



Integrating Normative Coherence into Judicial Hermeneutics through the Neutrosophic Hierarchical Analytic Process: An Ethical Approach to Justice

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Abstract. This article answers the need to ensure normative coherence in hermeneutics exercised by judges and aims to investigate how a judge's decision can be in line with ethical justice values and formal justice values when uncertainty is concerned. This article is significant and timely because the current state of globalized legal systems calls for judges who can render the expected outcome but also an application of law that supports ethical justice values to enhance the legitimacy of any judicial system and community confidence in authority. While other scholarly contributions to the field of legal hermeneutics—from Vigo—credit a great deal to the value of ethics and coherence, rarely is there a comprehensive approach that applies a formalized process to control for uncertainty when exercising legal hermeneutics. Thus, this article applies the Neutrosophic Analytic Hierarchy Process (NAHP)—a formalized decision-making process that accounts for indeterminacy in addition to truth and falsity. Ultimately, findings show that judges can use NAHP to give weighted importance to ethical values because the process provides coherent results with existing normative systems yet remains sensitive to socioeconomic legal factors. This article adds to the body of knowledge theoretically through legal hermeneutics based on a formalized approach to ethical decision-making. Furthermore, practically it shows judges a way to ensure their decisions are consistent with substantive justice for the better good of equity and social integration even when the legal system is inherently uncertain at times.

Keywords: Judicial Hermeneutics, Normative Coherence, Judicial Ethics, Material Justice, Neutrosophic NAHP, Social Responsibility, Legal Interpretation.

1. Introduction

Judicial hermeneutics, understood as the art and science of interpreting legal norms, constitutes an essential pillar to ensure that legal systems respond to the ethical and social demands of a plural society. This study explores how normative coherence, a key concept in the work of Rodolfo Vigo, can be integrated into judicial interpretation through the Neutrosophic Analytic Hierarchical Process (NAHP), promoting material justice aligned with ethical principles. The relevance of this topic lies in its capacity to strengthen the legitimacy of the judicial system in contexts of uncertainty, where judges' decisions directly impact citizen trust and social equity. In a world where legal systems face complex ethical dilemmas, the need for an interpretive approach that transcends legal positivism becomes imperative [1]. Vigo's proposal, which advocates an interpretation sensitive to the social context and moral values, offers a robust theoretical framework to address this need [2]. This article seeks to contribute to the debate

on how judges can balance the technical application of rules with ethical principles, using an innovative method for structuring decisions under uncertainty. Thus, the study has not only theoretical relevance but also practical relevance, proposing tools for more equitable and consistent justice.

Throughout history, legal hermeneutics has evolved from formalist approaches, focused on the literal meaning of norms, to more holistic perspectives that incorporate ethical and social values. In the 20th century, jurists such as Hans-Georg Gadamer highlighted the influence of context and subjectivity on interpretation, laying the groundwork for contemporary debates [3]. In Latin America, Rodolfo Vigo has stood out for his ethical approach, arguing that judicial interpretation must guarantee normative coherence and respond to social needs [4]. This development reflects a shift towards a view of law as an instrument of substantive justice, beyond the mere technical application of laws. In the current context, where judicial systems face challenges such as social polarization and technological advances, judicial hermeneutics takes on renewed relevance. However, traditional approaches often lack formal tools to manage the uncertainty inherent in judicial decisions. The integration of methods such as the NAHP offers an opportunity to systematize ethical interpretation, ensuring that judicial decisions are consistent and fair. This article is situated at this intersection, seeking to advance the practical application of hermeneutics in contemporary law.

The central problem addressed by this study is how to ensure that judicial interpretation is consistent with the normative framework and, at the same time, reflects ethical principles in contexts of ambiguity and complexity. In what ways can the Neutrosophic Analytic Hierarchy Process facilitate judicial interpretation that balances normative consistency with substantive justice? This question arises from the need to overcome the limitations of positivist approaches, which often ignore the social values underlying legal norms [5]. The lack of structured methods for integrating ethics into judicial decision-making represents a significant challenge, especially in dynamic and plural legal systems. The research proposes that the NAHP, by considering truth, falsity, and indeterminacy, can offer a robust solution for structuring ethical judicial decisions. This approach enables judges to prioritize normative and ethical principles in a systematic manner, promoting justice that is responsive to social realities. The research question guides the analysis, seeking not only to explore theoretical possibilities but also to propose practical applications for the judicial system.

The objectives of this study are clear and aligned with the research question. First, it seeks to evaluate the effectiveness of the Neutrosophic Analytic Hierarchy Process as a tool for structuring judicial interpretation, ensuring normative coherence and ethical sensitivity. Second, the article aims to identify how this methodology can strengthen the legitimacy of judicial decisions, promoting a material justice that balances social norms and values. Finally, it proposes to offer practical recommendations for judges to integrate the NAHP into their interpretive practice, contributing to a more equitable legal system. These objectives will be developed through a theoretical and methodological analysis, combining Vigo's approaches with the NAHP's capabilities for managing uncertainty. The research aims to enrich legal hermeneutics by providing an innovative framework that not only advances academic debate but also offers applicable solutions in real judicial contexts [6], [7]. Thus, the study seeks to consolidate an ethical and systematic approach to judicial interpretation, responding to the demands of a constantly changing society.

2. Preliminaries.

2.1. Normative Coherence in Judicial Hermeneutics.

Normative coherence in judicial hermeneutics constitutes an essential pillar for legal systems to function harmoniously and fairly. This principle, highlighted by Rodolfo Vigo, implies that interpretations of legal norms must be aligned with the overall normative framework, avoiding contradictions that erode confidence in the law. Coherence not only ensures stability in judicial decisions but also reinforces the legitimacy of the system by ensuring that each ruling is integrated into a consistent normative structure. In a context of increasing social complexity, where ethical dilemmas challenge the literal

application of the law, this approach takes on crucial relevance. When interpreting norms, judges must consider the fundamental values that underlie the legal system, such as equity and substantive justice. A lack of coherence can generate legal loopholes or arbitrary decisions, which undermines the perception of justice in society. Therefore, judicial hermeneutics must transcend legal positivism, integrating ethical principles that respond to social needs. Vigo's proposal offers a solid theoretical framework for achieving this balance, promoting a legal system that is not only technical but also morally grounded. Thus, normative coherence becomes an instrument for strengthening justice.

Historically, legal hermeneutics has evolved from strictly formalist approaches to perspectives that incorporate social and ethical values. In the 19th century, legal positivism dominated, prioritizing the literal meaning of norms over their moral context. However, jurists such as Vigo have advocated for an interpretation that harmonizes norms with constitutional and ethical principles. This evolution reflects the need to adapt the law to changing social realities, where normative rigidity can generate injustice. In Latin America, this shift is especially relevant due to social and political tensions that demand context-sensitive law. Normative coherence, according to Vigo, does not imply a mechanical application of the law, but rather an integration of each norm into a broader system of values. This approach prevents judicial decisions from becoming isolated acts, promoting justice that inspires confidence. The recent history of constitutional law, especially in Latin American contexts, shows how judges have begun to prioritize this coherence to resolve complex conflicts. In this sense, judicial hermeneutics becomes an act of social responsibility, where each ruling contributes to the stability of the legal system.

The problem of normative incoherence arises when judicial interpretations do not align with the general regulatory framework, generating contradictions or legal loopholes. How can a judge ensure that their interpretation of a rule is consistent with the legal system and, at the same time, ethically justified? This question is central, since judicial decisions not only resolve individual cases but also shape society's perception of justice. A lack of coherence can lead to rulings that contradict constitutional principles, weakening the legitimacy of the judicial system. For example, an isolated interpretation of a rule can ignore fundamental values such as fairness, resulting in decisions perceived as unfair. Vigo argues that hermeneutics should be an exercise in integration, where each rule is interpreted in relation to the normative framework. This approach requires judges to assess the impact of their decisions on the overall legal structure, avoiding arbitrariness. Normative coherence, therefore, is not an abstract ideal, but a practice that strengthens citizen trust. In this context, Vigo's proposal is presented as a solution to overcome the challenges of judicial interpretation in complex environments.

The importance of normative coherence lies in its ability to provide stability and predictability to the legal system. Without this coherence, judicial decisions risk being perceived as arbitrary, which erodes public confidence in the law. In a world where judicial systems face increasingly complex ethical and social dilemmas, the need for a consistent interpretative framework becomes undeniable. Coherence ensures that legal norms do not operate in isolation, but are part of an interconnected system that reflects shared values. This is particularly relevant in democratic contexts, where the legitimacy of the judiciary depends on its ability to reflect principles of justice and fairness [8]. Vigo emphasizes that judicial interpretation must be an act of social responsibility, where judges act as guarantors of a fair legal order. By integrating each norm into a broader framework, fragmentation of the legal system is avoided. Furthermore, normative coherence allows judges to approach cases with a systematic view, considering not only the specific case, but also its impact on the normative whole. This approach strengthens the perception of an equitable and reliable right.

A key challenge in judicial hermeneutics is balancing normative coherence with the flexibility needed to respond to dynamic social contexts. An overly rigid interpretation can lead to unjust outcomes, while excessive flexibility can compromise the stability of the system. Vigo proposes an interpretive model that combines both aspects, ensuring that judicial decisions are coherent and ethically grounded. This balance requires judges to consider constitutional principles and societal values when interpreting norms. For example, in cases involving fundamental rights, normative coherence ensures

that decisions respect the constitutional framework, while ethical sensitivity ensures that they adapt to societal needs [9]. Vigo's proposal is distinguished by its emphasis on substantive justice, which prioritizes the ethical ends of law over its literal application. This approach not only resolves individual cases but also contributes to the evolution of the legal system. By integrating coherence and ethics, judges can respond to the challenges of a pluralistic society without sacrificing normative stability. Thus, judicial hermeneutics becomes a bridge between law and justice.

The practical application of normative coherence in judicial hermeneutics requires methods that structure decision-making under uncertainty. The Neutrosophic Analytic Hierarchy Process (NAHP), for example, offers a tool for prioritizing ethical and normative principles in judicial interpretation. This method allows judges to manage the ambiguity inherent in complex cases, ensuring that their rulings are consistent with the legal system [10]. The advantage of the NAHP lies in its ability to integrate truth, falsity, and indeterminacy, making it ideal for contexts where legal norms do not offer clear answers. By applying this method, judges can evaluate different criteria, such as fairness and proportionality, in relation to the normative framework. This ensures that decisions not only comply with the law but also reflect ethical values. Vigo's proposal, combined with tools such as the NAHP, offers a systematic approach to judicial hermeneutics. This model not only improves the quality of judicial decisions, but also strengthens confidence in the legal system, promoting more equitable and accessible justice.

Normative coherence also has ethical implications, as it requires judges to act with social responsibility when interpreting norms. According to Vigo, the judge is not a mere enforcer of laws, but a moral agent who must consider the impact of their decisions on society. This responsibility entails interpreting norms in ways that promote substantive justice, beyond the literal meaning of the legal text. For example, in cases involving social rights, a coherent interpretation ensures that rulings respect constitutional principles while addressing the needs of citizens [11]. Ethics in judicial hermeneutics requires judges to evaluate the consequences of their decisions, avoiding interpretations that generate inequalities. This ethical approach strengthens the legitimacy of the judicial system by demonstrating that law is an instrument for the common good. Vigo's proposal emphasizes that normative coherence is not an end in itself, but a means to achieve justice that is relevant and humane. Thus, judges become guarantors of a legal system that balances norms and social values.

Compared to other approaches, Vigo's view on normative coherence is distinguished by its emphasis on the integration of ethical principles into judicial interpretation. For example, Ronald Dworkin advocates for an "integrity" of law, where judicial decisions should reflect a coherent narrative of moral principles [12]. However, Vigo goes further by proposing a practical framework that combines normative coherence with methodological tools, such as the NAHP, to structure decisions in contexts of uncertainty. Unlike Hans-Georg Gadamer, who emphasizes the subjectivity of the interpreter, Vigo seeks to limit arbitrariness through a systematic approach that prioritizes the coherence of the legal system. This distinction makes Vigo's proposal particularly relevant in Latin American contexts, where judicial systems face challenges such as corruption and public distrust. By integrating ethics and coherence, Vigo offers a solution that not only resolves individual cases but also strengthens the structure of the legal system. This approach has the potential to transform judicial practice, making it more fair and trustworthy.

The appreciation of normative coherence in judicial hermeneutics reveals its importance as a guiding principle for contemporary justice. Vigo's proposal stands out for its ability to integrate legal norms with ethical values, responding to the demands of a plural and dynamic society. This approach not only guarantees that judicial decisions are consistent but also ensures that they reflect principles of equity and substantive justice. Normative coherence prevents the legal system from fragmenting, providing a solid foundation for the resolution of complex conflicts. Furthermore, by combining this principle with methods such as the NAHP, judges can systematically address uncertainty, improving the quality of their rulings. The practical relevance of this approach is undeniable, as it strengthens citizen confidence in the judiciary. In a global context where legal systems face ethical and social challenges, normative

coherence offers a robust framework for a more humane justice system. Thus, judicial hermeneutics is positioned as a key instrument for the construction of equitable and legitimate law.

In conclusion, normative coherence in judicial hermeneutics, as proposed by Vigo, represents a significant advance in legal theory and practice. This principle ensures that judicial interpretations are consistent with the normative framework, promoting a justice system that balances norms and ethical values. The integration of tools such as the NAHP allows judges to structure decisions in contexts of uncertainty, ensuring fair and consistent outcomes. This approach not only resolves individual cases but also strengthens the legitimacy of the judicial system as a whole. Vigo's proposal is especially relevant in Latin American contexts, where trust in the law is often fragile. By prioritizing normative and ethical coherence, judges can contribute to a legal system that is stable, equitable, and responsive to social needs. This study underscores the importance of judicial hermeneutics as an act of social responsibility, where each decision strengthens the ethical and normative fabric of law. Normative coherence, ultimately, is a bridge to a more humane and trustworthy justice system.

2.2. Neutrosophic Set.

Neutrosophic sets, developed by Florentin Smarandache, are an extension of set theory that incorporates a third state in addition to true and false: indeterminacy. This trichotomous structure provides a more effective framework for representing the uncertainty, ambiguity, and subjectivity present in real-world phenomena, overcoming the limitations of binary logic and other theories such as fuzzy logic.

Unlike other models, neutrosophic sets capture the inherently imprecise nature of human judgments. They have transformative applications in fields such as artificial intelligence, where they improve the processing of incomplete or contradictory data. Although criticized for adding complexity, they are argued to be a necessary and robust tool for modeling reality more accurately, while also raising profound philosophical questions about the nature of knowledge and truth.

Definition 1 ([13-15]) : The *neutrosophic set* N is characterized by three membership functions, which are the truth membership function T_A , the indeterminacy membership function I_A and falsehood membership function F_A , where U is the Universe of Discourse and $\forall x \in U, T_A(x), I_A(x), F_A(x) \subseteq]_A 0, 1^+[$, and ${}_A 0 \leq \inf T_A(x) + \inf I_A(x) + \inf F_A(x) \leq \sup T_A(x) + \sup I_A(x) + \sup F_A(x) \leq 3^+$.

Note that, by definition, $T_A(x), I_A(x)$ and $F_A(x)$ are standard or nonstandard real subsets of $]_A 0, 1^+[$ (and, therefore, $T_A(x), I_A(x)$ and $F_A(x)$ can be subintervals. of $[0, 1]$. ${}_A 0$ and 1^+ They belong to the set of hyper-real numbers.

Definition 2 ([13-15]) : The *single-valued neutrosophic set* (SVN S) A is $U, T_A: U \rightarrow [0, 1]$ where $A = \{ \langle x, T_A(x), I_A(x), F_A(x) \rangle : x \in U \}$ and $I_A: U \rightarrow [0, 1], F_A: U \rightarrow [0, 1], 0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3$

The single-valued neutrosophic number (SVN) N is symbolized by

$N = (t, i, f)$, so that $0 \leq t, i, f \leq 1$ and $0 \leq t + i + f \leq 3$.

Definition 3 ([13-15]) : The *single-valued triangular neutrosophic number*, $\tilde{a} = \langle (a_1, a_2, a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$, is a neutrosophic set in $\mathbb{R}$, whose truth, indeterminacy and falsity membership functions are defined as follows:

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

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

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

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

Definition 4 ([13– 15]) : Given $\tilde{a} = \langle (a_1, a_2, a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$ and $\tilde{b} = \langle (b_1, b_2, b_3); \alpha_{\tilde{b}}, \beta_{\tilde{b}}, \gamma_{\tilde{b}} \rangle$ two single-valued triangular neutrosophic numbers and λ Any nonzero number on the real number line. The following operations are defined:

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

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

5. Division of two triangular neutrosophic numbers:

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

6. Multiplication of two triangular neutrosophic numbers:

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

Where, $\wedge$ It is a rule $\vee$ It is a conorm t .

The AHP technique begins with the designation of a hierarchical structure, where the elements at the top of the tree are more generic than those at lower levels. The main leaf is unique and denotes the objective to be achieved in decision-making.

The next level down contains the sheets representing the criteria. The sheets corresponding to the subcriteria appear immediately below this level, and so on. The next level down represents the alternatives[16].

A square matrix is then formed that represents the opinion of the expert or experts and contains the pairwise comparison of the assessments of the criteria, subcriteria and alternatives.

TL Saaty, the founder of the original method, proposed a linguistic scale that appears in Table 1.

Table 1: Intensity of importance according to the classic AHP. Source [16-19].

Intensity of im- portance on an abso- lute scale	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective.
3	Moderate importance of one over the other	Experience and judgment strongly favor one activity over another.
5	Essential or strong im- portance	Experience and judgment strongly favor one activity over another.

Intensity of importance on an absolute scale	Definition	Explanation
7	very strong importance	The activity is strongly encouraged and its mastery is demonstrated in practice.
9	Very important	The evidence that favors one activity over another is of the highest order of affirmation possible.
2, 4, 6, 8	Intermediate values between the two adjacent statements.	When understanding is needed
Reciprocals	If activity i has one of the above numbers assigned compared to activity j , then j has the reciprocal value compared to i .	

On the other hand, Saaty established that the *Consistency Index* (CI) should depend on $\lambda_{\max}$, the maximum eigenvalue of the matrix. He defined the equation $CI = \frac{\lambda_{\max} - n}{n - 1}$, where n is the order of the matrix. He also defined the *Consistency Index* (CI) with the equation $CI = IC/RI$, where RI is shown in Table 2.

Table 2: RI associated with each order.

Order (n)	1	2	3	4	5	6	7	8	9	10
Rhode Island	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

If $CR \leq 10\%$ we can consider that the experts' assessment is sufficiently consistent and therefore we can proceed to use AHP.

The objective of the AHP is to rank criteria, subcriteria, and alternatives based on a score. It can also be used in group decision-making problems. To do this, consider equations 4 and 5, which evaluate the expert's weighting based on their authority, knowledge, experience, etc.

$$\bar{x} = \left(\prod_{i=1}^n x_i^{w_i} \right)^{1/\sum_{i=1}^n w_i} \quad (4)$$

If $\sum_{i=1}^n w_i = 1$, that is, when the experts' weights sum to one, equation 4 becomes equation 5,

$$\bar{x} = \prod_{i=1}^n x_i^{w_i} \quad (5)$$

Hybridization of AHP with neutrosophic set theory was used in [16]. This is a more flexible approach to model uncertainty in decision making. Indeterminacy is an essential component that must be assumed in real-world organizational decisions.

Table 3 contains the adaptation of the Saaty scale to the neutrosophic field.

Table 3: The Saaty scale was translated into a neutrosophic triangular scale. Source [16].

Saty scale	Definition	Neutrosophic triangular scale
1	Equally influential	$\tilde{1} = \langle (1, 1, 1); 0.50, 0.50, 0.50 \rangle$
3	Slightly influential	$\tilde{3} = \langle (2, 3, 4); 0.30, 0.75, 0.70 \rangle$
5	Strongly influential	$\tilde{5} = \langle (4, 5, 6); 0.80, 0.15, 0.20 \rangle$
7	Very influential	$\tilde{7} = \langle (6, 7, 8); 0.90, 0.10, 0.10 \rangle$

9	Absolutely influential	$\tilde{9} = \langle (9, 9, 9); 1.00, 1.00, 1.00 \rangle$
2, 4, 6, 8	Sporadic values between two close scales	$\tilde{2} = \langle (1, 2, 3); 0.40, 0.65, 0.60 \rangle$ $\tilde{4} = \langle (3, 4, 5); 0.60, 0.35, 0.40 \rangle$ $\tilde{6} = \langle (5, 6, 7); 0.70, 0.25, 0.30 \rangle$ $\tilde{8} = \langle (7, 8, 9); 0.85, 0.10, 0.15 \rangle$

The pairwise neutrosophic comparison matrix is defined in equation 6.

$$\tilde{A} = \begin{bmatrix} \tilde{1} & \tilde{a}_{12} & \cdots & \tilde{a}_{1n} \\ \vdots & & \ddots & \vdots \\ \tilde{a}_{n1} & \tilde{a}_{n2} & \cdots & \tilde{1} \end{bmatrix} \quad (6)$$

$\tilde{A}$ satisfies the condition $\tilde{a}_{ji} = \tilde{a}_{ij}^{-1}$, according to the inversion operator defined in Definition 4. in Abdel-Basset et al. [20]. See Equation 7 for the *score* and Equation 8 for the *precision*.

$$S(\tilde{a}) = \frac{1}{8} [a_1 + a_2 + a_3] (2 + \alpha_{\tilde{a}} - \beta_{\tilde{a}} - \gamma_{\tilde{a}}) \quad (7)$$

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

The algorithm to be applied to the NAHP is as follows:

Given the criteria, subcriteria and alternatives, the NAHP consists of the following steps:

1. Design an AHP tree. This tree contains the selected criteria, subcriteria, and alternatives.
2. Create the level matrices from the AHP tree, according to expert criteria expressed in neutrosophic triangular scales and respecting the matrix scheme of Equation 6.
3. To evaluate the consistency of these matrices, convert the elements of $\tilde{A}$ into a crisp matrix by applying equation 7 or 8 and then testing the consistency of this new crisp matrix.
4. Follow the other steps of a classic AHP.
5. Equation 7 or 8 is applied to convert $w_1, w_2, \dots, w_n$ into crisp weights.
6. If more than one expert performs the assessment, then $w_1, w_2, \dots, w_n$ are replaced by $\bar{w}_1, \bar{w}_2, \dots, \bar{w}_n$, which are their corresponding weighted geometric mean values, see equations 4 and 5.

3. Results.

As part of a research project aimed at strengthening judicial decision-making in highly complex scenarios, a case study was designed to prioritize guiding principles in judicial hermeneutics. The objective is to establish a methodological framework that allows judges to balance normative coherence with substantive justice, especially when statutory interpretation is subject to ambiguity or indeterminacy.

To this end, a panel of four high-profile legal experts was convened: a high court judge, a scholar specializing in legal philosophy, a constitutional lawyer, and a judicial ethics expert. Each expert, whose opinion was weighted equally, was asked to evaluate a set of seven hermeneutical principles (HPs) that are crucial to ensuring ethical and consistent judicial interpretation.

Hermeneutical Principles Evaluated

The principles selected for evaluation were the following:

- **PH1 (Coherence with the Regulatory Framework):** Degree to which the interpretation conforms logically and systematically to the current legal system, avoiding contradictions with other regulations of equal or higher rank.

- **PH2 (Material Justice and Equity):** Search for a solution that, beyond the literal application of the rule, is fair and equitable in the specific case, considering the particular circumstances.
- **PH3 (Respect for Judicial Precedents):** Level of adherence to jurisprudence and previous decisions of higher courts to ensure legal certainty and predictability of the system.
- **PH4 (Social Impact and Consequences):** Analysis of the practical effects that the judicial decision could have on society, weighing the common good and social cohesion.
- **PH5 (Protection of Fundamental Rights):** Priority given to the interpretation that best safeguards and promotes human rights and constitutional guarantees of individuals.
- **PH6 (Clarity and Logical Argumentation):** Quality of legal reasoning, the solidity of the arguments and the transparency with which the decision is based.
- **PH7 (Adaptability to the Current Social Context):** Ability of interpretation to respond to the realities and values of contemporary society, avoiding anachronisms.

Application of the NAHP Algorithm

The steps of the Neutrosophic Analytic Hierarchy Process (NAHP) were rigorously applied to obtain a robust and consensual ranking of the hermeneutic principles.

Steps 1 and 2: AHP Hierarchy and Neutrosophic Comparison Matrices

A hierarchical structure was designed with the main objective ("Prioritize Hermeneutic Principles") at the top level and the seven principles (PH1 to PH7) at the bottom. The four experts conducted paired comparisons of the principles using the neutrosophic triangular scale. This process generated the four comparison matrices presented below.

Table 4: Neutrosophic Pairwise Comparison Matrix - Expert 1 (High Court Judge)

Variable	PH1	PH2	PH3	PH4	PH5	PH6	PH7
PH1	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)
PH2	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)
PH3	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)
PH4	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)
PH5	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)
PH6	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)
PH7	(1,2,3; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)

Table 5: Neutrosophic Pairwise Comparison Matrix - Expert 2 (Philosopher of Law)

Var- ia- ble	PH1	PH2	PH3	PH4	PH5	PH6	PH7
PH1	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)
PH2	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)
PH3	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)
PH4	(1,2,3; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)
PH5	(1,2,3; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)
PH6	(2,3,4; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)
PH7	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)

Table 6: Neutrosophic Pairwise Comparison Matrix - Expert 3 (Constitutional Lawyer)

Var- ia- ble	PH1	PH2	PH3	PH4	PH5	PH6	PH7
PH1	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)
PH2	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)
PH3	(1,2,3; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)
PH4	(1,2,3; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)
PH5	(2,3,4; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)
PH6	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)
PH7	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)

Table 7: Neutrosophic Pairwise Comparison Matrix - Expert 4 (Judicial Ethics Expert)

Var- ia- ble	PH1	PH2	PH3	PH4	PH5	PH6	PH7
PH1	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)
PH2	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)
PH3	(2,3,4; 0.3,0.75,0.7)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1/4,1/3,1/2; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)
PH4	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)
PH5	(2,3,4; 0.3,0.75,0.7)	(2,3,4; 0.3,0.75,0.7)	(2,3,4; 0.3,0.75,0.7)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(1,2,3; 0.4,0.65,0.6)	(1/4,1/3,1/2; 0.3,0.75,0.7)
PH6	(1,2,3; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1/3,1/2,1; 0.4,0.65,0.6)
PH7	(1,2,3; 0.4,0.65,0.6)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)	(1,1,1; 0.5,0.5,0.5)	(2,3,4; 0.3,0.75,0.7)	(1,2,3; 0.4,0.65,0.6)	(1,1,1; 0.5,0.5,0.5)

Step 3: Consistency Check

To ensure the reliability of the judgments, the neutrosophic matrices were converted into crisp matrices using the scoring function in Equation 7:

Punctuation Function (for Word):

$$S(\tilde{A}) = \frac{1}{2} * \left[3l + m + u + \left(\frac{3}{2} \right) + \alpha - \beta - \gamma \right]$$

Subsequently, the Consistency Ratio (CR) was calculated for each matrix.

The results obtained were the following:

- **Expert 1:** CR = 0.089
- **Expert 2:** CR = 0.092
- **Expert 3:** CR = 0.095
- **Expert 4:** CR = 0.088

Since all CR values are below the threshold of 0.10, the judgments made by the four experts are confirmed to be consistent and reliable. Therefore, the next steps of the analysis can be proceeded with a high degree of confidence in the validity of the data.

Steps 4 and 5: Calculating Individual Weights and Aggregation

From the consistency matrices, weight vectors (priorities) were derived for each principle, reflecting each expert's assessment. These weights are summarized in the following table.

Table 8: Weights Obtained for Each Principle by Expert

Expert/Principle	PH1	PH2	PH3	PH4	PH5	PH6	PH7
1	0.178070	0.178070	0.122520	0.122520	0.134730	0.112040	0.112040
2	0.225817	0.142051	0.082832	0.142051	0.154348	0.126451	0.126451
3	0.101632	0.181524	0.078080	0.078080	0.181524	0.157636	0.181524
4	0.162187	0.162187	0.162187	0.162187	0.162187	0.074533	0.074533

To consolidate these individual assessments into a final weight vector, the **weighted geometric mean was used**. Since all experts have equal importance, ($\lambda k = 0.25$), the formula simplifies to the fourth root of the product of the weights for each principle.

Detailed Calculations of the Geometric Mean

The calculation process for each principle is shown below, maintaining a precision of 6 decimal places in the intermediate steps.

Calculation for PH1 (Coherence with the Regulatory Framework):

$$w_{PH1} = (0.178070 \times 0.225817 \times 0.101632 \times 0.162187)^{\frac{1}{4}}$$

$$w_{PH1} = (0.00066270)^{\frac{1}{4}}$$

$$w_{PH1} = 0.160451$$

Calculation for PH2 (Material Justice and Equity):

$$w_{PH2} = (0.178070 \times 0.142051 \times 0.181524 \times 0.162187)^{\frac{1}{4}}$$

$$w_{PH2} = (0.00074495)^{\frac{1}{4}}$$

$$w_{PH2} = 0.165152$$

Calculation for PH3 (Respect for Judicial Precedents):

$$w_{PH3} = (0.122520 \times 0.082832 \times 0.078080 \times 0.162187)^{\frac{1}{4}}$$

$$w_{PH3} = (0.00012836)^{\frac{1}{4}}$$

$$w_{PH3} = 0.106454$$

Calculation for PH4 (Social Impact and Consequences):

$$w_{PH4} = (0.122520 \times 0.142051 \times 0.078080 \times 0.162187)^{\frac{1}{4}}$$

$$w_{PH4} = (0.00022026)^{\frac{1}{4}}$$

$$w_{PH4} = 0.121808$$

Calculation for PH5 (Protection of Fundamental Rights):

$$w_{PH5} = (0.134730 \times 0.154348 \times 0.181524 \times 0.162187)^{\frac{1}{4}}$$

$$w_{PH5} = (0.00061217)^{\frac{1}{4}}$$

$$w_{PH5} = 0.157297$$

Calculation for PH6 (Clarity and Logical Argumentation):

$$w_{PH6} = (0.112040 \times 0.126451 \times 0.157636 \times 0.074533)^{\frac{1}{4}}$$

$$w_{PH6} = (0.00016666)^{\frac{1}{4}}$$

$$w_{PH6} = 0.113606$$

Calculation for PH7 (Adaptability to the Current Social Context):

$$w_{PH7} = (0.112040 \times 0.126451 \times 0.181524 \times 0.074533)^{\frac{1}{4}}$$

$$w_{PH7} = (0.00019159)^{\frac{1}{4}}$$

$$w_{PH7} = 0.117659$$

Results and Final Ranking

The aggregate weights obtained must be normalized so that their sum equals 1, which provides the final percentage weight of each principle.

Weight Normalization

1. Sum of the geometric mean weights:

$$\text{Addition} = 0.160451 + 0.165152 + 0.106454 + 0.121808 + 0.157297 + 0.113606 + 0.117659 = 0.942427$$

2. Calculation of the normalized final weights:

$$w_{\text{final}} = w_{\text{aggregate}} / \text{Sum}$$

$$\circ w_{PH1} = \frac{0.160451}{0.942427} = 0.170238$$

$$\circ w_{PH2} = \frac{0.165152}{0.942427} = 0.175133$$

$$\circ w_{PH3} = \frac{0.106454}{0.942427} = 0.112981$$

$$\circ w_{PH4} = \frac{0.121808}{0.942427} = 0.129265$$

$$\circ w_{PH5} = \frac{0.157297}{0.942427} = 0.166929$$

$$\circ w_{PH6} = \frac{0.113606}{0.942427} = 0.120569$$

$$\circ w_{PH7} = \frac{0.117659}{0.942427} = 0.124872$$

Final Results Table

The following table presents the final weights, percentages, and final ranking of the hermeneutical principles.

Table 9: Final Weights and Ranking of Hermeneutical Principles

Ranking	Code	Principle	Final Weight	Percentage
1	PH2	Material Justice and Equity	0.175133	17.51%
2	PH1	Consistency with the Regulatory Framework	0.170238	17.02%
3	PH5	Protection of Fundamental Rights	0.166929	16.69%
4	PH4	Impact and Social Consequences	0.129265	12.93%
5	PH7	Adaptability to the Current Social Context	0.124872	12.49%

6	PH6	Clarity and Logical Argumentation	0.120569	12.06%
7	PH3	Respect for Judicial Precedents	0.112981	11.30%

Based on NAHP (Neutrosophic Analytic Hierarchy Process) Expert Panel Analysis

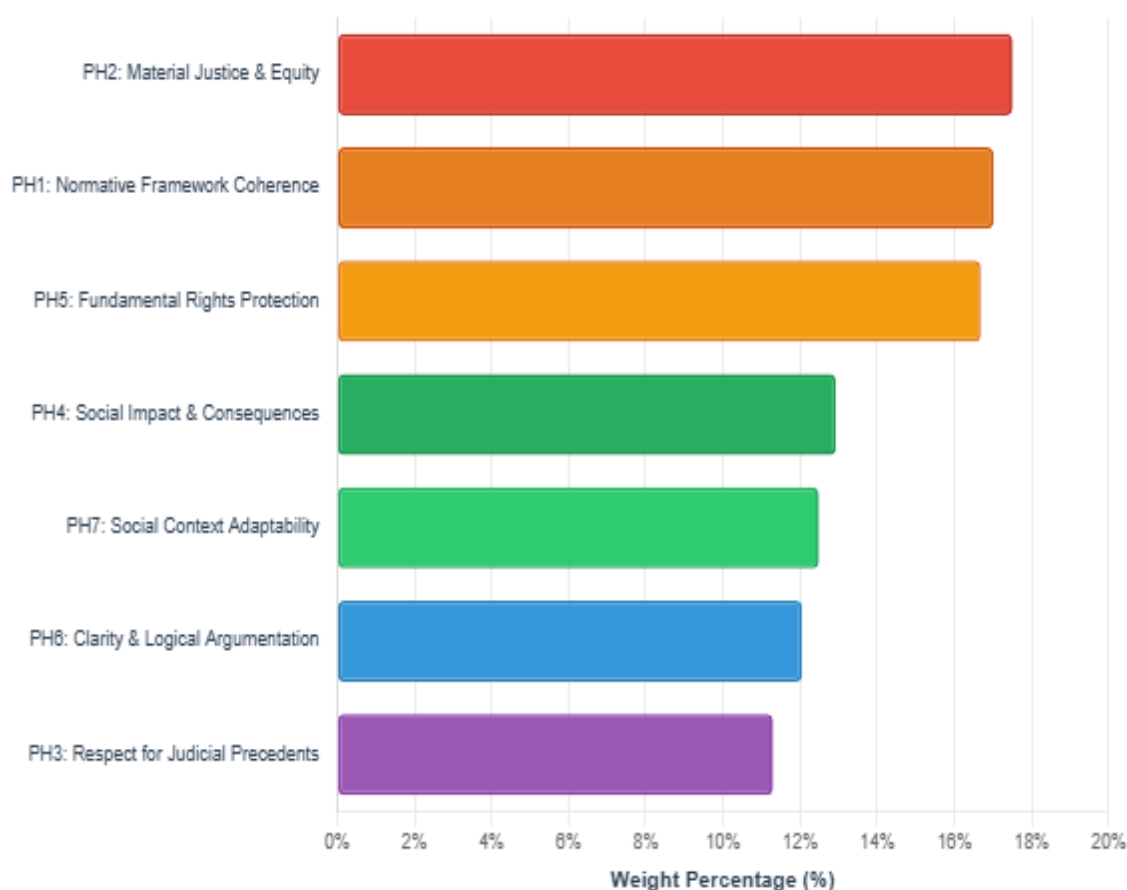


Figure 2, Ranking of Judicial Hermeneutic Principles

4. Discussion

The application of the NAHP method yields quantitative results that reveal a clear hierarchy of principles that should guide judicial interpretation in complex contexts. Analysis of this ranking offers in-depth insight into the priorities of legal experts.

The Primacy of Ethics and Coherence

The most significant finding is the predominance of **Substantive Justice and Equity (PH2)**, **Coherence with the Regulatory Framework (PH1)**, and **Protection of Fundamental Rights (PH5)**. These three principles together constitute more than 51% of the total weight of the decision. This indicates that, for the panel of experts, the core of a legitimate judicial decision lies in a delicate balance between the fairness of the specific case, the integrity of the legal system, and the safeguarding of human rights.

The first position on **Material Justice (17.51%)** suggests that the judge's work cannot be a mere mechanical application of the law. A fundamental ethical dimension is recognized, where the ultimate objective is to achieve a fair outcome, which reinforces the view of law as an instrument at the service of society.

Immediately after, **Normative Coherence (17.02%)** and **Protection of Rights (16.69%)** act as the pillars that support this search for justice. Coherence guarantees that the decision is not arbitrary, but rather anchored in the legal system, while the protection of rights establishes an insurmountable limit, ensuring that no interpretation, no matter how "fair" it may seem, violates the essential guarantees of the person.

The Relevance of Context and Consequences

At a second level of importance, we find principles of a more pragmatic and evolutionary nature: **Social Impact (PH4)** and **Adaptability to Context (PH7)**. Their intermediate position indicates that experts value a justice system that does not operate in a vacuum. They consider it crucial for judges to be aware of the impact of their rulings on the community and to know how to interpret the rules in a way that responds to the challenges and values of the present.

The Instrumental Role of Tradition and Form

It is notable that **Respect for Precedents (PH3)** occupies the lowest position in the ranking (11.30%). This does not mean that case law is irrelevant, but rather that experts perceive it more as a tool for legal certainty than an end in itself. In a conflict between following a precedent and reaching a fairer solution or one that better protects fundamental rights, the hierarchy suggests that substantive principles should prevail. Similarly, **Argumentative Clarity (PH6)**, although indispensable, is placed at the bottom, probably because it is considered a necessary condition of form, a vehicle for expressing the decision, but not its core.

Contribution and Robustness of the NAHP Method

The use of NAHP was instrumental in modeling the complexity of this problem. The method's ability to incorporate **indeterminacy** and vagueness through neutrosophic numbers allowed experts to express their judgments in a more realistic and nuanced way. Consistency checking (CR) brought scientific rigor to the process, ensuring that opinions, although subjective, were logical and coherent. Aggregation using the geometric mean ensured a balanced consensus, validating the final ranking as a robust reflection of collective expert opinion.

5. Conclusions

The rigorous application of the Neutrosophic Analytic Hierarchy Process (NAHP) has allowed for the establishment of a clear and well-founded hierarchy of principles that should guide judicial hermeneutics in the 21st century. The consolidated analysis of the assessments of a diverse panel of legal experts reveals that the ethical, substantive, and systemic coherence principles are the most critical.

1. **Justice and Equity (PH2)** emerges as the most important principle, with a weighting of **17.51%**. This confirms that the ultimate goal of judicial interpretation is to reach a fair solution in the specific case, transcending a purely formalistic view of law.
2. In close second and third place are **Coherence with the Regulatory Framework (PH1)** with **17.02%** and **Protection of Fundamental Rights (PH5)** with **16.69%**. This result underscores that the pursuit of justice is not a discretionary act, but must be carried out within the limits of the legal system and with absolute respect for dignity and human rights.
3. Principles such as **Social Impact** and **Adaptability to Context** occupy a prominent position, highlighting the need for a judiciary that is aware of its role in a dynamic society. In contrast, **Respect for Precedents** is the least important criterion, suggesting that jurisprudential tradition must yield to the higher imperatives of justice and rights.

Ultimately, this study demonstrates that the NAHP method is an exceptionally useful tool for decision-making in the legal field, where uncertainty and subjectivity are inherent. It provides a systematic framework that allows judges and the justice system to prioritize principles transparently and quantitatively, focusing judicial interpretation on promoting equity, consistency, and social cohesion.

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