

Evaluation of international market entry strategies for mineral oil companies using a neutrosophic SWARA-CRADIS methodology

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HIGHLIGHTS

- Propose T2NN-SWARA-CRADIS to select the best entry mode for the mineral oil sector.
- Identify the criteria for selecting an entry mode for a foreign market.
- Determine the importance of the criteria affecting the entry mode selection.
- Define the entry mode options for the mineral oil sector.
- Presents comprehensive insights and implications for analysts.

ARTICLE INFO

Keywords:

Market Entry Strategies
International Marketing
Type 2 Neutrosophic Sets
Step-wise Weight Assessment Ratio Analysis
Compromise Ranking of Alternatives from
Distance to Ideal Solution

ABSTRACT

Businesses encounter risks when entering new countries, but there are also opportunities. The strategy a business employs when opting to enter a new market is directly tied to its success. In this regard, the study provides an approach for evaluating new market entry strategies for businesses facilitating in the mineral oil sector and manufacturing industries. The approach includes the development of the type 2 neutrosophic step-wise weight assessment ratio analysis (SWARA)-compromise ranking of alternatives from distance to ideal solution (CRADIS) methodology, which aims to solve the problem by determining the candidate strategies and the criteria to be utilized in their evaluation. The findings revealed that market conditions are the most crucial criterion in selecting strategies for mineral oil companies intending to enter new markets. The magnitude and development potential of the new market to be entered, as well as the status of the actors, all have an impact on market conditions, which are critical for businesses. Moreover, foreign direct investment is found to be the best market entry strategy. This strategy arises because businesses aim to maximize the potential in the market they have recently entered, as well as other factors such as government incentives. The study is expected to benefit production enterprises, the mineral oil sector, the marketing field, and the literature by identifying criteria and option sets, finding the importance degrees of the criteria, selecting the ideal entry strategy, and proposing a methodology for handling uncertain data.

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<https://doi.org/10.1016/j.asoc.2025.112976>

Received 1 August 2024; Received in revised form 5 January 2025; Accepted 28 February 2025

Available online 8 March 2025

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1. Introduction

International marketing is defined as "the process of planning and conducting transactions across national borders to create exchanges that satisfy the objectives of individuals and organizations." International marketing is based on the "exchange and satisfaction" tenets of basic marketing. Marketers are confronted with many macroenvironmental factors as well as different constraints and conflicts from different cultures, laws, and societies. Therefore, the applications, intensity, and complexity of the basic principles of marketing may differ substantially in international marketing rules [1]. There are many stimuli, both pulling and pushing businesses along the international marketing path. Czinkota et al. [1] classified these major stimuli to go international as reactive and proactive motivations. Competitive pressures, falling domestic scales, overproduction, overcapacity, overcrowded domestic markets, and lack of access to ports and customers all serve as reactive motivations. Proactive motivations are unique products, profit advantages, technological advantages, economies of scale, exclusive information, and market size. In brief, it can be said that reactive firms enter a foreign market because they must, while proactive ones enter a foreign market because they want to [2].

On the other hand, in today's economy, international marketing operations are crucial to the independence of countries and their economic survival [3]. Effective marketing operations are an absolute prerequisite for the growth and survival of firms [4]. In this process, firms must make critical decisions to choose the best way to enter a foreign market. On the other hand, international marketing has different forms, ranging from licensing, exporting, joint ventures, turnkey operations, management contracts, wholly owned subsidiaries, assembly plants, and franchising [5].

Choosing an entry-mode is a crucial strategic decision for a business looking to enter a foreign market. All entry strategies require resource commitments at varying levels, and the mode selections of firms are tough to change without huge amounts of money and time loss [6]. To enter a foreign market, a company must select one or more of the most appropriate and effective entry modes, such as exporting, licensing agreements, franchising, contract manufacturing, turnkey projects, management contracts, joint ventures, assembly plants, foreign direct investments (FDIs), acquisitions, and mergers. Entry mode choices differ largely in their advantages and disadvantages, and the effect of entry modes on firms' success in foreign markets cannot be ignored. That is, the entry method decision can have a wide range of strategic effects on the business's performance, success, and survival [7,8].

This strategic entry mode decision is affected by many criteria and these criteria are classified in different forms in the literature. For example, according to Dunning [9,10], entry mode selection is affected by three main factors: location benefits of a market (market potential and investment risk), ownership advantages of a firm (magnitude, international experience, capacity to create differentiated goods) and internalization advantages (contractual risk). According to Werner [11], entry mode research is related to firms' international activity and contains "the predictors of entry mode choices, predictors of international equity ownership levels, and consequences of entry mode decisions." These predictors include home country factors, multinational enterprise factors, host country factors, transaction costs, and industry. Ekeledo & Sivakumar [12] emphasized the impact of company characteristics (proprietary technology, tacit knowledge, experience, specialized assets, magnitude, corporate culture, reputation, etc.), home country characteristics, host country characteristics, and the product's nature (manufactured products and nonseparable services) on the entry mode choice. Additionally, Chen & Hu [13] studied determinants of entry mode as proprietary assets, host country markets' magnitude and potential, cultural differences, capital intensity, planned duration of the project, and transaction costs.

The fact that companies have various entry mode options for entering new markets naturally makes selecting the right one

challenging. However, identifying the criteria and the priority levels of these criteria that influence companies' new market and entry mode decisions, particularly under current conditions, and evaluating the best strategies for entering the foreign market emerge as critical problems [14,15]. This study will examine how to solve the new market entry mode decision problem for mineral oil companies.

The mineral oil sector is reliant on the chemical sector and continues to grow. Mineral oils are manufactured via a series of operations that begin with atmospheric distillation of crude oil and end with vacuum distillation of atmospheric residue. Mineral oil products can be classed as lubricant or non-lubricant. Lubricant items include automotive and industrial engine oils and greases, hydraulic oils, metalworking fluids, as well as lubricants for food processing and textiles. "Non-lubricant" products, on the other hand, are utilized as rubber extender oils, printing ink carriers, processing aids in rubber, plastic, and textile manufacture, and batch oils for softening natural fibers such as jute [141].

Mineral oil companies promote their products to a wide range of industries, including iron and steel, automobiles, glass, defense and aviation, bearings, white goods, and wire drawing. Businesses that produce competitively and prioritize quality aspire to expand their operations beyond the local market. At this point, entering a new foreign market is a strategic decision for the business's long-term survival. The decision on which market to enter and how to enter it are both critical to success. A wrong strategic decision will result in the loss of market potential and the transfer of resources to foreign markets. Entering the international marketplace and adopting the right strategy is critical for businesses to increase profits, evaluate excess production capacity, have more growth potential, raise company awareness, and apply domestic market experience in foreign markets. For the mineral oil sector, which appeals to a diverse variety of markets, expanding into new markets and determining the best entry strategy are strategic and challenging problems.

For businesses looking to enter foreign markets, the criteria and strategies to examine while determining the best entry mode are critical in forming the problem. In this context, the criteria for consideration can be classified into three categories: host country factors, home country factors, and firm-management factors. Market conditions, host country competition, cultural distance, institutional development, legal environment, ownership risks, operational risks, technological risks, balance of payments, foreign trade politics, and factors of production are accepted as host country characteristics. Home country characteristics embrace local market size, competitive local structure, local costs of transportation, institutional development, transfer risk, planned duration of project, and incentives. Firm-management factors include firm size, international experience, organizational culture, firm reputation, product type, proprietary assets, tacit know-how, and service requirements.

To analyze foreign entry modes and criteria affecting these modes, a multi-criteria decision analysis (MCDA) methodology was employed in the study. MCDA methodologies defined under neutrosophic sets provide effective solutions for representing the uncertainty that exists in the problems. In this context, neutrosophic sets (NSs), developed by Smarandache [16], are a generalized form of picture fuzzy sets (PFSs), Pythagorean fuzzy sets (PyFSs), spherical fuzzy sets (SFSs), q-rung orthopair fuzzy sets (q-ROFSs), and intuitionistic fuzzy sets (IFSs). Classical fuzzy sets are not helpful in most problems since they can only handle uncertainty using membership degree functions. While IFS can model incomplete information, it does not handle inconsistent or ambiguous data. The IFS definition is expanded by NSs to include the indeterminacy (I) membership function. In addition, the truth (T) and falsity (F) membership functions are included in NSs [17,18].

On the other hand, Abdel-Basset et al. [19] developed type-2 neutrosophic numbers (T2NNs) and the cluster by dividing the T, I, and F membership functions internally. T2NN is defined as allocating values to components of a single-valued NN based on T, I, and F memberships [20]. This approach enables us to treat each of these membership

functions as a fuzzy set and give distinct linguistic variables to the truth, uncertainty, and falsity membership functions [21]. In this perspective, T2NSs are regarded as a generalization of type-2 fuzzy sets and type-2 IFSs. T2NSs are more effective than IFS, type-2 fuzzy sets, and type-2 IFS in modeling problems with uncertainty and inconsistency [22].

Kersulienė et al. [23] proposed step-wise weight assessment ratio analysis (SWARA), a scientific tool for identifying the weights of criteria within the context of expert opinions. SWARA enables the comparative importance degrees of the criteria to be determined [24]. SWARA also contains user-friendly and practical features. In this study, T2NN-SWARA is proposed to find the weight coefficients of criteria in solving problems containing uncertain information.

Many MCDA methods seek a compromise solution based on the reference values (i.e. ideal, anti-ideal, etc.) assigned to each criterion [25]. Puška et al. [26] developed one of them, a compromise ranking of alternatives from distance to ideal solution (CRADIS), which merges ARAS, MARCOS, and TOPSIS to get better results. It is stated that CRADIS overcomes the disadvantages of TOPSIS, MARCOS, and ARAS, such as computation complexity, processing time, and exposure to extreme values while integrating their advantages. Krishankumar & Ecer [27] described CRADIS as a simpler, more practical, functional, and effective method for evaluating and ranking alternatives. Considering all these factors, the T2NN-SWARA-CRADIS methodology is formulated to solve the studied problem.

There are many studies examining firms' international marketing strategies in different countries. However, most of the previous studies have just examined the effects of external and internal factors on firms' international marketing strategies and defined foreign entry modes. While these previous studies have made crucial contributions to our understanding of firms' entry mode decisions, a significant gap in the literature is determining which criteria are the most important for firms. Choosing the best entry mode for a specified firm and finding the importance of the main criteria have been neglected in the current literature. Accordingly, this study's main contributions are listed below:

- Determining criteria for choosing a foreign market entry strategy.
- Determining the importance of the criteria affecting the entry mode selection.
- Finding the entry mode options for the mineral oil sector.
- Selecting the best entry mode for the mineral oil sector.
- Proposing a T2NN-SWARA-CRADIS approach to solve the problem, including uncertainty.

This study is divided into six sections. The next section is dedicated to a comprehensive literature review of foreign marketing entry strategies and modes. Section 3 provides theoretical explanations for the proposed T2NN-SWARA-CRADIS methodology. Section 4 presents the results, including validity tests, of applying the methodology to a real-world case study in the mineral oil sector. Section 5 discusses the findings and provides detailed practical and managerial consequences. In the end, Section 6 constitutes the study's conclusion, outlining its limitations and recommendations for future research.

2. Research background

As a dynamic international marketing paradigm, choosing an entry mode has a substantial impact on how businesses will operate in foreign markets in the future. Basically, market entry mode is a strategy adopted by a firm to enter a new market [28]. Root [29] defined entry mode as "an institutional arrangement that makes possible the entry of a firm's products, technology, human skills, management, or other resources into a foreign country." Entry mode is also identified as "a structural arrangement that allows a firm to implement its product market strategy

in a host country either by carrying out only the marketing operations, or both production and marketing operations there by itself or in partnership with others" [30]. Moreover, Anderson & Gatignon [7] defined an entry strategy as a "governance structure that allows a firm to exercise control over its foreign operations".

According to general acceptance in the literature, there are 10 entry modes: (1) exporting, (2) franchising, (3) licensing, (4) joint venture, (5) turnkey operations, (6) FDI, (7) management contracts, (8) assembly plants, (9) contract manufacturing, (10) acquisitions and mergers [31]. Interviews with experienced and competent mineral oil industry experts were conducted as part of this research to better understand and model the components of the studied problem. As a result of interviews with experts, some of these entry modes were not included in this study because they were not suitable for the mineral oil sector. There is an extensive literature review that examines these foreign market entry modes and identifies home factors, host factors, and firm-specific management factors affecting entry modes [12,32,33].

To conduct a literature review on the subject, the Web of Science database was searched for studies on businesses' entry strategies into foreign markets. In this context, the keywords "marketing", "entry", "strategy", "new market", "business", "company", "firm", and "organization" were employed. Additionally, articles and book chapters were only considered to avoid gray literature. Moreover, to obtain current studies in the literature review, the period was limited to 2014-2025, and the language was restricted to English. As a result of the search, 145 studies were found, with 57 of them related to the subject of this study and presented in Table A.1 in Appendix-1.

We examined the literature from three perspectives; i.e. objectives, key findings, and methods. As seen in Table A.1, the current literature (spanning the last 10 years) focuses on the criteria influencing entry strategies. When the literature is examined in terms of objectives and key findings, the studies broadly investigate the entry strategies of different firms in different markets and determine factors that impact entry modes and firms' market location choices. More specifically, the studies covered non-traditional entry modes, foreign market involvement in internationalization outcomes, international motives of small and medium-sized enterprises (SMEs), repeat country location decisions, internationalization of family firms, hotel companies, textile firms, firms' exit decisions, financial and diplomatic incentives, the effect of competitive advantage to enter a new market, the effect of finding private and public partners before entering a foreign and local market, country risks in the decision to enter new markets, bridge economy partners and triadic partnerships, as well as the function of transaction expenses and trust. The studies also examine how market dynamics affect international policies and the long-term trajectory of international relations.

Some recent studies have concentrated on a single-entry mode, such as foreign direct investment or joint ventures [134,136]. Others carried out independent assessments of a particular criterion, such as networks [123], business environment [130], risks [131], and host country institutions [138]. Divestment of foreign investments [126,132], as well as initial choice and subsequent modifications [128], have been popular subjects in recent studies. However, no study has been found that completely examines the factors for selecting a new market entry mode and reveals their level of importance.

It is seen that new-technology-based firms, information and communication technology firms, online sellers, family firms, and SMEs were researched in these studies. When the literature is examined in terms of the methods used in the studies, regression analysis stands out. Case study analysis, literature review, qualitative analysis, and proposing new models were also included in the studies.

In a study [34] involving the use of MCDA methods, international market selection was made for textile companies. Furthermore, MCDA

methods have been applied to problems covered by various frameworks, such as market entry mode or new market search [35–37]. However, these studies did not apply any MCDA methods defined under T2NS. In particular, no study has used the T2NN-CRADIS method, which was proposed in the study. In this context, the study will make methodological contributions to the literature, the field of marketing, manufacturing firms, and businesses that will face similar problems. In addition to this, in terms of market location choice, the new market entry problem for Turkish manufacturing companies was investigated only in one study [38]. On the other hand, no study has been discovered on the best entry strategy or the most important criterion for mineral oil firms. Furthermore, the proposed methodology will contribute to the mineral oil sector and other sectors planned to enter a new market. The study will also guide firms in emerging markets or those wanting to enter an emerging market.

3. Methodological framework: type 2 neutrosophic SWARA-CRADIS

The preliminaries related to T2NSs are accompanied in Appendix-2. The T2NN-SWARA-CRADIS approach is implemented using the procedures outlined below:

Step 1. The important elements of the problem, including the experts, options, and criteria, are identified. In this context, $C = \{C_1, \dots, C_n\}$ is the set of criteria, $A = \{A_1, \dots, A_m\}$ depicts the options, and $E = \{E_1, \dots, E_r\}$ represents the experts.

Step 2. Using the linguistic phrases indicated in Table 1, experts assess the importance of criteria and the performance or preferability of options.

The linguistic terms are transformed to T2NNs. Therefore, $\eta_j^{(k)} = \left\langle \left(T_{\eta_j}^{(k)}, T_{I_{\eta_j}}^{(k)}, T_{F_{\eta_j}}^{(k)} \right), \left(I_{T_{\eta_j}}^{(k)}, I_{I_{\eta_j}}^{(k)}, I_{F_{\eta_j}}^{(k)} \right), \left(F_{T_{\eta_j}}^{(k)}, F_{I_{\eta_j}}^{(k)}, F_{F_{\eta_j}}^{(k)} \right) \right\rangle$ represents the k -th expert's evaluation on the importance of j -th criterion. Likewise, $x_{ij}^{(k)} = \left\langle \left(T_{x_{ij}}^{(k)}, T_{I_{x_{ij}}}^{(k)}, T_{F_{x_{ij}}}^{(k)} \right), \left(I_{T_{x_{ij}}}^{(k)}, I_{I_{x_{ij}}}^{(k)}, I_{F_{x_{ij}}}^{(k)} \right), \left(F_{T_{x_{ij}}}^{(k)}, F_{I_{x_{ij}}}^{(k)}, F_{F_{x_{ij}}}^{(k)} \right) \right\rangle$ shows the k -th expert's evaluation on i -th option in j -th criterion. The T2NN individual decision matrices $X^{(k)} = [x_{ij}^{(k)}]_{m \times n}$ are constructed [40].

Step 3. The experts' weight values are determined. The significance of each expert's evaluations (θ_k) is determined via the linguistic phrases listed in Table 1. Eq. (1) is employed to compute the weight coefficient (λ_k) of each expert, where $0 \leq \lambda_k \leq 1$ and $\sum_{k=1}^r \lambda_k = 1$ as:

$$\lambda_k = \frac{S(\theta_k)}{\sum_{k=1}^r S(\theta_k)}. \quad (1)$$

Step 4. Experts' evaluations on importance of criteria are integrated by employing Eq. (2):

$$\eta_j = \left\langle \left(1 - \prod_{k=1}^r \left(1 - T_{T_{\eta_j}}^{(k)} \right)^{\lambda_k}, 1 - \prod_{k=1}^r \left(1 - T_{I_{\eta_j}}^{(k)} \right)^{\lambda_k}, 1 - \prod_{k=1}^r \left(1 - T_{F_{\eta_j}}^{(k)} \right)^{\lambda_k} \right), \left(\prod_{k=1}^r \left(I_{T_{\eta_j}}^{(k)} \right)^{\lambda_k}, \prod_{k=1}^r \left(I_{I_{\eta_j}}^{(k)} \right)^{\lambda_k}, \prod_{k=1}^r \left(I_{F_{\eta_j}}^{(k)} \right)^{\lambda_k} \right), \left(\prod_{k=1}^r \left(F_{T_{\eta_j}}^{(k)} \right)^{\lambda_k}, \prod_{k=1}^r \left(F_{I_{\eta_j}}^{(k)} \right)^{\lambda_k}, \prod_{k=1}^r \left(F_{F_{\eta_j}}^{(k)} \right)^{\lambda_k} \right) \right\rangle. \quad (2)$$

Step 5. Eq. (A.5) enables deneutrofication of η_j values. Thus, $S(\eta_j)$ values are obtained.

Step 6. The ranking order of criteria (ξ_j) is determined according to their $S(\eta_j)$ values. In this context, ξ_1 is the criterion which has the highest $S(\eta_j)$ value.

Step 7. The comparative significance (c_j) values of each criterion is calculated based on the significant ranks of the criteria. In this process, $c_1 = 1$ is assigned to the most significant criterion, while the value produced from $\xi_1 - \xi_2$ is assigned to the second significant criterion. A similar procedure is followed for all remaining criteria.

Step 8. Adjusted comparative significance (ac_j) of each criterion is obtained via:

$$ac_j = \begin{cases} 1, & \text{if } j = 1 \\ c_j + 1, & \text{if } j > 1 \end{cases} \quad (3)$$

here, c_1 is the criterion which has the highest ac_j value, while c_2 is the criterion which has the second-high ac_j value.

Step 9. Non-normalized criterion weights (q_j) is computed by applying Eq. (4):

$$q_j = \begin{cases} 1, & \text{if } j = 1 \\ \frac{ac_{(j-1)}}{ac_j}, & \text{if } j > 1 \end{cases} \quad (4)$$

Step 10. The weight coefficients (w_j) of criteria are computed using Eq. (5) as:

$$w_j = \frac{q_j}{\sum_{j=1}^n q_j}, \quad (5)$$

here, $0 \leq w_j \leq 1$ and $\sum_{j=1}^n w_j = 1$. As a result, the procedure of calculating the criteria's weight coefficients is complete.

The steps involved in using the T2NN-CRADIS method to rank the options are shown below.

Step 11. The integrated T2NNS decision matrix $X = [x_{ij}]_{m \times n}$ is made using Eq. (6) as:

Table 1
Linguistic phrases and their associated T2NNs [39].

Notations	Linguistic terms for evaluating criteria and experts	Linguistic terms for evaluating options	Corresponding T2NNs								
			T_T	T_I	T_F	I_T	I_I	I_F	F_T	F_I	F_F
VL	Very Low Importance	Very Low	0.2	0.2	0.1	0.65	0.8	0.85	0.45	0.8	0.7
LO	Low Importance	Low	0.35	0.35	0.1	0.5	0.75	0.8	0.5	0.75	0.65
ML	Moderate Low Importance	Medium Low	0.5	0.3	0.5	0.5	0.35	0.45	0.45	0.3	0.6
MO	Moderate	Moderate	0.4	0.45	0.5	0.4	0.45	0.5	0.35	0.4	0.45
MH	Moderate High Importance	Medium High	0.6	0.45	0.5	0.2	0.15	0.25	0.1	0.25	0.15
HI	High Importance	High	0.7	0.75	0.8	0.15	0.2	0.25	0.1	0.15	0.2
VH	Very High Importance	Very High	0.95	0.9	0.95	0.1	0.1	0.05	0.05	0.05	0.05

$$x_{ij} = \left\langle \left(1 - \prod_{k=1}^r (1 - T_{x_{ij}}^{(k)})^{\lambda_k}, 1 - \prod_{k=1}^r (1 - T_{x_{ij}}^{(k)})^{\lambda_k}, \right), \right. \\ \left. \left(\prod_{k=1}^r (I_{x_{ij}}^{(k)})^{\lambda_k}, \prod_{k=1}^r (I_{x_{ij}}^{(k)})^{\lambda_k}, \prod_{k=1}^r (F_{x_{ij}}^{(k)})^{\lambda_k} \right), \right. \\ \left. \left(\prod_{k=1}^r (F_{x_{ij}}^{(k)})^{\lambda_k}, \prod_{k=1}^r (F_{x_{ij}}^{(k)})^{\lambda_k}, \prod_{k=1}^r (F_{x_{ij}}^{(k)})^{\lambda_k} \right) \right\rangle. \quad (6)$$

Step 12. The T2NNS decision matrix is normalized using Eq. (7) as:

$$v_{ij} = \begin{cases} \left\langle \left(T_{x_{ij}}, T_{x_{ij}}, T_{x_{ij}} \right), \left(I_{x_{ij}}, I_{x_{ij}}, I_{x_{ij}} \right), \right\rangle, j \in J^+ \\ \left\langle \left(T_{x_{ij}}, F_{x_{ij}}, F_{x_{ij}} \right), \right. \\ \left. \left(T_{x_{ij}}, 1 - T_{x_{ij}}, T_{x_{ij}} \right), \left(I_{x_{ij}}, 1 - I_{x_{ij}}, I_{x_{ij}} \right), \right\rangle, j \in J^- \end{cases} \quad (7)$$

herein, J^- represents cost criterion and J^+ depicts benefit criterion.

Step 13. The weighted normalized T2NNS decision matrix $Y = (y_{ij})_{m \times n}$ is obtained via Eq. (8) as:

$$y_{ij} = v_{ij} w_j. \quad (8)$$

Step 14. The ideal solution a_j^+ values and the anti-ideal solution a_j^- values are determined based as:

$$a_j^+ = \left\langle \left(\max_i (T_{y_{ij}}), \max_i (I_{y_{ij}}), \max_i (F_{y_{ij}}) \right), \right. \\ \left. \left(\min_i (I_{y_{ij}}), \min_i (I_{y_{ij}}), \min_i (F_{y_{ij}}) \right), \right. \\ \left. \left(\min_i (F_{y_{ij}}), \min_i (F_{y_{ij}}), \min_i (F_{y_{ij}}) \right) \right\rangle, \quad (9)$$

$$a_j^- = \left\langle \left(\min_i (T_{y_{ij}}), \min_i (I_{y_{ij}}), \min_i (F_{y_{ij}}) \right), \right. \\ \left. \left(\max_i (I_{y_{ij}}), \max_i (I_{y_{ij}}), \max_i (F_{y_{ij}}) \right), \right. \\ \left. \left(\max_i (F_{y_{ij}}), \max_i (F_{y_{ij}}), \max_i (F_{y_{ij}}) \right) \right\rangle. \quad (10)$$

Step 15. The deviations from a_j^+ are determined using Eq. (11) while the deviations from a_j^- are obtained by applying Eq. (12). For this purpose, the Hamming distance defined in Eq. (A.7) is used as:

$$d_i^+ = \sum_{j=1}^n |a_j^+ - y_{ij}|, \quad (11)$$

$$d_i^- = \sum_{j=1}^n |y_{ij} - a_j^-|. \quad (12)$$

Step 16. The utility measures of the options are determined by:

$$u_i^+ = \frac{\min_i (d_i^+)}{d_i^+}, \quad (13)$$

$$u_i^- = \frac{d_i^-}{\max_i (d_i^-)}. \quad (14)$$

Step 17. The general utility measures of options are computed by applying Eq. (15) as:

$$u_i = \frac{u_i^+ + u_i^-}{2}, \quad (15)$$

here, the options are ranked in descending order based on their u_i values.

4. Findings

This study examines strategies that manufacturing companies may employ for entering new markets abroad, particularly in the mineral oil sector. This framework includes criteria for evaluating strategies. The study, which was carried out as a group decision problem, gathered the opinions of highly qualified and experienced industry experts. In the following section, the data collection and analysis process carried out in the study will be presented in detail.

In the first stage, three experts with high knowledge and expertise on the subject provided feedback on the problem. The lists of options and criteria derived from the literature were provided to experts during this procedure. Prominent experts recommended eliminating similar criteria and alternatives, as well as those that were inappropriate for the mineral oil or manufacturing industries. As a result, sets of criteria and options were formed. Then, 13 experts were contacted from various oil companies. Some of these experts' assessments could not be fully obtained for a variety of reasons, including their heavy schedule, and the evaluation process was left incomplete. However, eight experts' opinions were fully received. Table 2 provides brief information regarding the experts who participated in the study. The level of significance for assessments by experts having significant knowledge of the sector and key roles was evaluated as high importance (HI). Therefore, 0.1250 was determined as the weight coefficient of each expert.

Twenty-six criteria were taken into consideration in the study under three main criteria groups. Brief explanatory information on these criteria is presented in Table 3.

Table 4 presents options for choosing the best entry mode for mineral oil companies. Three entry modes (franchising, turnkey operations, and assembly plants) were not included in the study. The prominent experts stated that these entry modes were not suitable for the industry or their firms. Hence, they were excluded from the analysis. When other entry modes were examined, international market entry strategies were evaluated in three different groups such as exporting, contractual, and investment modes [29]. Eight different entry modes were evaluated in this study. There are two types of exporting: direct and indirect. Entry modes based on contracts are licensing, management contracts, and contract manufacturing. On the other hand, entry modes based on investment are FDI, joint ventures, mergers, and acquisitions. For example, exporting differs from the other strategies in that a firm's intermediate or final good is manufactured outside the target market and subsequently transferred to it. A licensing agreement is a non-equity and contractual method with one or more local partners. FDI and joint ventures entail direct investment in the target country [61].

Entry decisions cover two different interdependent decisions, which are the mode of control and location. For example, licensing and FDI are foreign-located, while exporting is domestically located. FDI and exporting are administratively controlled, while licensing is

Table 2

The information on characteristics of experts.

Experts	Profession	Graduate	Experience (years)
E ₁	Logistics and customer support services manager	Economics	26
E ₂	Technical support department manager	Chemical engineer	12
E ₃	Export specialist	Mechanical engineer	6
E ₄	Chief executive of the company	Chemical engineer	14
E ₅	Industrial sales manager	Environmental engineer	15
E ₆	Chief executive of the company	Business and administration	20
E ₇	Sales support manager	Logistics	20
E ₈	Chief executive of the company	Mechanical engineer	18

Table 3

The criteria for selecting the best entry mode.

<i>Codes</i>	<i>Criteria</i>	<i>Explanation</i>	<i>Source (s)</i>
<i>C₁</i>	<i>Criteria regarding the target country</i>		
<i>C_{1.1}</i>	Market conditions	Market size, market structure, and market growth rate	[6,41, 42]
<i>C_{1.2}</i>	Host country competition	Competition intensity in the host country	[42–44]
<i>C_{1.3}</i>	Cultural distance	Cultural differences in terms of language, ideology, business ethics, social structure, business and consumer behavior, etc.	[13,45, 46]
<i>C_{1.4}</i>	Institutional development	It includes property rights, systems for information, regulatory frameworks, legal structure, and enforcement	[47–49]
<i>C_{1.5}</i>	Legal environment	International law and the conditions prescribed by a host country	[50,51]
<i>C_{1.6}</i>	Ownership risks	It is caused by the unpredictability of government acts like domestication, confiscation, expropriation, and nationalization that affect control of the business and its assets	[52,53]
<i>C_{1.7}</i>	Operational risks	It results from limitations on marketing, finance, supply, and other commercial operations that could be put in place by the government or driven on by market circumstances	[52,53]
<i>C_{1.8}</i>	Technological risks	The level of technology and the ability to accept technological changes	[54]
<i>C_{1.9}</i>	Balance of payments	Statistical report of the economic transactions of persons and institutions resident in an economy with similar organizations resident in other countries around the world over a certain time	[55]
<i>C_{1.10}</i>	Foreign trade politics	Government policy and regulations, exchange rate movements, customs duties, the volume of exports and imports, incentives for foreign investment, and non-tariff barriers	[56]
<i>C_{1.11}</i>	Factors of production	The quality, quantity, and price of raw materials, as well as labor, energy, and other elements of production	[56]
<i>C₂</i>	<i>Criteria regarding the home country</i>		
<i>C_{2.1}</i>	Domestic market size	Market potential and market demand in the home country	[57,58]
<i>C_{2.2}</i>	Competitive domestic structure	The arrangement and intensity of competition within a particular industry or market	[57]
<i>C_{2.3}</i>	Domestic costs of transportation	Expenses associated with moving goods or services from one location to another	[57,59]
<i>C_{2.4}</i>	Institutional development	The degree of development of factor markets, the efficacy of market intermediaries, the application of commercial regulations, government interference, and legal protection for property rights	[60]
<i>C_{2.5}</i>	Transfer risk	The power of the government to impose restrictions on the free movement of money, products, and services into and out of a country	[52]
<i>C_{2.6}</i>	Planned duration of project	The project's planned duration that is usually dictated by the day	[13]
<i>C_{2.7}</i>	Incentives	Government support, including lower taxes and interference, more infrastructure support, easier access to raw materials, etc.	[61–62]
<i>C₃</i>	<i>Criteria related to business and management</i>		
<i>C_{3.1}</i>	Firm size	The scale on which a firm operates (large or small firm capacity)	[12,41, 63]
<i>C_{3.2}</i>	International experience	Firms' previous international experience in foreign markets	[6,41, 64]
<i>C_{3.3}</i>	Organizational culture	It depends on the competitive advantages of the home country's business, the appointment of effective	[12,65]

Table 3 (continued)

<i>Codes</i>	<i>Criteria</i>	<i>Explanation</i>	<i>Source (s)</i>
		managers from the host country to key management positions, an open and transparent management style, management commitment and time to internationalization, and the adaptability of the management style to host country conditions	
<i>C_{3.4}</i>	Firm reputation	The company's name is well-known in its sector and in the environment in which it does business	[12,65]
<i>C_{3.5}</i>	Product type	Product type is a way to group similar goods or products, such as non-separable services or manufacturing goods	[12]
<i>C_{3.6}</i>	Proprietary assets	Company's proprietary knowledge, process, goods, brand name, marketing abilities, product distinction, etc.	[12,13, 65]
<i>C_{3.7}</i>	Tacit know-how	The routines of a company that are difficult to teach, transfer, and articulate to other business enterprises	[12,32, 66]
<i>C_{3.8}</i>	Service requirements	It refers to the service requirements that may arise before and after-sales	[64]

Table 4

The options for selecting the best entry mode.

<i>Codes</i>	<i>Options</i>	<i>Explanation</i>	<i>Source (s)</i>
<i>A₁</i>	Direct exporting	Direct exporting means that a manufacturer sells products directly to customers in a foreign market.	[67,68]
<i>A₂</i>	Licensing Agreement	A licensing agreement is a low control-low involvement entry mode since licensing does not entail equity participation. The licensee receives a single sum payment, a royalty charge per unit, and a pledge to follow any conditions specified in the licensing agreement in exchange for control over operations and strategy.	[32,69]
<i>A₃</i>	Management contracts	The firm exports management know-how rather than products to a foreign firm that supplies the capital.	[70]
<i>A₄</i>	Joint venture	A joint venture is a brand-new company formed when two or more companies combine some of their resources into a single legal entity.	[71]
<i>A₅</i>	International mergers and acquisitions	It is a combination of two separate firms into one or takeover.	[55]
<i>A₆</i>	Indirect exporting	A manufacturer sells to a middleman in their home country, who resells the goods in a foreign market. This is referred to as indirect exporting.	[67,68]
<i>A₇</i>	Foreign direct investment	Establishing assembly or manufacturing facilities abroad in order to enter a foreign market.	[70]
<i>A₈</i>	Contract manufacturing	The firm outsources all or part of its manufacturing processes to an outsider with a contractual agreement.	[71]

contractually controlled [77]. Entry modes may differ from each other in terms of three characteristics: resource commitment quantity, amount of control, and technology/dissemination risk. Thus, each entry mode has its own advantages and disadvantages, and the firm should evaluate these criteria and decide for itself.

Businesses face an extremely difficult problem when selecting a foreign market entry mode since there are multiple options that are superior to each other in different ways, and there are also many conflicting criteria for evaluating them. Solving the problem with fuzzy data

is necessary due to several obstacles, such as the lack of precise numerical representations of intuitive experiences, concerns regarding the new country to be entered, and the unknown structures of possible business partners and the new market. To define the options and criteria that the mineral oil business can use to invest in a new market as well as solve the entry mode selection problem, the T2NN-SWARA-CRADIS methodology will be very helpful in this context.

4.1. Computing the criteria weights

The criteria, alternatives, and expert lists for the problem are provided in the previous section. In the context of expert evaluations of the problem, the procedure for determining criterion weights will be clarified first. Table S1 in Online Resource displays expert assessments of the criteria importance levels.

Table S2 displays the corresponding T2NNs of experts' opinions of the criteria's importance levels. Expert evaluations were integrated via T2NNAO. Table S2 illustrates the integrated (η_j) values in a separate row below expert information for each criterion. Table 5 shows the results of applying the T2NN-SWARA method.

According to the findings (Table 5), "market conditions" (C1.1) is the most important criterion. The second-most important criterion is "balance of payments" (C1.9), while "host country competition" (C1.2) is the third most important criterion. "Market conditions" (C1.1) (i.e. market size, market structure, and market growth rate) are crucial determinants for investors. An attractive market condition combines a high growth potential with a fast growth rate, so the market is preferred by foreign and domestic investors. Firms also tend to enter and prefer more attractive and less risky markets [41,44]. Furthermore, in large and high-growth target markets, greater long-term profitability is expected in investment modes. Market growth in a target market also influences expected net returns and company growth [72].

One of the economic conditions affecting international marketing is the "balance of payments" (C1.9). The balance of payments is the accounting system used to record a country's international financial transactions. Especially from a global perspective, firms seeking to enter foreign markets need a systematic analysis of the economic environment. Basic economic determinants such as the level of income and employment, the rate of development, exchanges and inflation rates,

wage increases, income distribution, and external debts are closely related to the balance of payments. Therefore, the balance of payments is an important issue in terms of understanding the state of foreign economic relations between countries in a given period.

The third important criterion is "host country competition" (C1.2), which affects entry decisions [32,43]. An increase in the number of companies in an industry fosters competition, thus reducing the profitability level and negatively affecting the average growth rate of firms' sales [72]. Firms will tend to prefer entry strategies that involve low resource commitments when competition is intense in the host market [43]. According to Eicher & Kang [59], in cases of high competition, FDI becomes the predominant entry strategy, which gives firms the opportunity to reap all the benefits of their ownership advantages.

In addition to individually evaluating the importance of the criteria, elaborating the results in the context of the main criteria will yield helpful insights. Considering the main criteria, there are three main criteria in the study, and they are listed in order of importance as follows: the target country factors, the firm-management factors, and the home country factors. The target country environment impacts the international marketing operations of companies in a variety of ways. Target country factors include a broad spectrum of market conditions, risks, competition, economic factors, and cultural distance. The business's decision to enter a new market is influenced by factors such as competition, balance of payments, institutional development, legal environment, ownership risks, and foreign trade policies in the target country. Understanding the target country in which the company will operate will allow it to assess the factors and plan appropriate policies [1]. Secondly, international experience, firm reputation, product type, proprietary assets, tacit know-how, organizational culture, and service requirements are expressed as firm management factors. These factors are expressed as the drivers of a company's competitive advantage. Strategic issues and considerations are important in the selection of entry modes in international markets. For example, a company may adopt a collaborative entry mode in order to develop new capabilities or gain new knowledge. Finally, it is argued that the relationship between foreign enterprises operating in a country and their home countries is an important component of the country's international relations. A firm's home country political environment, in particular, constrains both foreign and domestic activities and can limit the countries into which an international firm will expand.

4.2. Ratings of the options

Table S3 shows linguistic evaluations of the options provided by experts ($E_1, \dots, E_8$), while Table S4 provides the corresponding T2NN numbers of experts' judgments related to the options. Table S5 contains the integrated decision matrix obtained via T2NNAO.

The integrated normalized decision matrix created during the application procedure of the T2NN-CRADIS method is shown in Table S6. The criteria weights determined via T2NN-SWARA were employed in the problem, and the integrated weighted normalized decision matrix provided in Table S7 was created. Table S7 also shows the ideal and anti-ideal solutions regarding each criterion. The distances between each option and the ideal and anti-ideal solution vectors were calculated using Eq. (A.7) and are presented in Table S8.

The solution results obtained with T2NN-CRADIS are presented in Table 6. According to findings from the study, the "foreign direct investment" (A7) mode is the best entry mode for firms to expand into new markets. That is, this mode is the ideal way for the firm to invest. FDI is seen as a significant source of technology spillover, advancement in growth, and efficiency. Through FDI, investors aim to acquire lasting interest in firms operating outside of their home country and gain an effective voice [73]. According to Dunning [9], at one time, firms preferred to engage in international transactions generally through exporting or importing.

Joint ventures are the second-best entry mode for mineral oil

Table 5
T2NN-SWARA results.

Criterion	$S(\eta_j)$	ξ_j	c_j	ac_j	q_j	w_j	Rank
C1.1	0.9292	1		1.0000	1.0000	0.0465	1
C1.2	0.8502	3	0.0240	1.0240	0.9257	0.0430	3
C1.3	0.6558	22	0.0145	1.0145	0.7638	0.0355	22
C1.4	0.7241	16	0.0098	1.0098	0.8173	0.0380	16
C1.5	0.7744	8	0.0031	1.0031	0.8593	0.0399	8
C1.6	0.8008	4	0.0495	1.0495	0.8821	0.0410	4
C1.7	0.7676	10	0.0001	1.0001	0.8534	0.0397	10
C1.8	0.6703	21	0.0077	1.0077	0.7748	0.0360	21
C1.9	0.8742	2	0.0550	1.0550	0.9479	0.0441	2
C1.10	0.7850	5	0.0158	1.0158	0.8684	0.0404	5
C1.11	0.6837	18	0.0199	1.0199	0.7853	0.0365	18
C2.1	0.7599	12	0.0003	1.0003	0.8470	0.0394	12
C2.2	0.7461	14	0.0022	1.0022	0.8354	0.0388	14
C2.3	0.6225	24	0.0222	1.0222	0.7390	0.0343	24
C2.4	0.6804	19	0.0033	1.0033	0.7827	0.0364	19
C2.5	0.6780	20	0.0024	1.0024	0.7808	0.0363	20
C2.6	0.7036	17	0.0205	1.0205	0.8008	0.0372	17
C2.7	0.7339	15	0.0122	1.0122	0.8253	0.0384	15
C3.1	0.7677	9	0.0067	1.0067	0.8535	0.0397	9
C3.2	0.7775	7	0.0075	1.0075	0.8620	0.0401	7
C3.3	0.6447	23	0.0111	1.0111	0.7554	0.0351	23
C3.4	0.7483	13	0.0117	1.0117	0.8372	0.0389	13
C3.5	0.7850	5	0.0000	1.0000	0.8684	0.0404	5
C3.6	0.5682	25	0.0543	1.0543	0.7009	0.0326	25
C3.7	0.5682	25	0.0000	1.0000	0.7009	0.0326	25
C3.8	0.7602	11	0.0074	1.0074	0.8472	0.0394	11

Table 6
T2NN-CRADIS ranking results.

Codes	Options	d_i^+	d_i^-	u_i^+	u_i^-	u_i	Rank
A ₁	Direct exporting	0.3633	0.2127	0.4662	0.5231	0.4946	6
A ₂	Licensing Agreement	0.2322	0.3438	0.7294	0.8455	0.7875	3
A ₃	Management contracts	0.2478	0.3281	0.6833	0.8070	0.7452	5
A ₄	Joint venture	0.2203	0.3557	0.7687	0.8747	0.8217	2
A ₅	International mergers and acquisitions	0.2435	0.3325	0.6955	0.8177	0.7566	4
A ₆	Indirect exporting	0.3765	0.1995	0.4498	0.4905	0.4701	7
A ₇	Foreign direct investment	0.1693	0.4066	1.0000	1.0000	1.0000	1
A ₈	Contract manufacturing	0.3958	0.1802	0.4278	0.4431	0.4355	8

companies. Joint ventures are legally autonomous firms formed by two or more companies from different countries [136]. There are numerous reasons why joint ventures are a popular entry mode for mineral oil companies. First, within the framework of this entry strategy, the newly founded venture can leverage the linked companies' current competencies and resources to develop new products for customers and design locally improved products. Firms can use the joint venture mode to reduce total transaction and production expenses. Joint ventures are recognized as an effective strategy to reduce the risks connected with economic transactions. Joint ventures are strategically examined for collusion and aggressive competition in order to gain market dominance. Although joint ventures are a popular entry mode, managerial dissatisfaction can occur during their operations. As a result, joint venture success is crucial, and confidence must be built among partners [139].

According to the study's findings, the third ideal entry mode is a licensing agreement. Licensing is a contractual mode and a firm transfers to a foreign company the right to use some properties, such as trademarks, patents, company names, business methods, or technology [32, 69]. The number of required resources differs greatly from the entry mode, and there are minimal training costs in licensing. In this sense, licensing is an easy and quick way for firms to enter new markets. However, licensing has the loss of technology and know-how risks and so is preferred as a later entry mode.

4.3. Validity tests

This part focuses on the validity, reliability, and sensitivity of the results obtained in the context of the proposed methodology and the created model. For this purpose, the criterion weights will be changed, the rank reversal problem will be investigated, and the findings acquired by applying different T2NN approaches will be compared.

In order to examine the change in criteria weights, a combination of three approaches was employed. In this framework, 292 scenarios were constructed using the three approaches. First, scenarios W1-W25 were formed by moving the criteria weight coefficients, displayed in Table 5, to a different criterion each time. Scenarios W26-W32 involve weight coefficients calculated using different techniques. W26 employed the equal weighting technique, W27 relied on T2NN-CRITIC [74], W28 was created based on the standard deviation (SD) weighting approach, and WT29 adopted the subjective weighting coefficients computed via an approach specified in the determination of experts' weights and Eq. (1). Moreover, W30 employed the entropy weighting technique, W31 based on the logarithmic decomposition of criteria importance (LODECI) technique [142], and W32 used the variance procedure (VP) weighting technique. Within the context of the third approach, the weight of each criterion was reduced by 10 % and distributed equally among the other criteria. Thus, the weight of the relevant criterion was allocated among the other criteria in ten different scenarios [143]. In this framework, 260 scenarios ranging from W33 to W292 were produced. This sensitivity approach adopted in examining criterion weight changes reveals whether the criterion weights have a holistic effect on the solution of the problem and whether the methodological approach reflects the criterion weights on the solution [75, 143]. The criterion weights in the original

solution obtained via the proposed methodology are shown with W0. Table S9 shows criterion weights that change by scenario, and Fig. 1 presents the results of the analyses.

The findings in Fig. 1 show that the proposed methodology reflects the effect of the criterion weight coefficients on problem-solving. It was found that the correlation between the original results and the outcomes in the context of the 292 produced scenarios is strong ($r_s > 0.9$). In addition, it is also critical for consistency that the ranking results do not fluctuate significantly among the scenarios under consideration. In general, the proposed approach accurately represents the weight modifications of the criteria to the solution, and, in the framework of the selection problem, the position of the first option remains constant.

The procedure of removing the options, considered for the solution, from the problem and assessing the ranking positions of the remaining ones within themselves was used to examine the presence of the rank reversal problem. Table 7 presents the ranking results obtained using this methodology. As seen in Table 7, the proposed approach did not cause rank reversal problems.

The proposed methodology's ranking results were compared to those obtained using T2NN-TOPSIS, T2NN-SAW, T2NN-WPM, T2NN-WASPAS, T2NN-MABAC, T2NN-CoCoSo, and T2NN-MARCOS methods [74, 76, 144]. Table 8 shows the rankings derived using these methods. The ranking order of the first option stayed consistent across different methods. In general, it is understood that the results obtained with T2NN-MABAC and T2NN-MARCOS differ slightly from those obtained with other methods. The Spearman correlation coefficient between the ranking results obtained with the proposed methodology and the other methods was found to be high ($r_s > 0.8$).

The validity and reliability of the findings were examined using a variety of tests. It is clear from the analysis of the rank reversal problem, criterion weight modifications, and comparison with different methods that the findings produced by the proposed approach are valid and reliable.

5. Discussions and implications

This section outlines the study's primary conceptual and empirical contributions to the international marketing literature. The study's proposed framework is supported by empirical evidence and, furthermore, provides managerial guidance by highlighting elements that managers ought to consider when choosing and assessing their foreign market entry strategy.

A thorough literature review was conducted as part of the study's preliminary stage (see Table A.1). Therefore, it was attempted to identify the criteria and options that can be considered for solving the studied problem. Most of these studies have focused on the key determinants affecting entry modes without ranking their degree of importance. The importance of market conditions and competition intensity has also been particularly emphasized in these studies.

According to the findings, the market conditions (C1.1) is the most critical criterion for mineral oil companies when deciding on a strategy for entering a new foreign market. This finding is consistent with the studies of Buckley & Casson [77] and Eicher & Kang [59]. Moreover, Altzinger [78] stated that the market-driven factors were determined as

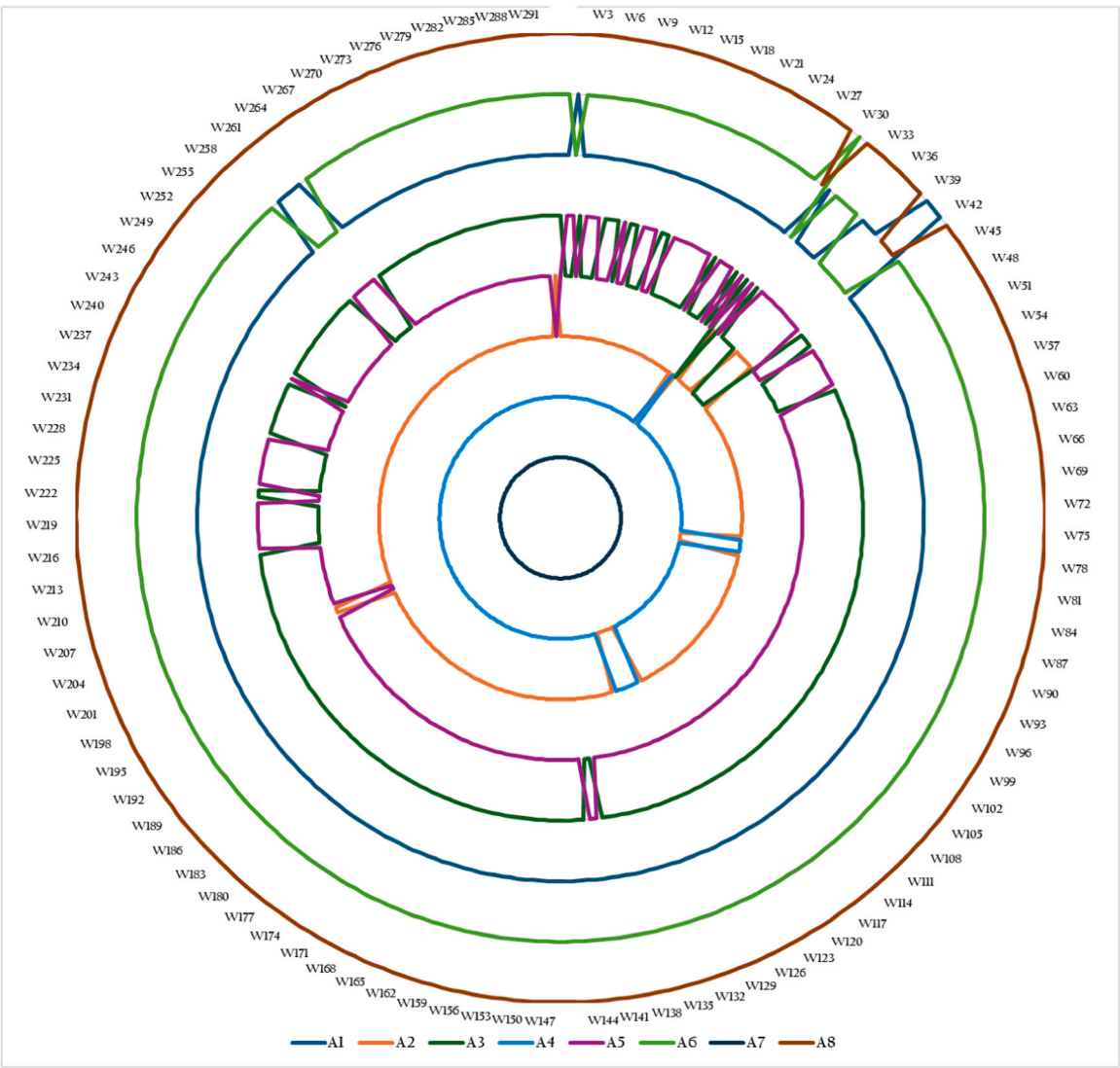


Fig. 1. The results of criterion weight fluctuations.

Table 7
Examination of rank reversal problems.

Options	Original rank	Excluded					
		A8	A8, A6	A8, A6, A1	A8, A6, A1, A3	A8, A6, A1, A3, A5	A8, A6, A1, A3, A5, A2
A ₁	6	6	6	×	×	×	×
A ₂	3	3	3	3	3	3	×
A ₃	5	5	5	5	×	×	×
A ₄	2	2	2	2	2	2	2
A ₅	4	4	4	4	4	×	×
A ₆	7	7	×	×	×	×	×
A ₇	1	1	1	1	1	1	1
A ₈	8	×	×	×	×	×	×

the most important factor in FDIs. According to a systematic review by Islam and Beloucif [134], market size is also mostly significant in almost all foreign direct investment studies. Therefore, the selection of market size as an important criterion in this study is an expected finding and consistent with the literature. According to Anil et al. [79], while domestic market size is important for global Turkish firms, it does not have a substantial impact on local Turkish businesses. The connections between market magnitude and market entry, however, are also described

as a "size of the pie" versus "share of the pie" problem, according to Min et al. [58]. It demonstrates that high market size does not equate to high profits. Price margins and a company's market shares in a market of any size are crucial. This strategy indicates the strength of the correlation between post-entry profit and market size may vary depending on the type of competition. Competition is already selected as the third important criterion in the study.

It was determined that the second most crucial criterion is the "balance of payments" (C1.9). There are many studies examining the impact of the economic environment on entry modes [80]. The balance of payments is also one of the factors in the economic environment. Political stability and the macroeconomic environment have also played a crucial role in FDI [81]. In a study on the oil sector, Bibi [137] stated that FDI is significant in the dynamics of the current and financial account sections of the balance of payments. A balance of payments implies that a country can maintain its existing economic activity without creating financial imbalances with the rest of the world [137]. The balance of payments provides significant insights about the new market to be entered. The balance of payments affects factors such as the country's economic stability, foreign exchange availability, foreign trade policies, and government incentives. If the country to be entered has a balance of payments deficit, it may implement savings strategies and reduce consumption expenditures. To reduce the current account deficit, the

Table 8

Comparisons of ranking results obtained via different methods.

Options	Proposed methodology	T2NN- TOPSIS	T2NN-SAW	T2NN-WPM	T2NN- WASPAS	T2NN- MABAC	T2NN-CoCoSo	T2NNN-MARCOS
A1	6	6	6	6	6	7	6	7
A2	3	3	3	4	4	5	4	2
A3	5	5	5	5	5	4	5	4
A4	2	2	2	2	2	3	2	3
A5	4	4	4	3	3	2	3	5
A6	7	7	7	7	7	6	7	8
A7	1	1	1	1	1	1	1	1
A8	8	8	8	8	8	8	8	6

government can discourage foreign companies and disrupt the competitive environment by supporting domestic companies. A decrease in foreign exchange reserves may put a burden on imported goods and, as a result, raw material availability. The issues related to the balance of payments might cause operational problems in sectors reliant on logistics and imports, such as the mineral oil industry. In this context, the company may decide not to enter the new market or may change its entry strategy.

Another important criterion was "host country competition" (C1.2). This finding is consistent with many studies that indicate that the intensity of competition has a crucial role in entry mode decisions [42,59,82]. Eicher & Kang [59] stated that optimal entry modes vary with the intensity of competition in the target market. Competitive intensity may also be a sign of market attractiveness, as more desirable markets have more businesses competing in them. Therefore, it is possible to conclude that competition intensity and market attractiveness are closely linked. According to Müller [82], when markets are very little or very much competitive, FDI (i.e. greenfield investment) is the optimal entry strategy. On the other side, Kim and Hwang [43] claimed that target markets with intense competition may be less profitable. As a result of this, assuming all other factors remain constant, multinational companies will select entry modes that require minimal resource commitments in high-intensity competition [43]. According to Anil et al. [79], many Turkish firms want to enter new markets and operate in a non-competitive market. Thus, managers should thoroughly evaluate the competitive landscape of the foreign market they enter. Understanding competitive dynamics can help practitioners make better decisions regarding entry strategy and identify potential opportunities and constraints.

The findings indicate that the most ideal strategy for mineral oil firms to enter new markets is "foreign direct investment" (A7). Bhaumik & Gelb [83] stated that FDI had replaced trade as a driver of economic growth in emerging economies and less developed countries by the end of the twentieth century. In the study of Demirbağ et al. [80], according to data from Turkish firms investing in Central Asian Republics, wholly owned subsidiaries are generally preferred as an entry mode. FDI is a crucial entry strategy for promoting industrial growth in emerging economies where access to technology and money may be constrained. As a result, authorities should provide incentives for international companies and establish an environment that encourages business. FDI enables mineral oil companies to maintain complete control over the activities in the markets they enter. This allows the company to maintain its quality standards and experience, giving it substantial advantages. Applying partnerships or different entry modes in the local market may result in the affiliated company becoming a significant rival in the future. FDI also prevents such a problem. Furthermore, establishing a local production facility or warehouse helps to reduce or even eliminate the degree of problems related to imports. FDI indicates the business's long-term presence in the local market, increasing its reliability in the eyes of the client. In this way, decisions regarding the local market can be made quickly and the competitive advantage can be used. In terms of the company, FDI can be the ideal entry strategy in a stable and high-potential market.

The second ideal entry mode in the research was determined as a

"joint venture" (A4). This mode can be defined as two or more businesses pooling a part of their resources within a single legal enterprise [63]. According to Luo [84], firms prefer joint ventures as an entry mode when environmental uncertainty and government intervention are high, or the target country's experience is low. Joint ventures can be a quicker and more effective way to enter a market with a local partner, especially if the dynamics in the target country are unpredictable. The local partner's network and infrastructure can mitigate market and local risks. Mineral oil companies may benefit from faster market entry, leading to increased cash flow. Working with a local partner may be an appealing option, particularly if international firms are prohibited in the country where the company wants to do business. If the company is skeptical about foreign direct investment, a joint venture may be preferable as a first step. On the other hand, there could be several reasons why the joint venture entry mode is not the first choice. As stated in the literature [131], there are some critical risks of joint ventures such as inflation, exchange rates, high interest, budget overrun, economic fluctuation, cash flow problems of the customer, challenges in getting approval for projects from target country authorities, financial distress, corruption, and bribery. Managers and practitioners need to strike a balance between risk management and market expansion to ensure firms' long-term survival and success [132]. Moreover, it is suggested that legal restrictions and high-country risk should lead firms to avoid the use of wholly owned subsidiaries and use cooperative strategies instead. It is also recommended that firms should use cooperative strategies in target countries with high growth potential and high market attractiveness [51].

In brief, as mentioned above, the impact of market conditions (i.e. market size, market growth potential, etc.) and competition is emphasized in many studies. Firms try to choose the ideal entry mode by considering these factors as well as other factors related to firms, including home and host country factors. For mineral oil firms, "market conditions", "competition intensity", and the "balance of payment" are the three most important criteria. One of the most prominent findings in the study is that the balance of payments is the second most important criterion.

6. Conclusions

Entry mode selection is seen as the starting point of firms' future activities, so its importance for the future success of firms is undeniable. In fact, the entry mode decision is seen as a "frontier issue" in international marketing. Internationalization is a crucial strategy for businesses' long-term survival and success. Managers who want to seize new opportunities in foreign markets face significant and complex decisions. Therefore, this study used the MCDA approach to evaluate the entry modes and criteria affecting these entry strategies. The proposed model can help managers and decision-makers select the ideal entry mode to reach higher returns and competitive advantages.

The findings of this study revealed that the market conditions are the most important factor that businesses consider when entering a new international market. This is particularly true for the oil sector and manufacturing businesses. Before entering a new market, businesses must conduct preliminary research and feasibility studies on issues such

as the market share of other businesses in the new market, the market's magnitude and structure, and its development rate. Another critical criterion is the "balance of payments". A country's balance of payments reflects its overall economic strength. The exchange rate, income distribution, economic policies, and employment levels in the country where the investment will be made all have a significant impact on this variable. Businesses prefer to enter a market with predictable conditions. The soundness of the balance of payments is a key indicator in this regard. Furthermore, the study's findings revealed that "competition intensity" is the third most important criterion. Businesses should assess their competitors and the level of competition in the countries where they plan to establish new operations. Similar statements can be made about competitors and the competitive environment in the firm's home country.

FDI was determined to be the best entry strategy for entering a new international market, particularly for the problem at hand. Foreign investment benefits a country and generates revenue for businesses. It enhances the country's economic growth, sector development, employment opportunities, and product quality. Depending on the chosen entry strategy, the firm may share knowledge, experience, and trade secrets with local businesses in the new market. This situation may result in the business causing losses and having a bad experience without fully getting the benefits of its investments in the new market it has entered, or even causing damage to its operations in the home country. FDI appears to be an effective strategy for mineral oil companies to mitigate such risks. On the other hand, by competing with local businesses through a successful direct investment, the business can gain valuable experience in this country's cultural, economic, industrial, and social conditions, which will help it in its future international activities.

Businesses can utilize this study as a guide when considering entry strategies as it clarifies the most crucial elements and optimal choices. This is useful because businesses that frequently face resource and time restrictions can examine a scientifically based model for resolving a highly complicated problem. We also recommend that businesses should consider the potential market conditions and competitive situations more seriously when they enter new markets. The study also suggests that practitioners should be equipped with more resource-based and industry-specific strategic insights for market entry.

The proposed methodology's ability to efficiently process unclear data makes it applicable to problems encountered in the manufacturing industries, marketing, and related fields. Businesses that employ the proposed approach can define the components of the problems that are tried to be solved intuitively. The proposed methodology can be utilized to help firms manage and account for these ambiguous and conflicting components. Future research can expand on the proposed methodology to include other approaches such as the Delphi, focus group interviews, and objective weighting procedures. Thus, it may be possible to address processes related to similar problems by including different perspectives.

From a sectoral perspective, the industry in which a company operates is related to the level of competition, product characteristics, and the requirement for innovation, all of which are significant to a company's foreign market entry mode decision [140]. As a result, the study's findings will be useful for businesses or SMEs in similar sectors looking for entry into foreign markets. Additionally, as stated before, host country competition is an important criterion for international companies. These firms should make something to gain a competitive advantage today. In that sense, two popular and current ways may be proposed: sustainability and artificial intelligence. Firms consider sustainable development goals proposed by the UN and they may add value to their companies. On the other hand, a recent study found that artificial intelligence technologies may minimize uncertainty in the host market, giving businesses more confidence in making larger resource commitments. Managers can use AI technology in competitive analysis, market research, and decision-making processes during and after entering foreign markets. This will help managers better understand

international market dynamics, contribute to their long-term development, and enhance their market resilience and sensitivity [133].

Furthermore, this study contributes to both researchers and international marketing practitioners by providing a comprehensive review of the international entry mode literature. First, even though market entry modes are a well-established research subject, the role of individual decision-makers (experts) has received very little attention in studies. In this regard, the study will contribute to the international marketing literature and mineral oil companies. Second, appropriate measures of important constructs are a big concern in international marketing because more reliable measures can provide a better foundation for strategic and management decisions. In this regard, the proposed methodology and expert interviews will contribute to international marketing literature and firms' future operations. Identifying the criteria for selecting an optimal market entry strategy helps international marketing managers understand the importance of each factor and choose the best strategy for entering a new foreign market in the mineral oil industry. Fourth, the study acknowledges that the firm-management criterion is the second most important criterion. These findings indicate the significance of both firm-specific and firm-management factors in determining market entry mode strategy. As a result, it can be concluded that firm-management criteria provide competitive advantages to mineral oil or similar companies, and international marketing managers should consider firm-specific criteria when selecting an entry strategy.

Mineral oil and manufacturing companies may employ the model proposed in this study to determine their entry strategies into different countries. In this context, the candidate strategies and evaluation criteria included in the study will guide businesses. Similarly, the T2NN-SWARA-CRADIS methodology, which can handle expert opinions and uncertainty, would be extremely beneficial. Besides, the study allowed the opinions of experts in the field with extensive experience and understanding to be incorporated into the scientific framework. T2NN sets, which can handle uncertain data in a variety of contexts and process it within the framework of truthfulness, falsity, and indeterminacy components, were employed to carry out this procedure. The study's methodology can be modified or employed in future studies by analysts or researchers to solve similar problems in various fields.

Geographic limitations are the major limitation of the study. Hence, the findings of the study may change if implemented in different countries or markets. However, the study's results can provide some advantages in determining the differences between developed and developing countries on this issue. The entry mode selection is a complex, multidimensional, and strategically important decision. Future developments in this field may result in new criteria becoming decisive. As a result, future research may investigate the combined effects of multiple criteria that represent current advancements. Furthermore, similar research can be conducted in different sectors, especially in the service sector. The second limitation of the study was the small number of interviewers because of the challenge of finding experts and time constraints.

CRediT authorship contribution statement

Aytekin Ahmet: Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Investigation, Data curation, Conceptualization. **Küçük Hilal Öztürk:** Writing – review & editing, Writing – original draft, Validation, Investigation, Formal analysis, Data curation, Conceptualization. **Aytekin Makbule:** Writing – review & editing, Writing – original draft, Validation, Investigation, Formal analysis, Conceptualization. **Simic Vladimir:** Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Project administration, Formal analysis. **Pamucar Dragan:** Writing – review & editing, Writing – original draft.

Declaration of Competing Interest

interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare that they have no known competing financial

Appendix-A

Table A.1

Literature on entry strategies for companies

Author(s)	Year	Objective & key findings	Method(s)
Fernandes et al. [85]	2014	The decision of a multinational company to enter a new market by establishing a subsidiary company, exporting directly, or utilizing direct investment by contracting with a local distributor is investigated. It was stated that direct investment was the preferred entry strategy in large markets with low demand uncertainty.	Proposing two models based on the real options theory
Hutzschenreuter et al. [86]	2014	The reactions of local companies to foreign businesses entering the market were investigated using the prospect theory. Local companies are alleged to limit the number of goods and geographical region variety in import-based entries while increasing product and geographical diversity in entries through FDI.	Two-stage least squares regression analysis
Pla-Barber et al. [87]	2014	A knowledge-based approach has been proposed to assess the resource-augmenting and resource-exploiting strategies of hotel companies in terms of market entry. It was argued that when the cultural gap was high, businesses preferred more resource-intensive solutions.	Logistic regression analysis
Tanganelli & Schaan [88]	2014	The entry of Japanese companies into the European market was examined. It was found that over half of Japanese investments in Europe are in the form of new companies, with fewer than 6 % being acquisitions and about 40 % being joint ventures. The fact that no input mode worked better than any other was stressed.	Pearson chi-squared test, and Wilcoxon rank sum test
Yalcin & Sala [89]	2014	The study analyzed how international companies select whether to join new markets and which entry strategy is most effective, including FDI and export. It has been said that, in light of the uncertainty, the company decided to pursue a FDI strategy.	Proposing a new model
Swoboda et al. [90]	2015	It examined whether the most widely used foreign market entry modes in the past influenced a retail company's future mode choices. It was stated that the results supported this claim.	Probit regression analysis
Sousa & Tan [91]	2015	The actions and causes for businesses leaving foreign markets were investigated. It was said that strategy incompatibility and poor international performance damage the business's existence in foreign markets. The findings suggested that cultural distance moderated the impact of internal strategy alignment and international success on exit decisions.	Weighted least square mean and variance adjusted estimator
Gevorkyan [92]	2015	Armenia and Georgia were analyzed using the five forces model for foreign companies entering the domestic market after the economic crisis. Profits could be realized if foreign company managers find a public or private partner in the local context before entering the regional or international market.	Comparative assessment
Zhang et al. [93]	2015	The Chinese wind energy company's export size and market share in foreign countries, market entry strategies, and location preferences for FDI in other countries were studied. Chinese wind companies' entry into the foreign market was influenced by the competitive advantages of major Chinese wind companies and the rising local market competition, which was described as an appealing international market.	Qualitative research and case studies
Satta & Persico [94]	2015	The process of container port companies expanding into new international markets was studied. Cultural distance, personal capabilities, and market expertise were recognized as critical success factors for international terminal operators entering new markets.	Hierarchical clustering analysis
Gollnhofer & Turkina [95]	2015	Using transaction cost theory, the contingency method, and resource-based theory, the relationship among cultural distance, global strategy, and entry mode strategies was examined in the context of a French supermarket chain owner's international expansion. The results showed a positive relationship between commitment, and cultural distance for the company under examination.	Logistic regression analysis
Cozza et al. [96]	2015	Chinese companies that invested directly in Europe were evaluated. It was indicated that, among investments, the entry mode variable had a greater impact on the scale and productivity of Chinese multinational corporations making greenfield investments.	Regression analysis
Lee & Jang [97]	2016	The entry mode preferences of international companies that made FDIs were investigated. When considering a greenfield investment, merger, acquisition, or FDI, the host country's industry's comparative advantage might be a key factor. Market density, economies of scale, and investment size all had a significant and positive impact on entry mode selection.	Regression analysis
Boateng et al. [98]	2017	The study focused the macroeconomic and cultural factors that affect Chinese cross-border mergers and acquisitions as a foreign entry strategy between 1998 and 2011. Strategic assets, economic policies, and political assistance in the home nation were key drivers.	Regression analysis
Masiero et al. [99]	2017	The effects of mass entry into the Chinese market through firm groups were examined. The effectiveness of the Chinese government's use of financial and diplomatic incentives to reduce structural risks was emphasized.	Literature review
Oguji & Owusu [100]	2017	Finland's internationalization through the acquisition of African businesses is studied. It was found that multinational companies preferred partial acquisition over phased and complete acquisition.	Case study analysis
Chinchwadkar & Seth [101]	2018	Decisions to enter European Monetary Union countries and global markets outside of this region were examined in the context of regional combinations of multinational company strategies, considering country risks. It was claimed that standard predictions of business theory were reversed.	Multilevel mixed-effects logistic regression analysis
Puthusserry et al. [102]	2018	The study focused on companies in the United Kingdom and India. The role of various collaborative entrance modes in the growth of international new ventures into international	Qualitative semi-structured interview

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Table A.1 (continued)

		markets was investigated. The findings showed that INVs use both equity and non-equity partnership mechanisms to gain an international competitive advantage.	
Watson et al. [103]	2018	It investigates how relational approaches to international market entry strategies evolved, as well as the implications of these new technologies for changing global business environments. The study examined international entry strategies and classified them as relational, hybrid, and digital.	Literature review
de Mello et al. [104]	2019	The purpose was to investigate the long-term trajectory of international new ventures from three perspectives: the international entrepreneurship perspective, network theory, and the Uppsala internationalization process model. Findings showed that there was no single long-term trajectory for international new ventures.	Multiple case study-longitudinal approach
Qi et al. [105]	2020	This study investigated transaction cost theory (environmental and behavioral uncertainty, asset specificity, and transaction frequency) and also the trust dimension to evaluate entry mode options. Transaction cost theory and trust were seen as important dimensions for the selection of entry mode.	An in-depth case study
Chew et al. [28]	2020	This study investigated the entry strategy of Alipay (m-payment) in the Malaysian market. The most remarkable finding was that tourism is the vehicle for market entry mode.	Qualitative interview-secondary data
Dow et al. [106]	2020	It examined the psychic distance-entry mode relationship; e.g. differences across countries in language, religion, culture, etc. Firms seem to prefer joint ventures in order to access key local knowledge when they enter different countries.	An experimental approach
Du et al. [107]	2020	This study investigated the determining factors that affect the Chinese innovative firms' choice in market location, entry mode, and entry speed. Findings showed that these enterprises preferred developing countries and also chose acquisition, subsidiaries, exporting, and joint ventures.	Panel data
Hanell et al. [108]	2020	It examined the effect of market factors (e.g. competition, resources, and institutions) on the international strategies of an online seller. Findings showed that using partnerships could be effective when entering new markets.	A single qualitative case study research
Jiang et al. [109]	2020	This study investigated resource and strategic contingencies that affect MNEs' repeat country location decisions. Firms with strong production and marketing capabilities had a greater tendency to invest in new markets.	Mixed logit model
Paul [110]	2020	It proposed strategies with regard to entry modes, market selection, customer relationship development, and market adaptation with a new four-dimensional model. This model included political relationships, business relationships, social relationships, and internal relationships.	Literature review
Tang & Buckley [111]	2020	This study investigated the relationship between foreign ownership strategy and host country risk, as well as investigated the moderating effects of informal and formal institutions in the home country. Findings demonstrated that the country risk-ownership strategy relationship was moderated by home country institutions.	Meta-analysis
Alon et al. [112]	2021	It focused on international franchising by applying bibliometric analysis. Firms' capabilities and resources, the characteristics of the host country, and the firm's international performance affected the international franchising decision.	Bibliometric analysis
Escandón-Barbosa & Ochoa [113]	2021	This article examined the effect of export commitment, international experience, export strategy, networks, export assistance programs, tariff legislation, innovation, and sector size on export success. Government support through tariff legislation and programs was an important factor in entry into new markets.	Multilevel or hierarchical analysis
Baier-Fuentes et al. [114]	2021	It examined the role of triple helix actors (i.e. university, government, and industry) in new-technology-based firms to implement an early internationalization strategy in emerging economies. Specialized knowledge, diversified resources, and capabilities were positively related to NTBF's early internationalization.	Qualitative approach (multiple, longitudinal, and retrospective cases)
Alayo et al. [115]	2021	This study examined the internationalization process of family firms. This study revealed six thematic clusters: entry mode, corporate governance, board of directors, entrepreneurship, foreign market knowledge, competitive advantage.	Bibliometric analysis
Vanegas-López et al. [34]	2021	It aimed to investigate the best routes for textile exports and factors affecting the export of a textile-clothing product. Economic factors, costs, and trade barriers were the sub-criteria affecting textile exports.	Hybrid multi-criteria decision-making model
Arghashi & Okumus [38]	2022	The study aimed to investigate SMEs' internationalization processes in the Islamic market and to determine the country-of-origin factors influencing entry strategies into a foreign country.	Semi-structured interviews
Brouthers et al. [116]	2022	It investigated non-traditional entry modes by exploring the key antecedents, attributes, and strategic implications of these entry modes.	Literature review
Chiu et al. [117]	2022	This study aimed to investigate brand mergers and acquisitions and corporate strategies for Chinese sports brands. Chinese firms' cross-border mergers and acquisitions' key motives were identified as accelerated expansion, brand integration, integration of resources, barriers to the construction of new entrants, and rapid entry into the market.	A case analysis
Hänle et al. [118]	2022	It examined the international motives of Chinese SMEs and the role of the institutional environment. Findings showed that efficiency-seeking goals, entrepreneurial orientation, and integration in global value chains were driving factors. The institutional environment also caused widely different effects.	Multiple case study method
Agnihotri et al. [119]	2023	The authors investigated how servitization affected firms' entry strategy decisions and examined the integrated effect of servitization components (i.e. digitalization and customer relations). Also, this study considered the institutional environment, cultural differences between the host and home country, and market attractiveness in this relationship.	Conceptual framework typology
Bulah et al. [120]	2023	This research looked at the entry strategies of incumbent businesses in meat substitute markets in the United Kingdom, the United States, and the Netherlands. Distinct entry modes decision models were identified for four businesses. The commitment and timeliness of businesses to the plant-based meat substitute industry varies across these entry modes.	A qualitative event-history analysis
Zhang et al. [121]	2024	It studied bridge-economy partners, focusing on the role of bridge-economy firms and triadic collaborations. A triadic Western, bride-economy, and local firm collaboration necessitated a mature legal system and host country experience.	Multinomial logit regression analysis
Elbanna et al. [122]	2024	It focused the impact of the intensity and geographic distribution of foreign market participation on internationalization outcomes. There was a link between foreign market engagement level and	Open-ended interviews with 180 SMEs from three industries

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Table A.1 (continued)

		internationalization outcomes, and entry-mode learning merely moderated the relationship between intensity of foreign market involvement and outcomes.	
Bretas et al. [123]	2024	This study investigated international entry mode decisions from the stakeholders' perspectives, delving into different configurations of governance mode. Institutional partner support, business group affiliation, and host market network characteristics all affect a company's decision to adopt lower control modes in international markets.	Regression analysis
Chetty et al. [124]	2024	It analyzed SME's foreign market decision and entry and contributes to SME literature and international business by uncovering casual and effective paths to foreign market entry collaboration and international performance.	Survey with 140 SME, Partial Least Squares-structural equation modelling-
Donnelly et al. [125]	2024	The authors investigated the impact of limited resources and institutional distance on international market entry. Slack resources are not a one-size-fits-all solution to institutional distance, as their effectiveness is determined by both the type of institutional distance and the direction of entry.	Logistic regression model
Da Fonseca et al. [126]	2024	It examined the impact of foreign market entry strategies on future divestiture decisions. The study improves the theoretical knowledge of overseas divestitures as well as new internationalization decisions.	Cox's proportional hazard rate model
Jain et al. [127]	2024	The authors investigated theories that define the elements influencing family enterprises' entrance mode decisions, traits that explain family firms' entry mode selection, and methods utilized to grasp the underlying research field.	Literature review
Stoian [128]	2024	It focused on the knowledge configurations that help SMEs make initial decisions and later revisions when entering markets outside their home country. Initial foreign market entry mode decisions are based on prior experience. However, experiential knowledge has no effect on mode changes.	In-depth interviews
Lee and Lieberman [129]	2024	This study aimed to understand exploration and exploitation efforts to enter a new foreign market. It also examines acquisition and internal development as modes for balancing exploitation and exploration. There is no single right way to apply internal development versus acquisition in the pursuit of balance between exploitation and exploration.	Historical comparison
Xie and Yin [130]	2024	It focused on the effect of the business environment on firms' outward FDI and entry mode decisions from different perspectives, such as heterogeneous investment motivations, different life cycles, and the Belt and Road Initiative. Business environment is a crucial factor impacting the decision of FDI mode.	Regression analysis
Akunyumu et al. [131]	2024	This study aimed to determine market-level risk, country-level risk, and project-level risk in international construction joint ventures. The study provides information about the top ten critical risks in Ghana.	Mann-Whitney <i>U</i> test
Baum et al. [132]	2024	It investigated the relationship between home-peer performance and market entry intensity on SME export market exit. High levels of export intensity can increase the risk of exit from the targeted export market.	Cox's proportional hazard rate model
Liu et al. [133]	2024	The authors studied the effects of artificial intelligence technology on businesses' market entry strategies. AI technology can assist businesses analyze international markets and subsequently influence their entry mode decisions by developing market entry strategies based on technical innovation.	Logistic regression model
Islam and Beloucif [134]	2024	It provided a systematic literature review to offer key determinants of foreign direct investments.	Literature review
Bibi [135]	2024	The study focused on the sustainability of Kazakhstan's development strategy based on fossil fuels and external financial inflow reliance through the study of its international investment position statistics, its balance of payments, and the ownership of Kazakhstan's main resources.	Descriptive statistics
Jin and Wang [136]	2024	It looked into international joint ventures' innovation strategy based on an exploitation-exploration framework. Explorative innovation strategy creates a greater positive impact on international joint venture new product performance than exploitative innovation strategy.	Survey study
Srdelic and Davila-Fernandez [137]	2024	This study investigated the international trade dynamics of Croatia. The two most important explanatory factors are R&D investments and human capital accumulation.	Bayesian model averaging and weighted average LS
Haddad and Verriest [138]	2025	It underlined the impact of host-country institutions on subsidiary site decisions. Multinational firms are ready to trade weak institutional characteristics for stronger ones.	Regression analysis

Appendix-B. Preliminaries of Type-2 Neutrosophic Sets

F is a set of all triangular neutrosophic numbers, and Z is the discourse universe. Assuming that $U = \{z, T_U(z), I_U(z), F_U(z) | z \in Z\}$ represents the T2NN set U defined on Z , where $T_U(z)$ is the degree of truth membership, $F_U(z)$ is the degree of falsity membership, and $I_U(z)$ is the degree of indeterminacy membership, including $0 \leq T_U(z)^3 + I_U(z)^3 + F_U(z)^3 \leq 3$. Besides,

$U = \langle (T_{T_U}(z), T_{I_U}(z), T_{F_U}(z)), (I_{T_U}(z), I_{I_U}(z), I_{F_U}(z)), (F_{T_U}(z), F_{I_U}(z), F_{F_U}(z)) \rangle$ is T2NN [19].

Operations, score and acc. functions, and distances functions are given in Eqs. (A.1)-(A.6), where

U_1 and U_2 are two T2NNs and $\lambda > 0$ [19,22]:

$$U_1 \oplus U_2 = \left\langle \begin{aligned} &(T_{T_{U_1}}(z) + T_{T_{U_2}}(z) - T_{T_{U_1}}(z) \cdot T_{T_{U_2}}(z), T_{I_{U_1}}(z) + T_{I_{U_2}}(z) - T_{I_{U_1}}(z) \cdot T_{I_{U_2}}(z), T_{F_{U_1}}(z) + T_{F_{U_2}}(z) - T_{F_{U_1}}(z) \cdot T_{F_{U_2}}(z)), \\ &(I_{T_{U_1}}(z) \cdot I_{T_{U_2}}(z), I_{I_{U_1}}(z) \cdot I_{I_{U_2}}(z), I_{F_{U_1}}(z) \cdot I_{F_{U_2}}(z)), \\ &(F_{T_{U_1}}(z) \cdot F_{T_{U_2}}(z), F_{I_{U_1}}(z) \cdot F_{I_{U_2}}(z), F_{F_{U_1}}(z) \cdot F_{F_{U_2}}(z)) \end{aligned} \right\rangle, \quad (A.1)$$

$$U_1 \otimes U_2 = \left\langle \begin{pmatrix} T_{T_{U_1}}(z) \cdot T_{T_{U_2}}(z), T_{I_{U_1}}(z) \cdot T_{I_{U_2}}(z), T_{F_{U_1}}(z) \cdot T_{F_{U_2}}(z) \\ (I_{T_{U_1}}(z) + I_{T_{U_2}}(z) - I_{T_{U_1}}(z) \cdot I_{T_{U_2}}(z), I_{I_{U_1}}(z) + I_{I_{U_2}}(z) - I_{I_{U_1}}(z) \cdot I_{I_{U_2}}(z), I_{F_{U_1}}(z) + I_{F_{U_2}}(z) - I_{F_{U_1}}(z) \cdot I_{F_{U_2}}(z)) \\ (F_{T_{U_1}}(z) + F_{T_{U_2}}(z) - F_{T_{U_1}}(z) \cdot F_{T_{U_2}}(z), F_{I_{U_1}}(z) + F_{I_{U_2}}(z) - F_{I_{U_1}}(z) \cdot F_{I_{U_2}}(z), F_{F_{U_1}}(z) + F_{F_{U_2}}(z) - F_{F_{U_1}}(z) \cdot F_{F_{U_2}}(z)) \end{pmatrix} \right\rangle, \quad (A.2)$$

$$\lambda U_1 = \left\langle \begin{pmatrix} 1 - (1 - T_{T_{U_1}}(z))^\lambda, 1 - (1 - T_{I_{U_1}}(z))^\lambda, 1 - (1 - T_{F_{U_1}}(z))^\lambda \\ (I_{T_{U_1}}(z))^\lambda, (I_{I_{U_1}}(z))^\lambda, (I_{F_{U_1}}(z))^\lambda \\ (F_{T_{U_1}}(z))^\lambda, (F_{I_{U_1}}(z))^\lambda, (F_{F_{U_1}}(z))^\lambda \end{pmatrix} \right\rangle, \quad (A.3)$$

$$U_1^\lambda = \left\langle \begin{pmatrix} (T_{T_{U_1}}(z))^\lambda, (T_{I_{U_1}}(z))^\lambda, (T_{F_{U_1}}(z))^\lambda \\ 1 - (1 - I_{T_{U_1}}(z))^\lambda, 1 - (1 - I_{I_{U_1}}(z))^\lambda, 1 - (1 - I_{F_{U_1}}(z))^\lambda \\ 1 - (1 - F_{T_{U_1}}(z))^\lambda, 1 - (1 - F_{I_{U_1}}(z))^\lambda, 1 - (1 - F_{F_{U_1}}(z))^\lambda \end{pmatrix} \right\rangle, \quad (A.4)$$

$$S(U_1) = \frac{8 + (T_{T_{U_1}}(z) + 2(T_{I_{U_1}}(z)) + T_{F_{U_1}}(z)) - (I_{T_{U_1}}(z) + 2(I_{I_{U_1}}(z)) + I_{F_{U_1}}(z)) - (F_{T_{U_1}}(z) + 2(F_{I_{U_1}}(z)) + F_{F_{U_1}}(z))}{12}, \quad (A.5)$$

$$A(U_1) = \frac{T_{T_{U_1}}(z) + 2(T_{I_{U_1}}(z)) + T_{F_{U_1}}(z) - (F_{T_{U_1}}(z) + 2(F_{I_{U_1}}(z)) + F_{F_{U_1}}(z))}{4}, \quad (A.6)$$

$$d(U_1, U_2) = \frac{1}{9} \left(\begin{aligned} &|T_{T_{U_1}}(z) - T_{T_{U_2}}(z)| + |T_{I_{U_1}}(z) - T_{I_{U_2}}(z)| + |T_{F_{U_1}}(z) - T_{F_{U_2}}(z)| \\ &+ |I_{T_{U_1}}(z) - I_{T_{U_2}}(z)| + |I_{I_{U_1}}(z) - I_{I_{U_2}}(z)| + |I_{F_{U_1}}(z) - I_{F_{U_2}}(z)| \\ &+ |F_{T_{U_1}}(z) - F_{T_{U_2}}(z)| + |F_{I_{U_1}}(z) - F_{I_{U_2}}(z)| + |F_{F_{U_1}}(z) - F_{F_{U_2}}(z)| \end{aligned} \right). \quad (A.7)$$

Eq. (A.8) represents the T2NN weighted aggregation operator (T2NNAO) under T2NNs $U_1, U_2, \dots, U_n$ with $0 \leq w_j \leq 1$ and $\sum_{j=1}^n w_j = 1$ [19] where:

$$\begin{aligned} \text{T2NNAO}_w(U_1, U_2, \dots, U_n) &= w_1 U_1 \oplus w_2 U_2 \oplus \dots \oplus w_n U_n \\ &= \left\langle \begin{pmatrix} 1 - \prod_{j=1}^n (1 - T_j(z))^{w_j}, 1 - \prod_{j=1}^n (1 - I_j(z))^{w_j}, 1 - \prod_{j=1}^n (1 - F_j(z))^{w_j} \\ \left(\prod_{j=1}^n (I_j(z))^{w_j}, \prod_{j=1}^n (I_j(z))^{w_j}, \prod_{j=1}^n (I_j(z))^{w_j} \right) \\ \left(\prod_{j=1}^n (F_j(z))^{w_j}, \prod_{j=1}^n (F_j(z))^{w_j}, \prod_{j=1}^n (F_j(z))^{w_j} \right) \end{pmatrix} \right\rangle. \end{aligned} \quad (A.8)$$

Appendix C. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.asoc.2025.112976](https://doi.org/10.1016/j.asoc.2025.112976).

Data availability

Data will be made available on request.

References

- [1] M.R. Czinkota, I.A. Ronkainen, P. Cui, *International marketing*, Thomson/South-Western, 2007.
- [2] B. Francioni, O.M. Martín, International market, network, and opportunity selection: a systematic review of empirical research, integrative framework, and comprehensive research agenda, *J. Int. Manag.* (2024) 101174, <https://doi.org/10.1016/j.intman.2024.101174>.
- [3] J. Shi, Adaptive change: emerging economy enterprises respond to the international business environment challenge, *Technovation* 133 (2024) 102998, <https://doi.org/10.1016/j.technovation.2024.102998>.
- [4] G. Albaum, R.A. Peterson, Empirical research in international marketing: 1976–1982, *J. Int. Bus. Stud.* 15 (1984) 161–173, <https://doi.org/10.1057/palgrave.jibs.8490479>.
- [5] D. Klimkeit, P. Wang, H. Zhang, The Entry into Foreign Service Markets. *International Management in Service Firms: Environments, Strategies and Operations*, Springer International Publishing, Cham, 2024, pp. 199–255, https://doi.org/10.1007/978-3-031-50345-0_7.
- [6] S. Agarwal, S.N. Ramaswami, Choice of foreign market entry mode: impact of ownership, location and internalization factors, *J. Int. Bus. Stud.* 23 (1992) 1–27, <https://doi.org/10.1057/palgrave.jibs.8490257>.
- [7] E. Anderson, H. Gatignon, Modes of foreign entry: a transaction cost analysis and propositions, *J. Int. Bus. Stud.* 17 (1986) 1–26, <https://doi.org/10.1057/palgrave.jibs.8490432>.
- [8] V. Baena, Insights on international franchising: entry mode decision, *Lat. Am. Bus. Rev.* 14 (1) (2013) 1–27, <https://doi.org/10.1080/10978526.2013.780453>.
- [9] J.H. Dunning, Toward an eclectic theory of international production: Some empirical tests. The Eclectic Paradigm: A Framework for Synthesizing and Comparing Theories of International Business from Different Disciplines or Perspectives, Springer, 1980, pp. 23–49, https://doi.org/10.1007/978-1-137-54471-1_2.
- [10] J.H. Dunning, The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions, in: J. Cantwell (Ed.), *The Eclectic Paradigm*, Palgrave Macmillan, London, 2015, https://doi.org/10.1007/978-1-137-54471-1_3.
- [11] S. Werner, Recent developments in international management research: a review of 20 top management journals, *J. Manag.* 28 (3) (2002) 277–305, [https://doi.org/10.1016/S0149-2063\(02\)00129-0](https://doi.org/10.1016/S0149-2063(02)00129-0).

- [12] I. Ekeledo, K. Sivakumar, International market entry mode strategies of manufacturing firms and service firms: a resource-based perspective, *Int. Mark. Rev.* 21 (1) (2004) 68–101, <https://doi.org/10.1108/02651330410522943>.
- [13] H. Chen, M.Y. Hu, An analysis of determinants of entry mode and its impact on performance, *Int. Bus. Rev.* 11 (2) (2002) 193–210, [https://doi.org/10.1016/S0969-5931\(01\)00055-5](https://doi.org/10.1016/S0969-5931(01)00055-5).
- [14] S. Chetty, O.M. Martín, W. Bai, Causal foreign market selection and effectual entry decision-making: The mediating role of collaboration to enhance international performance, *J. Bus. Res.* 172 (2024) 114385, <https://doi.org/10.1016/j.jbusres.2023.114385>.
- [15] A. Jain, S. Thukral, J. Paul, Foreign market entry modes of family firms: A review and research agenda, *J. Bus. Res.* 172 (2024) 114407, <https://doi.org/10.1016/j.jbusres.2023.114407>.
- [16] F. Smarandache, Neutrosophic set is a generalization of intuitionistic fuzzy set, inconsistent intuitionistic fuzzy set (picture fuzzy set, ternary fuzzy set), pythagorean fuzzy set, spherical fuzzy set, and q-rung orthopair fuzzy set, while neutrosophication is a generalization of regret theory, grey system theory, and three-ways decision (revisited), *J. New Theory* 29 (2019) 1–31.
- [17] F. Smarandache, Neutrosophy: neutrosophic probability, set, and logic: analytic synthesis & synthetic analysis (1998).
- [18] F. Smarandache, A unifying field in Logics: Neutrosophic Logic. Philosophy, American Research Press, 1999, pp. 1–141.
- [19] M. Abdel-Basset, M. Saleh, A. Gamal, F. Smarandache, An approach of TOPSIS technique for developing supplier selection with group decision making under type-2 neutrosophic number, *Appl. Soft Comput.* 77 (2019) 438–452, <https://doi.org/10.1016/j.asoc.2019.01.035>.
- [20] V. Simic, S. Dabić-Miletić, E.B. Tirkolae, Ž. Stević, M. Deveci, T. Senapati, Neutrosophic CEBOM-MACONT model for sustainable management of end-of-life tires, *Appl. Soft Comput.* 143 (2023) 110399, <https://doi.org/10.1016/j.asoc.2023.110399>.
- [21] V. Simic, S. Dabić-Miletić, E.B. Tirkolae, Ž. Stević, A. Ala, A. Amirteimoori, Neutrosophic LOPCOW-ARAS model for prioritizing industry 4.0-based material handling technologies in smart and sustainable warehouse management systems, *Appl. Soft Comput.* 143 (2023) 110400, <https://doi.org/10.1016/j.asoc.2023.110400>.
- [22] F. Karaaslan, F. Hunu, Type-2 single-valued neutrosophic sets and their applications in multi-criteria group decision making based on TOPSIS method, *J. Ambient Intell. Humaniz. Comput.* 11 (2020) 4113–4132.
- [23] V. Keršulienė, E.K. Zavadskas, Z. Turskis, Selection of rational dispute resolution method by using new step-wise weight assessment ratio analysis (SWARA), *J. Bus. Econ. Manag.* 11 (2) (2010) 243–258, <https://doi.org/10.3846/jbem.2010.12>.
- [24] S.K. Sahoo, S.S. Goswami, A comprehensive review of multiple criteria decision-making (MCDM) Methods: advancements, applications, and future directions, *Decis. Mak. Adv.* 1 (1) (2023) 25–48.
- [25] S.K. Sahoo, S.S. Goswami, Green supplier selection using MCDM: a comprehensive review of recent studies, *Spectr. Eng. Manag. Sci.* 2 (1) (2024) 1–16, <https://doi.org/10.31181/dma1120237>.
- [26] A. Puška, M. Nedeljković, Ž. Sarkoćević, Z. Golubović, V. Ristić, I. Stojanović, Evaluation of agricultural machinery using multi-criteria analysis methods, *Sustainability* 14 (14) (2022) 8675.
- [27] R. Krishankumar, F. Ecer, Selection of IoT service provider for sustainable transport using q-rung orthopair fuzzy CRADIS and unknown weights, *Appl. Soft Comput.* 132 (2023) 109870.
- [28] B.C. Chew, X.B. Shen, J. Ansell, Alipay entered Malaysia: a closer look at the new market entry strategy driven by Chinese tourists, *Qual. Res. Financ. Mark.* 12 (4) (2020) 561–577, <https://doi.org/10.1108/qrfm-06-2019-0069>.
- [29] F.R. Root, *Entry strategies for international markets*, John Wiley & Sons, 1998.
- [30] V.M. Sharma, M.K. Erramilli, Resource-based explanation of entry mode choice, *J. Mark. Theory Pract.* 12 (1) (2004) 1–18, <https://doi.org/10.1080/10696679.2004.11658509>.
- [31] P. Gammeltoft, J.P. Pradhan, A. Goldstein, Emerging multinationals: home and host country determinants and outcomes, *Int. J. Emerg. Mark.* 5 (3/4) (2010) 254–265, <https://doi.org/10.1108/17468801011058370>.
- [32] C.W. Hill, P. Hwang, W.C. Kim, An eclectic theory of the choice of international entry mode, *Strateg. Manag. J.* 11 (2) (1990) 117–128, <https://doi.org/10.1002/smj.4250110204>.
- [33] J. Johnson, G.J. Tellis, Drivers of success for market entry into China and India, *J. Mark. Theory* 72 (3) (2008) 1–13, <https://doi.org/10.1509/JMKG.72.3.001>.
- [34] J.G. Vanegas-López, J.J. Baena-Rojas, D.A. López-Cadavid, M. Mathew, International market selection: an application of hybrid multi-criteria decision-making technique in the textile sector, *Rev. Int. Bus. Strategy* 31 (1) (2021) 127–150, <https://doi.org/10.1108/ribs-07-2020-0088>.
- [35] E. Oey, J. Noviyanti, L. Sanny, Evaluating international market selection with multi-criteria decision making tools—a case study of a metal company in Indonesia, *Int. J. Bus. Excell.* 16 (3) (2018) 343–361, <https://doi.org/10.1504/IJBEX.2018.095645>.
- [36] M. Aytekin, Küresel Pazarda Yeni Arayışlar ve İş Yapma Kolaylığı Bağlamında Gelişmekte Olan Pazarların Sınıflandırılması, *İğdır Üniversitesi Sosyal Bilimler Dergisi* (34) (2023) 1–23.
- [37] J.J. Baena-Rojas, T.M. Mackenzie-Torres, G. Cuesta-Giraldo, A. Tabares, A hybrid multi-criteria decision-making technique for international market selection in SMEs, *Pol. J. Manag. Stud.* 27 (2023) 26–45, <https://doi.org/10.17512/pjms.2023.27.1.02>.
- [38] V. Arghashi, A. Okumus, Country-of-origin image; SMEs and emerging economies - evidence from a case study of manufacturing SMEs from Turkey, *J. Islam. Mark.* 13 (4) (2022) 956–974, <https://doi.org/10.1108/jima-04-2020-0106>.
- [39] A.E. Torkayesh, M. Deveci, S.E. Torkayesh, E.B. Tirkolae, Analyzing failures in adoption of smart technologies for medical waste management systems: a type-2 neutrosophic-based approach, *Environ. Sci. Pollut. Res.* 29 (2022) 79688–79701, <https://doi.org/10.1007/s11356-021-16228-9>.
- [40] V. Simić, B. Milovanović, S. Pantelić, D. Pamučar, E.B. Tirkolae, Sustainable route selection of petroleum transportation using a type-2 neutrosophic number based ITARA-EDAS model, *Inf. Sci.* 622 (2023) 732–754, <https://doi.org/10.1016/j.ins.2022.11.105>.
- [41] A.J. Koch, Factors influencing market and entry mode selection: developing the MEMS model, *Mark. Intell. Plan.* 19 (5) (2001) 351–361, <https://doi.org/10.1108/EUM0000000005652>.
- [42] L. Cui, F. Jiang, FDI entry mode choice of Chinese firms: a strategic behavior perspective, *J. World Bus.* 44 (4) (2009) 434–444, <https://doi.org/10.1016/j.jwb.2008.11.004>.
- [43] W.C. Kim, P. Hwang, Global strategy and multinationals' entry mode choice, *J. Int. Bus. Stud.* 23 (1992) 29–53, <https://doi.org/10.1057/palgrave.jibs.8490258>.
- [44] L. Cui, F. Jiang, B. Stening, The entry-mode decision of Chinese outward FDI: firm resources, industry conditions, and institutional forces, *Thunderbird Int. Bus. Rev.* 53 (4) (2011) 483–499, <https://doi.org/10.1002/tie.20425>.
- [45] K.D. Brouthers, L.E. Brouthers, Explaining the national cultural distance paradox, *J. Int. Bus. Stud.* 32 (2001) 177–189, <https://doi.org/10.1057/palgrave.jibs.8490944>.
- [46] S. Malhotra, K. Sivakumar, P. Zhu, Distance factors and target market selection: the moderating effect of market potential, *Int. Mark. Rev.* 26 (6) (2009) 651–673, <https://doi.org/10.1108/02651330911001332>.
- [47] A. Bevan, S. Estrin, K. Meyer, Foreign investment location and institutional development in transition economies, *Int. Bus. Rev.* 13 (1) (2004) 43–64, <https://doi.org/10.1016/j.ibusrev.2003.05.005>.
- [48] K.E. Meyer, Institutions, transaction costs, and entry mode choice in Eastern Europe, *J. Int. Bus. Stud.* 32 (2001) 357–367, <https://doi.org/10.1057/palgrave.jibs.8490957>.
- [49] Y.H. Xie, H.J. Zhao, Q.J. Xie, M. Arnold, On the determinants of post-entry strategic positioning of foreign firms in a host market: a “strategy tripod” perspective, *Int. Bus. Rev.* 20 (4) (2011) 477–490, <https://doi.org/10.1016/j.ibusrev.2010.09.005>.
- [50] E.W. Cundiff, M.T.J. Hilger, *Marketing in the international environment* (1988).
- [51] D. Morschett, H. Schramm-Klein, B. Swoboda, Decades of research on market entry modes: what do we really know about external antecedents of entry mode choice? *J. Int. Manag.* 16 (1) (2010) 60–77, <https://doi.org/10.1016/j.intman.2009.09.002>.
- [52] K.D. Brouthers, The influence of international risk on entry mode strategy in the computer software industry, *MIR: Manag. Int. Rev.* 35 (1) (1995) 7–28.
- [53] Z.U. Ahmed, O. Mohamad, B. Tan, J.P. Johnson, International risk perceptions and mode of entry: a case study of Malaysian multinational firms, *J. Bus. Res.* 55 (10) (2002) 805–813, [https://doi.org/10.1016/S0148-2963\(00\)00220-4](https://doi.org/10.1016/S0148-2963(00)00220-4).
- [54] S. Yiğit, A. Yiğit, Stratejik Yönetimde Dış Çevre Analizi: Kobi'ler ve Büyük İşletmeler Arasında Bir Karşılaştırma, *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* 38 (2011) 119–136.
- [55] P.N. Ghauri, P.J. Buckley, International mergers and acquisitions: Past, present and future. *Advances in mergers and acquisitions*, Emerald Group Publishing Limited, 2003, pp. 207–229.
- [56] Abilkhanov, A. (2003). *Uluslararası pazarlara giriş stratejileri ve bir uygulama* Marmara Üniversitesi (Turkey).
- [57] F.R. Gutiérrez, K.L. Jáuregui Machuca, International markets entry strategy determinants: an exploratory study in Peru, *Cuad. De. Adm. oN.* 33 (59) (2017) 2–19, <https://doi.org/10.25100/cdea.v33i59.4485>.
- [58] S. Min, N. Kim, G. Zhan, The impact of market size on new market entry: a contingency approach, *Eur. J. Mark.* 51 (1) (2017) 2–22, <https://doi.org/10.1108/EJM-12-2013-0696>.
- [59] T. Eicher, J.W. Kang, Trade, foreign direct investment or acquisition: optimal entry modes for multinationals, *J. Dev. Econ.* 77 (1) (2005) 207–228, <https://doi.org/10.1016/j.jdevco.2004.03.007>.
- [60] J. Wu, X. Chen, Home country institutional environments and foreign expansion of emerging market firms, *Int. Bus. Rev.* 23 (5) (2014) 862–872, <https://doi.org/10.1016/j.ibusrev.2014.01.004>.
- [61] G.E. Osland, C.R. Taylor, S. Zou, Selecting international modes of entry and expansion, *Mark. Intell. Plan.* 19 (3) (2001) 153–161, <https://doi.org/10.1108/02634500110391690>.
- [62] D. Holtbrügge, S.C. Berning, Market entry strategies and performance of Chinese firms in Germany: the moderating effect of home government support, *Manag. Int. Rev.* 58 (2018) 147–170, <https://doi.org/10.1007/s11575-017-0334-y>.
- [63] B. Kogut, H. Singh, The effect of national culture on the choice of entry mode, *J. Int. Bus. Stud.* 19 (1988) 411–432, <https://doi.org/10.1057/palgrave.jibs.8490394>.
- [64] H.F. Chung, P. Enderwick, An investigation of market entry strategy selection: exporting vs foreign direct investment modes—a home-host country scenario, *Asia Pac. J. Manag.* 18 (2001) 443–460, <https://doi.org/10.1023/A:1012871225166>.
- [65] J. Couturier, D. Sola, International market entry decisions: the role of local market factors, *J. Gen. Manag.* 35 (4) (2010) 45–64, <https://doi.org/10.1177/030630701003500403>.

- [66] Y.M. Cheng, Determinants of FDI mode choice: acquisition, brownfield, and greenfield entry in foreign markets, *Can. J. Adm. Sci. /Rev. Can. Des. Sci. De. l'Adm.* 23 (3) (2006) 202–220, <https://doi.org/10.1111/j.1936-4490.2006.tb00627.x>.
- [67] B. Elango, N. Pangarkar, Home country institutional impact on the choice of direct vs indirect exports: an emerging markets perspective, *Int. Mark. Rev.* 38 (2) (2020) 387–411, <https://doi.org/10.1108/IMR-09-2019-0231>.
- [68] V. Terpstra, J. Foley, R. Sarathy, *International marketing*, Naper Press, 2012.
- [69] P.S. Aulakh, S.T. Cavusgil, M. Sarkar, Compensation in international licensing agreements, *J. Int. Bus. Stud.* 29 (1998) 409–419, <https://doi.org/10.1057/palgrave.jibs.8490043>.
- [70] P. Kotler, G. Armstrong, *Principles of marketing*, Pearson education, 2010.
- [71] C. Han, T. Porterfield, X. Li, Impact of industry competition on contract manufacturing: an empirical study of US manufacturers, *Int. J. Prod. Econ.* 138 (1) (2012) 159–169, <https://doi.org/10.1016/j.ijpe.2012.03.015>.
- [72] C. Chen, Entry mode selection for international construction markets: the influence of host country related factors, *Constr. Manag. Econ.* 26 (3) (2008) 303–314, <https://doi.org/10.1080/01446190701882382>.
- [73] N. Bayraktar, Foreign direct investment and investment climate, *Procedia Econ. Financ.* 5 (2013) 83–92, [https://doi.org/10.1016/S2212-5671\(13\)00013-0](https://doi.org/10.1016/S2212-5671(13)00013-0).
- [74] V. Simic, I. Gokasar, M. Deveci, A. Karakurt, An integrated CRITIC and MABAC based type-2 neutrosophic model for public transportation pricing system selection, *Socio-Econ. Plan. Sci.* 80 (2022) 101157.
- [75] A. Aytekin, Energy, environment, and sustainability: a multi-criteria evaluation of countries, *Strateg. Plan. Energy Environ.* (2022) 281–316, <https://doi.org/10.13052/speel048-5236.4133>.
- [76] Ö.F. Görçün, A novel integrated MCDM framework based on Type-2 neutrosophic fuzzy sets (T2NN) for the selection of proper Second-Hand chemical tankers, *Transp. Res. Part E: Logist. Transp. Rev.* 163 (2022) 102765, <https://doi.org/10.1016/j.tre.2022.102765>.
- [77] P.J. Buckley, M.C. Casson, Analyzing foreign market entry strategies: extending the internalization approach, *J. Int. Bus. Stud.* 29 (1998) 539–561, <https://doi.org/10.1057/palgrave.jibs.8490006>.
- [78] W. Altzinger, Austria's foreign direct investment in Central and Eastern Europe: "supply based" or "market driven"? (1998).
- [79] İ. Anıl, I. Armutlulu, C. Canel, R. Porterfield, The determinants of Turkish outward foreign direct investment, *Mod. Econ.* 2 (05) (2011) 717–728, <https://doi.org/10.4236/me.2011.25080>.
- [80] M. Demirbag, M. McGuinness, H. Altay, Perceptions of institutional environment and entry mode: FDI from an emerging country, *Manag. Int. Rev.* 50 (2010) 207–240, <https://doi.org/10.1007/s11575-010-0028-1>.
- [81] V. Benacek, M. Gronicki, D. Holland, M. Sass, The determinants and impact of foreign direct investment in Central and Eastern Europe: a comparison of survey and econometric evidence, *Transnatl. Corp.* 9 (3) (2000) 163–212.
- [82] T. Müller, Analyzing modes of foreign entry: Greenfield investment versus acquisition, *Rev. Int. Econ.* 15 (1) (2007) 93–111, <https://doi.org/10.1111/j.1467-9396.2006.00634.x>.
- [83] S.K. Bhaumik, S. Gelb, Determinants of entry mode choice of MNCs in emerging markets: evidence from South Africa and Egypt, *Emerg. Mark. Financ. Trade* 41 (2) (2005) 5–24, <https://doi.org/10.1080/1540496X.2005.11052603>.
- [84] Y. Luo, Determinants of entry in an emerging economy: a multilevel approach, *J. Manag. Stud.* 38 (3) (2001) 443–472, <https://doi.org/10.1111/1467-6486.00244>.
- [85] R. Fernandes, B. Gouveia, C. Pinho, Exploring modes of entry into international markets: direct investment or contractual relations, *J. Bus. Econ. Manag.* 15 (1) (2014) 56–73, <https://doi.org/10.3846/16111699.2013.809786>.
- [86] T. Hutzschenreuter, I. Kleindienst, F. Groene, A. Verbeke, Corporate strategic responses to foreign entry: insights from prospect theory, *Multinat. Bus. Rev.* 22 (3) (2014) 294–323, <https://doi.org/10.1108/mbr-06-2014-0026>.
- [87] J. Pla-Barber, C. Villar, F. León-Darder, Augmenting versus exploiting entry modes in soft services: Reconsidering the role of experiential knowledge, *Int. Mark. Rev.* 31 (6) (2014) 621–636, <https://doi.org/10.1108/imr-09-2013-0209>.
- [88] D. Tanganelli, J.L. Schaan, Japanese subsidiaries in the European Union: Entry modes and performance, *Cogent Econ. Financ.* 2 (1) (2014) 920270, <https://doi.org/10.1080/10.1080/23322039.2014.920270>.
- [89] E. Yalcin, D. Sala, Uncertain productivity growth and the choice between FDI and export, *Rev. Int. Econ.* 22 (1) (2014) 189–208, <https://doi.org/10.1111/roie.12105>.
- [90] B. Swoboda, S. Elsner, E. Olejnik, How do past mode choices influence subsequent entry? A study on the boundary conditions of preferred entry modes of retail firms, *Int. Bus. Rev.* 24 (3) (2015) 506–517, <https://doi.org/10.1016/j.ibusrev.2014.10.008>.
- [91] C.M.P. Sousa, Q. Tan, Exit from a foreign market: do poor performance, strategic fit, cultural distance, and international experience matter? *J. Int. Mark.* 23 (4) (2015) 84–104, <https://doi.org/10.1509/jim.15.0003>.
- [92] A.V. Gevorkyan, The legends of the Caucasus: economic transformation of Armenia and Georgia, *Int. Bus. Rev.* 24 (6) (2015) 1009–1024, <https://doi.org/10.1016/j.ibusrev.2014.12.002>.
- [93] S.F. Zhang, W. Wang, L. Wang, X.L. Zhao, Review of China's wind power firms internationalization: status quo, determinants, prospects and policy implications, *Renew. Sustain. Energy Rev.* 43 (2015) 1333–1342, <https://doi.org/10.1016/j.rser.2014.11.100>.
- [94] G. Satta, L. Persico, Entry mode choices of rapidly internationalizing terminal operators: the determinants of the degree of control on foreign ventures, *Marit. Econ. Logist.* 17 (1) (2015) 97–126, <https://doi.org/10.1057/mel.2014.32>.
- [95] J.F. Gollnhofer, E. Turkina, Cultural distance and entry modes: implications for global expansion strategy, *Cross Cult. Manag. - Int. J.* 22 (1) (2015) 21–41, <https://doi.org/10.1108/ccm-07-2013-0114>.
- [96] C. Cozza, R. Rabellotti, M. Sanfilippo, The impact of outward FDI on the performance of Chinese firms, *China Econ. Rev.* 36 (2015) 42–57, <https://doi.org/10.1016/j.chieco.2015.08.008>.
- [97] J. Lee, Y.J. Jang, The effect of comparative advantage of host country's industry on multinationals' M&A vs greenfield FDI decisions, *J. Korea Trade* 20 (3) (2016) 30, <https://doi.org/10.1108/jkt-09-2016-013>.
- [98] A. Boateng, M. Du, Y. Wang, C.Q. Wang, M.F. Ahammad, Explaining the surge in M&A as an entry mode: home country and cultural influences, *Int. Mark. Rev.* 34 (1) (2017) 87–108, <https://doi.org/10.1108/imr-10-2014-0330>.
- [99] G. Masiero, M.H. Ogasavara, M.L. Risso, Going global in groups: a relevant market entry strategy? *Rev. Int. Bus. Strategy* 27 (1) (2017) 93–111, <https://doi.org/10.1108/ribs-11-2016-0067>.
- [100] N. Oguji, R.A. Owusu, Acquisitions entry strategies in Africa: the role of institutions, target specific experience, and host-country capabilities-the case acquisitions of finnish multinationals in Africa, *Thunderbird Int. Bus. Rev.* 59 (2) (2017) 209–225, <https://doi.org/10.1002/tie.21822>.
- [101] R. Chinchwadkar, R. Seth, The choice of exit: influence of private equity investors and buyout entry, *J. Emerg. Mark. Financ.* 17 (2018) S1–S26, <https://doi.org/10.1177/0972652717751534>.
- [102] P.N. Puthusserry, Z. Khan, P. Rodgers, International new ventures market expansion through collaborative entry modes: a study of the experience of Indian and British ICT firms, *Int. Mark. Rev.* 35 (6) (2018) 890–913, <https://doi.org/10.1108/imr-01-2017-0001>.
- [103] G.F. Watson, S. Weaven, H. Perkins, D. Sardana, R.W. Palmatier, International market entry strategies: relational, digital, and hybrid approaches, *J. Int. Mark.* 26 (1) (2018) 30–60, <https://doi.org/10.1509/jim.17.0034>.
- [104] R.C. de Mello, A. da Rocha, J.F. da Silva, The long-term trajectory of international new ventures: a longitudinal study of software developers, *J. Int. Entrep.* 17 (2) (2019) 144–171, <https://doi.org/10.1007/s10843-018-0236-5>.
- [105] X.G. Qi, J.H. Chan, J.Y. Hu, Y.F. Li, Motivations for selecting cross-border e-commerce as a foreign market entry mode, *Ind. Mark. Manag.* 89 (2020) 50–60, <https://doi.org/10.1016/j.indmarman.2020.01.009>.
- [106] D. Dow, D. Baack, R. Parente, The role of psychic distance in entry mode decisions: magnifying the threat of opportunism or increasing the need for local knowledge? *Glob. Strategy J.* 10 (2) (2020) 309–334, <https://doi.org/10.1002/gsj.1309>.
- [107] H.P. Du, L. Mitkova, N. Wang, The paths of internationalization of chinese innovative firms, *Sustainability* 12 (6) (2020) 2575, <https://doi.org/10.3390/su12062575>.
- [108] S.M. Hanell, E.R. Nordman, D. Tolstoy, N. Ozbek, "It's a new game out there": e-commerce in internationalising retail SMEs, *Int. Mark. Rev.* 37 (3) (2020) 515–531, <https://doi.org/10.1108/imr-03-2018-0107>.
- [109] G.F. Jiang, G.L.F. Holburn, P.W. Beamish, Repeat market entries in the internationalization process: the impact of investment motives and corporate capabilities, *Glob. Strategy J.* 10 (2) (2020) 335–360, <https://doi.org/10.1002/gsj.1206>.
- [110] J. Paul, Marketing in emerging markets: a review, theoretical synthesis and extension, *Int. J. Emerg. Mark.* 15 (3) (2020) 446–468, <https://doi.org/10.1108/ijoem-04-2017-0130>.
- [111] R.W. Tang, P.J. Buckley, Host country risk and foreign ownership strategy: Meta-analysis and theory on the moderating role of home country institutions, *Int. Bus. Rev.* 29 (4) (2020) 15, <https://doi.org/10.1016/j.ibusrev.2020.101666>.
- [112] I. Alon, I.D. Apriliyanti, M.C.H. Parodi, A systematic review of international franchising, *Multinat. Bus. Rev.* 29 (1) (2021) 43–69, <https://doi.org/10.1108/mbr-01-2020-0019>.
- [113] D. Escandón-Barbosa, A.E. Ochoa, Success factors in the internalisation of export companies in Colombia, *Ekon. Reg. - Econ. Reg.* 17 (2) (2021) 570–581, <https://doi.org/10.17059/ekon.reg.2021-2-15>.
- [114] H. Baier-Fuentes, M. Guerrero, J.E. Amorós, Does triple helix collaboration matter for the early internationalisation of technology-based firms in emerging Economies? *Technol. Forecast. Soc. Change* 163 (2021) 12, <https://doi.org/10.1016/j.techfore.2020.120439>.
- [115] M. Alayo, T. Iturralde, A. Maseda, G. Aparicio, Mapping family firm internationalization research: bibliometric and literature review, *Rev. Manag. Sci.* 15 (6) (2021) 1517–1560, <https://doi.org/10.1007/s11846-020-00404-1>.
- [116] K.D. Brouthers, L. Chen, S.L. Li, N. Shaheer, Charting new courses to enter foreign markets: conceptualization, theoretical framework, and research directions on non-traditional entry modes, *J. Int. Bus. Stud.* 53 (9) (2022) 2088–2115, <https://doi.org/10.1057/s41267-022-00521-x>.
- [117] W.H. Chiu, Y.S. Shih, L.S. Chu, S.L. Chen, Merger and acquisitions integration, implementation as innovative approach toward sustainable competitive advantage: a case analysis from Chinese sports brands, *Front. Psychol.* 13 (11) (2022) 869836, <https://doi.org/10.3389/fpsyg.2022.869836>.
- [118] F. Hänle, S. Weil, B. Cambré, Chinese SMEs in Germany: an exploratory study on OFDI motives and the role of China's institutional environment, *Multinat. Bus. Rev.* 30 (1) (2022) 103–126, <https://doi.org/10.1108/mbr-09-2020-0190>.
- [119] A. Agnihotri, S. Bhattacharya, N. Yannopoulou, A. Thrassou, Foreign market entry modes for servitization under diverse macroenvironmental conditions: taxonomy and propositions, *Int. Mark. Rev.* 40 (4) (2023) 561–584, <https://doi.org/10.1108/imr-09-2021-0287>.
- [120] B.M. Bulah, M. Tziva, C. Bidmon, M.P. Hekkert, Incumbent entry modes and entry timing in sustainable niches: the plant-based protein transition in the United

- States, Netherlands, and United Kingdom, *Environ. Innov. Soc. Transit.* 48 (22) (2023) 100735, <https://doi.org/10.1016/j.eist.2023.100735>.
- [121] J. Zhang, W. Zhang, A. Schwab, Interorganizational triads for foreign-market entry: partnerships among Western, bridge-economy, and local VCs in mainland China, *J. Bus. Ventur.* 39 (1) (2024) 106363, <https://doi.org/10.1016/j.jbusvent.2023.106363>.
- [122] S. Elbanna, L. Hsieh, J. Child, R. Narooz, S. Marinova, P. Puthusserry, et al., Foreign market involvement, entry-mode learning potential and SME internationalization outcomes, *Manag. Decis.* 62 (1) (2024) 301–325, <https://doi.org/10.1108/md-01-2023-0045>.
- [123] V.P. Bretas, J.R. Galetti, I. Alon, T.V. Rocha, Do stakeholders matter in entry mode decisions? An investigation of international franchise governance mode choice, *J. Bus. Res.* 178 (2024), <https://doi.org/10.1016/j.jbusres.2024.114673>.
- [124] S. Chetty, O.M. Martín, W. Bai, Causal foreign market selection and effectual entry decision-making: the mediating role of collaboration to enhance international performance, *J. Bus. Res.* (2024) 172, <https://doi.org/10.1016/j.jbusres.2023.11438>.
- [125] R. Donnelly, S. Purkayastha, T.S. Manolova, L.F. Edelman, Institutional distance, slack resources, and foreign market entry, *J. Int. Bus. Stud.* 55 (2) (2024) 194–211, <https://doi.org/10.1057/s41267-023-00647-6>.
- [126] L.N.M. Da Fonseca, A. da Rocha, J.B. Ferreira, Multilatinas' foreign divestment and host country institutional uncertainty: is there a best entry strategy? *Eur. Bus. Rev.* 36 (1) (2024) 71–88, <https://doi.org/10.1108/EBR-05-2023-0150>.
- [127] A. Jain, S. Thukral, J. Paul, Foreign market entry modes of family firms: a review and research agenda, *J. Bus. Res.* 172 (2024), <https://doi.org/10.1016/j.jbusres.2023.114407>.
- [128] M.C. Stoian, A knowledge-based perspective on SME foreign market entry mode choices and changes, *Int. J. Entrep. Behav. Res.* 30 (10) (2024) 2488–2508, <https://doi.org/10.1108/IJEBR-06-2023-0641>.
- [129] G.K. Lee, M.B. Lieberman, Exploration, exploitation, and mode of market entry: acquisition versus internal development by Amazon and Alphabet, *Ind. Corp. Change* 33 (1) (2024) 253–267, <https://doi.org/10.1093/icc/dtad015>.
- [130] Q. Xie, H. Yin, Business environment and the choice of entry mode of OFDI: evidence from China, *J. Asian Econ.* 92 (2024), <https://doi.org/10.1016/j.asieco.2024.101717>.
- [131] S. Akunyumu, F. Fugar, E. Adinyira, Evaluation of risks affecting international construction joint venture (ICJV) projects in Ghana, *J. Eng. Des. Technol.* 22 (6) (2024) 1797–1824, <https://doi.org/10.1108/JEDT-06-2022-0299>.
- [132] M. Baum, S. Sui, S. Malhotra, Tempted to fail? The interplay of peer performance and SME export market entry intensity on their export market exit, *J. Small Bus. Entrep.* (2024) 1–24, <https://doi.org/10.1080/08276331.2024.2397746>.
- [133] W. Liu, M. Cao, J. Zheng, J.Z. Zhang, Independence or interdependence: the role of artificial intelligence in corporate entry mode for overseas energy investments, *J. Innov. Knowl.* 9 (3) (2024), <https://doi.org/10.1016/j.jik.2024.100518>.
- [134] M.S. Islam, A. Beloucif, Determinants of foreign direct investment: a systematic review of the empirical studies, *Foreign Trade Rev.* 59 (2) (2024) 309–337, <https://doi.org/10.1177/00157325231158846>.
- [135] S. Bibi, Oil revenues, FDI and balance of payment dynamics: the case of Kazakhstan between the supercycle commodity boom and financial subordination, *Resour. Policy* 90 (2024), <https://doi.org/10.1016/j.resourpol.2024.104789>.
- [136] J.L. Jin, L. Wang, Design and governance of international joint venture innovation strategy: evidence from China, *Int. Bus. Rev.* 33 (3) (2024), <https://doi.org/10.1016/j.ibusrev.2024.102277>.
- [137] L. Srdelić, M.J. Dávila-Fernández, International trade and economic growth in Croatia, *Struct. Change Econ. Dyn.* 68 (2024) 240–258, <https://doi.org/10.1016/j.strueco.2023.10.018>.
- [138] C. Haddad, A. Verriest, How do country institutions affect foreign investment? Evidence from European multinational companies, *Int. Bus. Rev.* 34 (1) (2025), <https://doi.org/10.1016/j.ibusrev.2024.102344>.
- [139] M.F. Boersma, P.J. Buckley, P.N. Ghauri, Trust in international joint venture relationships, *J. Bus. Res.* 56 (12) (2003) 1031–1042, [https://doi.org/10.1016/S0148-2963\(01\)00315-0](https://doi.org/10.1016/S0148-2963(01)00315-0).
- [140] K. Laufs, C. Schwens, Foreign market entry mode choice of small and medium-sized enterprises: a systematic review and future research agenda, *Int. Bus. Rev.* 23 (6) (2014) 1109–1126, <https://doi.org/10.1016/j.ibusrev.2014.03.006>.
- [141] R. Pirow, A. Blume, N. Hellwig, M. Herzler, B. Huhse, C. Hutzler, et al., Mineral oil in food, cosmetic products, and in products regulated by other legislations, *Crit. Rev. Toxicol.* 49 (9) (2019) 742–789, <https://doi.org/10.1080/10408444.2019.1694862>.
- [142] O. Pala, Assessment of the social progress on European Union by logarithmic decomposition of criteria importance, *Expert Syst. Appl.* 238 (2024) 121846, <https://doi.org/10.1016/j.eswa.2023.121846>.
- [143] Ö.F. Görçün, E.B. Tirkolaei, A. Aytekin, S. Korucuk, Sustainability performance assessment of freight transportation modes using an integrated decision-making framework based on m-generalized q-neutrosophic sets, *Artif. Intell. Rev.* 57 (5) (2024) 121, <https://doi.org/10.1007/s10462-024-10751-0>.
- [144] M. Mohamed, S. Ayman, R. Yong, J. Ye, Ranking cloud service providers using SWARA-MARCOS in Type-2 neutrosophic number set environment, *Neutrosophic Syst. Appl.* 18 (2024) 46–59, <https://doi.org/10.61356/j.nswa.2024.18284>.