NEUTROSOPHIC ANALYSIS OF THE IMPORTANCE OF ILLEGALITY IN CRIMINAL LAW AND CIVIL LAW. EVALUATION OF CAUSES AND CONSEQUENCES

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ABSTRACT.

The research addresses a fundamental problem in the legal field: the complex relationship between illegality in criminal law and civil law, and its impact on the legal and social structure. This analysis is essential in a context where the notions of legality and illegality not only determine acceptable social conduct but also directly affect justice and legal certainty. Despite the extensive literature on these concepts, there remains a significant lack of approaches that integrate advanced analytical tools to assess the causes and consequences of illegality from an interdisciplinary perspective. This study seeks to fill this gap by employing neutrosophic Delphi-AHP methods, designed to handle uncertainty and ambiguity in complex scenarios. The results of the analysis demonstrate that the neutrosophic approach allows to decompose and prioritize key factors underlying the causes and consequences of illegality in both legal fields. The areas where the interaction between criminal and civil law is most critical were identified, providing a framework to improve legal coherence and the effectiveness of public policies. Among the main contributions of the study, the integration of advanced methodologies to address complex legal problems and the generation of practical insights applicable to the administration of justice stand out. This work not only expands theoretical knowledge on the nature of illegality but also promotes the use of neutrosophic tools as a way to strengthen decision-making in uncertain legal environments.

KEYWORDS: Illegality, criminal law, civil law, neutrosophic analysis, Delphi-AHP methods, causes, consequences, uncertainty, ambiguity.

MSC: 03B52, 62P20, 90B50

RESUMEN

La investigación aborda un problema fundamental en el ámbito jurídico: la compleja relación entre la ilegalidad en el derecho penal y el derecho civil, y su impacto en la estructura legal y social. Este análisis resulta esencial en un contexto donde las nociones de legalidad e ilegalidad no solo determinan la conducta social aceptable, sino que también afectan directamente la justicia y la seguridad jurídica. A pesar de la extensa literatura en torno a estos conceptos, persiste una carencia significativa de enfoques que integren herramientas analíticas avanzadas para evaluar las causas y consecuencias de la ilegalidad desde una perspectiva interdisciplinaria. Este estudio busca llenar esa brecha al emplear métodos neutrosóficos Delphi-AHP, diseñados para manejar incertidumbre y ambigüedad en escenarios complejos. Los resultados del análisis demuestran que el enfoque neutrosófico permite descomponer y priorizar factores clave que subyacen en las causas y consecuencias de la ilegalidad en ambos campos legales. Se identificaron las áreas donde la interacción entre el derecho penal y el civil es más crítica, proporcionando un marco para mejorar la coherencia legal y la eficacia de las políticas públicas. Entre las principales contribuciones del estudio, se destaca la integración de metodologías avanzadas para abordar problemas jurídicos complejos y la generación de insights prácticos aplicables a la administración de justicia. Este trabajo no solo amplía el conocimiento teórico sobre la naturaleza de la ilegalidad, sino que también promueve el uso de herramientas neutrosóficas como una vía para fortalecer la toma de decisiones en entornos legales inciertos.

PALABRAS CLAVE: Ilegalidad, derecho penal, derecho civil, análisis neutrosófico, métodos Delphi-AHP, causas, consecuencias, incertidumbre, ambigüedad.

1. INTRODUCTION.

Illegality, as a central concept in the legal field, transcends its literal definition to become a critical axis of analysis in both criminal and civil law. Its impact not only shapes the social and economic dynamics of modern societies but also profoundly influences the administration of justice and the collective perception of fairness. This study focuses on analyzing the significance of illegality in both fields of law through neutrosophic Delphi-AHP methods, providing an innovative approach to unraveling the causes and consequences of such a complex and multifaceted phenomenon. The need to understand illegality from a comprehensive and quantifiable perspective has never been more urgent, particularly in a global context where legal and social tensions are constantly evolving [5]. Throughout history, the conceptualization of illegality has been shaped by cultural, political, and economic factors. In criminal law, this term has evolved from a strictly punitive interpretation to a more restorative approach, while in civil law, illegality has moved from being a contractual breach to a fundamental pillar to guarantee justice in private transactions. However, both legal systems share an interdependence that often goes unnoticed, which generates inconsistencies in their application and understanding [9]. At present, with the growing influence of globalization and the advancement of disruptive technologies, the boundaries between these two legal areas are

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increasingly blurred, which demands new analytical tools to address their intrinsic relationship [8]. The central problem that guides this research lies in the lack of robust methodologies that allow evaluation the interaction between illegality in criminal and civil law in a quantitative and multidimensional way. How can we identify and prioritize the causes and consequences of illegality in both legal systems? This question reflects not only a theoretical gap in the existing literature but also a practical need to design approaches that address the uncertainty and ambiguity inherent in the legal system. In particular, there is a lack of tools that incorporate expert perception and the structural complexity of the law to generate comprehensive solutions [12].

This study seeks to bridge this gap by using Delphi -AHP neutrosophic methods, a methodological combination that allows for managing high levels of indeterminacy and subjectivity. While the Delphi method facilitates the collection of expert opinions in complex contexts, the AHP (Analysis Hierarchy Process) provides a framework for prioritizing and weighing key variables. The integration of these tools under a neutrosophic approach guarantees a deeper and more nuanced analysis of the legal dynamics involved, allowing illegality to be addressed from both a qualitative and quantitative perspective [2]. Preliminary results of this approach have demonstrated its ability to identify critical interactions between the factors that perpetuate illegality in both fields of law. Among the most notable findings is the importance of assessing how individual and collective perceptions of legality influence public policy formulation and the implementation of regulations. Likewise, the study underlines the need to analyze the collateral effects of illegality, such as economic tensions and social inequalities that emerge from its uneven application [13]. The practical relevance of this research lies in its ability to offer clear and actionable recommendations to policymakers. Through the use of advanced analytical tools, strategies are proposed to improve coherence between criminal and civil law, optimizing the interpretation and application of illegality in diverse contexts. These proposals not only strengthen legal governance but also promote equity and transparency in access to justice [6].

However, it is important to acknowledge the limitations inherent in the scope of this study. The reliance on expert opinions introduces a degree of subjectivity that, although mitigated by methodological rigor, does not eliminate potential bias. Furthermore, the geographic and cultural focus restricts the generalizability of the results to other legal contexts. Nevertheless, this study lays the groundwork for future research exploring the interaction between illegality in different legal systems under a neutrosophic approach.

In summary, the main objective of this paper is to evaluate illegality in criminal and civil law from a novel perspective that combines theoretical rigor with practical applications. Through this research, it is hoped not only to advance the academic understanding of illegality but also to influence the creation of more fair, transparent, and effective public policies. In doing so, this study seeks to contribute to the development of a more coherent legal framework adapted to the complexities of modern societies.

2. MATERIALS AND METHODS

2.1. Neutrosophic Delphi method

The Delphi technique is used in many fields such as program planning, resource utilization, policy judgment, and needs assessment. A Delphi technique has the following advantages [2]:

1. Tackling complex problems effectively.
2. Able to define and modify a wide range of alternatives.
3. Create different judgments on the same topic and use feedback on individuals' judgments to allow them to revise their views.
4. Achieve a high degree of consensus.
5. Increase coherence by reducing the noise that results from focusing on group and/or individual interests rather than focusing on dissolving the problem.

It is a structured communication technique, designed primarily to gather and consolidate expert opinions on specific topics through a series of iterative questionnaires with controlled feedback. Developed in the 1950s by the RAND Corporation, this method is used to reach consensus on predicting future trends, solving complex problems, strategic planning, and risk assessment, among others.

The process begins with the selection of a panel of experts who possess specialized knowledge in the area of interest. These experts respond to an initial questionnaire, the answers to which are anonymous and summarized by a coordinator or coordinating team. The summarized results are then shared with the group, along with a new questionnaire based on the previous responses. This questionnaire-response-feedback process is repeated in several rounds , to narrow the range of responses and move the group toward consensus.

A key feature of the Delphi method is the anonymity of participants, which helps to avoid the influence or domination effect of certain participants over others, thus facilitating more objective responses and reducing conformity bias. At the end of the process, the convergence of opinions is expected to reveal a consensus or a clearer understanding of the issue at hand, providing valuable information for decision-making [4,15] .

To establish the knowledge of the analyzed topic and object of study, a self-assessment process is carried out on a scale (see Table 1). This so-called neutrosophic knowledge coefficient is determined by the information that the expert himself presents on the object of study.

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 at the subject of study (GK)	(0.70,0.25,0.30)
Moderately good at the subject of study (MGK)	(0.60,0.35,0.40)
Knowing the subject of study (K)	(0.50,0.50,0.50)
Has moderately poor knowledge of the subject matter (MPK)	(0.40,0.65,0.60)
Poor knowledge of the subject of study (PK)	(0.30,0.75,0.70)
He knows the subject very poorly (VPK)	(0.20,0.85,0.80)
Very, very poor knowledge of the subject of study (VVPK)	(0,10,0,90,0,90)
Without knowledge of the subject of study (NK)	(0,1,1)

Table 1: Linguistic terms used to determine and evaluate the proposed criteria. Source: Own elaboration.

For the evaluation and validation of questionnaires using the Delphi method, the scale (see Table 2) was used to achieve greater objectivity in the management of information. This allows the evaluation of the criteria argued by the judges of the panel of experts for each of the items individually.

Using linguistic terms with Single Value Neutrosophic Numbers (SVNN) for consensus based on the expert opinion, criteria are evaluated using the neutrosophic argumentation coefficient.

Linguistic term I	SVNN	Linguistic term II
Very Adequate (VA)	(0.9,0.1,0.1)	Essential (E)
Fairly adequate (FA)	(0.75,0.25,0.20)	Very useful (VU)
Suitable (A)	(0.50,0.55,0.5)	Useful (U)
Poorly suited (PA)	(0.3,0.75,0.80)	Not very useful (LU)
Not suitable (NA)	(0,10,0,90,0,90)	Not useful (NU)

Table 2: Linguistic terms used. Source: Own elaboration.

To determine the consensus among the participants of the expert panel, the coefficient of concordance was used, determined through the expression:

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

where: V_n is the number of negative votes issued by the judges, and $V_t$is the total number of votes issued by the judges. Therefore, a level of consensus must be reached when the coefficient of agreement Cc obtains a value greater than 75%, and the process must be concluded; if this value is not reached, a new round must be established.

2.2. Neutrosophic AHP method

The Analytic Hierarchy Process (AHP) is a decision-oriented theory used to identify the best alternative based on the resources allocated. This method can be applied to situations involving technical, economic, political, social and cultural factors. That is, it aims to be a scientific tool to address aspects that are difficult to quantify but that sometimes require a unit of measurement. The methodology in its original version can be seen in [16 ,17]. However, for this work the need for uncertainty is recognized, and for this purpose its neutrosophic version is adopted. Which uses triangular numbers for its execution, whose definition is the following:

Definition 1: Let *X* be a space of points and $x \in X$. A neutrosophic set *A* in *X* is defined by a truth membership function $T_A(x)$, an indeterminacy membership function $I_A(x)$, and a falsity membership function $F_A(x)$. *U* is the Universe of Discourse and

$\forall x \in U, T_A(x), I_A(x), F_A(x) \subseteq]-0, 1+[$

and

$$-0 \leq \inf T_A(x) + \inf I_A(x) + \inf F_A(x) \leq \sup T_A(x) + \sup I_A(x) + \sup T_A(x) \leq 3+.$$

Note that by the definition, $T_A(x)$, $I_A(x)$, and $F_A(x)$ are standard or nonstandard real subsets of $[0, 1] + [8,15]$.

Definition 2: Let *X* be a universe of discourse. A single-valued neutrosophic set *A* over *X* is an object taking the form $A = \{\langle x; T_A(x), I_A(x), F_A(x)\rangle : x \in U\}$, where $T_A : U \to [0, 1]$, $I_A : U \to [0, 1]$, and $F_A : U \to [0, 1]$,

$$0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3 \text{ for all } x \in X.$$

The intervals $T_A(x)$, $I_A(x)$, and $F_A(x)$ represent the degree of truth, degree of indeterminacy, and degree of falsehood of *x* through *A*, respectively. For convenience, an SVN number is represented by $A = (a, b, c)$, where a, $b, c \in [0, 1]$ and $a+b+c \leq 3$.

Definition 3: Suppose $\tilde{a}, \tilde{a}, \tilde{a} \in [0, 1]$ and $a_1, a_2, a_3, a_4 \in R$ where $a_1 \leq a_2 \leq a_3 \leq a_4$. Then, a 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 special neutrosophic set on

the set of real lines $\mathbb{R}$, whose truth membership, indeterminacy membership and falsity membership functions are defined as see reviewed methodology [17, 10].

Definition 4: Given $\tilde{a} = \langle(a_1, a_2, a_3, a_4); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}}\rangle$single-valued trapezoidal neutrosophic numbers λ and $\tilde{b} = \langle(b_1, b_2, b_3, b_4); \alpha_{\tilde{b}}, \beta_{\tilde{b}}, \gamma_{\tilde{b}}\rangle$any nonzero number on the real line. Then, the following operations are defined:

Addition:$\tilde{a} + \tilde{b} = \langle(a_1 + b_1, a_2 + b_2, a_3 + b_3, a_4 + b_4); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}}\rangle$
Remains: $\tilde{a} - \tilde{b} = \langle(a_1 - b_4, a_2 - b_3, a_3 - b_2, a_4 - b_1); \alpha_{\tilde{a}} \wedge \alpha_{\tilde{b}}, \beta_{\tilde{a}} \vee \beta_{\tilde{b}}, \gamma_{\tilde{a}} \vee \gamma_{\tilde{b}}\rangle$*(2)*
Investment: $\tilde{a}^{-1} = \langle({a_4}^{-1}, {a_3}^{-1}, {a_2}^{-1}, {a_1}^{-1}); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}}\rangle$, *where* $a_1, a_2, a_3, a_4 \neq 0$.
Multiplication by a scalar number: [11]

This technique models the problem leading to the formation of a representative hierarchy of the associated decision-making scheme. The comparison is made using a scale, according to Table 3 [1] . To verify the neutrosophic methodology see [1,10,11,16,17].

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

Table 3. Saaty scale translated into a neutrosophic triangular scale. Source:

3. Methods

This study employed a Delphi methodology combined with the Neutrosophic Analytic Hierarchy Process (AHP) to analyze the causes and consequences of illegality in criminal and civil law. The research involved an iterative process with a panel of 18 legal experts, including judges, prosecutors, and defense attorneys, to identify key factors influencing illegality and prioritize strategic solutions.

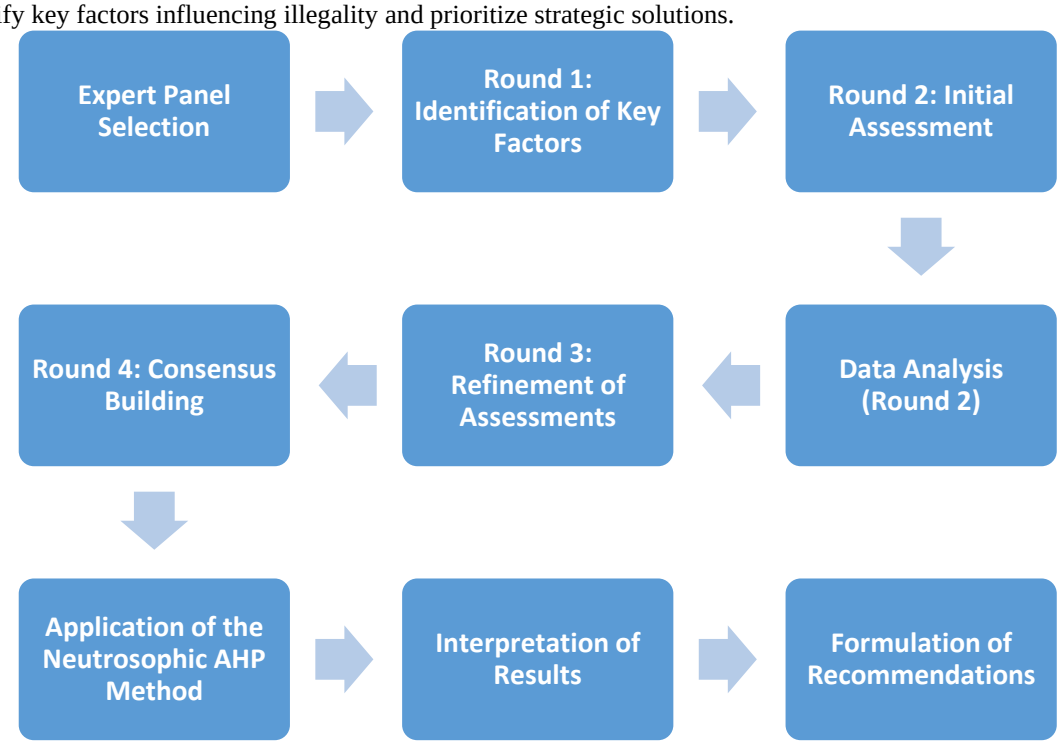

Figure 1. Methodology Steps

Delphi Method Process

The Delphi process was conducted in multiple rounds:

Round 1: Identification of Key Factors

Experts identified five critical factors influencing illegality:
Economic: Impact of economic inequalities on illegal activities.

Social: Influence of cultural norms that justify illegal acts.
Legal: Gaps in legal frameworks hindering effective enforcement.
Political: Political decisions affecting perceptions of legality.
Institutional: Weaknesses in institutions responsible for legal compliance.

Round 2: Initial Assessment

Experts evaluated the influence of each factor using a Single-Valued Neutrosophic Number (SVNN) scale.
The SVNN scale captures three dimensions:
Truth (T): Degree of certainty about the factor's impact.
Indeterminacy (I): Level of uncertainty.
Falsity (F): Degree of disagreement.
Responses were analyzed to identify consensus and areas of discrepancy.

Round 3: Refinement of Assessments

Experts reviewed aggregated results and were encouraged to adjust their assessments based on group feedback. This round aimed to reduce discrepancies and improve consensus on key factors.

Round 4: Consensus Building

Final deliberations focused on areas of disagreement. A consensus threshold of 75% was established, which was met, confirming strong agreement on the prioritization of factors.

Application of the Neutrosophic AHP Method

The Neutrosophic AHP was applied to rank the identified strategies based on expert judgments. Pairwise comparison matrices were constructed using SVNN values to capture uncertainty and contradictions in expert opinions. The final weights for each strategy were derived from the Neutrosophic Weighted Average, highlighting the relative importance of economic, institutional, legal, and political factors.

Data Analysis

TRINS Matrix Construction: For each expert, responses were encoded into TRINS matrices to categorize degrees of agreement on an indeterminate Likert scale.
Neutrosophic Relative Frequencies: Frequency distributions were transformed into Neutrosophic Phylogenetic Probabilities to assess the overall behavior of perceptions.
Statistical Comparisons: Differences in perceptions among expert groups were analyzed using phylogenetic statistical methods, allowing for the detection of significant patterns.

Ethical Considerations

The study adhered to ethical guidelines for research involving human subjects. Participation was voluntary, with confidentiality ensured for all responses.

4. RESULTS AND DISCUSSION.

The Delphi methodology, combined with the AHP neutrosophic approach, was used to analyse the causes and consequences of illegality in criminal and civil law. This iterative process involved the participation of a panel of 18 experts to assess key factors and prioritise strategies to address this issue.
Round 1: Identifying key factors.
Five key factors influencing illegality within the criminal and civil law systems were identified:

1. **Economic** : Impact of economic inequalities on the proliferation of illegal activities.
2. **Social** : Influence of cultural and social norms that tolerate or justify illegal acts.
3. **Legal** : Ambiguities and gaps in regulatory frameworks that hinder their effective implementation.
4. **Political** : Incidence of political decisions that affect the perception of legality and justice.
5. **Institutional** : Weaknesses in the institutions responsible for ensuring compliance with the law.

Round 2: Identification of key factors and initial assessments

Questions :

1. What do you think is the impact of economic factors on illegality?
2. Evaluate the impact of social factors on illegality.
3. Determine the influence of legal factors on illegality.
4. Evaluate the importance of political factors in illegality.
5. Indicate how institutional factors affect illegality.

Responses : Experts provided their assessments using a single-valued number (SVNN)-based neutrosophic scale. Responses were analyzed to identify areas of consensus and discrepancy.

Expert	Economic	Social	Legal	Political	Institutional
E1	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.90;0.10;0.10)	(0.35;0.75;0.80)	(0.50;0.50;0.50)
E2	(0.90;0.10;0.10)	(0.35;0.75;0.80)	(0.75;0.25;0.20)	(0.75;0.25;0.20)	(0.35;0.75;0.80)
E3	(0.35;0.75;0.80)	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.50;0.50;0.50)	(0.90;0.10;0.10)

E4	(0.50;0.50;0.50)	(0.35;0.75;0.80)	(0.90;0.10;0.10)	(0.75;0.25;0.20)	(0.75;0.25;0.20)
E5	(0.90;0.10;0.10)	(0.50;0.50;0.50)	(0.75;0.25;0.20)	(0.90;0.10;0.10)	(0.50;0.50;0.50)
E6	(0.75;0.25;0.20)	(0.35;0.75;0.80)	(0.90;0.10;0.10)	(0.75;0.25;0.20)	(0.35;0.75;0.80)
E7	(0.50;0.50;0.50)	(0.75;0.25;0.20)	(0.35;0.75;0.80)	(0.90;0.10;0.10)	(0.75;0.25;0.20)
E8	(0.90;0.10;0.10)	(0.50;0.50;0.50)	(0.90;0.10;0.10)	(0.75;0.25;0.20)	(0.50;0.50;0.50)
E9	(0.35;0.75;0.80)	(0.35;0.75;0.80)	(0.50;0.50;0.50)	(0.90;0.10;0.10)	(0.90;0.10;0.10)
E10	(0.50;0.50;0.50)	(0.75;0.25;0.20)	(0.90;0.10;0.10)	(0.75;0.25;0.20)	(0.35;0.75;0.80)
E11	(0.90;0.10;0.10)	(0.35;0.75;0.80)	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.75;0.25;0.20)
E12	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.35;0.75;0.80)	(0.90;0.10;0.10)	(0.50;0.50;0.50)
E13	(0.50;0.50;0.50)	(0.90;0.10;0.10)	(0.50;0.50;0.50)	(0.75;0.25;0.20)	(0.90;0.10;0.10)
E14	(0.90;0.10;0.10)	(0.35;0.75;0.80)	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.75;0.25;0.20)
E15	(0.75;0.25;0.20)	(0.75;0.25;0.20)	(0.35;0.75;0.80)	(0.90;0.10;0.10)	(0.50;0.50;0.50)
E16	(0.50;0.50;0.50)	(0.50;0.50;0.50)	(0.90;0.10;0.10)	(0.75;0.25;0.20)	(0.90;0.10;0.10)
E17	(0.90;0.10;0.10)	(0.35;0.75;0.80)	(0.50;0.50;0.50)	(0.75;0.25;0.20)	(0.35;0.75;0.80)
E18	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.90;0.10;0.10)	(0.90;0.10;0.10)	(0.50;0.50;0.50)

Table 4: Level of validation of criteria. Source: Own elaboration

Indicators	(0.9;0.1;0.1)	(0.75;0.25;0.20)	(0.50;0.50;0.50)	(0.35;0.75;0.80)	(0.10;0.90;0.90)
Economic	0.3333	0.5000	0.6667	0.8333	1.0000
Social	0.2222	0.4444	0.5556	0.7778	1.0000
Legal	0.3333	0.5556	0.6667	0.8889	1.0000
Political	0.2778	0.4444	0.5556	0.7778	1.0000
Institutional	0.0000	0.2500	0.4167	0.5833	1,0000

Table 5: Neutrosophic Relative Frequency. Source: Own elaboration

N - Average	SVNN
-1.13	Useful
-0.84	Not very useful
-1.17	Useful
-1.18	Useful
-1.22	Useful
-0.39	Not very useful

Table 6: Cut-off points and criteria scale. Source: Own elaboration**.**

Round 3: Refinement of Assessments

Based on the responses from Round 2, a summary of the assessments and identification of areas of agreement and disagreement was prepared. Experts were asked to reconsider their previous responses if they deemed it necessary, especially in areas where there was significant disagreement.

Questions:

1. Given the variety of responses on the impact of economic factors, would you like to modify your assessment?
2. Are there any new considerations you would like to add regarding the impact of social factors?
3. Given the variety of opinions on the legal factors, do you think it is necessary to adjust your assessment?
4. How would you re-evaluate the importance of political factors after seeing the responses of other experts?
5. Based on the feedback received, would you change your perception of institutional factors?

Answers:

The experts reviewed their previous assessments, adjusting them based on discussions and arguments presented by other participants. This made it possible to significantly reduce discrepancies in assessments.

Round 4 (and subsequent rounds if necessary): Consensus

In this final round, the experts focused on the remaining points of disagreement. After deliberations, a coefficient of agreement was obtained, exceeding the established threshold of 75%. This indicated an acceptable consensus among the experts regarding the relative importance of each factor.

Conclusion of the Delphi process

The analysis found that the **economic factor** is the most critical, followed by the **institutional** and **legal factors** . Priority strategies include strengthening regulatory frameworks, improving institutional efficiency, and addressing economic inequalities that fuel illegality in the criminal and civil law systems.

Solutions to address the identified problems

1. Improving institutional infrastructure: A significant investment in technology and resources is proposed to streamline judicial processes, improving transparency and reducing corruption.

2. Strengthening the legal framework: Update existing laws to close legal loopholes and ensure uniform application at all levels of the judicial system.

3. Reduction of economic inequalities: Implement programs that promote economic inclusion and reduce gaps that encourage illegal activities.

4. Training of judicial personnel: Incorporate ongoing training and evaluation programs for judges, prosecutors, and defenders, focusing on ethics and efficiency.

5. Awareness campaigns: Carry out initiatives that promote citizen knowledge about their legal rights and obligations, fostering a culture of respect for the law.

Strategies for applying the AHP method to solve the problem

1. Promotion of Economic Inclusion Policies (PIE):

2. Implementation of Institutional Modernization Programs (PMI):

3. Strengthening the Legal Framework (FML):

4. Citizen Awareness (CA):

Strategies	**PIE**	**PMI**	**FML**	**CA**
FOOT	1	⟨(4,5,6);0.8,0.1,0.2 ⟩	⟨ (6,7,8);0.9,0.1,0.1 ⟩	⟨(6,7,8);0.9,0.1,0.1 ⟩
PMI	⟨ (4,5,6);0.8,0.1,0.2 ⟩	1	⟨ (2,3,4);0.3,0.7,0.7 ⟩	⟨(4,5,6);0.8,0.1,0.2 ⟩
FML	⟨ (6,7,8);0.9,0.1,0.1 ⟩	⟨(2,3,4);0.3,0.7,0.7 ⟩	1	⟨ (2,3,4);0.3,0.7,0.7 ⟩
SC	⟨ (6,7,8);0.9,0.1,0.1 ⟩	⟨ (4,5,6);0.8,0.1,0.2 ⟩	⟨ (2,3,4);0.3,0.7,0.7 ⟩	1

Table 7. Neutrosophic AHP paired matrix. Source: Own elaboration.

Strategies	**PIE**	PMI	FML	CA	Weight
FOOT	0.65	0.75	0.85	0.50	0.69
PMI	0.20	0.30	0.40	0.35	0.31
FML	0.10	0.05	0.10	0.10	0.09
SC	0.05	0.05	0.05	0.05	0.05

Table 8. Criterion weights using the Neutrosophic AHP method. Source: Own elaboration.

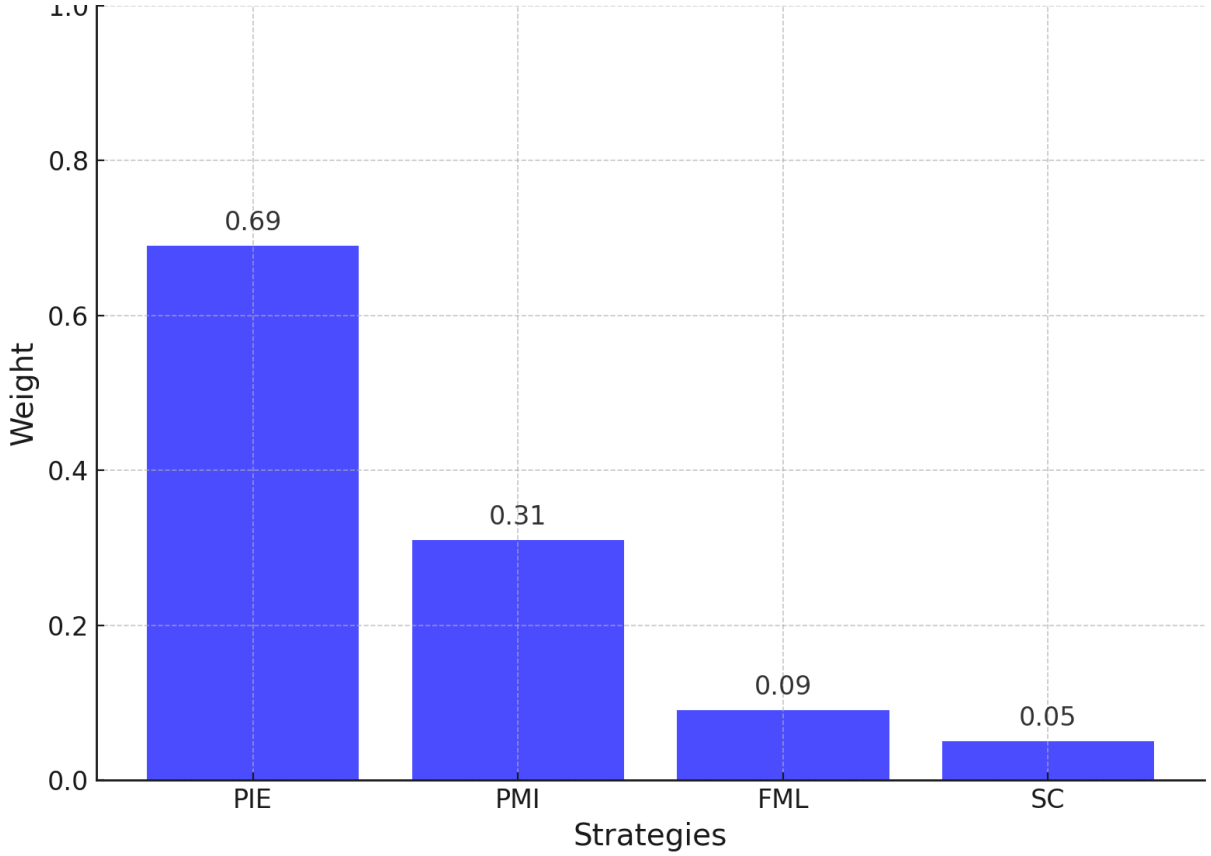

Figure 2: Criterion weights using the Neutrosophic AHP method.

It is concluded that the **PIE strategy** has greater weight, suggesting that programs that promote economic inclusion should be implemented as a priority to address the root causes of illegality. The results obtained underline the relevance of attacking economic inequalities and strengthening institutions as the main actions to reduce illegality in the criminal and civil law systems. Promoting economic inclusion not only addresses an underlying cause but also has a multiplier effect in other areas, such as improving citizen perception of justice and equity. Institutional strengthening is crucial to ensure that existing laws are applied uniformly and transparently. However, this objective cannot be achieved without adequate investment in resources and staff training. In addition, the results also highlight the need for legal reforms that reduce ambiguity and improve consistency in the application of justice. In conclusion, this analysis provides a clear roadmap to address the problem of illegality from a comprehensive and evidence-based perspective. The identified strategies must be implemented in a coordinated manner to maximize their impact and ensure sustainable change.

5. CONCLUSIONS

The findings of this study allow us to identify economic, institutional, and legal factors as the root causes of illegality in the criminal and civil law systems. This analysis, supported by a rigorous Delphi and neutrosophic AHP consensus process, highlights that economic inequalities are the most critical element, followed by deficiencies in institutions and gaps in the regulatory framework. These findings not only reveal the depth of the problem but also the complex interrelations between these factors. From a practical perspective, the results are highly relevant. Prioritizing strategies focused on economic inclusion, institutional modernization, and updating the legal framework offers a clear path toward reducing illegal practices. These actions have the potential to transform not only the legal sphere but also the social and economic dynamics that perpetuate illegality. Likewise, the implementation of awareness-raising campaigns can strengthen the relationship between institutions and citizens, fostering a culture of legality. Among the main contributions of this study is the combined application of the Delphi and neutrosophic AHP methodologies, which provide a robust and structured approach to addressing complex problems with multiple variables. This approach not only allows for reaching a consensus among experts but also generates valuable insights for strategic decision-making. Furthermore, by integrating elements of indeterminacy into the analysis, the study advances the understanding of complex social phenomena, opening up new possibilities for research in legal and social sciences.

However, the study has certain limitations that must be acknowledged. First, the subjectivity inherent in expert assessments may introduce biases that affect the generalizability of the results. Second, the specific context of this analysis limits the direct applicability of the conclusions to other geographic or cultural settings. Finally, the iterative process of the Delphi method may extend over time, which could affect the speed of implementation of the proposed

strategies. For future research, it is recommended to explore methodological approaches that complement neutrosophic analysis, such as the use of artificial intelligence and Fuzzy analysis. In addition, it would be valuable to expand the geographic and cultural scope of the study to validate and generalize the conclusions obtained. It is also suggested to investigate in greater depth the impact of citizen perception on the effectiveness of legal and institutional strategies. In summary, this work offers a comprehensive framework to address illegality from a multidimensional and evidence-based perspective. The proposed strategies, if implemented in a coordinated manner, have the potential to generate a significant impact in building more equitable, effective, and sustainable legal systems.

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