

NEUTROSOPHIC MULTI-CRITERIA ANALYSIS OF LEGAL AND SOCIAL BARRIERS TO MARRIAGE EQUALITY IN MERCOSUR

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ABSTRACT.

The present study analyzes the status of the legalization of same-sex marriage in Mercosur member countries, using a multicriteria approach based on neutral logic. This work addresses a critical problem in the region: the remarkable disparity in the recognition and protection of LGBTIQ+ rights between the different Member States, despite the international commitments assumed. Through a systematic analysis, the study identifies how legal frameworks, cultural dynamics, and political positions impact the evolution of these rights. Although existing literature has explored individual aspects, such as social perceptions or public policies, no approaches that simultaneously capture the multiple dimensions of this complex phenomenon have been integrated. The applied methodology combines neutral tools and multicriteria evaluation techniques to analyze key indicators such as current regulations, political support, social activism, and citizen perception. The results highlight that, although some countries show significant advances, structural and cultural barriers persist that slow down progress in others. This study contributes to the literature by offering a holistic approach to understanding the legalization of equal marriage in complex regional contexts, also providing concrete recommendations to overcome identified barriers. Ultimately, this research not only expands the theoretical framework on human rights and public policies but also provides practical tools to promote more equitable and sustainable progress in the recognition of LGBTIQ+ rights in the Mercosur region.

KEYWORDS: neutrosophic, multicriteria, policies, public, disparity, frames, legal, dynamics, cultural, activism, perception, citizenship, barriers, structural.

MSC: 03B52, 62P20, 90B50

RESUMEN

El presente estudio analiza el estado de la legalización del matrimonio entre personas del mismo sexo en los países miembros del MERCOSUR, utilizando un enfoque multicriterio basado en la lógica neutrosófica. Este trabajo aborda un problema crítico en la región: la notable disparidad en el reconocimiento y la protección de los derechos LGBTIQ+ entre los distintos estados miembros, a pesar de los compromisos internacionales asumidos. A través de un análisis sistemático, el estudio identifica cómo los marcos legales, las dinámicas culturales y las posturas políticas impactan en la evolución de estos derechos. Aunque la literatura existente ha explorado aspectos individuales, como las percepciones sociales o las políticas públicas, no se han integrado enfoques que capturen simultáneamente las múltiples dimensiones de este fenómeno complejo. La metodología aplicada combina herramientas neutrosóficas y técnicas de evaluación multicriterio para analizar indicadores clave como la normativa vigente, el apoyo político, el activismo social y la percepción ciudadana. Los resultados destacan que, aunque algunos países muestran avances significativos, persisten barreras estructurales y culturales que ralentizan el progreso en otros. Este estudio contribuye a la literatura al ofrecer un enfoque holístico para comprender la legalización del matrimonio igualitario en contextos regionales complejos, brindando además recomendaciones concretas para superar las barreras identificadas. En última instancia, esta investigación no solo amplía el marco teórico sobre derechos humanos y políticas públicas, sino que también provee herramientas prácticas para fomentar un progreso más equitativo y sostenible en el reconocimiento de los derechos LGBTIQ+ en la región del MERCOSUR.

PALABRAS CLAVE: Neutrosófico, Multicriterio, Políticas, Públicas, Disparidad, Marcos, Legales, Dinámicas, Culturales, Activismo, Percepción, Ciudadanía, Barreras, Estructurales.

1. INTRODUCTION

The legalization of same-sex marriage has emerged as a critical issue in the fight for human rights in the 21st century. Despite legislative progress in various countries, the situation within the MERCOSUR member states reveals significant disparities, reflecting complex legal, cultural, and social dynamics. These differences, often overlooked in comparative studies, have crucial implications for equality and regional cohesion. Recent research has explored individual aspects of this issue, such as social acceptance or local regulations, yet there remains a need for integrative approaches that capture the multidimensionality of the problem [1][2].

Historically, the legislation surrounding marriage equality has evolved unevenly. While countries like Argentina took the lead in the region by enacting inclusive laws in 2010 [3], other MERCOSUR nations have adopted more conservative stances, creating a patchwork of regulations across the bloc. This context highlights not only divergences in societal values but also the influence of political structures and local leadership. Therefore, understanding the interplay of these factors requires a systematic analysis that transcends purely legal perspectives and considers cultural and social dynamics [4].

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The central problem driving this study lies in the absence of a comprehensive analytical framework to evaluate the conditions and current status of same-sex marriage legalization in MERCOSUR countries. This issue can be summarized in the following question: how can the state of such legislation be effectively analyzed, considering the normative, political, and cultural diversity of the region? This methodological gap serves as a barrier to the development of policies that promote greater equality within the bloc [5].

In response to this, the study employs a multi-criteria neutrosophic approach, an innovative analytical tool designed to address uncertainty and ambiguity inherent in complex social problems. This method, which combines mathematical techniques with subjective evaluations, is particularly suited for analyzing phenomena where multiple factors converge. The goal is not only to generate a clear diagnosis of the current legislative status but also to propose strategies to foster progress in this domain [6][7].

The primary objective of this article is to develop a comprehensive methodology for analyzing and comparing the status of marriage equality across MERCOSUR countries. Additionally, it seeks to identify critical factors hindering legislative progress in some nations while highlighting best practices that could be replicated within the regional context. On a broader level, this study aims to contribute to the academic literature by offering a replicable methodological framework for regions with similar characteristics.

Finally, this work has significant practical and theoretical implications. From a practical perspective, the findings can inform the creation of inclusive public policies and guide the design of strategies that promote equal rights in the region [8]. Theoretically, the use of a neutrosophic approach expands methodological possibilities for analyzing complex problems in contexts of high uncertainty, showcasing its applicability beyond the specific case under study.

In conclusion, this research addresses an urgent and relevant issue in the context of human rights and regional politics. By integrating multiple dimensions into a systematic analysis, the study seeks not only to illuminate the current state of marriage equality legislation within MERCOSUR but also to provide practical and conceptual tools for advancing equality and social justice in the region. This multidisciplinary approach bridges the gap between theory and practice, fostering sustainable and equitable solutions for the future.

2. MULTI-CRITERIA NEUTROSOPHIC METHOD.

To achieve the proposed objectives, the study used the multi-criteria decision-making method (MCDM). MCDM allows the development of procedures that take very complex real situations and make decisions with simplifications in certain situations. In this way, the original problem reaches a solvable state.

Several MCDM methods have been developed to solve problems arising in various areas of life and society. However, traditional methods often use explicit values to evaluate alternatives. Due to the complexity of the environment and human subjectivity, MCDM problems often involve uncertainty, so the information provided to solve them is often confusing or verbal.

Decision-making typically involves the use of human language or, commonly, linguistic parameters. Arguments simply represent words or concepts used in human language. Therefore, this linguistically variable approach is a suitable way for decision-makers to express their evaluation. Basic levels can be expressed using linguistic variables. Linguistic variables can be represented in SVNS, as shown in Table 1.

Definition	SVNS
Extremely preferred (ExP)	(1,0,0)
Very Very Preferred (VVP)	(0.9, 0.1, 0.1)
Highly preferred (VP)	(0.8,0.15,0.20)
Preferred (P)	(0.70,0.25,0.30)
Equally preferred (EP)	(0.50,0.50,0.50)
Not preferred (NP)	(0.35,0.75,0.80)
Very little preferred (VNP)	(0.20,0.85,0.80)
Very little preferred (VVNP)	(0,10,0.90,0.90)
Extremely Not Preferred (ENP)	(0,1,1)

Table 1: Parameters and Single-Valued Neutrosophic Numbers [SVNN]. Source: [13]

Given a set of options $G = [G_1, G_2, \dots, G_n]$ and $A = [A_1, \dots, A_m]$ a collection of properties. Let be $W = [w_1, w_2, \dots, w_n]$ the weight of the attribute, where

$$0 \leq w_j \leq 1 \text{ y } \sum_{j=1}^n w_j = 1 \quad (1).$$

Let a_{ij} with $i = 1, 2, \dots, m$ and $j = 1, 2, \dots, n$, be the value of the selection attribute A_i associated with the attribute G_j . Then

$$A = [a_{ij}]_{m \times n} = \langle (T_{ij}, I_{ij}, F_{ij}) \rangle_{m \times n} \quad (2)$$

be the SVN matrix. Here, T_{ij} , I_{ij} , and F_{ij} are the membership degree and the degree of uncertainty in membership. The diagnosis procedure is as follows:

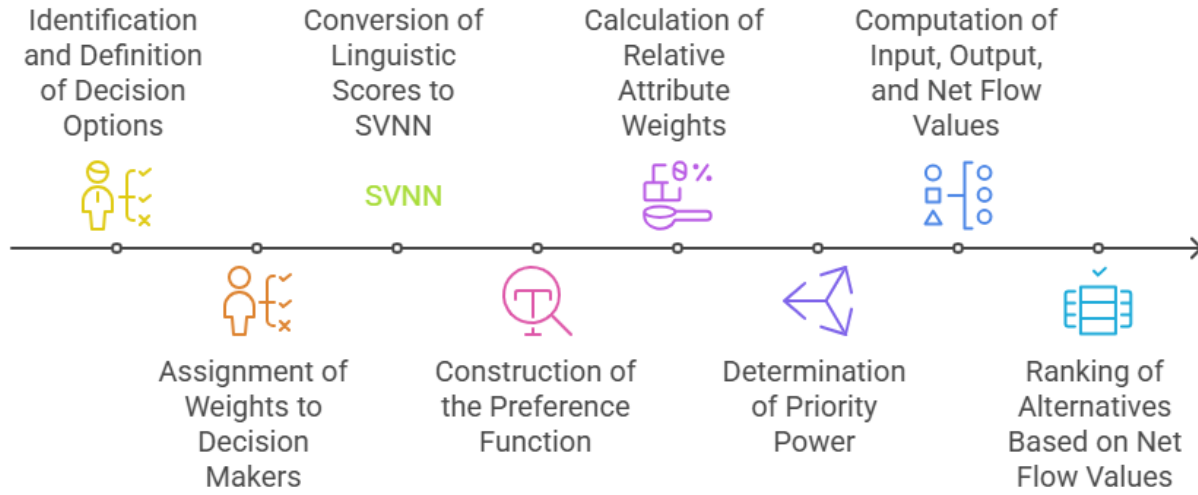


Figure1. Decision-Making Process

Step 1 Identification and Definition of Decision Options

Multicriteria decision-making methods are analytical frameworks designed to address complex problems by evaluating multiple, often conflicting, objectives. Central to these methods is the explicit definition of options (potential solutions) and criteria (measurable factors used to assess those solutions), such as cost-effectiveness, environmental sustainability, or social impact. This structured approach not only enhances transparency but also mitigates biases, ensuring decisions align with strategic goals.

Step 2 Assignment of Weights to Decision Makers

The logic of the method allows each decision-maker to receive unique and different ratings from the other decision-makers. This is because each rating is given based on each expert's level of knowledge about the decision issue under discussion. The relative weight of each determinant is considered a language variable and an input to the SVN, which is then defined by Equation 1.

Step 3: Conversion of Linguistic Scores to Single Valued Neutrosophic Numbers (SVNN).

The language scores provided by the experts are converted to the SVN. From the clear and precise individual matrices obtained according to expert judgment, the individual neutrosophic decision-making matrix is constructed as shown in Table 1. The initial relationship matrix is obtained for options A and G see (2)

Equation (2) is used to calculate the member score, undetected member score, and non-member score. In the fifth step, the information about the solution is combined. This means that we normalize.

$$A = [a_{ij}]_{m \times n} \quad B = [b_{ij}]_{m \times n} \quad (3)$$

If the decision is a cost factor, the decision information must be changed to an additional set using equation [3], but if the decision is an efficiency factor, it cannot be changed.

To provide greater context on the subject, decision-making plays a vital role across all domains, whether in personal, professional, or academic settings. In the academic realm, students regularly encounter choices that range from selecting courses to deciding on research topics. Utilizing structured methodologies, like the approach outlined, enables students to make well-informed and thoughtful decisions by taking into account multiple factors and the insights of experts.

Furthermore, the use of matrices and equations provides a quantitative framework for evaluating options, which can be especially useful in situations where decisions are influenced by multiple variables. However, it is important to note that while methods can provide structure and clarity, it is also critical to consider the specific context and individual needs when making decisions. Therefore, the application of these methods must be complemented by careful analysis.

Step 4: Construction of the Preference Function.

Use [5] to build the preference function $P_j[B_i, B_r]$ to replace B_i with B_r with the characteristic G_j .

$$P_j(B_i, B_r) = \begin{cases} 0, & d \leq p \\ \frac{d-p}{q-p}, & p < d < q \\ 1, & d \geq q \end{cases} \quad (4)$$

Step 5: Calculation of Relative Attribute Weights

Calculate the relative weight of attribute w_{jr} , which is the relative weight of G_r concerning G_j . here

$$w_{jr} = \frac{w_j}{w_r} = [j, r = 1, 2, \dots, n] \quad (5)$$

Step 6: Determination of Priority Power.

Determine priority power $\pi[B_i, B_r]$ of circuit B_i for B_r using the following formula:

$$\pi(B_i, B_r) = \frac{\sum_{j=1}^n w_{jr} P_j(B_i, B_r)}{\sum_{j=1}^n w_{jr}} \quad (6)$$

Step 7: Computation of Input, Output, and Net Flow Values.

Calculate the input $\Phi^+[B_i]$, output $\Phi^-[B_i]$ and net input $\Phi[B_i]$ as follows:

$$\Phi^+(B_i) = \frac{\sum_{r=1}^m \pi(B_i, B_r) - \min_{1 \leq i \leq m} \{\sum_{r=1}^m \pi(B_i, B_r)\}}{\max_{1 \leq i \leq m} \{\sum_{r=1}^m \pi(B_i, B_r)\} - \min_{1 \leq i \leq m} \{\sum_{r=1}^m \pi(B_i, B_r)\}} \quad (7)$$

$$\Phi^-(B_i) = \frac{\sum_{r=1}^m \pi(B_r, B_i) - \min_{1 \leq i \leq m} \{\sum_{r=1}^m \pi(B_r, B_i)\}}{\max_{1 \leq i \leq m} \{\sum_{r=1}^m \pi(B_r, B_i)\} - \min_{1 \leq i \leq m} \{\sum_{r=1}^m \pi(B_r, B_i)\}} \quad (8)$$

$$\Phi(B_i) = \Phi^+(B_i) - \Phi^-(B_i) \quad (9)$$

Step 8: Ranking of Alternatives Based on Net Flow Values.

Sort all options by value $\Phi(B_i)$. The higher the value, $\Phi(B_i)$, the better the option.

3. RESULTS

Below, we analyze step by step the neutrosophic multicriteria process used to evaluate the equality of marital status between persons of the same sex in MERCOSUR.

A total of seven experts were consulted, whose opinions were used to determine the appropriate endpoints for this study. The criteria obtained from this consultation are presented in Table 2.

In	Evaluation criteria
F1	Equal rights in marriage are evaluated based on whether same-sex couples have the same opportunities as heterosexual couples to formalize their unions. This assessment examines the extent to which legal, administrative, or social obstacles may hinder equal access, highlighting potential disparities in the ability of same-sex couples to enjoy the same rights and recognition.
F2	Legal protection and recognition are crucial factors in assessing whether married same-sex couples enjoy the same safeguards and rights as heterosexual couples. This includes evaluating their access to property rights, tax benefits, social security, adoption opportunities, and other legal privileges associated with marriage.
F3	Non-discrimination and respect for gender identity are key aspects to consider when evaluating the treatment of same-sex couples by both the government and society. This includes ensuring that these couples are not subjected to discriminatory practices and that their gender identities are acknowledged and respected throughout the marriage process.
F4	Education and awareness-raising: it also includes education and awareness-raising initiatives on marriage equality and the specific rights and issues faced by same-sex couples. This may include educational programs, information campaigns, and training for professionals in different fields.

Table 2: Indicators that evaluate respect for equal marriage in MERCOSUR.

This paper adopts a horizontal approach to assign weighting vectors to the indicators used to assess the equality of marital status for same-sex couples within MERCOSUR. This methodology forms the foundation for deriving informed conclusions about the level of equality achieved. The results of these weighting vectors, which quantify the relative importance of each indicator, are detailed below and summarized in Table 3.

Evaluation criteria	Neutrosophic weight
F1	(0.9, 0.1, 0.1)
F2	(1 0 0)
F3	(0.8, 0.15, 0.20)
F4	(1 0 0)

Table 3: Weights related to the indicators.

To obtain the results of the proposed method, people use a neutrosophic scale, more precisely the linguistic scale S , where $v_{kj} \in S$, and $S = \{s_1, \dots, s_g\}$ is a set of terms. The language is defined to evaluate the characteristics of CK using the

Single-Evaluate Neutrosophic Count (EN) method. This approach facilitates the analysis of the resulting linguistic terms. The range of linguistic terms employed in this evaluation is presented in Table 4.

Linguistic terms	SVN Number
Extremely high (EH)	(1 0 0)
Very very high (VVH)	(0.9, 0.1, 0.1)
Very high (VH)	(0.8,0.15,0.20)
High (H)	(0.70,0.25,0.30)
Medium High (MH)	(0.60,0.35,0.40)
Medium (M)	(0.50,0.50,0.50)
Medium Low (ML)	(0.40,0.65,0.60)
Low (VL)	(0.30,0.75,0.70)
Very low (VL)	(0.20,0.85,0.80)
Very very low (VVL)	(0,10,0.90,0.90)
Extremely Low (EL)	(0,1,1)

Table 4. Scale of linguistic terms.

Based on the results obtained, the Neutrosophic tool was used to quantify the status of same-sex marriage in Mercosur. The analysis was carried out using a scale of linguistic terms; the results are presented in Table 5.

Evaluation criteria	Linguistic terms	Neutrosophic value
F1	Very very high (VVH)	(0.9, 0.1, 0.1)
F2	Extremely high (EH)	(1 0 0)
F3	Very high (VH)	(0.8,0.15,0.20)
F4	Extremely high (EH)	(1 0 0)

Table 5. The scale determines the current state of equal rights in marriage and adoption of same-sex couples in MERCOSUR

Based on the proposed linear neutrosophic weighting method, a calculation was performed to determine the equal marital status of same-sex couples in Mercosur. Table 6 presents the data and processing results obtained from the calculation of Equation 3.

Evaluation criteria	Preferred neutrosophic value	Neutrosophic weight vector	Calculation
F1	(0.70,0.25,0.30)	(0.9, 0.1, 0.1)	(0.8,0.15,0.20)
F2	(0.40,0.65,0.60)	(1 0 0)	(0.7,0.25,0.30)
F3	(0.40,0.65,0.60)	(0.8,0.15,0.20)	(0.60,0.35,0.40)
F4	(0.20,0.85,0.80)	(1 0 0)	(0.60,0.35,0.40)
Results			(0.67,0.35,0.40)

Table 6: Processing results.

The results indicate that the status of same-sex marriage within MERCOSUR achieves a favorable assessment, reflected in an index score of 0.67, signifying a "very good" level of progress.

Below are the results of a survey conducted to gather information and verify the results of the method developed, as well as to assess the need for its use. The survey was conducted with 15 lawyers from the countries of Ecuador and MERCOSUR. The results are as follows:

Question 1: Do you support the legalization of same-sex marriage in MERCOSUR?

Option	Total	Percent
Yes	13	88%
No	2	12%
Total	15	100%

Table 7: Results of Question 1.

Regarding question 1, we found that among all respondents, 88% support the legalization of same-sex marriage in MERCOSUR, while 18% oppose the measure.

Question 2: Do you think same-sex couples can marry in the country?

Option	Total	Percent
Yes	12	86.6%
No	3	13.4%
Total	15	100%

Table 8: Results of Question 2.

Analyzing the results of the question, 86.6% support this option, while 13.4% oppose it.

Question 3: Do you think that the HOMOSEXUAL community in Mercosur is advancing in terms of rights and acceptance in society?

Option	Total	Percent
Yes	11	80%
No	4	20 %
Total	15	100%

Table 9: Results of Question 3.

According to the analysis, 80% of respondents believe that Mercosur is making progress in the rights of LGBTIQ+ groups and 20% believe that there is no progress in this regard in society.

Question 4: Are additional legal measures necessary to guarantee equal rights for same-sex couples in matters of marriage in MERCOSUR?

Option	Total	Percent
Yes	10	73.3%
No	5	26.7%
Total	15	100%

Table 10: Results of Question 4.

Regarding this question, most of the responses were in favor (73.3%) and only 26.7% were against.

Question 5: In your opinion, should same-sex couples enjoy the same rights as opposite-sex couples?

Option	Total	Percent
Yes	14	93.3%
No	1	6.7%
Total	15	100%

Table 11: Results of Question 5

Analyzing the issue, it can be seen that 93.3% of respondents support homosexual couples having the same rights as heterosexual couples. However, 6.7% believe that they should not have the same rights but rather specific rights for each group.

Question 6: Do you think it is necessary to improve and simplify processes in MERCOSUR?

Option	All	Percent
Yes	15	100%
No	0	0%
Total	15	100%

Table 12: Results of Question 6.

Respondents were 100% in agreement on the importance of improving and optimizing processes within MERCOSUR to enhance the well-being of children and adolescents.

Question 7: Do you agree that the law should guarantee equal opportunities for all couples, regardless of their sexual orientation?

Option	Total	Percent
Yes	13	87%
No	2	13%
Total	15	100%

Table 8: Results of Question 7.

On this issue, 87% of respondents agreed that the law guarantees equal opportunities for couples to adopt children regardless of their sexual orientation, while only 13% disagreed with adoption.

The study reveals that the status of same-sex marriage within MERCOSUR is assessed at a favorable level, achieving an index score of 0.67, which signifies a "very good" degree of progress. This quantitative evaluation provides a strong foundation for understanding the current situation while highlighting areas requiring further attention. Below, the results

of a survey conducted with 15 lawyers from Ecuador and MERCOSUR are presented to corroborate these findings and assess the necessity of the developed methodology. Regarding **Question 1**, which asked participants if they supported the legalization of same-sex marriage in MERCOSUR, **88% of respondents expressed support**, while **12% opposed the measure** (Table 7). These results suggest a high level of approval for legalizing same-sex marriage across the surveyed legal professionals, reflecting progressive attitudes toward equality. For **Question 2**, respondents were asked if they believed same-sex couples could legally marry in their country. **86.6% responded affirmatively**, whereas **13.4% stated otherwise** (Table 8). This indicates that most respondents perceive the availability of marriage rights for same-sex couples as a reality, though a minority highlighted persisting legal or practical barriers. In **Question 3**, participants were queried about societal progress regarding the rights and acceptance of the LGBTQ+ community in MERCOSUR. **80% acknowledged advancements**, while **20% felt there had been no significant progress** (Table 9). This feedback underscores the perception of ongoing improvement, although a notable portion of respondents still views societal acceptance as insufficient.

When asked in **Question 4** whether additional legal measures are necessary to ensure equal rights for same-sex couples in marriage, **73.3% of respondents agreed**, compared to **26.7% who disagreed** (Table 10). This finding highlights the perception that further legislative efforts are required to fully guarantee equality. **Question 5** addressed whether same-sex couples should enjoy the same rights as opposite-sex couples. **An overwhelming 93.3% supported this**, while **6.7% favored specific rights tailored to each group** (Table 11). This data reflects a strong consensus toward equal treatment, with only a small minority advocating for differentiated approaches. In **Question 6**, all respondents (100%) agreed on the necessity of improving and simplifying processes within MERCOSUR to enhance the well-being of children and adolescents (Table 12). This unanimity suggests widespread recognition of the importance of administrative efficiency and inclusivity in fostering better outcomes for all families. Finally, **Question 7** explored whether the law should guarantee equal opportunities for all couples, regardless of sexual orientation, in matters such as adoption. **87% supported this**, while **13% disagreed** (Table 8). This finding underscores significant support for equality in family-related rights, with only a small minority dissenting.

The survey results, supported by a robust methodological framework, reveal a generally favorable perception of progress in marriage equality within MERCOSUR. However, they also highlight critical areas requiring legal and societal improvements, particularly in ensuring comprehensive equality and removing residual barriers to full recognition.

4. DISCUSSION.

The results of this study reveal that the status of same-sex marriage within MERCOSUR is assessed at a favorable level, with an index score of 0.67 indicating a "very good" degree of progress. Additionally, the survey results demonstrate strong support among legal professionals for marriage equality and highlight the need for further legislative and administrative improvements to ensure full equality across the region. These results underscore significant strides in the recognition of same-sex marriage rights within MERCOSUR. The high levels of support for legalization (88%) and equal rights (93.3%) among respondents suggest a shifting societal and professional consensus in favor of inclusivity. This progress may be attributed to growing advocacy, regional legal precedents, and increasing awareness of LGBTQ+ rights. The unanimous agreement (100%) on the necessity of improving administrative processes further emphasizes the demand for systemic efficiency to enhance the implementation of rights. Comparing these results with prior studies, the findings align with research indicating regional disparities in LGBTQ+ rights recognition but also highlight an overarching trend toward equality in Latin America. For instance, countries like Argentina have pioneered same-sex marriage legalization, influencing neighboring nations. However, contrasting perspectives remain, particularly in more conservative contexts within the bloc, where societal resistance and political inertia continue to hinder progress. This divergence mirrors findings from previous studies that emphasize the role of cultural and political factors in shaping marriage equality outcomes.

Despite these promising results, the study is not without limitations. The survey sample, consisting of 15 legal professionals, may not fully capture the diversity of opinions within the broader population. Additionally, the geographic focus on MERCOSUR, while providing valuable regional insights, limits the generalizability of the findings to other contexts. These constraints should be addressed in future research through larger, more diverse samples and comparative analyses across different regions. The implications of these findings are substantial for both future research and practical application. For researchers, the study highlights the importance of adopting holistic, multi-criteria methodologies to evaluate complex social and legal phenomena. Future studies could expand on this approach by incorporating perspectives from policymakers, activists, and the general public. Practically, the findings emphasize the need for targeted legislative reforms and public awareness campaigns to address remaining barriers to equality, particularly in countries lagging behind in recognizing same-sex marriage. Anomalous results, such as the 13.4% of respondents who indicated that same-sex marriage is not yet recognized in their country, despite legal precedents in some cases, suggest gaps in public understanding or inconsistencies in enforcement. These discrepancies warrant further investigation to uncover underlying causes, such as regional administrative challenges or misinformation. These findings contribute valuable evidence to the ongoing discourse on marriage equality, demonstrating significant progress while emphasizing areas requiring further attention. The study not only highlights the advancements in LGBTQ+ rights within MERCOSUR but also provides a framework for addressing remaining inequalities. By integrating data-driven analysis with practical insights, this research sets the stage for more inclusive and equitable policies in the future.

5. CONCLUSION.

This study provides valuable insights into the status of same-sex marriage within MERCOSUR, highlighting significant progress while identifying areas that require further attention. The favorable index score of 0.67 and the strong support for marriage equality among legal professionals underscore a growing consensus for inclusivity and equal rights in the region. These findings reveal a shifting cultural and legal landscape that increasingly embraces LGBTQ+ rights. The practical importance of these results lies in their ability to guide policymakers, advocates, and legislators in creating and implementing reforms that address persistent inequalities. By identifying critical gaps in societal acceptance and administrative processes, this research equips stakeholders with actionable data to promote more effective and inclusive policies. One of the key contributions of this study is its application of a multi-criteria neutrosophic approach to analyze the complex interplay of cultural, legal, and administrative factors influencing marriage equality. This methodology not only provides a nuanced understanding of the current status but also offers a replicable framework for assessing similar issues in other regions. The study bridges theoretical insights with practical implications, making it a significant step forward in the field of social and legal equity research. However, the research is not without limitations. The small sample size of 15 legal professionals, while providing valuable insights, restricts the generalizability of the findings to broader populations. Furthermore, the focus on MERCOSUR, while regionally relevant, may not fully capture the nuances present in other geopolitical or cultural contexts. These factors should be considered when interpreting the results and their implications. Future studies could expand on this work by incorporating larger and more diverse samples, including perspectives from activists, policymakers, and the general public. Additionally, exploring complementary methodologies, such as Fuzzy Logic or Artificial Intelligence, could enhance the analytical depth and accuracy of future assessments. Further investigation into the administrative and cultural barriers identified in this study is essential for sustaining the progress observed and addressing areas where disparities remain. In summary, this research underscores both the advancements and challenges in achieving marriage equality within MERCOSUR. It lays a foundation for continued dialogue and action, providing tools and insights that can drive meaningful change. By addressing the limitations and exploring new avenues of inquiry, future research can build on this work to foster greater equity and justice in the region and beyond.

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