Neutrosophic–Plithogenic IADOV for Capturing Subjective Meaning in Qualitative Research

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Abstract

The research problem of this endeavor was how to comprehend subjective meanings based upon qualitative research—a uniform methodological concern of the social sciences for phenomena perpetually occurring in ever-changing environments. The significance of the study is based upon a methodological necessity that transcends natural human capability to engage what it means to be "uncertain" now that so much social reality has been rendered tainted, in addition to cultural and contextual amalgamation. Nonsensical articles provide one form of understanding but fail to equip uncertainty—acknowledgement of where something can go one way or the other, or multiple—and multivalent perspectives ultimately render ineffective opportunities for researchers to adopt a quantifiable, absolute reality. Therefore, this endeavor applies the Iadov Plithogenic Neutrosophic approach, compounded of plithogenic logic with neutrosophic meaning to successfully navigate qualitative research with high uncertainty. Ultimately, findings support that this approach empowers researchers to remove layers and find meaning in more original and texture-based fashions than the traditional A/B/C option. Ultimately, this work contributes theoretically to qualitative researches with an integrative new approach to render subjectivity, while practically providing those who want to understand a complicated world, the works to be effective. This endeavor illustrates that the most effective flexible approach to render meaning knowledge is the only way to go when the undertaking exists in comprehensive arenas.

Keywords: Qualitative Research; Neutrosophic Plithogenic Iadov; Subjectivity; Meanings; Uncertainty; Interpretive Methods; Context

1. Introduction

Qualitative research, an essential pillar for unraveling the complexity of social phenomena, is enriched by approaches that address the subjectivity and uncertainty inherent in human experiences. This study explores the use of the Iadov Plitogenic Neutrosophic method to capture subjective meanings, a topic of growing relevance in the social sciences. The need to understand human realities in dynamic and diverse contexts drives this research. Traditional methods, although valuable, often lack tools to handle the ambiguity of individual perceptions [1]. The proposal to integrate plitogenic and neutrosophic approaches responds to this lack, offering an innovative framework. Subjectivity, far from being an obstacle, is positioned as a key resource for generating in-depth knowledge [2]. In a world where social interactions are increasingly complex, this approach is crucial. Qualitative research, by valuing context and experiences, allows for a richer understanding of reality [3]. This work seeks to contribute to this field, proposing a methodology that captures profound nuances. Its relevance lies in its ability to address social phenomena from an integrative and flexible perspective.

Over the past few decades, qualitative research has evolved significantly, moving from rigid approaches to more open and interpretive methodologies. Initially dominated by positivist paradigms, the discipline began to incorporate post-positivist perspectives in the 20th century [4]. This shift recognized the importance of subjectivity

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and context in the analysis of social phenomena. Authors such as Denzin and Lincoln have emphasized the need for approaches that integrate multiple perspectives to capture human complexity [5]. In Latin America, the work of Martínez Miguélez has been pivotal, promoting interpretive methods that value individual experience [6]. However, the integration of uncertainty and ambiguity into these methods has been less explored. Recent advances in the social sciences have highlighted the relevance of tools that handle unstructured data and diverse perceptions. This historical and conceptual context places the Iadov Plithogenic Neutrosophic method as a timely innovation. Its ability to address indeterminacy makes it a valuable resource. Thus, this study is inserted in a tradition of methodological evolution.

The central problem this article addresses is the difficulty of capturing subjective meanings in contexts of high uncertainty within qualitative research. Despite advances in interpretive methodologies, a gap persists in managing the ambiguity inherent to human experiences [7]. How can qualitative research integrate uncertainty to generate deep and contextualized knowledge? This question guides the study, seeking to overcome the limitations of traditional approaches. Subjectivity, although recognized as essential, is often approached in a fragmented manner, without robust tools to systematize its analysis. Conventional methods tend to simplify complex phenomena, losing crucial nuances [8]. The lack of approaches that integrate multiple dimensions of social reality motivates this research. The Iadov Plithogenic Neutrosophic method emerges as a potential solution, by allowing a more complete analysis of qualitative data. This problem is not only theoretical, but also practical, with implications for studies in diverse cultural contexts. The question seeks to open a dialogue on innovative methodologies.

The objectives of this study are clear and aligned with the posed research question. First, it seeks to evaluate the effectiveness of the Neutrosophic Plitogenic Iadov method for capturing subjective meanings in qualitative research. Furthermore, it aims to develop a methodological framework that systematically integrates uncertainty and subjectivity. This approach will allow researchers to address complex social phenomena in greater depth. A third objective is to offer practical recommendations for applying this method in diverse social and cultural contexts. The research also aims to contribute to the theoretical debate on interpretive validity in qualitative studies. These objectives respond to the need to overcome the limitations of traditional methods. In doing so, the study seeks to enrich the practice of qualitative research in the social sciences. The coherence between the objectives and the research question ensures a structured approach. Finally, the work aims to inspire new applications of integrative methodologies. Thus, it is positioned as a significant contribution to the field.

2. Related work

2.1. Plithogenic environment

The study uses the IADOV Plithogenic method to analyze the diversity and complexity of Indigenous communities' perceptions of their rights and legal practices in Ambato, Ecuador. This innovative approach highlights how the interaction between ancestral worldviews and the current legal system influences community satisfaction. It underscores the need for inclusive approaches that harmonize cultural plurality with Indigenous justice.

Analysis: neutrosophics as an integration of plithogenic logic

Mathematical modeling, from neutrosophic logic to plithogenic logic, is a methodology that focuses on incorporating indeterminacy and contradiction into the evaluation of sets and systems. Plithogenic logic has the following characteristics:

1. Neutrosophic sets: These sets allow to quantify the indeterminacy (I) through a third parameter, in addition to the true membership (T) and the false membership (F) [9] . The values of T, I and F are independent and their total sum is between 0 and 3 [10] .
2. Membership functions: Within a universe of discourse U, a Neutrosophic Set (NS) is defined by three functions: $u_A(x), r_A(x), v_A(x) : X \rightarrow \ ]0-, 1+[$; that satisfy the condition $0 \leq -\inf u_A(x) + \inf r_A(x) + \inf v_A(x) \leq \sup u_A(x) + \sup r_A(x) + \sup v_A(x) \leq 3 +$for all $x \in X$. $u_A(x), r_A(x), v_A(x)$are the truth, indeterminacy and falsity membership functions of x in A, respectively, and their images are standard or non-standard subsets of $]0-, 1+[$.
3. Plitogeny: Represents the creation and evolution of entities from dynamics and fusions of previous entities that may be contradictory, neutral or non-contradictory [11, 12] . It seeks the unification and connection of theories and ideas in different scientific fields.
4. plithogenic: an extension of the classical, fuzzy, intuitionistic, and neutrosophic sets. A plithogenic set (P, a, V, d, c) :

a) Where "P" is a set, "a" is an attribute (usually multidimensional), "V" is the range of attribute values, "d" is the degree of membership of the attribute value of each element x to the set P for some given criteria ($x \in P$), and "d" stands for " d_F", or " d_{IF} ", or " d_N", when it is a fuzzy degree of membership, an intuitionistic fuzzy membership or a neutrosophic degree of membership, respectively, of an element x to the plithogenic set P;

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b) "c" means " c_F", or " c_{IF}", or " c_N", when it is a fuzzy attribute-value contradiction degree function, intuitionistic fuzzy attribute-value contradiction function, or neutrosophic attribute-value contradiction function, respectively.
c) The functions are defined according to the applications that the experts need to solve. $d(\cdot,\cdot)$and $c(\cdot,\cdot)$then, the following notation is used: $x(d(x,V))$where $d(x,V) = \{d(x,v),$ for all $v \in V\}, \forall x \in P$. The attribute value contradiction function is calculated between each attribute value with respect to the dominant attribute value (denoted by) in particular, and also for other attribute values v_D.
5. plithogenic: These include union (OR), intersection (AND), and other aggregation operators that combine attribute values based on t_{norm} and t_{conorm}. Linear and nonlinear aggregation operations can be created.
6. Contradiction and Aggregation Calculation: The contradiction function c evaluates the contradiction between attribute values. Therefore, they influence how t_{norm} and $t_{conorm}$when applied to create aggregation operators.
7. If t_{norm} is applied to the value of the dominant attribute indicated by v_D, and the contradiction between $v_D$and $v_2$is $c(v_D, v_2)$, then it is applied to the attribute value $v_2$as follows:

$$[1 - c(v_D, v_2)] \cdot t_{norm}(v_D, v_2) + c(v_D, v_2) \cdot t_{conorm}(v_D, v_2), \quad (1)$$

8. Or according to the following symbology:

$$[1 - c(v_D, v_2)] \cdot (v_D \wedge_F v_2) + c(v_D, v_2) \cdot (v_D \vee_F v_2), \quad (2)$$

9. Similarly, if $t_{conorm}$is applied to the value of the dominant attribute denoted by v_D, and the contradiction between $v_D$andv_2 is $c(v_D, v_2)$then applied to the value of the attribute v_2:

$$[1 - c(v_D, v_2)] \cdot t_{conorm}(v_D, v_2) + c(v_D, v_2) \cdot t_{norm}(v_D, v_2), \quad (3)$$

10. Or, according to the following symbology:

$$[1 - c(v_D, v_2)] \cdot (v_D \vee_F v_2) + c(v_D, v_2) \cdot (v_D \wedge_F v_2), \quad (4)$$

11. neutrosophic intersection and union : They are defined in such a way that one criterion is applied for membership and its opposite for non-membership, while for indeterminacy the average is taken.
12. plithogenic is defined as:

$$(a_1, a_2, a_3) \wedge_P (b_1, b_2, b_3) = \left(a_1 \wedge_F b_1, \frac{1}{2}[(a_2 \wedge_F b_2) + (a_2 \vee_F b_2)], a_3 \vee_F b_3\right) \quad (5)$$

13. plithogenic is defined as:

$$(a_1, a_2, a_3) \vee_P (b_1, b_2, b_3) = \left(a_1 \vee_F b_1, \frac{1}{2}[(a_2 \wedge_F b_2) + (a_2 \vee_F b_2)], a_3 \wedge_F b_3\right), \quad (6)$$

14. Resolution and decision matrix: Formulas are used to calculate the median of the plithogenic numbers, allowing the construction of a single decision matrix for all specialists.
15.

$$\text{median}_{i=1}^{m}\{PN_i\} = (\text{median}_{i=1}^{m}\{T(PN_i)\}, \text{median}_{i=1}^{m}\{I(PN_i)\}, \text{median}_{i=1}^{m}\{F(PN_i)\}), \quad (7)$$

Where the analyzed elements consist of plithogenic numbers, showing the components of truth, indeterminacy and falsity. In other words, it means that the median of a set of plithogenic numbers is defined as the plithogenic number of the medians of its components $PN_i, T(PN_i), I(PN_i)$, and$F(PN_i)$

To compare relationships between quadrants, the following formula is used to blur a neutrosophic number:

$$\mathcal{S}([T, I, F]) = \frac{2 + T - I - F}{3} \quad (8)$$

• For each row of the pairwise comparison matrix, calculate a weighted sum based on the sum of the product of each cell by the priority of each corresponding alternative or criterion (see Table 1).

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Table 1: Linguistic expression to determine the level of importance of the factor on the variable. Source: own elaboration.

Linguistic Expression	Scale	plithogenic (T, I, F)	S
Poor significance (PS)	0	(0,0,9,1)	0.03
Least significant (LS)	1	(0,2,0.8,0.8)	0.20
Low significance (LS)	2	(0.4,0.7,0.6)	0.37
Moderately significant (MS)	3	(0.5,0.5,0.5)	0.50
Significant (S)	4	(0.6,0.3,0.4)	0.63
Most significant (MS)	5	(0.8,0.2,0.2)	0.80
Very significant (VS)	6	(0.9,0,0.5)	0.95

2.2. Plithogenic IADOV

The Plitogenic IADOV technique is an assessment method that uses five questions, three multiple-choice and two open-ended, to measure respondent satisfaction [13] . The peculiarity of this method lies in its "IADOV Logical Grid", which connects three of the questions in a way that is hidden from the participant in order to infer satisfaction through their interrelationships. By extending this technique to the plitogenic context and using a neutrosophic scale [14] , the ability to measure indeterminate or inaccessible aspects with conventional methods is introduced. This makes it possible to address the complexity of respondents' perceptions. It requires an assessment system adapted to the neutrosophic model to accurately capture expert opinions (see Table 2). This system and its neutrosophic equivalents are defined as the scoring function A of a neutrosophic number as proposed by Basset.

Table 2: Expert evaluation system. Source: prepared by the authors.

Linguistic term	SVNN	Scale
Clearly satisfied	(1,0,0)	0.50
More satisfied than dissatisfied	(0.75,0.20,0.25)	0.40
Indefinite	Yo	0.25
More dissatisfied than satisfied	(0.25,0.70,0.75)	0.15
Clearly dissatisfied	(0,0,1)	0.00
Contradictory	(1,0,1)	1.00

The term *I* in Neutrosophic is interpreted as a unit of indeterminacy. Another component of the method is the IADOV Logic Table, which assigns numerical values to three closed questions applied to experts (according to the references consulted [15]). If necessary, open questions can also be applied to the surveys. Among the questions used in this study are:

1. Do you think indigenous rights in Ecuador are adequately implemented in the community?
2. What areas do you think require urgent attention to strengthen the rights of indigenous communities?
3. What are the most significant advances you have observed in the implementation of Indigenous rights in your community?
4. Can you describe any specific experiences in which you felt Indigenous rights were well defended or promoted?
5. Are you satisfied with the way Indigenous rights are implemented in the community?

To calculate the Neutrosophic Plithogenic Global Satisfaction Index (NPGSI) of the respondents H_N^P, the aggregation operator was used, considering the evaluations of each element X to the plithogenic set P ; x ∈ $\mathrm{Pd_F}$ $\mathrm{d_{IF}}$ $\mathrm{d_N}$. Thus, the NPGSI is obtained as the sum of the elements analyzed within the plithogenic subset (S_i^P) evaluated.

$$H_N^P\left(S_1^P S_2^P, \ldots, S_n^P\right) = \sum_{i=1}^{n}\left[w_j, S_i^P\right] \tag{11}$$

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3. Results

The study focused on qualitative researchers' perceptions of the effectiveness of the Iadov Plithogenic Neutrosophic method compared to traditional approaches. A survey was administered to a sample of 40 researchers with experience in social sciences, who evaluated the method based on its ability to handle ambiguity, depth of analysis, and practical applicability.

The findings, analyzed using the IADOV Plithogenic framework, reveal a complex distribution of satisfaction. While traditional methods often force subjective experiences into predefined categories, the neutrosophic approach allows for a more faithful representation of the uncertainty and contradiction inherent in qualitative data. Researchers' satisfaction was assessed in five key areas, represented on a plithogenic satisfaction map.

Figure 1. Neutrosophic Satisfaction Degrees by Plithogenic Domain

The degrees of satisfaction (GS) observed in the plithogenic areas are broken down below:

1. Capturing Ambiguity and Uncertainty (D1)

This domain is located at an intermediate level between *More Satisfied than Dissatisfied* (MSI) and *Indefinite* (I). Researchers value the method's ability to avoid discarding ambiguous data, but express uncertainty about the standardization of its interpretation.

- $\boldsymbol{GS} = (\mathbf{0,75}; \mathbf{0,20}; \mathbf{0,25})$:A substantial improvement is recognized compared to methods that ignore indeterminacy.
- $\boldsymbol{GS} = (\boldsymbol{I})$:There is considerable uncertainty about how to consistently replicate indeterminacy analysis across different studies or researchers.
- $\boldsymbol{GS} = (\mathbf{0,25}; \mathbf{0,70}; \mathbf{0,75})$:Gaps persist between the theoretical capacity of the method and its practical implementation, generating a feeling of dissatisfaction regarding the clarity of the procedure.

2. Depth of Subjective Analysis (D2)

It is firmly positioned between *Satisfied* (SC) and *Conflicting* (C). Respondents are clearly satisfied with the depth achieved, but they perceive a contradiction between the depth of the analysis and the time required to execute it.

- $\boldsymbol{GS} = (\mathbf{1}; \mathbf{0}; \mathbf{0})$:There is high satisfaction with the method's ability to unravel nuanced meanings that other approaches would miss.
- $\boldsymbol{GS} = (\boldsymbol{I})$:The variability in the depth of analysis depends largely on the researcher's ability to handle neutrosophic logic, which introduces a factor of indeterminacy into its effectiveness.
- $\boldsymbol{GS} = (\mathbf{1}; \mathbf{0}; \mathbf{1})$:The contradiction is clear: the method offers exceptional depth, but at the cost of complexity and time consumption that can be prohibitive.

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3. Systematic Integration of Subjectivity (D3)

It falls somewhere between *More Dissatisfied than Satisfied* (MDS) and *Indefinite* (I). Researchers tend to be dissatisfied, feeling that, although the method integrates subjectivity, the process lacks a clear systematicity, which generates indefinite results.

- $\boldsymbol{GS} = (\mathbf{0,25}; \mathbf{0,70}; \mathbf{0,75})$:There is a perception that the methodological framework is not yet mature enough to guide the researcher in a systematic and predictable manner.

4. Practical Field Applicability (D4)

This index is located in the *Clearly Dissatisfied* (CI) and *Contradictory* (C) areas. The trend leans toward dissatisfaction and contradiction, as although it is theoretically powerful, its application in actual fieldwork is perceived as impractical.

- $\boldsymbol{GS} = (\mathbf{0}; \mathbf{0}; \mathbf{1})$:The difficulty in applying the method in real time during interviews or focus groups generates clear dissatisfaction.
- $\boldsymbol{GS} = (\mathbf{1}; \mathbf{0}; \mathbf{1})$:Its potential for post-collection analysis is recognized, but this contradicts the need for agile tools during field research.

5. Theoretical Contribution to the Field (D5)

It is mostly classified as *Clearly Satisfied* (CS). Researchers agree that the method theoretically enriches qualitative research.

- $\boldsymbol{GS} = (\mathbf{1}; \mathbf{0}; \mathbf{0})$:The new conceptual framework it offers for thinking about subjectivity and uncertainty is highly valued.

Plithogenic Integration for Method Effectiveness

To improve the adoption and effectiveness of the method, a plithogenic analysis is proposed that structures the components of its implementation.

1. Design of the structure of the Plithogenic complex

The subsets, attributes, variables and factors that make up the "Effectiveness of the Neutrosophic Plithogenic Iadov method" are defined (see Table 3).

Table 3: Structure of the plithogenic set for the effectiveness of the method

Plithogenic set	Subset	Attributes	Variables	Factors
Effectiveness of the Neutrosophic Plithogenic Iadov method	P_1: Ambiguity Capture	a. Handling indeterminate responses< br >b. Representing multiple perspectives	1. Rate of ambiguous data retained< br >2. Inter-coder consistency	A. Framework flexibility< br >B. Researcher training
	P_2: Depth of Analysis	c. Capturing nuanced experiences< br >d. Identifying internal contradictions	3. Richness of qualitative findings< br >4. Analysis time per unit of data	C. Complexity of the method< br >D. Software tools
	P_3: Systematicity	e. Clarity of the methodological process< br >f. Systematic data analysis	5. Level of replicability of the study< br >6. Error rate in the application	E. Methodological documentation< br >F. Standardization of procedures
	P_4: Practical Applicability	g. Ease of use in the field< br >h. Training time required	7. Usability evaluations< br >8. Training hours for competence	G. User Interface Design< br >H. Resource Availability
	P_5: Theoretical Validity	i. Improving interpretive validity< br >j. Contribution to qualitative theory	9. Citations in academic literature< br >10. Adoption by the scientific community	I. Coherence with existing paradigms< br >J. Conceptual innovation

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2. Assigning attribute values

Neutrosophic values are assigned to each attribute based on the responses of the 40 researchers surveyed (see Table 4).

Table 4: Attribute Values in the Plithogenic Set

No.	Subset	Attribute	Attribute value (T, I, F)
1	P_1: Ambiguity Capture	Handling indeterminate responses	(0.8, 0.2, 0.2)
		Representation of multiple perspectives	(0.9, 0.1, 0.05)
2	P_2: Depth of Analysis	Capturing nuanced experiences	(0.8, 0.2, 0.2)
		Identification of internal contradictions	(0.6, 0.3, 0.4)
3	P_3: Systematicity	Clarity of the methodological process	(0.4, 0.7, 0.6)
		Systematic data analysis	(0.5, 0.5, 0.5)
4	P_4: Practical Applicability	Ease of use in the field	(0.2, 0.8, 0.8)
		Training time required	(0.4, 0.7, 0.6)
5	P_5: Theoretical Validity	Improving interpretive validity	(0.9, 0.1, 0.05)
		Contribution to qualitative theory	(0.8, 0.2, 0.2)

It is observed that the dominant attributes (with the highest value in T and the lowest in F and I) are found in the subsets P_1, P_2 and P_5.

3. Priority strategies and actions

- **A. Develop a clear methodological protocol (Subset P_3):** Create a step-by-step guide, with concrete examples, that standardizes systematic data analysis. *Timeframe: Short term.*
- **B. Create supporting software tools (Subset P_4):** Design software that facilitates the application of the method, especially in the analysis phase, reducing the cognitive load and time required. *Timeframe: Long term.*
- **C. Simplify Training (Subset P_4):** Develop interactive training modules and tutorials to dramatically reduce training time. *Timeframe: Medium term.*
- **D. Integrate data capture with analysis (Subset P_4):** Investigate ways to adapt the method for real-time use during data collection, perhaps through mobile applications. *Timeframe: Medium term.*
- **E. Disseminate successful case studies (Subset P_5):** Publish research demonstrating the interpretive validity and richness of the findings obtained with the method to encourage its adoption. *Timeframe: Short term.*

Implementation of the Plithogenic Intersection

The plithogenic intersection is analyzed to identify areas where combining efforts can have the greatest impact. Three key intersections are selected for evaluation:

a. Representation of multiple perspectives (P_1) and Improvement of interpretive validity (P_5). b. Clarity of the methodological process (P_3) and Required training time (P_4). c. Systematic data analysis (P_3) and Capturing nuanced experiences (P_2).

Diffusion formulas are applied with an accuracy of six decimal places.

Formulas Used

Plithogenic Neutrosophic Intersection (Equation 5):

$$T_{\{int\}} = \frac{T_a + T_b}{2}, I_{\{int\}} = \frac{I_a + I_b}{2}, F_{\{int\}} = \frac{F_a + F_b}{2}$$

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Dediffusion (Equation 8):

$$S = \frac{2 + T - 2I - F}{3}$$

Detailed results and calculations are presented in Table 5.

Table 5: Plithogenic neutrosophic intersection between subsets

Intersection attributes (a, b)	**Values (T, I, F) of a and b**	**Calculation of Intersection (T_{ int }, I_{ int }, F_{ int })**	**Calculation of S**	**Assessment**
a. Representation of multiple perspectives (P_1)< br > b **.** Improving interpretive validity (P_5)	a = (0.9, 0.1, 0.05)< br >b = (0.9, 0.1, 0.05)	T = (0.9 + 0.9)/2 = 0.900000< br >I = (0.1 + 0.1)/2 = 0.100000< br >F = (0.05 + 0.05)/2 = 0.050000	S = (2 + 0.9 - 2(0.1) - 0.05)/3 = 2.65/3 ≈ 0.883333	Located in a sublevel very close to *Most Significant* (MS) and *Very Significant* (VS).
a. Clarity of the methodological process (P_3)< br > **b.** Training time required (P_4)	a = (0.4, 0.7, 0.6)< br >b = (0.4, 0.7, 0.6)	T = (0.4 + 0.4)/2 = 0.400000< br >I = (0.7 + 0.7)/2 = 0.700000< br >F = (0.6 + 0.6)/2 = 0.600000	S = (2 + 0.4 - 2(0.7) - 0.6)/3 = 0.4/3 ≈ 0.133333	Located in a sublevel very close to *Less Significant* (LS).
a. Systematic data analysis (P_3)< br > **b.** Capturing nuanced experiences (P_2)	a = (0.5, 0.5, 0.5)< br >b = (0.8, 0.2, 0.2)	T = (0.5 + 0.8)/2 = 0.650000< br >I = (0.5 + 0.2)/2 = 0.350000< br >F = (0.5 + 0.2)/2 = 0.350000	S = (2 + 0.65 - 2(0.35) - 0.35)/3 = 1.6/3 ≈ 0.533333	Located in a sublevel between *Moderately Significant* (MS) and *Significant* (S).

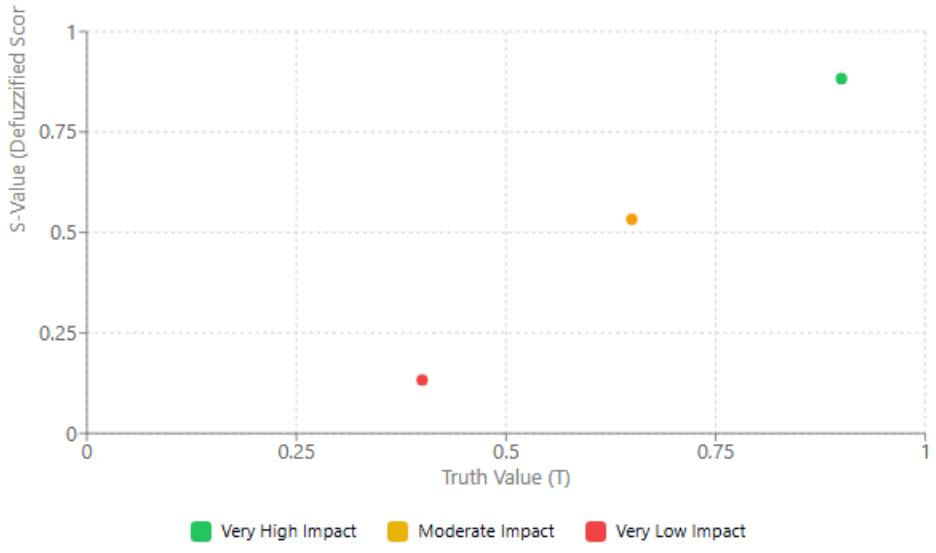

Figure 2. Plithogenic Intersection Analysis - Truth Value vs S-Value

The interpretation of these intersections is detailed in Table 6.

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Table 6: Analysis of plithogenic intersections

Subsets	Intersection attributes	Plithogenic Intersection (T,I,F)	Cause of the intersection	Advantages	Cons	Benefits
P_1 and P_5	Representation of Multiple Perspectives and Improving Interpretive Validity	(0.90, 0.10, 0.05)	The ability to capture multiple subjective realities is the basis for a valid and robust interpretation.	Strengthens the credibility and transferability of qualitative findings.	It requires a greater analytical effort to synthesize divergent perspectives without losing its essence.	Increases confidence in the study's conclusions and its theoretical contribution.
P_3 and P_4	Clarity of the methodological process and training time required	(0.40, 0.70, 0.60)	An unclear and difficult-to-systematize method inevitably increases the time and difficulty of training.	Improving one (clarity) would directly impact reducing the other (training time).	The current state of high indeterminacy and falsity in both attributes creates a negative feedback loop.	Addressing this intersection is key to the viability and adoption of the method at scale.
P_3 and P_2	Systematic data analysis and capturing nuanced experiences	(0.65, 0.35, 0.35)	The challenge is to maintain the richness of subjective nuances within a framework of analysis that is systematic and replicable.	A well-designed system can ensure that important nuances are not missed during coding and analysis.	Too much systematization can flatten the richness of the data, while a lack of it leads to chaotic analysis.	Achieving a balance at this intersection produces research that is both in-depth and rigorous.

4. Discussion

The quantitative results of the plithogenic analysis confirm and deepen the initial qualitative insights. The high value placed on the intersection between the **representation of multiple perspectives and interpretive validity** ($S \approx 0.883$)it underscores a fundamental synergy: the method is perceived as theoretically robust precisely because its neutrosophic structure captures the complexity of the real world, which in turn legitimizes its findings. This is the method's strongest point and its main selling point to the academic community.

Lowest diffusion value (S ≈ 0.133) between **process clarity and training time** reveals the method's "Achilles' heel." The difficulty and lack of a standardized protocol not only make the method difficult to learn but also generate high indeterminacy and falsity (dissatisfaction) in its application. This is the most significant barrier to its widespread adoption.

The intermediate intersection ($S \approx 0.533$) between **systematic analysis and nuance capture** represents the core of the methodological debate. The truth-value of 0.65 indicates moderate optimism: researchers believe it is possible to balance systematic rigor with interpretive sensitivity. However, the indeterminacy (0.35) and falsity (0.35) reflect the real difficulty of achieving this balance in practice. The proposed strategies, especially the development of supporting software (B) and clear protocols (A), should focus on resolving this tension.

5. Conclusion

The study demonstrates that the Iadov Plithogenic Neutrosophic method is a theoretically powerful tool for qualitative research, excelling in capturing ambiguity and the depth of subjective meanings. Its main contribution is to offer a framework those values and quantifies indeterminacy, overcoming the limitations of traditional methods that often ignore or force the simplification of complex data. However, its practical implementation faces significant challenges related to the lack of a clear methodological process and the steep learning curve, resulting

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in low satisfaction with its field applicability. The calculated plithogenic intersections reveal that the main priority for future development of the method should be the creation of standardized protocols and software tools that make the method more accessible and systematic without sacrificing its analytical depth. In summary, the Neutrosophic Plithogenic Iadov method is positioned as a significant advance for qualitative analysis, but requires further development in its usability to reach its full potential and achieve wider adoption in the scientific community.

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