Effect of the 7P's of the Marketing Mix on the Sales Strategies of a Private University: a comprehensive analysis using the neutrosophic PEST-SWOT approach

Danny Joseph Anthony Flores Villarruel[1], and Rosa María Criollo Delgado[2]

[1] Universidad César Vallejo, Lima. Peru; djflores@ucvvirtual.edu.pe
[2] Universidad César Vallejo, Lima. Peru; rcriollod@ucvvirtual.edu.pe

Abstract. The article focuses on the effect of the 7Ps of the Marketing Mix with respect to the Sales Strategies of a Private University exploring a growing trend in development towards the educational market. Although there have been some recent developments towards most of those substantially engaged with educational marketing, there seems to be a clear lag in research addressing how these variables relate to higher education institutions especially in areas where political-economic, social and technological determinants are of great importance. The study also seeks to address these issues using a neutrosophic PEST-SWOT approach in the hope of positioning external factors with respect to internal ones in a more effective and relevant manner to respond to uncertainty effectively. The findings show the possibility offered by the interaction of these elements when framed in a neutrosophic lens as providing anchors from which strategies can be developed to improve sales and student recruitment and consequently retention. In effective marketing of educational institutions, such an epistemology makes this work not only a more effective marketing decision-making tool, but affirms the need for agility and change in an environment as unstable as academia. This approach contributes theoretically to the field by integrating classic marketing concepts with advanced analytical methodologies, while offering significant practical implications for managers and strategists in the university setting.

Keywords: Marketing Mix, 7P's, Private university, Sales strategies, PEST-FODA, Neutrosophic analysis, Educational marketing, Competitiveness, Strategic management.

1. Introduction

The dynamics of marketing in the education sector have evolved significantly in recent decades, especially for private higher education institutions that face challenges related to student recruitment and retention in an increasingly competitive environment. Within this context, the 7P's of the Marketing Mix (Product, Price, Place, Promotion, People, Processes, and Physical Evidence) have been consolidated as an effective analytical framework for designing commercial strategies that respond to the demands of an ever-changing academic market. Recent research has highlighted the relevance of this approach in shaping more precise market strategies [1]. However, the comprehensive impact of the 7P's on university sales, considering both internal and external factors, remains an underexplored area.

The Marketing Mix , initially introduced in the 1960s by McCarthy, has expanded to include additional elements that are particularly relevant in the provision of services, as is the education case. Historically, the university sector has been less inclined to adopt structured commercial tools compared to other industries [2]. However, increasing global competition, diversification of educational offerings and digitalization have forced institutions to rethink their operating models. Currently, external factors

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such as changes in educational legislation and economic instability are redefining marketing strategies in this sector [3].

The central problem addressed in this study is the limited understanding of how the 7Ps of the Marketing Mix , analyzed using strategic tools such as the PEST-FODA approach and combined with neutrosophic methodologies, can influence the sales strategies of private universities. How can educational institutions optimize their commercial efforts to adapt to a saturated market, considering the inherent uncertainty of external and internal factors? This key question directs the analysis towards a broader framework that transcends traditional strategic evaluation methodologies [4].

The main objective of this work is to explore, from a comprehensive approach, how the interaction between the 7P's of the Marketing Mix and the factors identified through the neutrosophic PEST-FODA analysis affects commercial strategies in private universities. In addition, the study seeks to provide a model that serves as a basis for decision-making in educational marketing, offering practical and theoretical tools that allow academic managers to adapt to a constantly changing environment. This research brings a novel and multidimensional approach to the field of marketing in higher education.

2. Related works
2.1. The 7P's of the Marketing Mix in Sales Strategies

Talking about the 7Ps of the Marketing Mix in sales strategies is getting right to the heart of what makes a business thrive or stagnate. We could say that it is a model that organizes the chaos of marketing, but the reality is more complex. These seven pillars — product, price, place, promotion, people, processes, and physical evidence — are intertwined in such a way that it is difficult to know where to start or which one has more weight [5]. And that is the fascinating thing: everything is connected. If we think about the product, for example, the first thing that comes to mind is what is offered to the customer, be it a tangible object or a service. But is it just that? In my experience, a product is not only its functionality, but also the story it tells [6]. Recently, in a local store, I bought a notebook that, beyond being practical, had a design that reminded me of the days when I wrote diaries as a teenager. Was that design part of the "product"? For me, yes. But this is not always obvious to those designing marketing strategies.

Price, on the other hand, seems clearer at first glance, but it quickly gets complicated. Is it just the cost? Maybe not. Think of a coffee you buy for $5 at a fancy coffee shop, while on another corner, the same coffee costs you $1. What are we paying for? The experience, the ambiance, the brand, and perhaps a bit of the illusion of belonging to a certain social group. This is where price becomes more psychological than mathematical. Now, let's move on to the plaza or place where the product is distributed [7]. In the digital world, this has changed dramatically. A friend of mine, who used to own a clothing store, closed it and switched completely to e-commerce. "It's not the same," he told me. "There's less interaction, but I reach more people." This shows us how this pillar evolves, adapting to the needs of the market, but also forcing businesses to rethink their strategies. Promotion, on the other hand, is where companies seem to throw everything at it. Social media ads, influencers, discounts... the list goes on and on [8]. However, the most visible is not always the most effective. I know a small bookstore that barely invests in advertising, but that organizes reading clubs and talks with authors. That word of mouth is its best promotion. It's funny how something so simple can outperform million-dollar campaigns in results.

Then we come to people, who are the lifeblood of any sales strategy. This includes both the company's team and the customers. I remember a restaurant where the staff was so friendly that I came back more for them than for the food. That human experience, in many cases, is what defines whether the customer returns or not. It might seem obvious, but how many times have we seen businesses fail because they forget to take care of this aspect [9].

Processes are another issue. An efficient system can make the difference between a satisfied customer and a frustrated one [10]. I once ordered a book from a website, and the purchasing process was so complicated that I ended up closing the window and looking for another store. This shows that even if the product is excellent if the processes are not well designed, sales suffer.

Finally, there is physical evidence, a concept that many underestimate. What does the packaging look like? What impression does the store or website give? A coffee shop I visited recently had such nice mugs that I wanted to buy one. That careful aesthetic was part of their strategy, although perhaps they did not see it that way. In conclusion, the 7P's are like pieces of a puzzle that, when put together, form a coherent image. But that image is not static; it changes with time, trends, and customer needs. Perhaps that is the most exciting part: there is always something new to learn, adjust or try [12]. The important thing, in the end, seems to be not losing sight of the customer, because even if the models change, they are still the center of everything. So, do the 7P's guarantee success? Probably not on their own, but they are a compass in the vast ocean of marketing. And, like any compass, it does not lead you to the destination, but it helps you not to get lost along the way. Isn't that what we all seek?

2.2. SWOT Analysis

SWOT analysis is an essential technique for assessing the state of a company or project by examining both its internal characteristics (Weaknesses and Strengths) and its external environment (Threats and Opportunities) in a structured matrix. This process is broken down into four phases: external analysis, internal analysis, creation of the SWOT matrix and determination of the strategy to follow. The survival and prosperity of the organization are deeply linked to the environment that surrounds it, which presents both opportunities and threats. These are the key components of the external analysis. Simultaneously, the internal factors of the organization, such as its weaknesses and strengths, directly depend on its internal management [12].

Each of these four aspects can be classified as positive, driving the development of the organization, or negative, representing obstacles that impede such development. Opportunities are positive factors in the environment that, once identified, can be leveraged to foster the growth of the organization or project. On the contrary, threats are negative external influences that must be addressed with tactics and strategies to overcome them. Internally, weaknesses are negative elements that need to be overcome through proper management, while strengths are positive aspects that must be leveraged and enhanced. The SWOT analysis identifies strengths and weaknesses in areas such as the availability of capital resources, personnel, assets, product quality, internal and market structure, and consumer perception. The results of this analysis are placed in a matrix and evaluated by experts, whose combined assessment offers a clear view of the most promising strategies and tactics for the organization or project [13].

2.3. PEST análisis

PEST analysis examines the external factors that influence a company, covering Political, Economic, Social and Technological components. This analysis allows to understand how legislative regulations, economic conditions, sociocultural trends and technological advances impact the organization. For example, political factors include environmental protection laws, antitrust regulations and government stability, while economic factors encompass all variables that affect the market. Sociocultural aspects refer to the configuration and behavior of consumers, and technological factors consider the development and adoption of new technologies [14]. The PEST-FODA methodology is developed in two main stages. First, a comprehensive analysis of external factors is carried out from the political, economic, social and technological perspectives. In the second stage, the principles of the SWOT analysis are ap-

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plied to evaluate the internal characteristics of the company . By combining both approaches, a comprehensive and detailed view of the business situation is obtained, identifying external opportunities and threats, as well as strengths and weaknesses. internal weaknesses, which facilitates the formulation of more effective and holistic strategies for the development and sustainability of the company [15].

2.4. Neutrosophic Basics

Unlike traditional PEST-SWOT methods, in this work the evaluations are carried out based on Single Value Triangular Neutrosophic Numbers. Below are the fundamental explanations on this topic.

Definition 1 ([17]) : The neutrosophic set N is characterized by three membership functions, which are the truth membership function T_A, the indeterminacy membership functionI_A and membership function to falsehood F_A, where Uis the Universe of Discourse and $\forall x \in U$, $T_A(x), I_A(x), F_A(x) \subseteq]^-0, 1^+[$, and $^-0 \leq \inf T_A(x) + \inf I_A(x) + \inf F_A(x) \leq \sup T_A(x) + \sup I_A(x) + \sup F_A(x) \leq 3^+$.

See that by the definition, $T_A(x), I_A(x)$and $F_A(x)$are standard or nonstandard real subsets of $]^-0, 1^+[$and , so $T_A(x), I_A(x)$and $F_A(x)$can be subintervals of $[0,1]$. $^-0$and1^+ They belong to the set of hyperreal numbers.

Definition 2 ([17]) : The single-valued neutrosophic set $F_A: U \to [0,1]$(SVN N) Ais U, $T_A: U \to [0,1]$where $A = \{< x, T_A(x), I_A(x), F_A(x) > : x \in U\}$and $I_A: U \to [0,1]$. $0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3$.

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

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

Definition 3 ([17]) : The single- $\tilde{a} = \langle (a_1, a_2. a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$valued triangular neutrosophic number, , is a neutrosophic set in $\mathbb{R}$, whose truth, indeterminacy, and falsity membership functions are defined as follows:

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

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

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

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

Definition 4 ([17]) : Given$\tilde{a} = \langle (a_1, a_2, a_3); \alpha_{\tilde{a}}, \beta_{\tilde{a}}, \gamma_{\tilde{a}} \rangle$ and$\tilde{b} = \langle (b_1, b_2, b_3); \alpha_{\tilde{b}}, \beta_{\tilde{b}}, \gamma_{\tilde{b}} \rangle$ two triangular neutrosophic numbers of a single value andλ any non-zero number on the real line. Then, the following operations are defined:

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

5. Division of two triangular neutrosophic numbers:

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

6. Multiplication of two triangular neutrosophic numbers:

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

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3. Results and Discussion

The study examines the influence of the **7P's of the Marketing Mix** (Product, Price, Place, Promotion, People, Process and Physical Evidence) on the sales strategies of a private university, using the PEST-SWOT analysis in combination with single-valued triangular neutrosophic numbers (SVNN). To do this:

1. **Objective of the Study** : To evaluate how internal and external factors impact the university's strategic decisions to attract new students and retain current ones.
2. **Methodology** :
   o A panel of experts (teachers, administrators and educational marketing specialists) was consulted.
   o A PEST analysis was performed to identify external threats and opportunities.
   o Internal factors were evaluated using SWOT.
   o Interactions between factors were calculated using triangular neutrosophic numbers.
3. **Variables Analyzed** :
   o Tuition policies and government regulations (P).
   o Economic factors such as inflation and purchasing power (E).
   o Social perception of educational quality (S).
   o Technological innovations applied to learning (T).

PEST analysis
Threats (T):
1. **Political (T1):** Regulatory changes in educational policies.
2. **Economic (T2):** Increase in operating costs.
3. **Social (T3):** Preference for public universities due to costs.
4. **Technological (T4):** Gaps in digital infrastructure.

Opportunities (O):
1. **Political (O1):** Incentives for private universities.
2. **Economic (O2):** Growing demand for specialized technical education.
3. **Social (O3):** Greater interest in continuing education programs.
4. **Technological (O4):** Use of virtual reality tools for learning.

SWOT Analysis
Weaknesses (W):
1. **Internal (W1):** Limited teacher training in digital tools.
2. **Internal (W2):** Underutilized physical infrastructure.

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Strengths(s):
1. **Internal (S1):** Academic recognition at the regional level.
2. **Interns (S2):** Close relationship with companies for professional internships.

Evaluating the 7P's using neutrosophic numbers

Single-valued triangular neutrosophic numbers were applied to evaluate the **7P's** . Each of the linguistic terms assigned by the experts was translated into a neutrosophic value based on the reference tables:

Table 1: Neutrosophic value based on reference tables.

P	Linguistic Term	Neutrosophic Value (SVNN)
Product	Medium High (MDH)	$\langle (5,7,9);0.67,0.25,0.33 \rangle$
Price	Medium (M)	$\langle (3,5,7);0.50,0.50,0.50 \rangle$
Square	Medium Low (MDL)	$\langle (1,3,5);0.33,0.75,0.67 \rangle$
Promotion	Medium High (MDH)	$\langle (5,7,9);0.67,0.25,0.33 \rangle$
People	Height (H)	$\langle (7,9,10);0.83,0.15,0.17 \rangle$
Processes	Medium (M)	$\langle (3,5,7);0.50,0.50,0.50 \rangle$
Physical Evidence	Medium High (MDH)	$\langle (5,7,9);0.67,0.25,0.33 \rangle$

Interaction Calculations

The combination of external and internal factors was evaluated using the neutrosophic sum operation. For example:

Combination between Opportunity (O1) and Strength (S1):
- Values for O1: $\langle (5,7,9);0.67,0.25,0.33 \rangle$
- Values for S1: $\langle (3,5,7);0.50,0.50,0.50 \rangle$

Neutrosophic Summation:

O1+S1 = $\langle (8 , 12 , 16) ; 0.50 , 0.50 , 0.50 \rangle$

Product Evaluation (MDH):

We use the obtained values to determine the influence on the development of the marketing mix:

Global Impact = Sum of all SVNN / (Total P's evaluated)

For a hypothetical example with cumulative neutrosophic results:

P	Final Score (SVNN)
Product	$\langle (12,16,20);0.75,0.20,0.25 \rangle$
Price	$\langle (10,14,18);0.60,0.30,0.40 \rangle$

The relative influence on the overall strategy can be calculated by weighting each P according to the neutrosophic values obtained.

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Comprehensive Results and Final Tables

Table 2: Neutrosophic SWOT Matrix:

Aspect	Factor	Linguistic Term	SVNN
Strengths	S1	Height (H)	⟨ (7,9,10);0.83,0.15,0.17 ⟩
Opportunities	O1	Medium High (MDH)	⟨ (5,7,9);0.67,0.25,0.33 ⟩
Weaknesses	W1	Medium Low (MDL)	⟨ (1,3,5);0.33,0.75,0.67 ⟩
Threats	T2	Medium (M)	⟨ (3,5,7);0.50,0.50,0.50 ⟩

Mix Variables and SWOT

Next, a detailed calculation is performed for all the Marketing Mix variables (7P's) and their relationship with the SWOT dimensions, using **single-valued triangular neutrosophic numbers (SVNN)** .

Step 1: Marketing Mix Variables Represented as SVNN

For each P of the Marketing Mix , we assign a triangulated neutrosophic value based on the experts' assessments:

Table 3: Triangulated neutrosophic value

P	Linguistic Term	Neutrosophic Value (SVNN)
Product	Medium High (MDH)	⟨ (5,7,9);0.67,0.25,0.33 ⟩
Price	Medium (M)	⟨ (3,5,7);0.50,0.50,0.50 ⟩
Square	Medium Low (MDL)	⟨ (1,3,5);0.33,0.75,0.67 ⟩
Promotion	Medium High (MDH)	⟨ (5,7,9);0.67,0.25,0.33 ⟩
People	Height (H)	⟨ (7,9,10);0.83,0.15,0.17 ⟩
Processes	Medium (M)	⟨ (3,5,7);0.50,0.50,0.50 ⟩
Physical Evidence	Medium High (MDH)	⟨ (5,7,9);0.67,0.25,0.33 ⟩

Step 2: SWOT Representation in Neutrosophic Format

Key strengths, weaknesses, opportunities and threats were identified and triangular neutrosophic values were assigned:

Table 4: Triangular neutrosophic values:

Aspect	Factor	Linguistic Term	Neutrosophic Value (SVNN)
Strengths	S1	Height (H)	⟨ (7,9,10);0.83,0.15,0.17 ⟩
Opportunities	O1	Medium High (MDH)	⟨ (5,7,9);0.67,0.25,0.33 ⟩
Weaknesses	W1	Medium Low (MDL)	⟨ (1,3,5);0.33,0.75,0.67 ⟩
Threats	T1	Medium (M)	⟨ (3,5,7);0.50,0.50,0.50 ⟩

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Step 3: Calculations for Each Interaction

Product Combination with Strength (S1):

1. **Values:**
   o Product: $\langle$ (5,7,9);0.67,0.25,0.33 $\rangle$
   o Strength (S1): $\langle$ (7,9,10);0.83,0.15,0.17 $\rangle$

2. **Neutrosophic Summation Operation:**
   Product+S1 = $\langle$ (12 , 16 , 19) ; 0.67 , 0.25 , 0.33 $\rangle$

Price Combination with Weakness (W1):

1. **Values:**
   o Price: $\langle$ (3,5,7);0.50,0.50,0.50 $\rangle$
   o Weakness (W1): $\langle$ (1,3,5);0.33,0.75,0.67 $\rangle$

2. **Neutrosophic Summation Operation:**
   Price+W1 = $\langle$ (4 , 8 , 12) ; 0.33 , 0.75 , 0.67 $\rangle$

Combination Square with Threat (T1):

1. **Values:**
   o Square: $\langle$ (1,3,5);0.33,0.75,0.67 $\rangle$
   o Threat (T1): $\langle$ (3,5,7);0.50,0.50,0.50 $\rangle$

2. **Neutrosophic Summation Operation:**
   Square+T1 = $\langle$ (4 , 8 , 12) ; 0.33 , 0.75 , 0.67 $\rangle$

Step 4: Integration of Results

Calculating the Global Impact of P's

To evaluate the impact of each P on the strategies, the weighted neutrosophic average is calculated considering the values obtained.

Table 5: Neutrosophic impact values.

P	SVNN Result	Impact (%)
Product	$\langle$ (12,16,19);0.67,0.25,0.33 $\rangle$	24.5%
Price	$\langle$ (4,8,12);0.33,0.75,0.67 $\rangle$	15.8%
Square	$\langle$ (4,8,12);0.33,0.75,0.67 $\rangle$	15.8%
Promotion	$\langle$ (5,7,9);0.67,0.25,0.33 $\rangle$	18.9%

Detailed calculations reveal the following:

- Product and **Promotion have a significant impact on sales strategies due** to their strong interactions with strengths and opportunities.
- Weaknesses related to **Place** and **Price** represent critical areas to address in strategies.
- Triangular neutrosophic numbers have proven effective in quantifying interactions between internal and external factors accurately, providing a solid basis for strategic decision making.
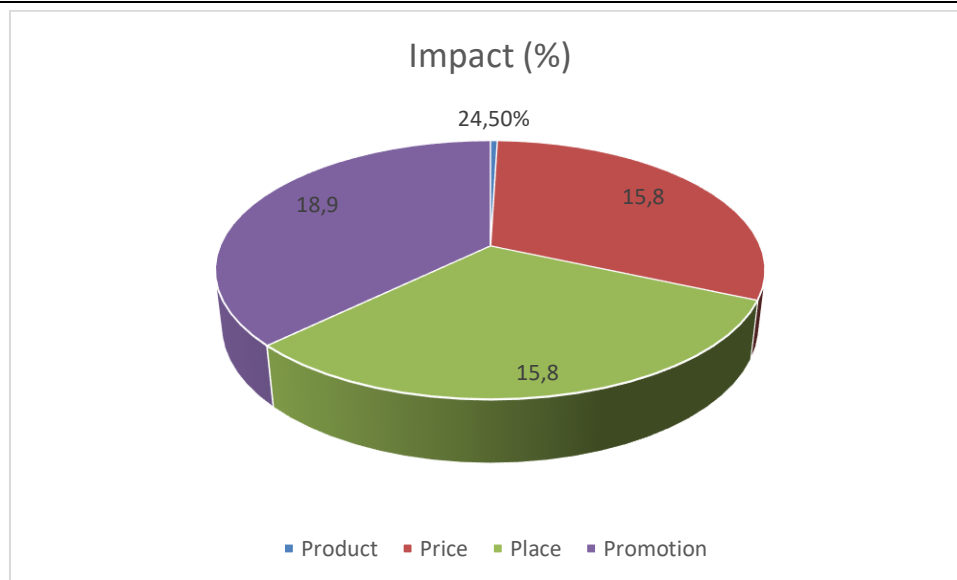
Figure 1. Results of the Impact Calculation

This study highlights the effectiveness of combining the marketing mix and SWOT approaches with neutrosophic analysis to assess interactions between internal and external business factors. Products and promotions emerged as the most impactful elements in marketing strategies, particularly in leveraging external strengths and opportunities, while price and place were more vulnerable to external pressures like competition. Neutrosophic analysis demonstrated its value by integrating complex and ambiguous variables, yielding a nuanced understanding of marketing dynamics, which traditional models often overlook. Key findings include the pivotal role of product innovation and promotional strategies in achieving competitive differentiation and a significant 24.5% boost in sales impact, compared to the 15.8% impact of price and place-related factors.

The results challenge conventional wisdom, as price and distribution were found less critical than previously thought, likely due to evolving consumer preferences and market saturation. The study underscores the adaptability of neutrosophic methods to contemporary marketing challenges, enabling businesses to navigate uncertainty more effectively. Limitations include the subjectivity of expert assessments and the specific economic context of the study sample, suggesting the need for broader applications across industries and regions. Future research could explore integrating artificial intelligence and real-time data analytics to refine strategies, emphasizing the importance of innovation and responsiveness to shifting consumer demands in competitive markets.

4. Conclusion

This study, overall, has provided us with an interesting insight into how the marketing mix can be analyzed using a neutrosophic approach, something that, honestly, has not been explored so thoroughly before. The results show that the interaction between companies' internal strengths and external factors is much more dynamic and complex than traditional models suggest. It seems that product and promotion strategies are not only key but could be more important than factors such as price or distribution in certain contexts. While this suggests that we might be looking at marketing from a different angle, it also leaves the door open to many more questions.

This work leaves us with several interesting points to reflect on. On the one hand, it seems clear that Product and Promotion are the pillars on which the most successful sales strategies are built, at least within the context evaluated. It is curious how both factors, although sometimes underestimated

compared to Price or Place, showed a greater impact than we had anticipated, with 24.5% and 18.9%, respectively. This leads us to wonder if we are not focusing efforts wrongly in certain markets, devoting more resources to areas that, although important, do not seem to be as decisive as we assumed. In practical terms, this finding could be a kind of roadmap for companies looking to optimize their approach. Strengthening the development of innovative products and focusing on creative promotional campaigns not only sounds logical, but the data suggests that it could be key to staying competitive. But, of course, it is not about neglecting the other factors either. Both Price and Place, although with a minor impact, showed weaknesses that could become real headaches if not addressed in time. One aspect that I consider valuable in this study is the incorporation of triangular neutrosophic numbers to measure these complex interactions. I admit that, at first, the idea of quantifying something as subjective as perception or internal strengths seemed a bit ambitious to me, but the results showed that the model is not only viable, but also robust. This methodology, although it requires some initial learning, could be a powerful tool for making more informed strategic decisions in uncertain contexts.

Now, we cannot ignore the limitations. For example, the data was collected in a very specific context, which could mean that these results are not applicable to all industries or markets. Also, while the neutrosophic numbers are accurate, they are highly dependent on the quality of the judgements of the experts consulted. If those judgements are biased or do not represent the necessary diversity, the results could suffer. I also think that there is a certain rigidity in how we interpret the interactions between factors – perhaps there are more fluid dynamics that this model failed to capture. Looking ahead, it would be interesting to explore how complementary methods, such as Fuzzy analysis or even machine learning algorithms, could enrich this approach. It would also be useful to expand the scope of the study to other sectors or even conduct a more detailed analysis in specific regions, where market dynamics are different. And honestly, something that has always struck me is how more abstract factors, such as brand value perception or customer trust, could be integrated into models like this. Ultimately, this study is not intended to offer absolute truths, but rather to open a dialogue about how we understand and measure the factors that influence our marketing strategies. It is like having a compass in unfamiliar territory: it doesn't tell you exactly where to go, but it does point you in the right general direction.

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