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# Method for Evaluating the Principle of Interculturality in the Custodial Sentence using the Iadov Technique

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**Abstract:** The principle of interculturality represents a condition for respecting the rights of others. Assessing the state of interculturality makes it possible to especially ensure the rights of indigenous communities. However, in Ecuador the existing legal norms do not guarantee the intercultural protection of citizens in custodial sentence. This research proposes a solution to the posed problem by developing a method for evaluating the principle of interculturality in the application of a custodial sentence. The method bases its operation on using the Iadov technique. Uncertainty is modeled with the use of neutrosophic numbers. The method was applied to representative people of the indigenous communities of the Pastaza province. As a result, we obtained an assessment of the main indigenous actors in the communities on the intervention of ordinary justice in death cases.

**Keywords:** Neutrosophy; intercultural principle; Iadov technique; custodial sentence.

## 1. Introduction

Interculturality raises a peaceful coexistence and the will for effective integration. Intercultural dialogue as a condition of equity that enables harmonious coexistence, mutual solidarity, the reconciliation of differences, integration between individuals and peoples and the awareness that the diversity of ways of life is the source of the cultural wealth of a country and the principle of internal cohesion of a nation [1-3].

Indigenous peoples have their own culture and Customary Law that defends cultural diversity and the principles of equality and non-discrimination [4, 5]. Article 24 of the Organic Code of the Judicial Function, talks about the principle of interculturality, which requires judges to consider elements of cultural diversity related to the customs, practices, norms and procedures of the people, groups or collectivities that are under their knowledge [6].

The Constitution of the Republic of Ecuador of 2008, in its article 171, states that: “The authorities of indigenous communities, peoples and nationalities shall exercise jurisdictional functions, based on their ancestral traditions and their own law, within their territorial scope, with the guarantee of participation and decision of women". The authorities will apply their own rules and procedures for the solution of their internal conflicts that are not contrary to the Constitution and human rights recognized in international instruments. The State will guarantee that the decisions of the indigenous jurisdiction are respected by public institutions and authorities [7].

In the province of Pastaza (Fig 1), we may find seven different nationalities. The Kichwas represent the group with the largest presence in this area. On November 28, 2013, the “Tagaeri-Taromenani” case occurred in which six Waorani indigenous nationals are allegedly guilty of a spear attack, committed against some 20 members of the Tagaeri-Taromenani clans, a tribe that is considered an uncontacted people in the Ecuadorian Amazon. Waorani organizations have called for the alleged criminals to be tried within the community under indigenous laws. However, the Ecuadorian State, through the competent jurisdictional bodies, has resolved that it must be judged through ordinary justice.


**Figure 1.** Pastaza Province

Based on the situation described above, this research aims to develop a method for evaluating the principle of interculturality in the custodial sentence.

## 2. Preliminaries

This section introduces the main theoretical references on the object of study and the different concepts that facilitate the understanding of the investigation. It begins with the references of the principle of interculturality. A description of the deprivation of liberty within the framework of interculturality is also covered.

### 2.1. Principle of interculturality

Interculturality implies a process of communication between people and groups with different identities, dialogue with others on an equal footing, a relationship of respect for diversity and a desire for mutual enrichment with the exchange of knowledge and experiences. Interculturality supports a humanism of reunion and peaceful coexistence; the will for effective integration.

Intercultural dialogue starts from the circumstance that neither group is above the other, condition of equity that enables harmonious coexistence, mutual solidarity, the reconciliation of differences, integration between individuals and peoples and the awareness that the diversity of ways of life is the source of the cultural wealth of a country and the principle of internal cohesion of a nation [8, 9].

Interculturality implies understanding that the dignity of indigenous people and peoples is contained in the set of fundamental rights and freedoms that Positive Law determines, but also, in their own culture and their Customary Law. For the respect and defense of cultural diversity, it is essential to take into account the principles of equality and non-discrimination.

## 3. Design of the method for the assessment of interculturality in custodial sentences

Obtaining information about a certain phenomenon can be complex. The method for assessing the custodial sentence represents a group decision-making problem [10, 11]. It is based on using methods and techniques to support decision making [12, 13]. The Iadov technique is used as an alternative in the method inference process.

Using the Iadov technique, an indirect route is established for the study of satisfaction. The criteria used are based on the relationships established between the three closed questions, which are inserted within a questionnaire and whose relationship the respondent does not know [14-16]. The technique is based on the application of a survey made up of closed and open questions [17, 18]. The three closed questions establish a relationship in the Iadov Logical Table [19], indicating the scale of individual satisfaction of each respondent, while open questions allow to delve into the positive elements and the recommendations or insufficiencies of the proposal being evaluated [20, 21].

The technique has been used to model uncertainty with the use of neutrosophic numbers [13, 22, 23]. A neutrosophic number is defined as: Let $N = \{(T, I, F): T, I, F \subseteq [0,1]1n$ a neutrosophic valuation is a mapping of a group of formulas proportional to N, that is, for each statement p we have:

$$v(p) = (T, I, F) \quad (1)$$

In order to facilitate practical application to decision-making and engineering problems, the proposal of the Single Valued Neutrosophic (SVN) sets was made [24] which allows the use of linguistic variables [25, 26] that increase the interpretability in the recommendation models and the use of indeterminacy [27].

Let X be a universe of discourse. An SVN over X is an object of the form.

$$A = \{\langle x, u_A(x), r_A(x), v_A(x)\rangle: x \in X\}d \quad (2)$$

Where $u_A(x): X \rightarrow [0,1]$, $r_A(x), : X \rightarrow [0,1]$ y $v_A(x): X \rightarrow [0,1]$ with $0 \leq u_A(x) + r_A(x) + v_A(x) :\leq 3$ for all $x \in X$. The interval $u_A(x), r_A(x)$ and $v_A(x)$ denote the memberships to true, indeterminate, and false of x in A, respectively. For convenience, an SVN number will be expressed as $A = (a, b, c)$, where $a, b, c \in [0,1]$, and $+ b + c \leq 3$ [28].

Neutrosophic Numbers are those satisfying Equation 3 [21, 29]

$a + bI$ (3)

Where a, b are real numbers, and I is indeterminacy part, such that $I^2 = I$ and $0 \cdot I = 0$.

If the coefficients a and b are real, then a + bI is called Neutrosophic Real Number.

Given $N_1 = a_1 + b_1 I$ and $N_2 = a_2 + b_2 I$ two neutrosophic numbers, some operations between them are defined as follows:

$N_1 + N_2 = a_1 + a_2 + (b_1 + b_2)I$ (Addition);
$N_1 - N_2 = a_1 - a_2 + (b_1 - b_2)I$ (Difference),
$N_1 \times N_2 = a_1 a_2 + (a_1 b_2 + b_1 a_2 + b_1 b_2)I$ (Multiplication),
$\frac{N_1}{N_2} = \frac{a_1 + b_1 I}{a_2 + b_2 I} = \frac{a_1}{a_2} + \frac{a_2 b_1 - a_1 b_2}{a_2(a_2 + b_2)} I$ (Division).

For the evaluation, a set of linguistic terms that represent neutrosophic values are used, which corresponds to an absolute value. Table 1 presents the assessment scale used.

| Language labels represented | SVN number/ Neutrosophic Number | Value |
|---|---|---|
| **Clear satisfaction** | (1, 0, 0) | 1 |
| **More satisfied than dissatisfied** | (1, 0.25, 0.25) | 2 |
| **Not defined** | I | 3 |
| **More dissatisfied than satisfied** | (0.25, 0.25, 1) | 4 |
| **Clear dissatisfaction** | (0,0,1) | 5 |
| **Contradictory** | (1,0,1) | 6 |

**Table 1.** Set of terms used as a rating scale.

## 4. Application of the method for the valuation of custodial sentences

For the implementation of the proposed method, a multi-expert approach was used. The province of Pastaza, which represents the highest concentration of Kichwas in the region, was used as the object of study. A questionnaire was applied to the main Kichwa patriarchs. The purpose of the instrument carried out was to estimate the satisfaction of the patriarchs on the exclusive sentence.

The sample used for the development of the activity was made up of 12 Kichwa patriarchs. The evaluated variables were:

Satisfaction about the application of the principle of interculturality by the Ecuadorian government.

Satisfaction regarding the determination in decision-making of exclusive sentences of members of the Kichwas tribe.

The results of the preferences of the set of Kichwas patriarchs that intervened in the process, are analyzed using the Iadov's Logical Table proposed in Table 2 [30].

| | **Do you consider correct the principle of interculturality implemented by the Ecuadorian government?** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **What is your opinion on the policy implemented by the Ecuadorian government regarding the custodial sentence within the framework of the principle of interculturality?** | **Do not** | | | **I don't know** | | | **Yes** | | |
| | Do you consider the protection that indigenous communities possess adequate to exercise their right of self-determination? | | | | | | | | |
| | **Yes** | **I don't know** | **Do not** | **Yes** | **I don't know** | **Do not** | **Yes** | **I don't know** | **Do not** |
| **I like it very much** | 1 | 2 | 6 | 2 | 2 | 6 | 6 | 6 | 6 |
| **I do not like it very much** | 2 | 2 | 3 | 2 | 3 | 3 | 6 | 3 | 6 |
| **I do not care** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **I dislike it more than I like it** | 6 | 3 | 6 | 3 | 4 | 4 | 3 | 4 | 4 |
| **I do not like** | 6 | 6 | 6 | 6 | 4 | 4 | 6 | 4 | 6 |
| **I do not know what to say** | 2 | 3 | 6 | 3 | 3 | 3 | 6 | 3 | 4 |

**Table 2**. Iadov's Logical Table.

In order to obtain the group satisfaction index (GSI), we worked with the different levels of satisfaction that are expressed on the numerical scale 1 and -1 as reported in Table 3.

| **Language labels to be represented** | **Value** |
|---|---|
| Maximum satisfaction | 1 |
| More satisfied than dissatisfied | 0,5 |
| Undefined and contradictory | 0 |
| More dissatisfied than satisfied | - 0,5 |
| Maximum dissatisfaction | -1 |

**Table 3**. Set of terms used as level of satisfaction.

Once the surveys were applied, we obtained on the individual satisfaction scale results shown in Table 4:

| **Satisfaction level** | **Quantity** | **Percent** |
|---|---|---|
| **Maximum satisfaction** | 0 | 0 |
| **More satisfied than dissatisfied** | 0 | 0 |
| **Undefined or contradictory** | 1 | 8,33 % |
| **More dissatisfied than satisfied** | 3 | 25,00 % |
| **Maximum dissatisfaction** | 8 | 66,66 % |

**Table 4.** Result of satisfaction on the application of the Iadov technique.

The application of the technique allowed us to obtain the Group Satisfaction Index (GSI), which represents a parameter attributed to the agreement of the group of users to whom the instrument was applied. GSI is determined by equation 3.

$$GSI = \frac{A(+1) + B(0.5) + C(0) - D(0.5) + E(-1)}{N} \quad (3)$$

Where:
A, B, C, D, E: represents the number of subjects with an individual index 1,2, (3 o 6), 4,5.
N: represents the total number of users in the group.

The Group Satisfaction Index values range between +1 and -1 as in figure 2. Values between -1 and -0.5 indicate dissatisfaction, values between -0.49 and 0.49 show contradictions due to what is expressed as

dissatisfaction and values between 0.5 and 1 indicate that there is satisfaction. Figure 2 shows a scale with the domain of values used to perform the valuation.

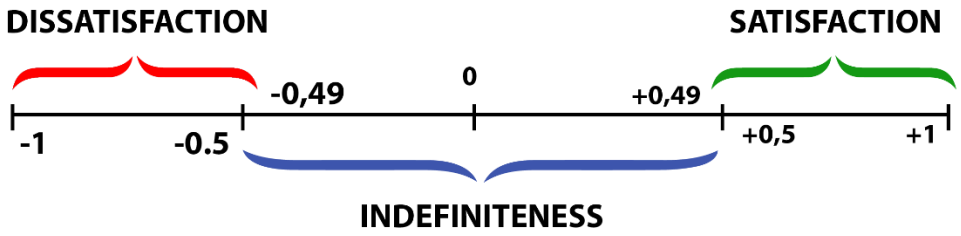


**Figure 2:** Satisfaction scale.

The processing of the method yielded a GSI = 0.37, considering that there is dissatisfaction. After obtaining an unsatisfactory GSI, the following analysis is performed:

The criteria of the respondents regarding the question whether "Do you consider correct the principle of interculturality implemented by the Ecuadorian government?", obtained an undefined or contradictory value of 0%, 8.33% considered it more dissatisfied than satisfied and 91.33% thought there was a maximum dissatisfaction.

Regarding question "What is your opinion on the policy implemented by the Ecuadorian government regarding the custodial sentence within the framework of the principle of interculturality?", results indicate an undefined or contradictory value of 8.33%, 25.00% rate it as more dissatisfied than satisfied and 66.66% considered it as maximum dissatisfaction.

Regarding whether "Do you consider the protection that indigenous communities have adequate to exercise their right of self-determination?" It was considered as maximum dissatisfaction by 100% of respondents.

In addition to the dissatisfaction obtained, the following elements could be identified through open questions:

That in the measures the principle of interculturality is not well implemented to guarantee respect for indigenous determination.

That implementations on criminal law applied in Ecuador that affect the Kichwas communities be extended.

## Conclusions

This investigation proposed a method for evaluating the principle of interculturality in the custodial sentence. The proposed method obtained an evaluation process by applying the Iadov technique while modeling the problem through neutrosophic numbers [31].

As a result, the method obtained the criteria issued by the main Kichwa patriarchs for the assessment of the principle of interculturality. This result, quantified by the method, was assessed by a satisfaction index that corresponds to high dissatisfaction.

As a final assessment of the application of the technique, we can conclude that the criteria issued and the results obtained using the Iadov technique corroborated that the application of the exclusive judgment does not correspond to the principle of interculturality.

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