times B)$, where $J(\alpha, \beta) = F(\alpha) * G(\beta); \alpha \in A, \beta \in B$, and $A \times B$ is the Cartesian product of the sets A and B .

Definition 4: ([18]) Given U the initial universe set and $\mathcal{P}(U)$ is the power set of U , and for $n \geq 1$ there are n distinct attributes $a_1, a_2, \dots, a_n$ whose corresponding attribute values are respectively the sets $A_1, A_2, \dots, A_n$, with $A_i \cap A_j = \emptyset$, for $i \neq j$, and $i, j \in \{1, 2, \dots, n\}$. Then the pair $(F, A_1 \times A_2 \times \dots \times A_n)$ where $F: A_1 \times A_2 \times \dots \times A_n \rightarrow \mathcal{P}(U)$ is called a *Hypersoft Set* over U .

Definition 5: ([18]) Given X is the initial universe set and $\mathcal{P}(X)$ is the power set of X , and for $n \geq 1$ there are n distinct attributes $a_1, a_2, \dots, a_n$ whose corresponding attribute values are respectively the sets $A_1, A_2, \dots, A_n$, with $A_i \cap A_j = \emptyset$, for $i \neq j$, and $i, j \in \{1, 2, \dots, n\}$. Then, the pair (ψ, Λ) is a *Neutrosophic HyperSoft Set* (NHSS) over X if there exists a relation $A_1 \times A_2 \times \dots \times A_n = \Lambda$. ψ is a mapping from $A_1 \times A_2 \times \dots \times A_n$ to $\mathcal{P}(X)$ and $\psi_\Lambda(A_1 \times A_2 \times \dots \times A_n) = \{\langle x, u_\Lambda(x), r_\Lambda(x), v_\Lambda(x) \rangle : x \in X\}$, where $u_\Lambda, r_\Lambda, v_\Lambda : X \rightarrow [0, 1]$, satisfy the condition $0 \leq u_\Lambda(x) + r_\Lambda(x) + v_\Lambda(x) \leq 3$ for all $x \in X$. $u_\Lambda(x)$, $r_\Lambda(x)$, and $v_\Lambda(x)$ denote the membership functions of truthfulness, indeterminacy, and falseness of x in Λ , respectively.

Definition 6: ([18]) Given two Neutrosophic Hypersoft sets ψ_{Λ_1} and ψ_{Λ_2} over U , ψ_{Λ_1} is called a *Neutrosophic Hypersoft Subset* of ψ_{Λ_2} if $T(\psi_{\Lambda_1}) \leq T(\psi_{\Lambda_2})$, $I(\psi_{\Lambda_1}) \geq I(\psi_{\Lambda_2})$ and $F(\psi_{\Lambda_1}) \geq F(\psi_{\Lambda_2})$.

Definition 7: ([18]) Given two Neutrosophic Hypersoft sets ψ_{Λ_1} and ψ_{Λ_2} over U , ψ_{Λ_1} and ψ_{Λ_2} are *equal* if and only if $T(\psi_{\Lambda_1}) = T(\psi_{\Lambda_2})$, $I(\psi_{\Lambda_1}) = I(\psi_{\Lambda_2})$, and $F(\psi_{\Lambda_1}) = F(\psi_{\Lambda_2})$.

Definition 8: ([18]) Given a Neutrosophic Hypersoft set ψ_Λ , its *complement* $(\psi_\Lambda)^c$ is defined by $(\psi_\Lambda)^c = \{u, T((\psi_\Lambda)^c) = F(\psi_\Lambda), I((\psi_\Lambda)^c) = I(\psi_\Lambda), F((\psi_\Lambda)^c) = T(\psi_\Lambda) : u \in U\}$.

Definition 9: ([18]) Given two Neutrosophic Hypersoft sets ψ_{Λ_1} and ψ_{Λ_2} over the common universe U . The *union* of them which is denoted by $\psi_{\Lambda_1} \cup \psi_{\Lambda_2}$ is the Neutrosophic Hypersoft Set defined as follows:

$$\begin{aligned} T(\psi_{\Lambda_1} \cup \psi_{\Lambda_2}) &= \begin{cases} T(\psi_{\Lambda_1}) & \text{if } u \in \Lambda_1 \setminus \Lambda_2, \\ T(\psi_{\Lambda_2}) & \text{if } u \in \Lambda_2 \setminus \Lambda_1, \\ \max(\psi_{\Lambda_1}, \psi_{\Lambda_2}) & \text{if } u \in \Lambda_1 \cap \Lambda_2, \end{cases} \\ I(\psi_{\Lambda_1} \cup \psi_{\Lambda_2}) &= \begin{cases} I(\psi_{\Lambda_1}) & \text{if } u \in \Lambda_1 \setminus \Lambda_2, \\ I(\psi_{\Lambda_2}) & \text{if } u \in \Lambda_2 \setminus \Lambda_1, \\ \min(\psi_{\Lambda_1}, \psi_{\Lambda_2}) & \text{if } u \in \Lambda_1 \cap \Lambda_2, \end{cases} \\ F(\psi_{\Lambda_1} \cup \psi_{\Lambda_2}) &= \begin{cases} F(\psi_{\Lambda_1}) & \text{if } u \in \Lambda_1 \setminus \Lambda_2, \\ F(\psi_{\Lambda_2}) & \text{if } u \in \Lambda_2 \setminus \Lambda_1, \\ \min(\psi_{\Lambda_1}, \psi_{\Lambda_2}) & \text{if } u \in \Lambda_1 \cap \Lambda_2, \end{cases} \end{aligned}$$

Definition 10: ([18]) Given two Neutrosophic Hypersoft sets ψ_{Λ_1} and ψ_{Λ_2} over the common universe U . The *intersection* of them which is denoted by $\psi_{\Lambda_1} \cap \psi_{\Lambda_2}$ is the Neutrosophic Hypersoft Set defined as follows:

$$\begin{aligned} T(\psi_{\Lambda_1} \cap \psi_{\Lambda_2}) &= \begin{cases} T(\psi_{\Lambda_1}) & \text{if } u \in \Lambda_1 \setminus \Lambda_2, \\ T(\psi_{\Lambda_2}) & \text{if } u \in \Lambda_2 \setminus \Lambda_1, \\ \min(\psi_{\Lambda_1}, \psi_{\Lambda_2}) & \text{if } u \in \Lambda_1 \cap \Lambda_2, \end{cases} \\ I(\psi_{\Lambda_1} \cap \psi_{\Lambda_2}) &= \begin{cases} I(\psi_{\Lambda_1}) & \text{if } u \in \Lambda_1 \setminus \Lambda_2, \\ I(\psi_{\Lambda_2}) & \text{if } u \in \Lambda_2 \setminus \Lambda_1, \\ \max(\psi_{\Lambda_1}, \psi_{\Lambda_2}) & \text{if } u \in \Lambda_1 \cap \Lambda_2, \end{cases} \\ F(\psi_{\Lambda_1} \cap \psi_{\Lambda_2}) &= \begin{cases} F(\psi_{\Lambda_1}) & \text{if } u \in \Lambda_1 \setminus \Lambda_2, \\ F(\psi_{\Lambda_2}) & \text{if } u \in \Lambda_2 \setminus \Lambda_1, \\ \max(\psi_{\Lambda_1}, \psi_{\Lambda_2}) & \text{if } u \in \Lambda_1 \cap \Lambda_2, \end{cases} \end{aligned}$$

Definition 11: ([18]) Given two Neutrosophic Hypersoft sets ψ_{Λ_1} and ψ_{Λ_2} over the common universe U . The *AND-Operation* between them $\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}$ is the Neutrosophic Hypersoft Set defined as follows:

$$\begin{aligned} T(\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}) &= \min(T(\psi_{\Lambda_1}), T(\psi_{\Lambda_2})), \\ I(\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}) &= \max(I(\psi_{\Lambda_1}), I(\psi_{\Lambda_2})), \\ F(\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}) &= \max(F(\psi_{\Lambda_1}), F(\psi_{\Lambda_2})). \end{aligned}$$

Definition 12: ([18, 19]) Given two Neutrosophic Hypersoft sets ψ_{Λ_1} and ψ_{Λ_2} over the common universe U . The *OR-Operation* between them $\psi_{\Lambda_1} \vee \psi_{\Lambda_2}$ is the Neutrosophic Hypersoft Set defined as follows:

$$T(\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}) = \max(T(\psi_{\Lambda_1}), T(\psi_{\Lambda_2})),$$

$$I(\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}) = \min(I(\psi_{\Lambda_1}), I(\psi_{\Lambda_2})),$$

$$F(\psi_{\Lambda_1} \wedge \psi_{\Lambda_2}) = \min(F(\psi_{\Lambda_1}), F(\psi_{\Lambda_2})).$$

3 The proposed model

In this section, we present the details of the proposed model. We must have a set of experts denoted by $E = \{e_1, e_2, \dots, e_n\}$, where $n \geq 1$.

The points to measure the tax culture of an SME that are important for economic sustainability are the following:

1- Tax Knowledge:

- Understanding of tax laws and regulations applicable to SMEs in Ecuador.
- Knowledge of different taxes (VAT, income tax, municipal taxes, etc.) and their corresponding tax obligations.
- Familiarity with procedures for compliance with tax obligations, such as filing and paying taxes.

2- Tax Compliance:

- Degree of compliance with tax obligations by SMEs, including timely filing of returns and payment of taxes.
- Non-existence of tax evasion or avoidance practices within SMEs.
- Use of tax incentives or tax benefits available to SMEs and their impact on tax compliance.

3- Attitudes and Perceptions towards Taxes:

- SME owners, managers, and employees towards the tax system.
- Perceptions about the equity of the tax system and distributive justice.
- Level of trust in tax authorities and their ability to effectively manage fiscal resources.

4- Tax management:

- Existence of departments or personnel dedicated to tax management within SMEs.
- Use of software or technological tools to facilitate tax management and compliance with tax obligations.
- Strategies used to legally and ethically minimize the tax burden, such as tax planning and tax credit optimization.

5- Economic and Financial Impact:

- Costs associated with compliance with tax obligations and their impact on the profitability and liquidity of SMEs.
- Effects of changes in tax policy on the financial viability of SMEs.
- Relationship between the tax burden and the capacity for investment, growth, and employment generation in SMEs.

Note that each dimension to be measured was listed using Arabic numerals and each of them has certain important points that constitute it, and for this we use letters. In summary, we have five dimensions, each of them made up of three aspects to measure.

Let us denote the dimensions with the set $D = \{d_1, d_2, d_3, d_4, d_5\}$, each of the subcriteria to be measured by the i^{th} dimension is denoted by d_{ia}, d_{ib}, d_{ic} .

There is a measurement scale with linguistic values that is recommended to experts to be used in decision-making. See Table 1.

Table 1: Scale of linguistic terms associated with neutrosophic values.

Linguistic expressions(T, I, F)	
Very Bad (VB)	(0.10, 0.75, 0.85)
Bad (B)	(0.25, 0.60, 0.80)
Medium Bad (MB)	(0.40, 0.70, 0.50)
Medium (M)	(0.50, 0.40, 0.60)

Linguistic expressions(T, I, F)

Medium Good (MG)	(0.65, 0.30, 0.45)
Good	(0.80, 0.10, 0.30)
Very Good (VG)	(0.95, 0.05, 0.05)

The steps to follow for the evaluation are given below:

Steps to follow to evaluate the tax culture of an SME 1. Input: $E = \{e_1, e_2, \dots, e_n\}$ is the set of experts, where $n \geq 1$. $D = \{d_1, d_2, d_3, d_4, d_5\}$: Dimensions to measure, d_{ia}, d_{ib}, d_{ic}: Each of the three aspects to measure the i^{th} dimension. The dimensions constitute the parameters to measure, where the elements of the set are $d_{ia} \times d_{ib} \times d_{ic}$ which means all the conditions of the i^{th} dimension are met, or the element $\sim(d_{ia} \times d_{ib} \times d_{ic})$ which means at least one of these conditions is not met. Given an SME, or a group of SMEs in a city, region, etc. in Ecuador, which we wish to study regarding their tax culture. This set is denoted by $U = \{P_1, P_2, \dots, P_m\}$, $m \geq 1$. Each expert in E evaluates each of the subcriteria to be measured for each of the SMEs. a_{ikjl} is the evaluation according to the scale shown in Table 1, by the j^{th} expert concerning the sub-criterion i_k of the i^{th} dimension for the l^{th} SME. $j \in \{1, 2, \dots, n\}$, $i \in \{1, 2, \dots, 5\}$, $k \in \{a, b, c\}$ and $l \in \{1, 2, \dots, m\}$. 2. Given i, k, and l fixed, we have a single triple of numerical values $\bar{a}_{ikl}$ that is the median of the values a_{ikjl} for all experts. These values will be taken as the evaluation to be processed. 3. It is established to include in the image ψ_A those values greater than or equal to M in Table 1. 4. Now fixing the i^{th} dimension, two-parameter options are obtained: "Satisfied" and "Not Satisfied" for each dimension. When $\min(\bar{a}_{ia}, \bar{a}_{ib}, \bar{a}_{ic}) \geq M$ then the dimension is "Satisfied" with a Single-Valued Neutrosophic Number equals to the minimum of the neutrosophic valuations of the three values. Otherwise, that is, when $\min(\bar{a}_{ia}, \bar{a}_{ib}, \bar{a}_{ic}) < M$, then the dimension is considered to be "Not Satisfied" with a Single-Valued Neutrosophic Number equals to the minimum of the neutrosophic valuations of the three values. 5. Thus, there is a Cartesian set made up of five sets $\Lambda: D_1 \times D_2 \times D_3 \times D_4 \times D_5$ to measure the tax culture of SMEs. There is also the function: $\psi_A: D_1 \times D_2 \times D_3 \times D_4 \times D_5 \rightarrow \mathcal{P}(U) .$ 6. With these results, queries can be made using an AND-Operation (Definition 11) or an OR- Operation (Definition 12).

Let us illustrate this model using an example.

Example 1. Suppose that three experts evaluate three Ecuadorian SMEs according to the 15 elements that constitute the subcriteria using the scale that appears in Table 1.

Tables 2-4 collect these results:

Table 2: Evaluation by Expert 1 on the 15 sub-criteria for the three SMEs.

Subcriterion /SME	P ₁	P ₂	P ₃
d _{1a}	M	MB	MB
d _{1b}	G	M	MB
d _{1c}	M	M.B	M
d _{2a}	MG	B	MB
d _{2b}	MG	B	B
d _{2c}	MG	MG	M
d _{3a}	M	B	MB

Subcriterion /SME	P ₁	P ₂	P ₃
d _{3b}	M	MG	VB
d _{3c}	M	M	VB
d _{4a}	MG	MG	MB
d _{4b}	G	M	VB
d _{4c}	G	M	VB
d _{5a}	M	B	MB
d _{5b}	MG	MB	B
d _{5c}	MG	MB	B

Table 3: Evaluation by Expert 2 on the 15 sub-criteria for the three SMEs.

Subcriterion /SME	P ₁	P ₂	P ₃
d _{1a}	VG.	MG	MB.
d _{1b}	M	MB	M
d _{1c}	MG	MG	VB
d _{2a}	M	MG	M
d _{2b}	MG	B	VB
d _{2c}	M	MB	VB
d _{3a}	M	B	M
d _{3b}	VG.	M	MB
d _{3c}	G	MB	B
d _{4a}	MG	M	M
d _{4b}	VG.	B	VB
d _{4c}	G	MB	MB
d _{5a}	VG.	B	M
d _{5b}	M	MG	B
d _{5c}	M	B	M

Table 4: Evaluation by Expert 3 on the 15 sub-criteria for the three SMEs.

Subcriterion /SME	P ₁	P ₂	P ₃
d _{1a}	VG	MG	B
d _{1b}	VG	MB	MB
d _{1c}	G	MB	M
d _{2a}	VG.	B	VB
d _{2b}	MG	B	M
d _{2c}	MG	M	MB
d _{3a}	VG	M	B
d _{3b}	M	MB	MB
d _{3c}	G	M	VB
d _{4a}	VG	B	VB
d _{4b}	VG	MB	B
d _{4c}	VG	B	M
d _{5a}	VG	MB	B
d _{5b}	VG	MB	M
d _{5c}	MG	B	B

The results of calculating the medians for the evaluations of all the experts from Tables 2-4 are shown in Table 5.

Table 5: Aggregated evaluation of all experts on the 15 sub-criteria for the three SMEs.

Subcriterion /SME	P ₁	P ₂	P ₃
d _{1a}	VG.	MG	MB
d _{1b}	G	MB.	MB
d _{1c}	MG	MB	M

Subcriterion /SME	P ₁	P ₂	P ₃
d _{2a}	MG	B	MB
d _{2b}	MG	B	B
d _{2c}	MG	M	MB
d _{3a}	M	B	MB
d _{3b}	M	M	MB
d _{3c}	G	M	VB
d _{4a}	MG	M	MB
d _{4b}	VG	MB	VB
d _{4c}	G	MB	MB
d _{5a}	VG	B	MB
d _{5b}	MG	MB	B
d _{5c}	MG	B	B

With the data in Table 5, it can be reduced to the "Satisfied" or "Not Satisfied" members of each dimension as shown in Table 6.

Table 6: Evaluation of each dimension for the three SMEs according to the parameters "Satisfied" and "Not Satisfied".

Dimension/Parameters	Satisfied	Not Satisfied
D ₁	P ₁ (MG)	P ₂ (MB), P ₃ (MB)
D ₂	P ₁ (MG)	P ₂ (B), P ₃ (B)
D ₃	P ₁ (M)	P ₂ (B), P ₃ (VB)
D ₄	P ₁ (MG)	P ₂ (MB), P ₃ (VB)
D ₅	P ₁ (MG)	P ₂ (B), P ₃ (B)

Therefore, from Table 6, if we want to consult the status of SMEs then:

$$\psi_A(\text{Satisfied}, \text{Satisfied}, \text{Satisfied}, \text{Satisfied}, \text{Satisfied}) = \{P_1, ((0.65, 0.30, 0.45), (0.65, 0.30, 0.45), (0.50, 0.40, 0.60)), (0.65, 0.30, 0.45), (0.65, 0.30, 0.45)\}.$$

That is, the SME denoted by P₁ is the only one that satisfies all the conditions imposed to be considered as complying with the tax culture. Note the degrees of truthfulness, indeterminacy, and falseness indicated by each dimension.

4 Conclusion

Ecuadorian SMEs have an important economic and social weight for the proper economic functioning of this Andean country. This is why a good tax culture guarantees the economic sustainability of the country, the community, and therefore the SME itself. This article proposes a neutrosophic model to measure the correct tax functioning of SMEs. For this, we use the theory of Neutrosophic Hypersoft Sets. The advantages of this model are the ease with which it can be automated, it is capable of dealing with uncertainty and indeterminacy, in addition to the fact that experts base their evaluation on an easily understandable linguistic scale. We illustrate the use of the model with an example that shows all the advantages that we have highlighted.

5 References

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Received: February 20, 2024. **Accepted:** June 11, 2024