Neutrosophic Sets and Systems, Vol. 74, 2024
University of New Mexico

Plithogenic Statistical Analysis of Labor Demand and its Impact on Stability in the Floricultural Sector

Wilson Eduardo Faz Cevallos [1], Andrea Nicole Faz Tapia [2], Valeria Jessnia Faz Tapia [3] and Clara de las Mercedes Razo Ascazubi[4]

[1] Technical University of Cotopaxi, Ecuador; wilson.faz9714@utc.edu.ec
[2] Technical University of Cotopaxi, Ecuador; andreikfaz@gmail.com
[3] Technical University of Cotopaxi, Ecuador; valerifaz@gmail.com
[4] Technical University of Cotopaxi, Ecuador; clara.razo@utc.edu.ec

Abstract. The floricultural sector faces significant challenges concerning job stability, primarily due to fluctuations in demand, policies, and recruitment capacity. This study aims to analyze the relationship between various factors influencing employability and labor sustainability within the economically active population in this sector. A plithogenic statistical analysis was conducted, utilizing observed and expected frequencies to examine the interrelationships among the variables. The results revealed that labor demand directly impacts job stability, contributing to increased unemployment and underemployment. Additionally, recruitment and retention policies were found to have a limited effect, largely due to the high dependency on agricultural labor. It was concluded that adjustments to recruitment strategies and the diversification of labor opportunities are essential to enhance job stability and sustainability in the floricultural sector**.**

Keywords: Recruitment policies, job stability, labor sustainability, labor market, plithogenic statistics.

1 Introduction

The analysis of labor demand in key productive sectors is essential to understanding the economic and social dynamics that affect the communities involved [1] [2] [3]. Within this context, the floricultural sector in the parish of José Guango Bajo serves as a significant case study due to its economic impact and its integration with local, national, and international markets. Specifically, the company AGRINAG, dedicated to the cultivation, harvesting, and commercialization of flowers, provides an appropriate environment to examine how fluctuations in labor demand influence job stability and the well-being of the economically active population.

Labor demand in the floricultural sector is closely linked to the seasonal variations of the market, as flower production is cyclical [4] [5]. During certain times of the year, a greater amount of labor is required, while at other times, demand decreases significantly. This pattern of high and low demand poses challenges in terms of hiring and job stability, often resulting in elevated levels of underemployment and unemployment during periods of lower demand [6]. Furthermore, the lack of clear policies for training, hiring, and retaining personnel, combined with the costs associated with hiring and dismissing workers, leads to an excess of labor during crises and a precarious employment situation [7].

Additionally, the constant fluctuation in labor demand in the floricultural sector affects workers' job stability. The uncertainty generated by these seasonal changes negatively impacts the emotional and psychological well-being of the workforce [8] [9]. This accentuates the need to implement recruitment strategies that ensure long-term job stability [10].

Another relevant aspect of analyzing labor demand in the José Guango Bajo region is the structure of the economically active population. In many rural areas, the lack of access to formal education limits workers' skills and restricts their opportunities to obtain stable and well-paying jobs. This phenomenon is exacerbated by the scarcity of continuous training programs that would allow workers to update their skills and adapt to changing market demands [11]. The limited availability of jobs in other productive sectors also forces many workers to accept precarious employment, which in turn contributes to underemployment and instability in the floricultural sector.

Underemployment, therefore, emerges as one of the main challenges for the floricultural sector, manifesting in two primary forms: underemployment due to insufficient working hours and underemployment due to skill mismatches [12]. In both cases, workers are unable to secure jobs that match their skill levels or full-time schedules, thereby limiting both their income and professional development [6]. This issue is particularly pronounced in rural areas like José Guango Bajo, where the lack of alternative job opportunities compels workers to accept jobs that do not fully meet their capacities or expectations, thereby restricting their well-being and personal growth [13].

This study focuses on analyzing the relationship between the various variables that influence employability and labor sustainability among the economically active population in the floricultural sector, employing plithogenic statistical analysis. The goal is to enhance the stability and sustainable development of the sector, implement actions that promote job stability, improve workers' well-being, and ensure a proper alignment between the skills of the labor force and market demands.

2 Materials and Methods

2.1 Plithogenic Statistics

Plithogenic statistics is applied to analyze complex data, providing an understanding of the interactions among these factors and how they simultaneously affect the analyzed environment. To implement this method, it is necessary to define the plithogenic dynamics [14], which consist of various types of opposites, and/or their neutrals, and/or non-opposites, as well as their organic fusion. Plithogeny generalizes dialectics (the dynamics of one type of opposites: <A> and <antiA>) and neutrosophy (the dynamics of one type of opposites and their neutrals: <A>, <antiA>, and <neutA>), as Plithogeny studies the dynamics of many types of opposites, their neutrals, and non-opposites (<A>, <antiA>, <neutA>; <B>, <antiB>, <neutB>, etc.), and many non-opposites (<C>, <D>, etc.), all together.

A specific application and derived case is the plithogenic set, which extends the classical set, fuzzy set, intuitionistic fuzzy set, and neutrosophic set [15], and has numerous scientific applications [16].

So, it is called a plithogenic set (P, a, V, d, c):

- Where "P" is a set, "a" is an attribute (generally multidimensional), "V" is the range of attribute values, "d" represents the degree of membership of the attribute value for each element xxx to the set PPP under given criteria, and "d" can correspond to d_F, d_{IF}, or d_N, indicating a fuzzy membership degree, an intuitionistic fuzzy membership degree, or a neutrosophic membership degree, respectively, for an element xxx in the plithogenic set P ($x \in P$);
- Similarly, "c" can correspond to c_F, c_{IF}, or c_N, representing the degree of contradiction function for fuzzy attribute values, intuitionistic fuzzy attribute values, or neutrosophic attribute values, respectively [17].

The functions are defined according to the applications that experts need to address. $d(\cdot,\cdot)$ and $c(\cdot,\cdot)$ are used with the following notation: $x(d(x,V))$, where $d(x,V) = \{d(x,v) \text{ for all } v \in V\}$, for all $x \in P$.

Thus, plithogenic statistical analysis enables addressing the complexity of the perceptions within the analyzed sample. This requires a linguistic evaluation system adapted to the plithogenic model to accurately capture the opinions of the experts (see Table 1).

Table 1: Plithogenic measurement scales. Source: Own elaboration.

Scale	Plithogenic scale	S([T,I,F])	Plithogenic evaluation criterion or category
6	(0.95, 0.05, 0.15)	0.90	Very High (VH)
5	(0.75, 0.25, 0.35)	0.75	High (H)
4	(0.50, 0.55, 0.55)	0.50	Medium or indeterminate (M)
3	(0.35, 0.65, 0.75)	0.32	Low (L)
2	(0.10, 0.75, 0.95)	0.13	Very Low (VL)
1	(1,0,1)	0	Contradictory (C)

Consequently, the data set is evaluated, which is formed entirely or partially by data with some degree of indeterminacy and contradiction. To do this, the plithogenic statistical method is used, which allows for the interpretation and organization of the data to reveal underlying patterns. For plithogenic statistical modeling, the methodology found in the analyzed reference materials has been reviewed [18].

On the other hand, the calculation of the chi-square statistic (χ^2) is a tool used to determine whether there is a significant relationship between two categorical variables. It is particularly useful in association studies and allows for assessing whether the differences observed in a contingency table are due to chance or indicate a real relationship. For this, the calculation of χ^2 is carried out according to equation (1).

$$X^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \quad (1)$$

Where:

- O_{ij} is the observed frequency in cell i, j,
- E_{ij} is the expected frequency in the cell i, j.

To determine the critical value in a chi-square (χ^2) test, a significance level is first selected, typically set at 0.05 or 0.01. This significance level (α) defines the probability threshold used to evaluate the null hypothesis, indicating the maximum allowable error probability when rejecting it. Additionally, the degrees of freedom (df) are calculated, which allows the test to be adapted to the dimensions of the data using equation (2).

$$gl = (r - 1) \cdot (c - 1) \quad (2)$$

Where r represents the number of rows and c represents the number of columns in the contingency table. Once α and the degrees of freedom are determined, the chi-square critical values table is consulted to obtain the value that defines the threshold for accepting or rejecting the null hypothesis within the context of the test.

3 The Study

3.1 Analysis of the behavior of the frequencies of each variable.

The floriculture sector has emerged as one of the key industries in several countries, particularly in the floriculture sector of the parish of José Guango Bajo. However, despite its economic relevance, this sector faces significant challenges related to job stability, which is affected by various factors, including labor demand, hiring and retention policies, and the recruitment capacity of companies. These variables influence employability and job sustainability for the economically active population, making their analysis crucial for the formulation of effective strategies.

Table 2 presents the relationships between the independent and dependent variables in the floriculture sector. These relationships allow for the analysis of how variations between these variables impact job stability and employability within the sector. For the development of the statistical analysis, a sample of 120 respondents from three areas {administrative (4), post-harvest (36), and cultivation (80)} has been proposed.

Table 2: Relationships between the study variables. Source: Own elaboration.

	Independent variable	**Dependent variable**
Relationships between variables	Labor demand (VI-1)	Job stability (VD-2)
	Hiring and retention policies (VI-3)	
	Recruitment capacity (VI-4)	Economically active population (employed in the sector) (VD-5)

Previous studies have indicated that in seasonal sectors like floriculture, labor demand increases labor turnover, affecting the stability of workers. Table 3 shows the observed frequencies between labor demand and job stability, using plithogenic categories to classify the impact in different labor areas (see Table 1). Among these, the prevalence of indeterminate relationships is observed, caused by external factors with an impact on these variables.

Table 3: Frequency observed between the relationship VI-1 and VD-2. Source: Own elaboration.

Job demand/job stability	**C**	**VH**	**H**	**M**	**L**	**VL**	**Total**
Administrative (A)	1	0	1	2	0	0	**4**
Post-Harvest (PH)	9	3	5	13	4	2	**36**
Cultivation (C)	5	5	10	42	15	3	**80**
Total	**15**	**8**	**16**	**57**	**19**	**5**	**120**

Table 4 visualizes how policies affect stability in different labor areas of the floriculture sector. It also shows, in the contradictory zone, factors influencing an inverse relationship between hiring and retention policies, impacting labor turnover. Finally, Table 5 presents the observed frequencies between recruitment capacity and the economically active population in the sector, mostly classified as (VH).

Table 4: Frequency observed between the relationship VI-3 and VD-2. Source: Own elaboration.

Hiring and retention policies/job stability	C	VH	H	M	L	VL	Total
Administrative (A)	2	0	1	1	0	0	**4**
Post-Harvest (PH)	18	2	4	4	0	8	**36**
Cultivation (C)	25	4	11	30	8	2	**80**
Total	**45**	**6**	**16**	**35**	**8**	**10**	**120**

Table 5: Frequency observed between the relationship VI-4 and VD-5. Source: Own elaboration.

Recruitment capacity / economically active population	C	VH	H	M	L	VL	Total
Administrative (A)	0	3	1	0	0	0	**4**
Post-Harvest (PH)	9	1	7	10	6	3	**36**
Cultivation (C)	7	38	1	24	9	1	**80**
Total	**16**	**42**	**9**	**34**	**15**	**4**	**120**

To evaluate the relationship between the variables, hypotheses must be defined and expected frequencies calculated. Therefore, the chi-square test requires grouping similar categories to increase the expected frequencies and ensure the validity of the analysis. For example, instead of analyzing the categories "Very High" and "High" separately, they are grouped as (H+VH), and "Low" and "Very Low" are grouped as (L+VL). Similarly, the respondent groups "Administrative (A)" and "Post-Harvest (PH)" are combined into a single multigroup (see Figure 1), as they share similar characteristics, referred to as (A+PH).

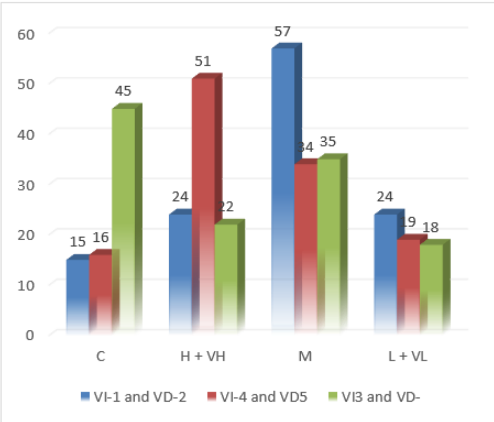

Figure 1: Variable frequencies using plithogenic multigroups. Source: Own elaboration.

In Figure 1, three relationships are observed, with high-value frequencies highlighted. Among them, the relationship (IV-1) and (DV-2) point to a plithogenic zone of indeterminacy, while the relationship (IV-4) and (DV-5) are located in a high-importance area. In contrast, the relationship (IV-3) and (DV-2) are found in a contradictory zone. These important zones are analyzed in the following sections (3.2, 3.3, and 3.4).

3.2 Relationship: Labor demand (VI-1) and job stability (VD-2).

Formulation of the plithogenic hypotheses:

- Null hypothesis (Ho): There is no relationship between labor demand and job stability in the floriculture sector (false hypothesis).

- Alternative hypothesis (H1): Job stability in the floriculture sector increases directly with the increase in labor demand (true hypothesis).
- Alternative hypothesis (H2): The relationship between labor demand and job stability is unpredictable; even though demand increases, other factors influence the stable relationship between these variables (indeterminate hypothesis).
- Alternative hypothesis (H3): An increase in labor demand reduces job stability (contradictory hypothesis).

Once the hypotheses are defined, the observed and expected structured frequencies are calculated (see Tables 6 and 7). Finally, the chi-square test will be calculated to assess the discrepancy between the observed and expected values.

Table 6: Structured observed frequencies. Source: Own elaboration.

Job demand/job stability	C	(H + VH)	Medium (M)	(L + VL)	Total
Administrative + Post-Harvest (A+PH)	10	9	15	6	**40**
Cultivation (C)	5	15	42	18	**80**
Total	**15**	**24**	**57**	**24**	**120**

Table 7: Expected frequencies. Source: Own elaboration.

Job demand/job stability	C	(H + VH)	Medium (M)	(L + VL)	Total
Administrative + Post Harvest (A+PH)	5.00	8.00	19.00	8.00	**40**
Cultivation (C)	10.00	16.00	38.00	16.00	**80**
Total	**15.00**	**24.00**	**57.00**	**24.00**	**120**

To calculate the degrees of freedom (df), formula (2) is used, where for r=2 and c=4, df=3. Therefore, with a significance level of α=0.05, a critical value of 7.815 is reached. Since $X^2 = 9.701 > 7.815$, the null hypothesis is rejected and the alternative hypothesis is accepted.

In this case, the alternative H2 hypothesis, or indeterminate plithogenic hypothesis, is selected, as it has a weight of 47.50% {Medium (M)} over the other plithogenic categories in the analyzed sample (see Figure 1). Additionally, the selection of this hypothesis is supported by the restriction for hiring new staff, determined by a highly specialized selection profile. The available vacancies are mainly aimed at professionals with minimum experience and specific qualifications, which limits opportunities for recent graduates and other candidates. This factor emerges as one of the most relevant variables in the studied relationship, highlighting the impact of the selection profile on employment dynamics in the sector.

3.3 Hiring and retention policies (VI-3) and job stability (VD-2).

Formulation of the plithogenic hypothesis:

- Null hypothesis (Ho): Labor stability in the floriculture sector does not depend on hiring and retention policies (false hypothesis).
- Alternative hypothesis (H1): Hiring and retention policies increase labor stability (true hypothesis).
- Alternative hypothesis (H2): A clear relationship between hiring and retention policies and labor stability cannot be predicted (indeterminate hypothesis).
- Alternative hypothesis (H3): Hiring and retention policies focused on specific areas decrease labor stability (contradictory hypothesis).

Once the hypotheses are defined, the calculation of the structured observed and expected frequencies is carried out, as shown in Tables 8 and 9. Finally, the Chi-square test is applied to evaluate the discrepancy between the structured observed and expected values, in order to verify the proposed hypothesis.

Table 8: Structured observed frequencies. Source: Own elaboration.

Hiring and retention policies/job stability	C	(H + VH)	Medium (M)	(L + VL)	Total
Administrative + Post-Harvest (A+PH)	20	7	5	8	**40**
Cultivation (C)	25	15	30	10	**80**
Total	**45**	**22**	**35**	**18**	**120**

Table 9: Expected frequencies. Source: Own elaboration.

Hiring and retention policies/job stability	C	(H + VH)	Medium (M)	(L + VL)	Total
Administrative + Post Harvest (A+PH)	15.00	7.33	11.67	6.00	**40**
Cultivation (C)	30.00	14.67	23.33	12.00	**80**
Total	**45.00**	**22.00**	**35.00**	**18.00**	**120**

For df= 3 and α=0.05, a critical value of 7.815 is obtained, and the analysis of the samples results in X^2=9.237, which is greater than 7.815. Therefore, the null hypothesis is rejected, and the alternate hypothesis is accepted. In this case, the H3 or contradictory plithogenic hypothesis is selected, which has a weight of 42.50% (C) compared to the other plithogenic categories in the analyzed sample (see Figure 1).

This is due to the high concentration of employment in the cultivation area, which leads to an overload of work and increased labor turnover. This highlights that, although hiring and retention policies exist, their effectiveness could be compromised if employment is concentrated in a single sector, potentially leading to labor instability.

3.4 Recruitment capacity (VI-4) and economically active population (VD-5).

Formulation of the plithogenic hypothesis:

- Null hypothesis (Ho): The recruitment capacity in floriculture companies does not influence the number of economically active population employed in the sector (false hypothesis).
- Alternative hypothesis (H1): The higher the recruitment capacity in floriculture companies, the greater the proportion of the economically active population employed in the sector (true hypothesis).
- Alternative hypothesis (H2): The recruitment capacity and the employment of the economically active population in the sector do not show a constant relationship due to external factors (indeterminate hypothesis).
- Alternative hypothesis (H3): An increase in the recruitment capacity in the floriculture sector decreases the employment of the economically active population (contradictory hypothesis).

Once the hypotheses are established, the structured observed and expected frequencies are calculated, as detailed in Tables 10 and 11. Subsequently, the Chi-square test is performed to evaluate the discrepancy between the observed and expected values, in order to analyze the validity of the hypotheses proposed in the analyzed relationship.

Table 10: Structured observed frequencies. Source: Own elaboration.

Recruitment capacity / economically active population	C	(H + VH)	Medium (M)	(L + VL)	Total
Administrative + Post-harvest (A+PH)	9	12	10	9	**40**
Cultivation (C)	7	39	24	10	**80**
Total	**16**	**51**	**34**	**19**	**120**

Table 11: Expected frequencies. Source: Own elaboration.

Recruitment capacity / economically active population	C	(H + VH)	Medium (M)	(L + VL)	Total
Administrative + Post Harvest (A+PH)	5.33	17.00	11.33	6.33	**40**
Cultivation (C)	10.67	34.00	22.67	12.67	**80**
Total	**16.00**	**51.00**	**34.00**	**19.00**	**120**

For a critical value of 7.815, a value of $X^2 = 7.907 > 7.815$ was calculated with a significance level of $\alpha = 0.05$. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. In this case, the H1 or true plithogenic hypothesis is selected, as it holds a weight of 42.50% (H + VH) over the other plithogenic categories in the analyzed sample (see Figure 1). Furthermore, it is established that the hiring capacity is effective in improving job stability for the economically active population in the floricultural sector. Thus, initiatives that promote this capacity are supported as a strategy for strengthening labor within the sector.

3.5 Analysis of the relationships between variables in the floricultural sector.

The relationship between labor demand and job stability was evaluated under the indeterminate plithogenic hypothesis (H2), which was accepted. The results indicate that fluctuations in labor demand, influenced by external factors such as economic changes and government policies, have a direct impact on job stability in the floricultural sector. This increases unemployment and underemployment rates, emphasizing the need to adjust hiring strategies specifically aimed at including new professionals and reducing barriers for recent graduates. It is also essential to implement measures to improve job security and working conditions within the sector.

On the other hand, the relationship between hiring and retention policies and job stability was evaluated under the contradictory plithogenic hypothesis (H3), which was also accepted. The results show that, although hiring and retention policies exist, the high concentration of employment in specific areas of the floricultural sector generates job instability. This is due to work overload and the limited diversification of job opportunities. Thus, it becomes necessary to reconsider current policies to distribute employment more equitably and promote greater job stability in the sector.

Finally, regarding the relationship between hiring capacity and the economically active population, the true plithogenic hypothesis (H1) was confirmed. It was observed that an increase in hiring capacity supports the integration of a greater proportion of the economically active population, thereby improving job stability. This highlights the importance of strengthening hiring capacities in the floricultural sector to reduce unemployment and underemployment rates by providing greater job opportunities and improving workers' conditions.

4. Conclusion

The plithogenic statistical analysis has revealed that fluctuations in labor demand within the floricultural sector negatively impact job stability by increasing unemployment and underemployment rates. Despite the existence of hiring and retention policies, their effectiveness is contradictory, suggesting the need to reconsider these policies to diversify job opportunities and improve employment distribution. Furthermore, it has been confirmed that greater hiring capacity is linked to higher integration of the economically active population. This underscores the need to strengthen hiring capacities as a strategy to improve working conditions and reduce unemployment in the sector.

References

[1] N. V. Anumala and R. Kumar, "Floriculture sector in India: current status and export potential," The Journal of Horticultural Science and Biotechnology, vol. 96, no. 5, pp. 673-680, 2021. [Online]. Available: https://www.tandfonline.com/doi/abs/10.1080/14620316.2021.1902863.

[2] S. Dessalegn, "Assessment of Workers' Benefit from Employment Injury in Batu Floriculture Industry," East African Journal of Social Sciences and Humanities, vol. 6, no. 1, pp. 17-34, 2021. [Online]. Available: https://eajsh.haramayajournals.org/index.php/eajsh/article/view/431.

[3] J. Sharma, "Floriculture: Demand and scope in India," Adhyayan: A Journal of Management Sciences, vol. 10, no. 02, pp. 59-63, 2020. [Online]. Available: https://smsjournals.com/index.php/Adhyayan/article/view/2277.
[4] L. O. Rodríguez Mañay, I. Guaita-Pradas, and I. Marques-Perez, "Measuring the supply chain performance of the floricultural sector using the SCOR model and a multicriteria decision-making method," Horticulturae, vol. 8, no. 2, p. 168, 2022. [Online]. Available: https://www.mdpi.com/2311-7524/8/2/168.
[5] J. M. Rausch, "Colombia's Cut Flower Industry: Unprecedented Growth and Controversy, 1960-2022," Middle Atlantic Review of Latin American Studies, vol. 7, no. 1, pp. 150-167, 2023. [Online]. Available: https://marlasjournal.com/articles/10.23870/marlas.400?_rsc=139ww.
[6] A. B. Tulcanaza-Prieto, P. A. Báez Salazar, and I. E. Aguilar-Rodríguez, "Determinants of Youth Unemployment in Ecuador in 2019," Economies, vol. 11, no. 2, p. 59, 2023. [Online]. Available: https://www.mdpi.com/2227-7099/11/2/59.
[7] J. Leon, M. Pavon, D. Murillo, M. Leon, D. Guatumillo, and J. Toroshina, "Waste managing plan for floriculture plants," Minerva, vol. 4, no. 11, pp. 31-40, 2023. [Online]. Available: https://minerva.autanabooks.com/index.php/Minerva/article/view/126.
[8] S. E. UGWU, C. F. OKECHUKWU, J. A. UKONZE, T. E. EJIOFOR, and C. C. ALI, "FLORICULTURE AS A TRADE SUBJECTS IN NIGERIAN SECONDARY SCHOOLS; AN ADVOCACY CALL," Journal of Association of Vocational and Technical Educators of Nigeria, vol. 26, no. 1, pp. 74-79, 2020. [Online]. Available: https://www.avten-edu.org.ng/journal/index.php/javten/article/view/282.
[9] K. Schelleman-Offermans et al., "Socio-economic inequities in mental health problems and wellbeing among women working in the apparel and floriculture sectors: testing the mediating role of psychological capital, social support and tangible assets," BMC Public Health, vol. 24, no. 1, p. 1157, 2024. [Online]. Available: https://link.springer.com/article/10.1186/s12889-024-18678-5.
[10] L. T. Raynolds, "Gender equity, labor rights, and women's empowerment: lessons from Fairtrade certification in Ecuador flower plantations," Agriculture and Human Values, vol. 38, no. 3, pp. 657-675, 2021. [Online]. Available: https://link.springer.com/article/10.1007/s10460-020-10171-0.
[11] S. Latorre, P. Hollenstein, M. González-Rodríguez, and S. Schmitz, "Ecuadorian peasantries amidst the agri-food globalization: Social differentiation and diverse livelihoods strategies in a cut flower exporting territory," Journal of Rural Studies, vol. 93, no. July, pp. 28-42, 2022/07/01/ 2022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0743016722000985.
[12] I. Guaita-Pradas, L. O. Rodríguez-Mañay, and I. Marques-Perez, "Competitiveness of Ecuador's flower industry in the global market in the period 2016–2020," Sustainability, vol. 15, no. 7, p. 5821, 2023. [Online]. Available: https://www.mdpi.com/2071-1050/15/7/5821.
[13] W. J. McKinley and C. R. Hall, "Developing educational and career pathway frameworks in the floristry industry," Technology in Horticulture, vol. 3, no. 1, pp. 1-7, 2023. [Online]. Available: https://www.maxapress.com/article/doi/10.48130/TIH-2023-0012?viewType=HTML.
[14] P. Gutiérrez et al., "Neutrosophic Sets and Systems Special Issue: Neutrosophic Advancements Plithogenic Iadov model to study university teaching practices in the complexity of the educational process of comprehensive training by competencies," Neutrosophic Sets and Systems, vol. 62, no. 1, pp. 79-83, 2023. [Online]. Available: https://digitalrepository.unm.edu/cgi/viewcontent.cgi?article=2526&context=nss_journalhttps://digitalrepository.unm.edu/cgi/viewcontent.cgi?article=2526&context=nss_journalhttps://digitalrepository.unm.edu/cgi/viewcontent.cgi?article=2526&context=nss_journal.
[15] E. Cristina et al., "Neutrosophic Statistical Analysis of Self-Assessment of Rehabilitation Knowledge in University Students," Neutrosophic Sets and Systems, vol. 52, no. October, pp. 2-5, 2022. [Online]. Available: https://digitalrepository.unm.edu/cgi/viewcontent.cgi?article=2206&context=nss_journal.
[16] F. Smarandache, "Plithogeny, Plithogenic Set, Logic, Probability and Statistics: A Short Review," Journal of Computational and Cognitive Engineering, vol. 1, no. 2, pp. 47-50, 2022. [Online]. Available: http://ojs.bonviewpress.com/index.php/JCCE/article/view/191.
[17] E. González Caballero, M. Leyva Vázquez, and F. Smarandache, "On neutrosophic uninorms," Neutrosophic Sets and Systems, vol. 45, no. 2021, pp. 340-348, 2021. [Online]. Available: https://digitalrepository.unm.edu/nss_journal/vol45/iss1/22.
[18] M. R. Alabdullah, "The Neutrosophic Regular and Most Important Properties that Bind Neutrosophic Ring Elements," Neutrosophic Sets and Systems, vol. 61, no. 1, p. 1, 2023. [Online]. Available: https://zenodo.org/records/10531836.

Received: July 08, 2024. Accepted: September 16, 2024