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Seleção de Critérios Para Avaliação de Mercados Internacionais: Uma Aplicação do Método Fuzzy Delphi

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Resumo: A seleção de mercados internacionais é uma decisão crítica para as empresas que buscam expandir-se para novos mercados. No entanto, a seleção de critérios para avaliar mercados internacionais é um processo complexo que requer a participação de múltiplos tomadores de decisão. Este artigo propõe uma metodologia baseada no método Fuzzy Delphi para ajudar as empresas a selecionar critérios para avaliar mercados internacionais. A metodologia baseia-se em uma abordagem híbrida que combina técnicas qualitativas, como o método Delphi, com ferramentas matemáticas, como a lógica fuzzy. A metodologia foi aplicada em um estudo de caso com especialistas do setor de cereais da Bolívia. Os resultados mostraram que a metodologia é eficaz na coleta e síntese das opiniões de múltiplos tomadores de decisão. Além disso, a metodologia é especialmente valiosa para empresas de um setor empresarial específico, pois permite adaptar os critérios às necessidades específicas desse setor. A principal contribuição deste estudo é a primeira abordagem flexível e rentável para selecionar critérios para avaliar mercados internacionais. Futuras pesquisas devem aplicar a metodologia proposta em diferentes setores empresariais e avaliar a viabilidade de adaptá-la como uma ferramenta complementar aos novos modelos multicritérios para o processo de seleção internacional de mercados.

Palavras-chave: Método Fuzzy Delphi, Lógica Fuzzy, Seleção de Mercados Internacionais, Pesquisa de Mercado Internacional, Marketing Internacional.

Criteria Selection for Evaluating International Markets: A Fuzzy Delphi Method Application

Abstract: International market selection is a critical decision for companies looking to expand into new markets. However, selecting criteria to evaluate global markets is a complex process that requires the participation of multiple decision-makers. This article proposes a methodology based on the Fuzzy Delphi method to help companies select criteria to evaluate international markets. The methodology is based on a hybrid approach that combines qualitative techniques, such as the Delphi method, with mathematical tools, such as fuzzy logic. The method was applied in a case study with experts from the Bolivian cereal sector. The results showed that the method is effective in collecting and synthesizing the opinions of multiple decision-makers. Additionally, the methodology is especially valuable for companies in a specific industry sector, as it allows for adapting the criteria

to the particular needs of that sector. The main contribution of this study is that it is the first flexible and cost-effective approach to selecting criteria for evaluating international markets. Future research should apply the proposed method in different industry sectors and assess the feasibility of adapting it as a complementary tool to new multi-criteria models for the international market selection process.

Keywords: Fuzzy Delphi method, Fuzzy Logic, International Market Selection, International Market research, International Marketing.

1. Introduction

International Market Selection (IMS) is a critical decision for companies seeking to expand beyond their borders (ASHLEY; MBUYA; VÖGEL, 2022; VANEGAS-LÓPEZ *et al.,* 2021). An inadequate decision can lead to significant costs, such as financial losses, damage to reputation, and missed market opportunities (PAPADOPOULOS *et al*., 2011). Therefore, companies must thoroughly research the criteria influencing the IMS process before entering new markets.

Several studies have examined these criteria and shed light on their importance in the decision-making process (FERNANDEZ *et al*., 2023). A crucial criterion that plays a pivotal role in determining the attractiveness and profitability of entering an international market is economic opportunity. This criterion includes aspects such as market size, growth potential, and purchasing power of the target market (AL QUR'AN; AL QUR'AN, 2020; WANG; LE, 2018). Geographical criteria also play a role in the IMS process. The location of the target market can affect logistics, transportation costs, and proximity to suppliers and customers (AL QUR'AN; AL QUR'AN, 2020). Cultural criteria are another critical consideration. Understanding the norms, values, and cultural preferences of the target market is crucial for successful market entry and adaptation of products or services (DEAZA *et al*., 2020).

Political criteria are also relevant. Political stability, government regulations, and trade policies can significantly affect the ease of doing business in a particular market (DEAZA *et al*., 2020). Legal criteria, such as intellectual property protection and contract enforcement, are also important considerations (ERRAMILLI, 1991). Technological criteria are increasingly relevant in today's globalized world. The level of technical infrastructure and digital readiness of a market can influence the viability and effectiveness of market entry strategies (DEAZA *et al*., 2020). Additionally, the competitive landscape and market competition intensity should be evaluated (ZHANG; LI, 2023). Other criteria influencing market selection include internal company factors, such as resources, capabilities, and strategic alignment with the target market (MACIEL; RADOMSKA; COSTA E SILVA, 2020).

For the measurement of each criterion, various compensatory and non-compensatory approaches have been proposed within the Multicriteria Decision Making (MCDM) field. Some compensatory models weigh and evaluate different criteria for international expansion. The main disadvantage of such models is that a deficiency in a specific criterion can be compensated by superior performance in another criterion (OEY; NOVIYANTI; LIM, 2018; VANEGAS-LÓPEZ *et al*., 2021). On the other hand, the non-compensatory models emphasize that other positive criteria cannot offset the importance of specific critical criteria such as political stability, regulatory risk, cultural adaptability, and geographical proximity. These models highlight the importance of maintaining specific non-negotiable criteria in the IMS process, which prevents trade-offs between different criteria (GÓRECKA, 2013).

One of the critical stages of each IMS-MCDM model is determining the criteria for the IMS process. However, despite the wide variety of criteria available in the literature, no evidence has been found of the use of flexible tools that allow multiple decision-makers to select criteria for evaluating an international market. In this sense, this research posed the following research question. How can multiple decision-makers from a specific business sector select the criteria for evaluating international markets? To answer the research question, this study

proposes to apply a case study with the Fuzzy Delphi method to collect and synthesize the opinions of multiple decision-makers from a specific industrial sector. In this way, a consensus can be reached on the criteria for selecting international markets.

This study is divided into five sections: introduction, bibliographic background, methodology, results, and discussion. The introduction presents the context, issues, and research objectives. The bibliographic background summarizes the fundamental concepts related to the topic. The methodology describes the steps followed to achieve the objective. The results present the research findings. The discussion analyzes the results and suggests possible directions for future research.

2. Bibliographic background

This section succinctly expounds upon the fundamental tenets underpinning this research endeavor's genesis. Given the comprehensive bibliography, procuring additional indispensable particulars and achieving a more profound comprehension of the subject matter is feasible.

2.2 Fuzzy Delphi Method (FDM)

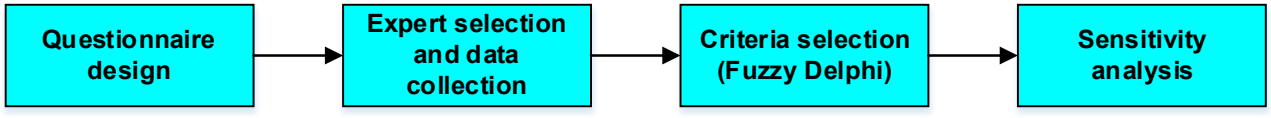
The computational analysis based on the FDM allowed the expert responses to be analyzed. FDM is an approach developed by Murray (1985), and combines Delphi method and fuzzy theory analysis to achieve a consensus by solving the vagueness and ambiguity of expert judgments to improve the efficiency and quality of traditional Delphi method surveys through fuzzy set theory, which addresses situations in which humans cannot precisely describe a judgement. According to Kuo (2008), this method is advantageous due to its simplicity and comprehensive coverage of expert opinions.

The use of fuzzy theory avoids the distortion of individual expert opinions, captures the semantic structure of predicted items and considers the unclear nature of the data collected (LEE; HSIEH, 2016). Therefore, the combination provided by FDM requires a small number of samples and offers a complete expression of expert knowledge (MA *et al*., 2011). In other words, the robustness of FDM lies in the fact that every expert opinion is considered and integrated to achieve a consensus and generates additional benefits by reducing investigation times and decision-making costs (KUO; CHEN, 2008; LEE; WU; TSENG, 2018).

3. Methodology

This study will address the FMD approach proposed by Padilla (2021) and is structured around four distinct steps, each designed to provide an in-depth depiction of the Fuzzy Delphi process. Figure 1 serves as a visual aid that delineates the various stages of the methodology.

Figure 1. Methodological steps



Source: Elaborated by the author (2023).

At this stage, the identified criteria in previous studies (FERNANDEZ *et al*., 2023) were evaluated in detail by academics and supply chain experts using the Fuzzy Delphi tool. Then, the sensitivity analysis approach proposed by Padilla (2021) aids in determining the robustness and stability of the criteria selected. In this sense, this stage will give consensus within the panel of experts regarding the most relevant criteria during the internationalization process. The steps of this stage are described below.

a) Questionnaire design: This step involves the development of a questionnaire based on the criteria identified by Fernandez *et al*. (2023). The questionnaire was conducted on the Google Forms platform with special attention to the native language of the participants.

b) Gather expert opinions from surveys: Steps B to E will allow us to filter the most relevant criteria for a business sector. First, professionals were asked to rate the significance of each IMS criterion, then their answers (judgments) were collected using the linguistic parameters shown in Frame 1.

Frame 1. Linguistic evaluation scale

Linguistic parameter	Description	Numeric scale	Triangular fuzzy numbers (a,b,c)
Absolutely essential	The criterion is fundamental in the IMS process.	9	(7,9,9)
Very important	The criterion is very significant in the IMS process.	7	(5,7,9)
Important	The criterion is significant in the IMS process.	5	(3,5,7)
Moderately important	The criterion is slightly relevant in the IMS process.	3	(1,3,5)
not important	The criterion is not relevant in the IMS process	1	(1,1,3)

Source: Adopted from Padilla-Rivera (2021).

c) Calculation of fuzzy numbers: To derive the fuzzy numbers for each criterion, triangular fuzzy number (*W*) were employed, as shown in equation 1, which aggregates the judgment of all *k* experts.

$$W_j = \left(a_{jL}, b_{jM}, c_{jN}\right) = \left(min_k a_{jL}^k; \left(\prod_{k=1}^{k} b_{jM}^k\right)^{\frac{1}{k}}; max_k c_{jN}^k\right) \quad (1)$$

Here, W_j represents the aggregate triangular fuzzy number for criterion j; *J* denotes the indicator set, while *k* represents the set of experts. a_{jL} denotes the minimum expert assessment, b_{jM} signifies the geometric mean of all expert assessments for criterion *j*, and c_{jN} indicates the maximum expert assessment. This step utilizes the maximum and minimum values of expert opinions as the endpoints of the triangular fuzzy numbers, with the geometric mean serving as the degree of membership for the fuzzy numbers.

d) Defuzzification: The final relative importance is obtained by defuzzifying the fuzzy number of each criterion using the Simple Center of Gravity Method (SCGM) proposed by Hsu (2010). SCGM is a commonly used defuzzification method that calculates the relative importance average of the membership function as equation 2. Here P_j represents a crisp score indicating the aggregate importance of each potential IMS-MCDM criterion.

$$P_j = \frac{a_{jL} + b_{jM} + c_{jN}}{3} \quad (2)$$

e) Selection guideline: A threshold value (β) needs to be established to select the essential IMS-MCDM criteria from the expert group. According to Shen (2010), the threshold value depends on the fuzzy linguistic scale and user preference. Consequently, to achieve a solid convergence between the perspectives of the multifaceted experts panel, a threshold value of β= 6 is applied to each defuzzification number to select the final criteria. Therefore, the condition is given by:

— If $P_J \geq \beta = 6$ then the IMS-MCDM criteria is selected.
— If $P_J \leq \beta = 6$ then the IMS-MCDM criteria is omitted.

f) Sensitivity analysis application: This analysis will allow us to understand how changes in the threshold values affect the final criteria list. Therefore, as Padilla-Rivera (2021) established, two threshold values were chosen, one being higher and the other lower by 0,5.

3. Results

This section presents the results of this study, providing key information to address our research issue.

3.1 Questionnaire design

The survey was elaborated with particular attention to the participant's mother dialect, Spanish. However, for this study, an accurate translation into the English language was carried out, considering all necessary precautions to preserve the question's appropriateness. Finally, A pre-test in collaboration with specific experts permits identifying and adjusting the questions that present ambiguities. The pre-test results allow editing, eliminating, or modifying those unclear questions to achieve greater questionnaire convergence.

The survey has been structured in two sections and consists of 39 questions. The first section, questions 1 through 9, focuses on collecting identifiable information. For its part, the second section, which includes questions 10 to 39, has as its primary objective to identify the IMS criteria relevance based on the experts' opinions. For this, The Google Forms platform aids in designing the semi-structured questionnaire and was available for one month (https://forms.gle/125GQfZNK8BWeu35A), from 15-June to 15-july 2023. The questionnaire design permits the experts to issue their judgment through a fuzzy linguistic scale regarding the level of importance attributed to each criterion (see Frame 1).

3.2 Experts' selection and data collection

The essential element in forecasting techniques lies in the meticulous selection of duly qualified experts (PADILLA-RIVERA *et al*., 2021). The panel of experts was made up of two different professionals' categories: the academic sphere, made up by professors, and the business sphere, made up of business specialists. The exploration of relevant websites, and personal contacts allowed to identify a total of six academic experts. On the other hand, the export associations, such as the Bolivian National Chamber of Commerce (BNCC) aid to identified eleven business experts.

The academic group represented only 35,3% of the interviews, in contrast to the business sector, which accounted 64,7%. The valid response rate was 48,57%, translating into 17 respondents, while 18 questionnaires were discarded as incomplete or invalid. However, this quantity did not significantly impact the decision quality since there is only a weak relationship between the number of participants and the quality of the experts' decisions (OCAMPO *et al*., 2018). Table 1 and Table 2 shows the sample variables of the academic and the business group.

Table 1. Frequencies of the Sample Variables - academic group

Variables		Frequency	Percent (%)
Years of experience	6-10	3	50%
	11-20	1	16,66%
	21-35	2	33,33%
Country	Bolivia	6	100%
Studies reached	Master degree	4	66,66%
	Doctorate degree	2	33,33%
Experience concentration	International trade management	2	33,33%

Variables		Frequency	Percent (%)
	Logistics and supply chain	5	83,33%
	Customs Management	2	33,33%
	International marketing	1	16,66%
	Business Administration	2	33,33%
	Industrial engineering	5	83,33%

Source: Elaborated by the author, (2023)

Table 2. Frequencies of the Sample Variables - Business group

	Variables	Frequency	Percent (%)
Years of experience	1-5	6	54,54%
	6-10	4	36,36%
	10 in advance	1	9,09%
Country	Bolivia	11	100%
Studies reached	Bachelor degree	9	81,81%
	Master degree	2	18,18%
Experience concentration	International trade management	2	18,18%
	Logistics and supply chain	6	54,54%
	Customs Management	1	9,09%
	International marketing	1	9,09%
	Business Administration	3	27,27%
	International economy	1	9,09%
	Industrial engineering	8	72,72%
Business sector	Secondary (industry, civil construction)	6	54,54%
	Tertiary (services, commerce)	5	45,45%
Business Size	Micro (<10 workers)	1	9,09%
	Small (11 to 20 workers)	3	27,27%
	Medium (21 to 49 workers)	1	9,09%
	Large (>50 workers)	6	54,54%

Source: Elaborated by the author (2023)

Table 1 and Table 2 show that all the interviewees are natives of Bolivia and possess vast experience, primarily in two key areas: international logistics and industrial engineering. These findings strengthen the notion that the data collected by the panel of experts are highly relevant and shed light on the minimum attributes that an insufflated cereal company located in Bolivia should regard for effective decision-making during its internationalization process.

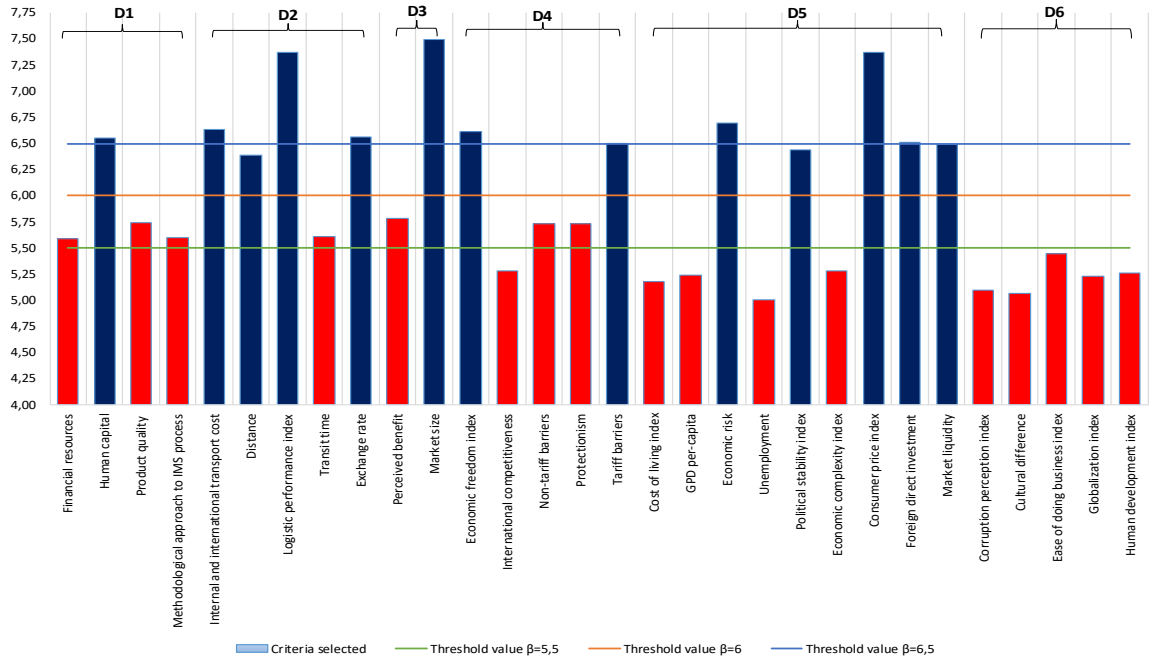
3.3 Criteria selection - Fuzzy Delphi method (FDM)

Chart 1 summarizes the result of applying the Fuzzy Delphi method described in the theoretical background. This graph shows that the panel of academic and industrial experts discarded 56.6% of the criteria due to their lack of essentiality in the market selection process for insufflated cereals companies in Bolivia. However, the threshold value (β) strongly influences the criteria selection process. When examining the same graph, it can be observed that a more permissive threshold, set at 0.5, leads to the elimination of 33.3% of the criteria. On the other hand, a more restrictive threshold value produces the opposite effect, resulting in the elimination of 70% of the criteria.

Table 3 shows that 13 of the 30 evaluated criteria surpassed our threshold value (6). In the first dimension, only the criterion "human capital" was selected (6.549). In the second dimension, the chosen criteria were transportation cost (6.639), geographical distance (6.391), logistics performance (7.372), and exchange rate (6.562). In the third dimension, the selected criteria were "market size" (7.494). In the fourth dimension, the chosen criteria were "economic freedom" (6.613) and "tariff barriers" (6.499). In the fifth dimension, the selected criteria were: "economic risk" (6.692), "political stability" (6.439), "inflation" (7.372), "foreign investment" (6.512), and "market liquidity" (6.487). Interestingly, in the final

dimension, the panel of experts determined that none of the criteria had significant importance in the market selection process.

Chart 1. Relevant criteria for the IMS-MCDM process.



D1 = SMEs-Specific dimension; **D2** = Supply chain dimension; **D3** = Market potential dimension; **D4** = Market openness dimension; **D5** = Political economic dimension; **D6** = Socio-cultural dimension
Source: Elaborated by the author (2023).

Table 3. Aggregate fuzzy judgments

Dimension	Criteria	Scores				
		Min	Max	Geom. mean	Aggregate fuzzy number	Final (defuzzification)
SMEs Specific	Financial resources	1	9	6,753	1;9;6,753	5,585
	Human capital	3	9	7,647	3;9;7,647	6,549
	Product quality	1	9	7,237	1;9;7,237	5,746
	Methodological approach to IMS process	1	9	6,787	1;9;6,787	5,596
Supply chain	Internal and international transport cost	3	9	7,916	3;9;7,916	6,639
	Distance	3	9	7,172	3;9;7,172	6,391
	Logistic performance index	5	9	8,115	5;9;8,115	7,372
	Transit time	1	9	6,823	1;9;6,823	5,608
	Exchange rate	3	9	7,685	3;9;7,685	6,562
Market potential	Perceived benefit	1	9	7,348	1;9;7,348	5,783
	Market size	5	9	8,483	5;9;8,483	7,494
Market openness	Economic freedom index	3	9	7,839	3;9;7,839	6,613
	International competitiveness	1	9	5,847	1;9;5,847	5,283
	Non-tariff barriers	1	9	8,194	1;9;8,194	5,734
	Protectionism	1	9	7,201	1;9;7,201	5,734
	Tariff barriers	3	9	7,497	3;9;7,497	6,499
Political-economic	Cost of living index	1	9	5,541	1;9;5,541	5,180
	GPD per-capita	1	9	5,704	1;9;5,704	5,235
	Economic risk	3	9	8,074	3;9;8,074	6,692
	Unemployment	1	9	5,017	1;9;5,017	5,006
	Political stability index	3	9	7,315	3;9;7,315	6,439
	Economic complexity index	1	9	5,850	1;9;5,85	5,284
	Consumer price index	5	9	8,115	5;9;8,115	7,372
	Foreign direct investment	3	9	7,535	3;9;7,535	6,512
	Market liquidity	3	9	7,461	3;9;7,461	6,487

Dimension	Criteria	Scores				
		Min	Max	Geom. mean	Aggregate fuzzy number	Final (defuzzification)
Socio-cultural	Corruption perception index	1	9	5,296	1;9;5,296	5,099
	Cultural difference	1	9	5,191	1;9;5,191	5,064
	Ease of doing business index	1	9	6,334	1;9;6,334	5,445
	Globalization index	1	9	5,681	1;9;5,681	5,227
	Human development index	1	9	5,792	1;9;5,792	5,264

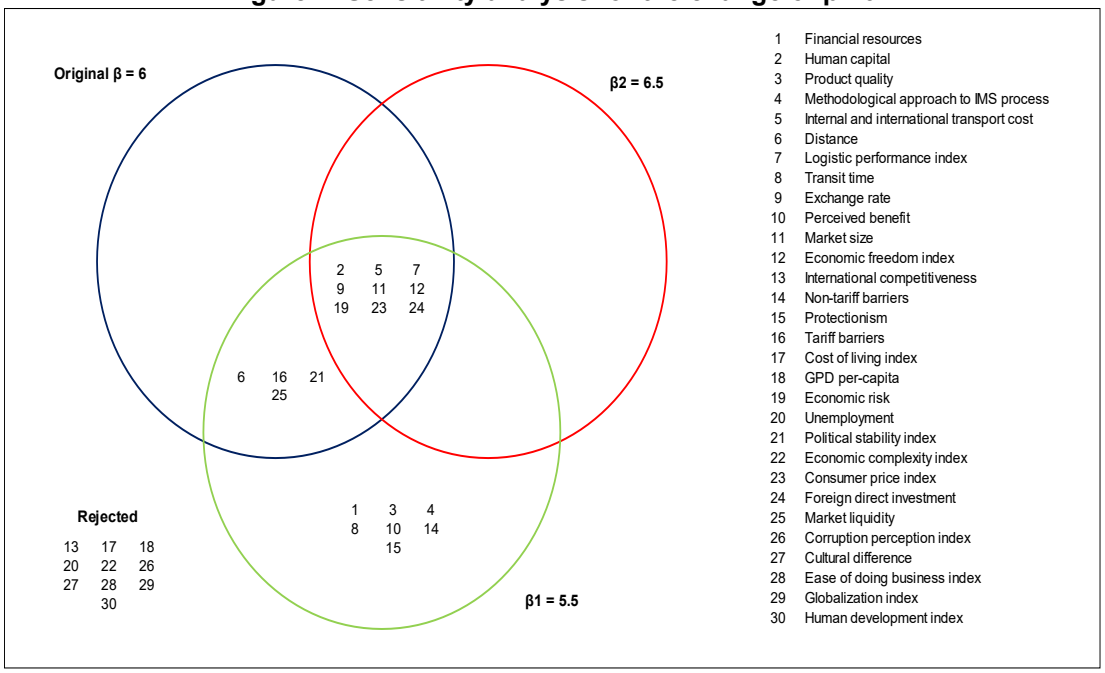
Source: Elaborated by the author (2023).

3.4 Sensitive analysis

Notably, the threshold value (β = 6) represents the pivotal factor in selecting or excluding criteria, given that a lower value can engender a more significant criteria adherence (and vice versa). Nevertheless, as previously indicated, establishing a threshold value is contingent upon the linguistic scale employed. Consequently, a sensitivity analysis was conducted to ascertain how much a threshold value (β) variation would influence the final criteria list.

From the pre-established β=6, two alternative threshold values were proposed through a comparable analysis (PADILLA-RIVERA *et al*., 2021). β1 = 6 - 0.5 and β2 = 6 + 0.5, thereby offering an illustrative distinction in the final criteria compilation. Figure 2 depicts a pronounced alteration in the total of acceptable criteria with β1 = 5.5, with a selection of 20 criteria, representing a difference of seven criteria from the original threshold (β = 6). Interestingly, a subtle fluctuation was witnessed with β2 = 6.5, as only nine criteria were deemed acceptable.

Figure 2. Sensitivity analysis for the change of β= 6



Source: Elaborated by the author (2023).

The sensitivity analysis predominantly influenced criteria close to the defuzzification value of the initial threshold (β = 6). A reduced β value resulted in a higher criteria adherence to the criteria selection guideline, consequently incorporating them into the final list. On the other hand, a higher β value yielded a slightly relevant change, thereby preserving the essential coherence of the final list. The subtle fluctuations associated with a more permissive and restrictive threshold β, in the FDM context, strongly support the robustness

of the proposed approach. Therefore, it can be inferred that the initial threshold (β = 6) was appropriate, solidifying the FDM as a resilient decision-making tool.

Finally, to obtain a definitive index that integrates the different criteria. The defuzzification value corresponding to the 13 previously selected criteria was used and then aggregated through an algebraic operation. The resulting sum was later transformed into classifications and hierarchical disputes from major to minor. This final ranking (see Frame 2) aims to enable the visualization of the most significant criteria for the expert group.

Frame 2. Indicators selected by academic and industry experts

Dimension	Indicator selected	Code	Final (Defuzzification)	Ordinal ranking
SMEs-Specific	Human Capital	C1	6,549	8
Supply Chain	Transportation cost	C2	6,639	5
	Distance	C3	6,391	13
	Logistic Performance Index	C4	7,372	2
	Exchange Rate	C5	6,562	7
Market potential	Market Size	C6	7,494	1
Market Openness	Economic Freedom Index	C7	6,613	6
	Tariff Barriers	C8	6,499	10
Political-economic	Economic Risk	C9	6,692	4
	Political Stability Index	C10	6,439	12
	Consumer price Index	C11	7,372	2
	Foreign Direct Investment	C12	6,512	9
	Market Liquidity	C13	6,487	11

Source: Own elaboration (2023).

5. Discussion and final considerations

Previous studies, such as those by Baena-Rojas *et al.* (2022), López-Cadavid *et al.* (2020) and Vanegas-López *et al.* (2021), used a wide range of literature-based criteria to construct their international market selection (IMS) models. However, these studies are limited because the criteria they used to evaluate markets are only valid for their specific business sectors. For example, Vanegas-López *et al.* (2021) focused on the textile industry, Baena-Rojas *et al. (2022)* on the confectionery sector, and López-Cadavid *et al.* (2020) on the chemical industry. This context led to the following research question: How can multiple decision-makers from a specific business sector select criteria for evaluating international markets? This study addresses this issue by adopting a flexible and cost-effective tool to achieve stakeholder consensus.

This study is the first to adapt the Fuzzy Delphi method to allow multiple decision-makers from a specific business sector to systematically select criteria for evaluating an international market. The methodology is based on a hybrid approach that amalgamates qualitative techniques, such as the Delphi method, with mathematical tools, such as fuzzy analysis, to address the criteria plurality involved in decision-making. The proposal embraces a holistic approach that attends to the multiple experts' perspectives behind the IMS process. This research documents the diverse considerations inherent to the IMS-MCDM process, highlighting the importance of tailoring criteria to each business sector. Future research should apply the proposed methodology to different business sectors, considering the dynamic IMS-MCDM criteria. Additionally, future research should assess the viability of adapting this approach as a complementary tool for the IMS models.

References

AL QUR'AN, M.; AL QUR'AN, M. Success factors influencing the selection of the location of international firms. **Competitiveness Review: An International Business Journal**, v. 30, n. 5, p. 665–679, 2 abr. 2020.

ASHLEY, N. L.; MBUYA, F. F.; VÖGEL, A. J. The internationalisation of South African enterprises: A focus on international market selection. **Acta Commercii**, v. 22, n. 1, 30 jun. 2022.

BAENA-ROJAS, J. J. et al. Hybrid multicriteria technique for international markets selection based on the analytic hierarchy process. **Revista de Administracao Mackenzie**, v. 23, n. 2, 2022.

DEAZA, J. A. et al. International market selection models: a literature review. **Tendencias**, v. 21, n. 2, p. 191–217, 21 out. 2020.

ERRAMILLI, M. K. The Experience Factor in Foreign Market Entry Behavior of Service Firms. **Journal of International Business Studies**, v. 22, n. 3, p. 479–501, 1 set. 1991.

FERNANDEZ, P. I. R. et al. Analyzing and consolidating factors influencing international market selection for multi-criteria decision making: a comparative study. **ENEGEP Conference 2023**, 27 out. 2023.

GÓRECKA, D. M. S. COUNTRY MARKET SELECTION IN INTERNATIONAL EXPANSION USING MULTICRITERIA DECISION AIDING METHODS. **Economic Sciences and Management**, v. 8, 2013.

HSU, Y. L.; LEE, C. H.; KRENG, V. B. The application of Fuzzy Delphi Method and Fuzzy AHP in lubricant regenerative technology selection. **Expert Systems with Applications**, v. 37, n. 1, p. 419–425, 2010.

KUO, Y. F.; CHEN, P. C. Constructing performance appraisal indicators for mobility of the service industries using Fuzzy Delphi Method. **Expert Systems with Applications**, v. 35, n. 4, p. 1930–1939, 2008.

LEE, C. H.; WU, K. J.; TSENG, M. L. Resource management practice through eco-innovation toward sustainable development using qualitative information and quantitative data. **Journal of Cleaner Production**, v. 202, p. 120–129, 2018.

LEE, T. H.; HSIEH, H. Indicators of sustainable tourism : A case study from a Taiwan ' s wetland. **Ecological Indicators**, v. 67, p. 779–787, 2016.

LÓPEZ-CADAVID, D. A.; VANEGAS-LÓPEZ, J. G.; BAENA-ROJAS, J. J. J. J. Application of a multi-criteria approach in the teaching of international market research. **Informacion Tecnologica**, v. 31, n. 1, p. 113–122, 2020.

MA, Z. et al. Constructing road safety performance indicators using fuzzy delphi method and grey delphi method. **Expert Systems with Applications**, v. 38, n. 3, p. 1509–1514, 2011.

MACIEL, J.; RADOMSKA, J.; COSTA E SILVA, S. Challenges of international market selection – the perspective of Mexican and Brazilian multilatinas. In: **Contemporary organisation and management. Challenges and trends**. [s.l.] Wydawnictwo Uniwersytetu Łódzkiego, 2020. p. 77–93.

MURRAY, T. J.; PIPINO, L. L.; VAN GIGCH, J. P. A pilot study of fuzzy set modification of delphi. **Human Systems Management**, v. 5, n. 1, p. 76–80, 1985.

OCAMPO, L. et al. Sustainable ecotourism indicators with fuzzy Delphi method – A Philippine perspective. **Ecological Indicators**, v. 93, n. November 2017, p. 874–888,

2018.

OEY, E.; NOVIYANTI; LIM, S. Evaluating international market selection with multi-criteria decision making tools – A case study of a metal company in Indonesia. **International Journal of Business Excellence**, v. 16, n. 3, p. 341–361, 2018.

PADILLA-RIVERA, A. et al. Social circular economy indicators: Selection through fuzzy delphi method. **Sustainable Production and Consumption**, v. 26, p. 101–110, 2021.

PAPADOPOULOS, N. et al. International market selection and segmentation: perspectives and challenges. **INTERNATIONAL MARKETING REVIEW**, v. 28, n. 2, p. 132–149, 2011.

SHEN, Y. C. et al. A hybrid selection model for emerging technology. **Technological Forecasting and Social Change**, v. 77, n. 1, p. 151–166, 2010.

VANEGAS-LÓPEZ, J. G. et al. International market selection: an application of hybrid multi-criteria decision-making technique in the textile sector. **Review of International Business and Strategy**, v. 31, n. 1, p. 127–150, 18 mar. 2021.

WANG, C. N.; LE, A. P. Application in International Market Selection for the Export of Goods: A Case Study in Vietnam. **Sustainability**, v. 10, n. 12, p. 4621, 5 dez. 2018.

ZHANG, T. T.; LI, G. H. Identify International Market Competition Intensity Based on Social Network Analysis. In: **Proceedings of the 2022 3rd International Conference on Management Science and Engineering Management (ICMSEM 2022)**. Dordrecht: Atlantis Press International BV, 2023. p. 184–193.