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Enhancing the Codification of Crimes Against Humanity: A Neutrosophic and Analytical Approach to International Legal Frameworks

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Abstract. The present paper investigates the process of codifying crimes against humanity, with a specific focus on the difficulties encountered in achieving regulatory consistency and precision within international legal traditions. Notwithstanding the implementation of the Rome Statute and the endeavors of the International Law Commission (ILC), there are still deficiencies in the codification, namely in the areas of preventing and punishing these offenses. By employing the Neutrosophic Analytic Hierarchy Process (NAHP), Delphi method, and Neutrosophic Cognitive Maps (NCM), this study reveals key elements that impact the codification process. These elements include the necessity for a distinct convention and the sufficiency of current legal norms. Neutrosophic Cognitive Maps provide the visualization of the connections and interdependencies among important elements, therefore providing a deeper comprehension of their influence. An expert consensus highlighted the need for precise definitions, regulatory consistency, and a strong theoretical and legal basis. To enhance accountability and avoid future crimes against humanity, the report asserts that stronger international collaboration and a systematic approach to integrating these elements are essential. Subsequent investigations should prioritize the pragmatic application of suggested standards, comparative examination with other global legal systems, and ongoing expert verification through neutrosophic techniques.

Keywords: Crimes against humanity, codification, international criminal law, International Law Commission, neutrosophic cognitive maps, Neutrosophic Analytic Hierarchy Process, Delphi method.

1. Introduction

The lack of adequate codification for crimes against humanity, in contrast to the codification of genocide and war crimes in the late 1940s, highlights a significant disparity in international regulation. Despite the adoption of the Rome Statute in 1998, which established the permanent International Criminal Court (ICC) and sought to address these crimes, insufficient acceptance and support for the ICC have posed challenges to effective accountability for crimes against humanity[1].

Throughout history, individual accountability for crimes against humanity has evolved and is less controversial today compared to the stance following World War II. However, detailed and complex issues persist that require proper addressing through solid codification [2].

The codification efforts carried out by the International Law Commission (ILC) reflect the importance of addressing the complexities of crimes against humanity and establishing clear definitions and norms for their prevention and punishment. The existence of disjointed regulations also highlights the need for more coherent codification for these crimes.

The adoption of the draft articles on the prevention and punishment of crimes against humanity by the ILC in 2019, on the second reading, represents a significant opportunity for scholarly analysis. Through this process, a valuable opportunity is presented to examine both the content of the document and the role played by the ILC in the development of international criminal law since its establishment.

The scientific analysis of this draft article will allow for an objective and rigorous assessment of the theoretical, conceptual, and legal foundations underpinning the proposals contained in the document. Researchers will be able to study and compare the approach adopted by the ILC in the prevention and punishment of crimes against humanity with existing legal frameworks and international standards [3].

Furthermore, the scientific analysis can shed light on how the ILC has evolved in its role as a subsidiary body of the UN General Assembly and its contribution to the development of international criminal law. Its working methods, decision-making processes, and the degree of participation and cooperation from member states and other international actors in its endeavors can be investigated [4].

The scientific study of this project can also address key issues related to the implementation and effectiveness of the proposed norms in the prevention and punishment of crimes against humanity. Researchers can examine the adequacy and coherence of the document concerning other international legal instruments, like the Rome Statute, and assess its potential impact on the protection of human rights and accountability.

The current debate naturally addresses the need to consider a separate Convention for crimes against humanity. This study aims to provide a critical and well-founded assessment of the need for more robust codification for crimes against humanity and its impact on the effective accountability and punishment of those responsible through the Saaty AHP [5] and neutrosophic Delphi methods [6]. Additionally, it sought to understand the role of the ILC in this context and its contribution to the development of international criminal law. The study also highlighted the implications and challenges related to the prevention and punishment of these crimes and how more coherent codification could more effectively address them.

2. Background

2.1 Analytic Hierarchy Process Method

The Analytic Hierarchy Process (AHP) is a methodology widely used to tackle complex decision-making problems that involve multiple criteria [7]. The AHP approach involves creating a hierarchy that contrasts the decision-making process, placing the main objective at the highest level and the available options at the lowest level, with relevant criteria and attributes outlined at intermediate levels.

This technique is particularly useful for decisions that require the consideration of technical, economic, political, social, and cultural aspects, providing a scientific method to manage elements that are difficult to comprehend.Through its structured approach, which includes element prioritization, pairwise comparisons, weight assignment, and synthesis, the AHP aids in identifying the best alternative based on available resources [8].

Originally proposed by Thomas Saaty in 1980, this method is distinguished by its ability to structure complexity, quantify preferences on a scale, and synthesize the outcomes to aid decision-making [7]. Moreover, the introduction of neutrosophic sets and their application in this context is noted. These sets are characterized by three membership functions: truth, indeterminacy, and falsehood, applicable to both standard and non-standard subsets[9,10].

Single-Valued Neutrosophic Set (SVNS) and Single-Valued Neutrosophic Number (SVNN) are mathematical representations of items that can be stated as values representing truth, indeterminacy, and untruth within a specified range. Additionally, the concept of a single-valued neutrosophic trapezoidal number is mentioned, providing a more detailed structure for these sets[11, 12].

This methodology represents the issue that results in the development of a hierarchical structure that reflects the corresponding decision-making paradigm. The initial and primary step is to formulate the decision-making problem into a hierarchical structure [13]. This stage is the phase in which the decision-maker must deconstruct the problem into its pertinent elements. The hierarchy is designed to ensure that the elements have a consistent magnitude and can correlate with certain levels below. A typical hierarchy is structured such that the top level identifies the challenge of decision-making. The factors that influence the process of making decisions are depicted at the intermediate level, where the criteria are situated. At the lowest level, the choice alternatives are positioned. The relative level of significance or importance of the criteria is determined by conducting paired comparisons between them. The comparison is conducted by applying a scale, as denoted by equation (1).

$$S = \left\{1,3,5,7,9,\frac{1}{9},\frac{1}{7},\frac{1}{5},\frac{1}{3}\right\} \tag{1}$$

Within a neutrosophic framework, the theory of the Analytic Hierarchy Process (AHP) allows for the modeling of decision-making indeterminacy via the application of neutrosophic AHP, otherwise known as NAHP. Equation 1 presents a universal neutrosophic pairwise comparison matrix

To convert neutrosophic triangular numbers into crisp numbers, two indexes are defined: the so-called score and accuracy indexes, as seen in Equations 2 and 3, respectively [14].

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

$$A(\tilde{a}) = \frac{1}{8}[a_1 + a_2 + a_3](2 + \alpha_{\tilde{a}} - \beta_{\tilde{a}} + \gamma_{\tilde{a}}) \tag{3}$$

A widely accepted method for comparing the relative importance of two alternatives involves the Saaty scale. By employing a comparison model technique, which involves assessing alternatives based on several criteria, precision is improved. Priorities are allocated numerical values ranging from 1 to 9, as shown in Table 1.

Table 1. Saaty's scale translated into a neutrosophic triangular scale. Source: [15].

Numerical	Scale	Neutrosophic Triangular Scale
1	Equally preferred	$\tilde{1} = \langle(1,1,1); 0.50, 0.50, 0.50\rangle$
3	Moderately preferred	$\tilde{3} = \langle(2,3,4); 0.30, 0.75, 0.70\rangle$
5	Strongly preferred	$\tilde{5} = \langle(4,5,6); 0.80, 0.15, 0.20\rangle$
7	Very strongly preferred	$\tilde{7} = \langle(6,7,8); 0.90, 0.10, 0.10\rangle$
9	Extremely preferred	$\tilde{9} = \langle(9,9,9); 1.00, 1.00, 1.00\rangle$
2	Equally to moderately preferred	$\tilde{2} = \langle(1,2,3); 0.40, 0.65, 0.60\rangle$
4	Moderately to strongly preferred	$\tilde{4} = \langle(3,4,5); 0.60, 0.35, 0.40\rangle$
6	Strongly to very strongly preferred	$\tilde{6} = \langle(5,6,7); 0.70, 0.25, 0.30\rangle$
8	Very strongly to extremely preferred	$\tilde{8} = \langle(7,8,9); 0.85, 0.10, 0.15\rangle$

To apply the AHP methodology among a set of criteria, the following steps are necessary[16]:

1. Determine the specific criteria for comparison.
2. Compute the Comparison Matrix for pairs of components, sub-factors, and strategies by utilizing the linguistic terminology provided in Table 1.
3. To normalize the comparison matrix, divide each integer by the total of the values in its corresponding column.
4. Determine the weight of each criterion by converting the neutrosophic pairwise comparison matrix into a deterministic matrix by applying Equations 9 and 10.
5. Determine the value of the consistency index..

In Step 3, the application of this technique requires the consideration of the calculus of the Consistency Index (CI), which is a function that depends on λmax, the greatest eigenvalue of the matrix. The consistency of the evaluations can be ascertained by the equation proposed by Saaty [17].

$$\mathrm{CI} = \frac{\lambda_{\max} - \mathrm{n}}{\mathrm{n} - 1} \tag{4}$$

where *n* is the order of the matrix. In addition, the *Consistency Ratio* (CR) is defined by equation:

$$CR = \frac{CI}{RI} \tag{5}$$

RI is given in Table 2.

Table 2. RI associated with every order. Source: [18].

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

If CR 0.1, it is considered that the experts' evaluation is sufficiently consistent, and thus, attempting to utilize NAHP is feasible.

2.2 Delphi Neutrosophic Method

The establishment of the group including the expert panel should guarantee the essential diversity and importance in order to effectively tackle the topic of the research. The neutrosophic expert competence coefficient (K_N) is used by the coordination group to determine the final selection of experts [19].

Let X be a universe of discourse. A Single-Valued Neutrosophic Set (SVNS) A over X is an object in the form described in the following equation [20]:

$$A = \{\langle x, u_A(x), r_A(x), v_A(x)\rangle : x \in X\} \tag{6}$$

In this coefficient, two factors were averaged, the knowledge coefficient (K_{cn}) and the argumentation coefficient (K_{an}).

$$K_N = \frac{1}{2}(K_{aN} + K_{cN}) \quad (7)$$

Where, by applying equation (7), it is obtained:

$$K_{aN} = \{\langle x, u_{Ka}(x), r_{Ka}(x), v_{Ka}(x)\rangle : x \in X\} \quad (8)$$

$$K_{cN} = \{\langle x, u_{Kc}(x), r_{Kn}(x), v_{Kn}(x)\rangle : x \in X\} \quad (9)$$

The neutrosophic knowledge coefficient is derived from the information provided by the expert on the researched subject. This information is obtained through a self-assessment procedure using a scale to measure the level of knowledge on the examined topic and subject of study (see Table 3).

Table 3. Linguistic terms used to determine $K_{aN,}K$ and evaluate the proposed criteria.

Linguistic term	SVNN
Full knowledge of the subject of study (FK)	(1,0,0)
Very very good in the subject of study (VVGK)	(0.9, 0.1, 0.1)
Very good in the subject of study (VGK)	(0.8,0,15,0.20)
Good in the subject of study (GK)	(0.70,0.25,0.30)
Moderately good in the subject of study (MGK)	(0.60,0.35,0.40)
Know the topic of study (K)	(0.50,0.50,0.50)
Moderately poorly knows the subject of study (MPK)	(0.40,0.65,0.60)
Poorly knows the topic of study (PK)	(0.30,0.75,0.70)
Know the topic of study very poorly (VPK)	(0.20,0.85,0.80)
Very very poor knowledge of the topic of study (VVPK)	(0.10,0.90,0.90)
No knowledge of the study topic (NK)	(0,1,1)

The Neutrosophic Argumentation Coefficient utilizes linguistic terms with Single-Valued Neutrosophic Numbers (SVNN) for the consensus of the expert opinion's substantiation (see Table 3).This is calculated by summing the weighted values derived from a set of influence factors identified by the Coordination Group. These factors include the experience acquired through activity and practice, understanding of the current state of the subject at national and international levels, intuition about the subject, knowledge of technology, and review of writings and publications on the research topic[21, 22]

The evaluation of the experts' responses is established as an objective criterion of the Neutrosophic Expert Competence Coefficient with a critical level required set by the Coordination Group for a value (A) (see Table 4).

Table 4. Linguistic terms used to determine K_{CN}. Source: [23].

Linguistic term	SVNN
Very High (VH)	(0.9, 0.1, 0.1)
High (H)	(0.75,0.25,0.20)
Medium (M)	(0.50;0.5;0.50)
Low (L)	(0.35,0.75,0.80)
Very Low (VL)	(0.10,0.90,0.90)

To determine the consensus among the participants of the Expert Panel, the agreement coefficient determined with the expression:

$$Cc = \left(1 - \frac{V_n}{V_t}\right)100 \quad (10)$$

For binary questions (yes or no), the consensus is considered reached with an agreement of 75%.

In this work, the application of the method was established in four stages:

- Design by the Coordination Group based on the variables identified in the undetermined dimensions in the neutrosophic analysis.

- Selection of the Expert Panel.
- Interpretation of responses and assessment of actions.
- Interpretation of the answers.

3. Materials and Methods

This study employed a neutrosophic cognitive mapping (NCM) [24, 25, 26] approach to analyze the factors influencing the codification and treatment of crimes against humanity. The process involved expert evaluation of key factors identified in the context of international legal frameworks. The methodology consisted of the following steps:

1. Identification of Key Factors.
   Critical factors were classified by experts in the domain of international law, particularly in the codification of crimes against humanity.
2. Neutrosophic Cognitive Map (NCM) Construction.
   The second step is the construction of the neutrosophic cognitive map (NCM) to visualize the relationships and influences among these factors. This map served as the basis for understanding the relative importance of each factor and their interdependencies.
3. Centrality Analysis and Node Elimination.
   Using centrality analysis, the significance of each factor was evaluated. Factors with higher centrality were determined to have a greater influence on the system, while those with lower centrality were considered less impactful.
4. Neutrosophic Analytical Hierarchy Process (NAHP).
   Once the nodes with lower centrality values were eliminated, the remaining factors were further analyzed using the Neutrosophic Analytical Hierarchy Process (NAHP). This method enables pairwise comparisons between the remaining factors to determine their relative importance.
5. Consistency Analysis.
   A consistency analysis was conducted to ensure that the pairwise comparison matrix was logically coherent.
6. Validation and Expert Consensus.

The expert panel's responses were validated through multiple iterations using the Delphi method, structured around the criteria derived from the NAHP analysis. Experts provided feedback on the validity of the criteria, and the results demonstrated strong consensus across the key areas.

The NAHP method and NCM analysis allowed for the clear identification of the most critical factors influencing the codification and treatment of crimes against humanity. By reducing the number of criteria based on centrality values and using neutrosophic logic, this methodology provided a structured and reliable approach for decision-making, incorporating uncertainty and indeterminacy inherent in complex international legal contexts.

In addition, the Delphi method played a crucial role in validating the findings by facilitating expert consensus on the prioritized factors. The iterative nature of the Delphi process enabled the refinement of opinions and ensured that the final set of criteria was grounded in collective expert knowledge. This helped strengthen the reliability of the decision-making framework, ensuring that the identified factors were not only analytically significant but also practically relevant according to expert judgment. The combined use of the NAHP, NCM, and Delphi method resulted in a comprehensive, consensus-driven approach to addressing the complex issue of codification in international legal frameworks.

3. Results

Experts classified nine factors to draw in the context of the codification and treatment of criminal offenses against humanity.

- Need for a Separate Convention (NCS)
- Adequacy of Codification (AC)
- Clarity of Definitions and Norms (CDN)
- Regulatory Coherence (CR)
- Lack of Coordination (LC)
- Theoretical and Legal Foundations (FTJ)
- Role and Evolution of the ILC (RE)
- Implementation Problems (IP)

- International Participation and Cooperation(PCI)
- Impact on Human Rights Protection (IPDH)
- Effectiveness of Legal Responsibility: (ERL)

The process begins by constructing a neutrosophic cognitive map (NCM) to visualize the relationships and influences between the identified factors. This map serves as the foundation for understanding the impact and relevance of each factor(Figure 1).

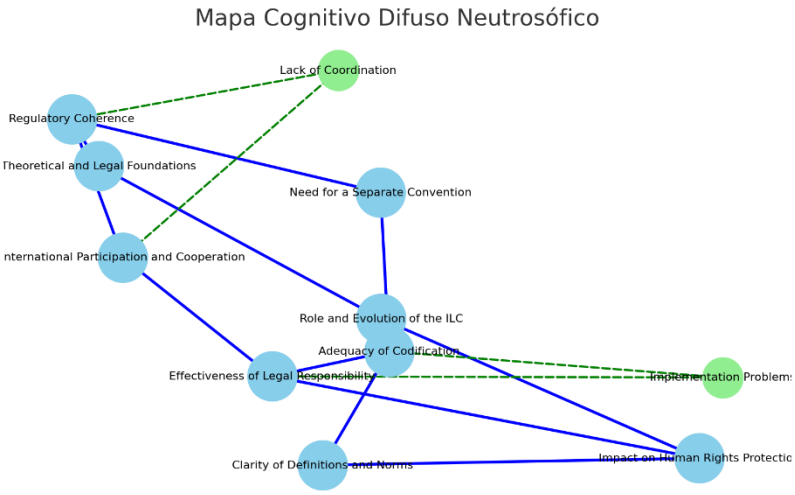

Figure 1. Neutrosophic Cognitive Map with Low-Centrality Nodes Highlighted in Green

The list of all the nodes with their centrality values, along with the two nodes that were eliminated is as follows:
AC (Adequacy of Codification): 0.375
CR (Regulatory Coherence): 0.375
IPDH (Impact on Human Rights Protection): 0.375
ERL (Effectiveness of Legal Responsibility): 0.375
NCS (Need for a Separate Convention): 0.25
CDN (Clarity of Definitions and Norms): 0.25
FTJ (Theoretical and Legal Foundations): 0.25
RE (Role and Evolution of the ILC): 0.25
PCI (International Participation and Cooperation): 0.25
Eliminated nodes (lower centrality):
LC (Lack of Coordination): 0.2
IP (Implementation Problems): 0.2
These two nodes were removed due to having the lowest centrality values.

Once the nodes with lower centrality values (LC - Lack of Coordination and IP - Implementation Problems) have been eliminated, and the number of criteria has been reduced, you can apply the Neutrosophic Analytical Hierarchy Process (NAHP) method to further refine the decision-making process .

The weights of the factors acting in the codification and treatment of crimes against humanity are determined using the Neutrosophic AHP method.

Table 5. Neutrosophic AHP Pairwise Matrix.

Factors	AC	NCS	CDN	CR	FTJ	RE	PCI	IPDH	ERL
NCS	Equally influential	5	7	5	7	5	7	5	7
AC	1/5	Equally influential	3	5	5	7	5	7	5
CDN	1/7	1/3	Equally influential	3	3	5	5	5	5
CR	1/5	1/5	1/3	Equally influential	1	3	3	3	3
FTJ	1/7	1/5	1/3	1/1	Equally influential	1	3	3	3
RE	1/5	1/7	1/5	1/3	1/1	Equally influential	1	1	1

Factors	AC	NCS	CDN	CR	FTJ	RE	PCI	IPDH	ERL
PCI	1/7	1/5	1/5	1/3	1/3	1/1	Equally influential	1	1
IPDH	1/5	1/7	1/5	1/3	1/3	1/1	1/1	Equally influential	5
ERL	1/7	1/5	1/5	1/3	1/3	1/1	1/1	1/5	Equally influential

Table 6. Determination of criteria weights using the Neutrosophic AHP method.

Factors	AC	NCS	CDN	CR	FTJ	RE	PCI	IPDH	ERL	WEIGHT
NCS	0,42	0,67	0,56	0,31	0,37	0,20	0,26	0,19	0,23	0,36
AC	0,08	0,13	0,24	0,31	0,26	0,28	0,19	0,27	0,16	0,21
CDN	0,06	0,04	0,08	0,18	0,16	0,20	0,19	0,19	0,16	0,14
CR	0,08	0,03	0,03	0,06	0,05	0,12	0,11	0,11	0,10	0,08
FTJ	0,06	0,03	0,03	0,06	0,05	0,04	0,11	0,11	0,10	0,07
RE	0,08	0,02	0,02	0,02	0,05	0,04	0,04	0,04	0,03	0,04
PCI	0,06	0,03	0,02	0,02	0,02	0,04	0,04	0,04	0,03	0,03
IPDH	0,08	0,02	0,02	0,02	0,02	0,04	0,04	0,04	0,16	0,05
ERL	0,06	0,03	0,02	0,02	0,02	0,04	0,04	0,01	0,03	0,03

Table 7. Analysis of the consistency of the paired matrix.

Factors	|	Approximate eigenvalues
NCS	4.11	11.53051666
AC	2.33	10.89193966
CDN	1.43	10.14890395
CR	0.74	9.650934083
FTJ	0.65	9.889946348
RE	0.37	9.741562706
PCI	0.32	9.799366333
IPDH	0.44	9.105433668
ERL	0.28	9.682770364
Eigenvalue - 10.049042		

The consistency analysis confirms that the modeling satisfies the desired parameters, with an eigenvalue of 6.40, CI=0.13, and CR=0.09. The values are believed to quantify the relative significance (weights) of several aspects assessed using the Analytic Hierarchy Process (AHP) approach devised by Saaty. The final weights are indicative of their relative relevance in the ultimate choice. Thus, NCS carries the greatest significance with a weight of 0.36, signifying its paramount role in the process of decision-making. The weight of 0.21 assigned to AC indicates that a distinct convention is equally important, albeit to a lower degree than AC.

Weighted at 0.14, the Clarity of Definitions and Norms indicates a modest level of significance. CR and FTJ assign weights of 0.08 and 0.07 correspondingly, suggesting a quite modest level of significance. The implication is that while these elements do influence decision-making, they are of lower importance compared to AC, NCS, and CDN. The minimum weights (0.04, 0.03, 0.05, and 0.03) assigned to RE, PCI, IPDH, and ERL indicate that these parameters are of the least importance in this study. This implies that although these features are taken into account, they exert a relatively smaller direct impact on strategic decision-making in comparison to other elements. Thus, the most pertinent criteria are:

1. Need for a Separate Convention: (NCS)
2. Adequacy of Codification: (AC)
3. Clarity of Definitions and Norms: (CDN)
4. Regulatory Coherence: (CR)
5. Theoretical and Legal Foundations: (FTJ)

To model the Delphi method the following strategies based on the mentioned criteria are contemplated:

- The creation of a clear framework for the convention: it is necessary to identify and reach consensus on specific areas that require detailed attention and distinct codification. This involves determining the boundaries and scope of such a convention, ensuring that it addresses needs identified and articulated by experts (a).
- The establishment of a Multidisciplinary Expert Panel: Given the criterion of "Adequacy of Codification," selecting a diverse group of experts who possess not only legal knowledge but also experience in areas that are relevant to the codification at hand is crucial. This ensures a broad and appropriate vision in the drafting of codifications or conventions that are integrally fair and applicable (b).
- Definition and setting of key terms: In response to "Clarity of Definitions and Standards," the strategy should clarify and reach a consensus on definitions of key terms and regulations. This facilitates a uniform understanding and reduces ambiguities in future interpretations (c).
- Evaluation and harmonization of existing regulations: Due to the importance of "Regulatory Coherence," discrepancies between existing regulations and proposals should be determined.The goal would be to harmonize the new codifications with the existing legal and regulatory framework and promote cohesive integration that strengthens the international legal system without generating normative conflicts (d).
- Validation of theoretical and legal foundations: To ensure that new norms or codifications are based on solid "Theoretical and Legal Foundations," the theoretical and legal principles that apply to the proposals can be validated.This involves critically reviewing the legal and theoretical basis and ensuring that the recommendations are well-founded and defensible from an international legal perspective (e).
- The selected strategies will be implemented and a questionnaire will be sent to the experts, following a structured approach.The Delphi process is characterized by being iterative, anonymous, and controlled, to reach consensus among experts on a specific topic. Below are the steps for implementing this:

Step 1: Expert Selection

- A panel of 9 experts with a wide range of expertise and experiences pertinent to the subject of interest is selected, including jurists, academics specialized in international law, experts with backgrounds in crimes against humanity, specialists in law formulation, and other relevant professionals. To appropriately select these specialists, the Neutrosophic Argumentation Coefficient is used, which is based on the evaluation of the solidity of the experts' opinions through a weighted aggregation of values obtained from various Influence Factors.
- These criteria are established by the Coordination Group and encompass the expert's professional and practical expertise, their understanding of the present national and international situation, their intuitive ability pertaining to the subject being discussed, their familiarity with technology, and their contribution to the relevant literature and studies.

Step 2: Design of the Initial Questionnaire

- The first questionnaire should be prepared to investigate the main areas delineated in the strategy, using open-ended questions to facilitate comprehensive answers and precise recommendations. This comprises:
  1. What are the main strategies you identify in the context of the codification and treatment of crimes against humanity?
  2. Based on your experience, how would you assess the relative frequency of the current strategies implemented?
  3. Which strategy do you consider the most effective?
  4. From your perspective, do you think the strategies are useful for overcoming current challenges?

Step 3: Distribution and Collection of Responses

- Send the questionnaire to the selected experts and ensure anonymity to promote honesty and avoid biases in the responses. Establish a clear deadline for the return of the responses.

Step 4: Analysis of Responses and Preparation for the Second Round

- Determine areas of agreement and disagreement by analyzing the responses. Compile a concise overview of the replies and incorporate statistical data if feasible (such as the degree of agreement with

each statement) and prepare a second questionnaire based on the obtained results. This second questionnaire should specifically target areas where agreement was not achieved and request the experts to reassess their answers within the framework of the group's overall recommendations.

Table 8. Validation of the criteria

Expert	a	b	c	d	e
E1	(0.35;0.75;0.80)	(0.35;0.75;0.80)	(0.35;0.75;0.80)	(0.10;0.90;0.90)	I
E2	(0.75;0.25;0.20)	(0.9;0.1;0.1)	(0.10;0.90;0.90)	(0.35;0.75;0.80)	(0.9;0.1;0.1)
E3	(0.9;0.1;0.1)	I	(0.10;0.90;0.90)	(0.35;0.75;0.80)	(0.75;0.25;0.20)
E4	(0.75;0.25;0.20)	(0.9;0.1;0.1)	(0.75;0.25;0.20)	(0.75;0.25;0.20)	(0.75;0.25;0.20)
E5	(0.35;0.75;0.80)	(0.75;0.25;0.20)	(0.10;0.90;0.90)	(0.75;0.25;0.20)	(0.35;0.75;0.80)
E6	(0.35;0.75;0.80)	(0.9;0.1;0.1)	I	(0.9;0.1;0.1)	(0.75;0.25;0.20)
E7	(0.10;0.90;0.90)	(0.10;0.90;0.90)	(0.35;0.75;0.80)	(0.35;0.75;0.80)	(0.10;0.90;0.90)
E8	(0.10;0.90;0.90)	(0.9;0.1;0.1)	(0.9;0.1;0.1)	(0.9;0.1;0.1)	(0.35;0.75;0.80)
E9	(0.9;0.1;0.1)	(0.75;0.25;0.20)	(0.75;0.25;0.20)	(0.75;0.25;0.20)	I

According to the evaluation given by the experts, strategies b, c, and e each show a level of indeterminacy.

Table 9. Relative frequency.

Indicators	Very high	High	Medium	Low	Very Low
a	0.2222	0.4444	0.4444	0.7778	1,0000
b	0.4444	0.6667	0.7778	0.8889	1,0000
c	0.1111	0.3333	0.4444	0.6667	1,0000
d	0.2222	0.5556	0.5556	0.8889	1,0000
e	0.1111	0.4444	0.6667	0.8889	1,0000

Table 10. Calculation of cut points.

Indicators	Very high	High	Medium	Low	Very Low
a	-0.76	-0.14	-0.14	0.76	3.50
b	-0.14	0.43	0.76	1.22	3.50
c	-1.22	-0.43	-0.14	0.43	3.50
d	-0.76	0.14	0.14	1.22	3.50
e	-1.22	-0.14	0.43	1.22	3.50

Table 11. Scale of neutrosophic indicators. Source: own elaboration.

Indicators	Average	N - Avg.	SVNN
a	0.64	**-0.95**	(0.35;0.75;0.80)
b	1.15	**-1.46**	(0.75;0.25;0.20)
c	0.43	**-0.74**	(0.35;0.75;0.80)
d	0.85	**-1.16**	(0.35;0.75;0.80)
e	0.76	**-1.07**	(0.35;0.75;0.80)
	-0.31	**=N**	
	N =	**-0.31**	

Table 12. Expert validation. Source: own elaboration.

Expert	C1	C2	C3	C4	C5
E1	YES	YES	YES	YES	YES
E2	YES	YES	YES	YES	YES
E3	YES	YES	YES	NO	YES
E4	YES	NO	YES	YES	YES
E5	YES	YES	YES	YES	YES
E6	YES	YES	YES	YES	YES
E7	NO	YES	YES	YES	YES
E8	YES	YES	YES	YES	YES
E9	YES	YES	YES	YES	YES
YES	8	8	9	8	9
NO	1	1	0	1	0
Coefficient	88.89	88.89	100	88.89	100

From the results it is clear that in all cases a consensus was reached; therefore, a second round was not necessary.

The analysis was based on a series of key indicators, evaluated through a consensus of experts. The indicators, identified as a, b, c, d, and e, were examined in terms of their average, average negativity). The results suggest significant differences in experts' perceptions of the importance and impact of these indicators. The details are as follows:

Indicator a: Shows a balance between positive and negative perspectives suggesting a moderately positive opinion.

Indicator b: Stands out for having the most positive evaluation on average.

Indicator c: Similar to indicator *a* in terms of perception, which shows a moderately positive opinion.

Indicators d and e: Both indicators present intermediate values, with a slight inclination towards a more positive than negative perception.

The overall average negativity (N) was calculated at -0.31, indicating a general trend towards more negative opinions in the dataset.

Based on collective knowledge and expert recommendations, the following strategic actions are suggested for each of the key areas represented by the indicators:

Indicators a and c: A cautious approach is recommended to optimize and continuously evaluate current strategies to ensure their effectiveness. The moderate positivity suggests that, although there are benefits, there are significant areas for improvement.

Indicator b: The strategy provides a basis for considering this indicator as strategically advantageous, with significantly positive attributes that experts find valuable.

Indicators d and e: Given their intermediate position with a tendency towards the positive, it is crucial to strengthen aspects that are already perceived favorably, while identifying and addressing the underlying causes of any negative perception.

Conclusion

The analytical findings emphasize the importance of progressing the codification and handling of crimes against humanity, with a specific emphasis on enhancing regulatory consistency and precision in defining relevant terms. Neutrosophic approaches and the Analytic Hierarchy Process (AHP) have enabled the identification of crucial elements that impact this process, including the necessity for a distinct convention and the sufficiency of codification. Nevertheless, various obstacles persist about the execution, global involvement, and synchronization endeavors aimed at attaining a stronger and more efficient legal structure. Although there was agreement on the

majority of the assessed criteria, it is still crucial to enhance the consistency of regulations and clarify the theoretical and legal basis.

For further study, it is advisable to examine the realistic application of the norms suggested by the International Law Commission (ILC), with a specific emphasis on how domestic legislation might conform to global benchmarks. Furthermore, it would be beneficial to investigate the influence of these standards on human rights and legal responsibility in particular situations, by employing comparative methodologies with other global frameworks. Furthermore, it is imperative to persist in the use and advancement of the Delphi method and neutrosophic analysis to guarantee continuous expert validation in the creation of worldwide legal guidelines.

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