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## **Economic Intelligence Modeling in the Territorial Location for Foreign Investments Case: Euro-Mediterranean Area**

**Mostafa Bachrane**

Ph. D. Researcher, Laboratory of Analysis of Systems, Information Processing and Management,  
Mohammadia Engineering School, University 5- Rabat, Morocco

**Jamila El Alami**

Professor, Laboratory of Analysis of Systems, Information Processing and Management,  
Mohammadia Engineering School, University 5- Rabat, Morocco

**Mostafa Hanoune**

Professor, Laboratory of Modeling and Information Processing, University of Ben m'sick Casablanca, Morocco

**Abstract:**

*The ranking of favorable countries to localization is governed by the harmonization of a number of criteria among countries of the Mediterranean area. Several researchers use econometric research to resolve socio-economic and political divergence issues.*

*By dint of overuse this traditional method does not measure the new potentialities of each country, because it uses the information in a smaller frame.*

*This paper aims to contribute to the study of applied Economic Intelligence (EI) in one territory with the purpose to create competitive advantages that can influence decisions of economic actors wishing to locate in a country in the Euro-Mediterranean area since the new trend of location for economic activities gives priority to large basins. Hence, policymakers begin to have a new rationale based on the usefulness of spatial data.*

*We used the method of multi-criteria decision support PROMETHEE which can be used in various ways according to the decision makers*

*The integration of the PROMETHEE method in the economic intelligence process permits to rank countries of the Mediterranean according to their territorial competitiveness obtained from the net flows and graph of partial and complete preference.*

*This method is used to rank the countries likely to be chosen for location in order of preference from good to unfavorable.*

*The results obtained allow us to affirm that France and Morocco have favorable strategic assets to attract foreign investment.*

**Keywords:** *Economic intelligence, location and territorial competitiveness, foreign investment, Euro-Mediterranean area, multicriteria decision, PROMETHEE method*

### **1. Theoretical & Conceptual Framework**

Economic intelligence is a multifaceted concept, which is according to researchers, encompasses a modern vision of processing and information management aiming to intervene in unexpected incidents and to cope with the uncertainty of the environment . Several collective and individual authors have explored this broad concept, providing many definitions. The theme is therefore rich and wavers between the decision-making control of an entity and information systems.

We consider EI to be the component of business intelligence aimed at gaining strategic advantage, as proposed by Porter (1998). EI includes competitor intelligence as well as intelligence collected on customers, suppliers, technologies, environments, or potential business relationships (Guyton, 1962; Fair, 1966; Grabowski, 1987; Gilad, 1989). The Society of Competitive Intelligence Professionals (SCIP, 2008) defines EI as "a systematic and ethical process for gathering, analysing and managing external information that can affect the company's plans, decisions and operations".

The concept of an "Economic Intelligence System" as developed by Luhn in 1958, was the first to define the need for updated observation of storage and filing for decision making and business' conduct. He argues that "Any system of communication for the conduct of business in the broadest sense can be considered an intelligent system ..." This definition is echoed in the works of [Simon

1960] in management strategy to designate the process of environment's exploitation with the purpose to identify situations requiring action.

A thorough reading of the concept of intelligence highlights the work of Wilensky , author of the concept of organizational intelligence. Fundamentally, Wilensky's idea is that decision making requires collection, processing, interpretation and reporting. In the year [1967 Agular] developed the term "scanning business environment," giving rise to the concept of strategic vigil.

We have observed that the first interesting definitions revolving around EI go back to the 70s by [G.Albaum 1964] , under the appellation of "Environment scanning" while the first glimmering concept of EI appeared in Britain where corporate banking, insurance companies and financial institutions have adopted what is called "smart marketing" in the conduct of business. This term has been translated in Britain into business intelligence [Audrey Knauf 2010] .

With the development of computer science, this versatile term has taken on a new dimension, as the "Marketing information system" , supportive of intelligent information systems in decision making. Prescott names this stage 1995 "Competitive data collection". Most distinguished authors are [Cleland & King 1975], [Montgomery & Weinberg 1979].

At the onset of the 80's Porter [4], argued that intelligence means "Giving the right information to the right person at the right time to make the right decision." Prescott 1995 describes this period of "competitive and sectoral analysis." In 1984 Samun uses the word "strategic intelligence" and distinguishes between "Environmental scanning" and "competitive analysis," which he terms "systematic approach to competitive information".

The transition from theory to fieldwork is often more important and more difficult. [Tayson 1986] developed a system to prevent the potential actions of competitors. Several cases of EI exploitation have emerged through the work of professional consultants [Fuld 1985] and [Kelly 1987] .In the late 80's and early 90's. Some researchers [Ribault & Martinet 1988] pondered upon the usefulness of strategic vigil as a driving force feeding EI for strategic purposes. In the 90's [Jakobiak 1991] used the term 'Technology Watch.'

However, the concept of intelligence along its derivatives remains a controversial topic among Anglo-Saxon researchers [Harmel 2001] . Most important researches were made by Americans and Germans. In French-speaking countries the term "Economic intelligence" was first introduced in France by Marté in 1994 under the influence of the Economic Advisory Council. Marté defines economic intelligence as "the set of coordinated actions of research, treatment and distribution for effective use of information by stakeholders" These actions are carried out legally with sufficient safeguard against companies' property under optimal conditions of quality, deadline and cost.

In the 90's, what mattered most was the application of EI or strategic intelligence in some companies with the purpose to anticipate the signs of environmental weaknesses [Lesca 1994] , control and detect threats and opportunities in order to develop influencing strategies [Jean-Pierre Bernat 2001], and finally help managers to develop the right strategy and to take the right decision in the context of "competitive intelligence" [Fuld 1995] .

The market orientation perspective on EI (Kohli and Jaworski, 1990; Slater and Narver, 1995) states that organizations should strive to achieve higher value and profits through business intelligence gathering and sharing across departments. Scanning for Economic intelligence is a major vehicle for organizations to obtain needed information for marketing intelligence generation and market adaptation (Patton and McKenna, 2005; Sawyerr et al., 2000).

Advancements in information technology and related developments in communications technology have increased organizations' ability to link global operations into sophisticated information networks, shrinking the time in which information is collected and enabling organizations to achieve tight coordination in worldwide operations. The knowledge economy and its establishment became a key issue in economics and business, specifically its appropriate management through the discovery process, has become a determinant dimension of the modern competitive atmosphere for firms and countries alike, and as a consequence, the role of information has evolved from minor relevance to the highest importance. (Hill, 2005; Laudon and Laudon, 2007; Pearce and Robinson, 2005).

Explain the location of economic activities in the territory and to seize the evolutions with it is unopposed the first object of the commercial and industrial geography.

The location contains the analysis of a series of spatial, economic, sociological, political variables as well as cultural to assure the sustainable evaluation of an existing location or the selection of the best possible location to reach strategic objectives of profits and sales.

Recent research and analysis on locations exceeded the classical framework, we are witnessing an elasticity location conditions by policymakers on the basis of relevance of location indicators, and we are going to expose this approach within the framework of the concept of the economic intelligence and use the most frequently methods of multi-criteria decisions called "the Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE), in order to support the decision-making process.

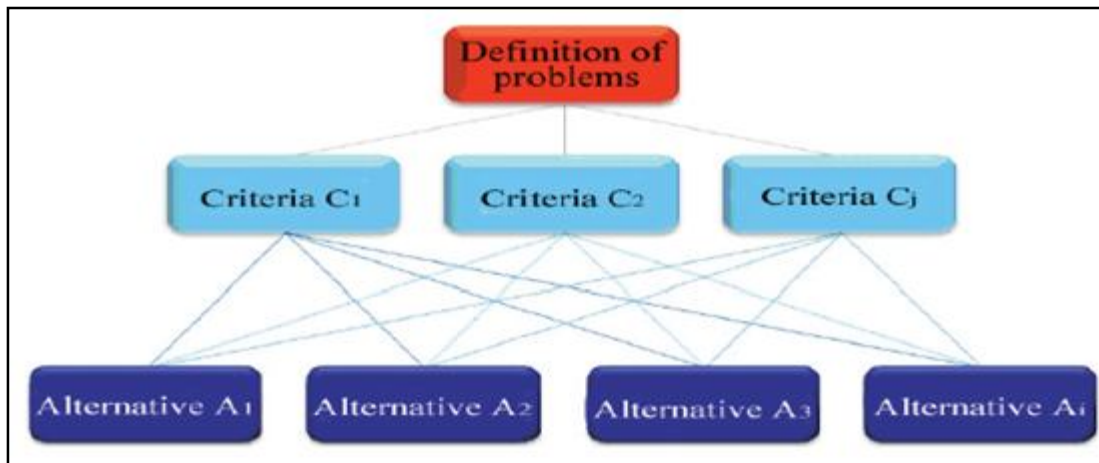


Figure 1: Phases of decision making

**2. The Promethee Method for Multiple Criteria Decision-Making**

The PROMETHEE method is based on mutual comparison of each alternative pair with respect to each of the selected criteria. In order to perform alternative ranking by the PROMETHEE method, it is necessary to define preference function  $P(a,b)$  for alternatives  $a$  and  $b$  after defining the criteria (Vojislav Tomić, Zoran Marinković\*, Dragoslav Janošević 2011 ). Alternatives  $a$  and  $b$  are evaluated according to the criteria functions. It is considered that alternative  $a$  is better than alternative  $b$  according to criterion  $f$ , if  $f(a) > f(b)$ . The decision maker has possibility to assign the preference to one of the alternatives on the basis of such comparison. The preference can take values on the scale from 0 to 1, and relation combinations are possible to represent using following relations:

- $P(a, b) = 0$  no preferences, indifference,
- $P(a, b) \approx 0$  weak preference  $k(a) > k(b)$ ,
- $P(a, b) \approx 1$  strong preference  $k(a) \gg k(b)$ ,
- $P(a, b) = 1$  strict preference  $k(a) \gg \gg k(b)$ .

Relations have following limitations:

$$0 < P(a,b) < 1, \tag{1}$$

$$P(a,b) \neq P(b, a) . \tag{2}$$

Higher preference is defined by higher value from the given interval. This means that, for each criterion, the decision maker considers certain preference function [13]. In Fig. 2, six generalized criteria are given and six preference functions  $P(d)$ . All six generalized criteria are possible to illustrate via linear functions, that is, they are obtained by choosing the highest four points inside criteria space of the given criterion. In Fig. 2, besides criteria functions, the parameters for chosen points within criteria space, which is illustrated in x-axis, are given, and the level of preference is given in y-axis ( $P$ ). In the four-level criterion, instead of value  $P(d) = 1/2$ , it is possible to give any value  $0 < P(d) < 1$ .

In Fig. 2, the following denotation is used:  $m$  – indifference limit,  $n$  – strong preference limit,  $q$  – approximate value between  $m$  and  $n$  for Gaus criterion (Vojislav Tomić, Zoran Marinković\*, Dragoslav Janošević 2011 ).

After defining the type of general criterion, it is necessary to determine the value of function preference of action  $a$  in relation to action  $b$  for each criterion, and calculate the index of preferences (IP) of action  $a$  in relation to action  $b$ . Each pair of actions is in set  $A$ . The index preference is calculated in the following way:

$$IP(a,b) = \sum_j^n W_j P_j(a, b), b \sum W_j = 1 \tag{3}$$

where  $W_j$  is the weight of criterion "j".

If all the criteria have the same weight, that is if  $W_j = 1/n$ , so the index preference is:

$$IP(a,b) = (1/n) \cdot \sum_j^n P_j(a,b) \tag{4}$$

and which is determined by the following relation:

$$0 \leq P_j(a,b) \leq 1 \tag{5}$$

Fig. 2 Types of preference functions  $P(d)$  with parameters that illustrate them

After determining index preference  $IP(a,b)$ , it is finally possible to calculate alternative flaw index  $T(a)$ , whose value represents the significance of the alternative. According to this index, the final decision about adequacy of one alternative from the set of alternatives is made.

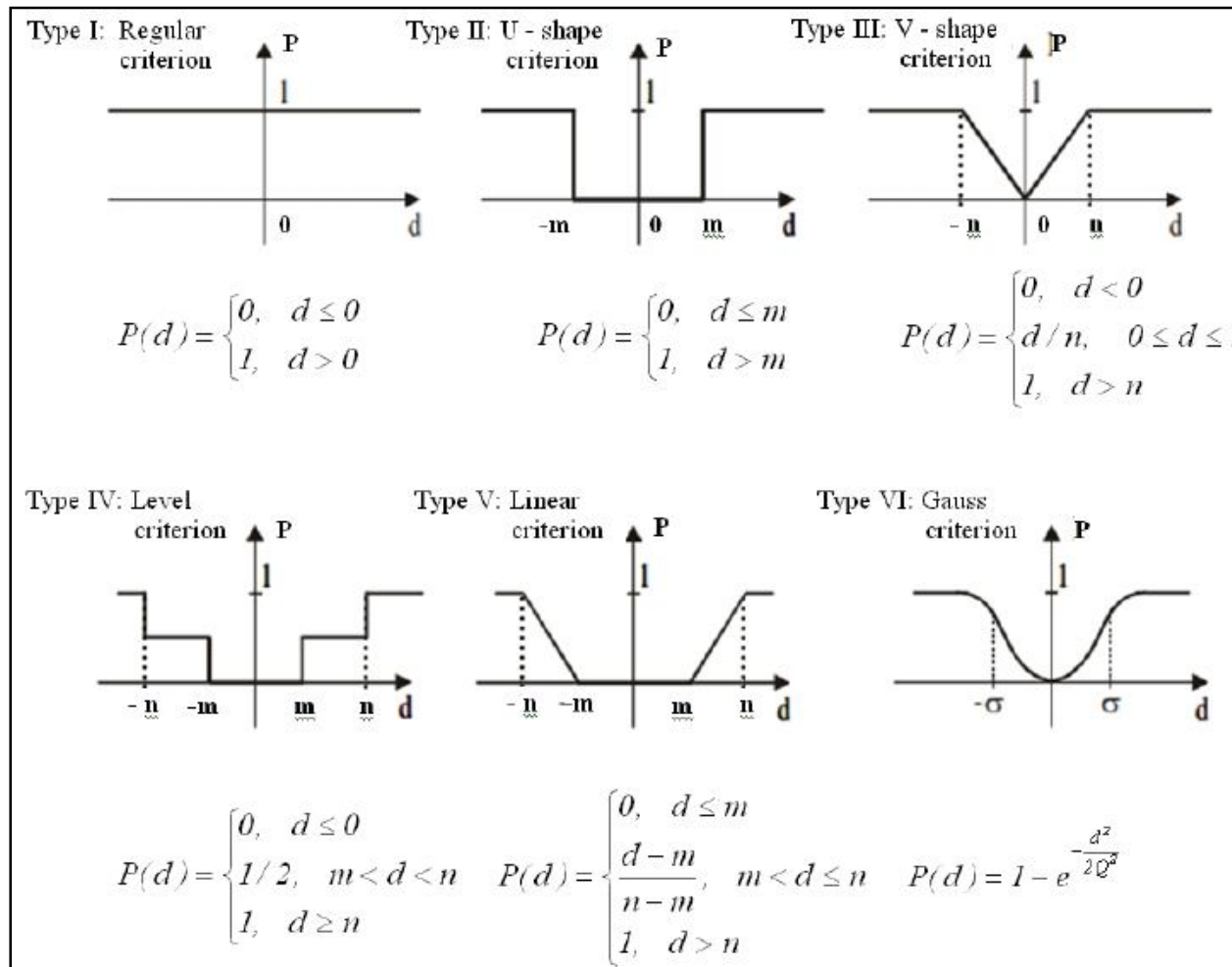


Figure 2: Types of preference functions  $P(d)$  with parameters that illustrate them

(Vojislav Tomić, Zoran Marinković\*, Dragoslav Janošević 2011)

After determining index preference  $IP(a,b)$ , it is finally possible to calculate alternative flaw index  $T(a)$ , whose value represents the significance of the alternative. According to this index, the final decision about adequacy of one alternative from the set of alternatives is made. It is determined as:

$$T(a) = \frac{\sum_{x \in A} IP(a, x)}{i-1} \tag{6}$$

The selection of criteria to be used in the decision process needs to be done carefully so that the majority of the chosen criteria define the problem at hand adequately and in accordance with the decision maker's given requests [14]. In this way, the influence of experience and subjective evaluation of the decision maker during selection of generalized criteria is maximally reduced.

### 3. Integration of Economic Intelligence in the Process of the Multiple Criteria Decision-Making Method

Several scientific disciplines (statistical, mathematical economics, programming) are based on the concept of the existence of an optimal decision based on an objective criterion. Trying to optimize implies a single criterion to solving approach. However this method is inefficient because it takes into account several visions and perspectives to assess the consequences of many actions.

The ranking of favorable countries to localization is governed by the harmonization of a number of criteria between countries in the Mediterranean area. We quote criteria such as infrastructure: Subscribers to mobile telephony and electricity consumption; economic criteria: Foreign direct investment, net inflows, inflation, GDP deflator, and Domestic credit provided by the banking sector; and social criteria: unemployment, population growth etc.

Several researchers use econometric research to resolve socio-economic and political divergence issues. By dint of use, this traditional method does not measure the new potentialities of each country, because it uses the information in a smaller frame.

This information is used as a tool to support decision makers in the decision-making process because it creates a uniform set of criteria for comparing unambiguously the various projects of territorial location. We have clarified that working in a mono-criteria context pushes the choice of actors. Modeling their preference involves the apprehension of the decisional problem to help decision makers reveal their preferences.

The new trend of localization of economic activities gives priority to the installation in large basins. Policymakers are beginning to have a new argument based on the usefulness of spatial data.

They ask administrations managers in charge of promoting investments in sites or international organizations such as the World Bank and UNCTAD ... Etc, information in the form of national indicators to assess their choice of location and preferences of the decision maker in a multiple choice situation.

. There are several rating agencies that rank countries according to several criteria, we cite as examples AT Kearney who leads a survey on the country’s image according to decision makers; the Globalization Index, which includes a dozen indicators to measure the country's openness to different kinds of flows; the World Economic Forum, which measures the integral growth factors; Standard & Poor's, which measures the solvency and insolvency risk, and most famous of all is the agency “Doing Business” which in collaboration with the World bank gives a classification of countries favorable to direct investment abroad.

However, note that these classifications remain rigid and do not allow a cross check of the values. For such reason, we use an approach of integrating upgrading methods in the economic intelligence process that seems adequate to compare the country likely to be the choice of decision makers.

The conceptual model of the data presented below is intended to be in line with the integration of Economic intelligence in the process of the Multiple Criteria Decision-Making data method that will be used by the information technology system. Below is a simple data representation, easy to understand, describing the IT system that uses entities.

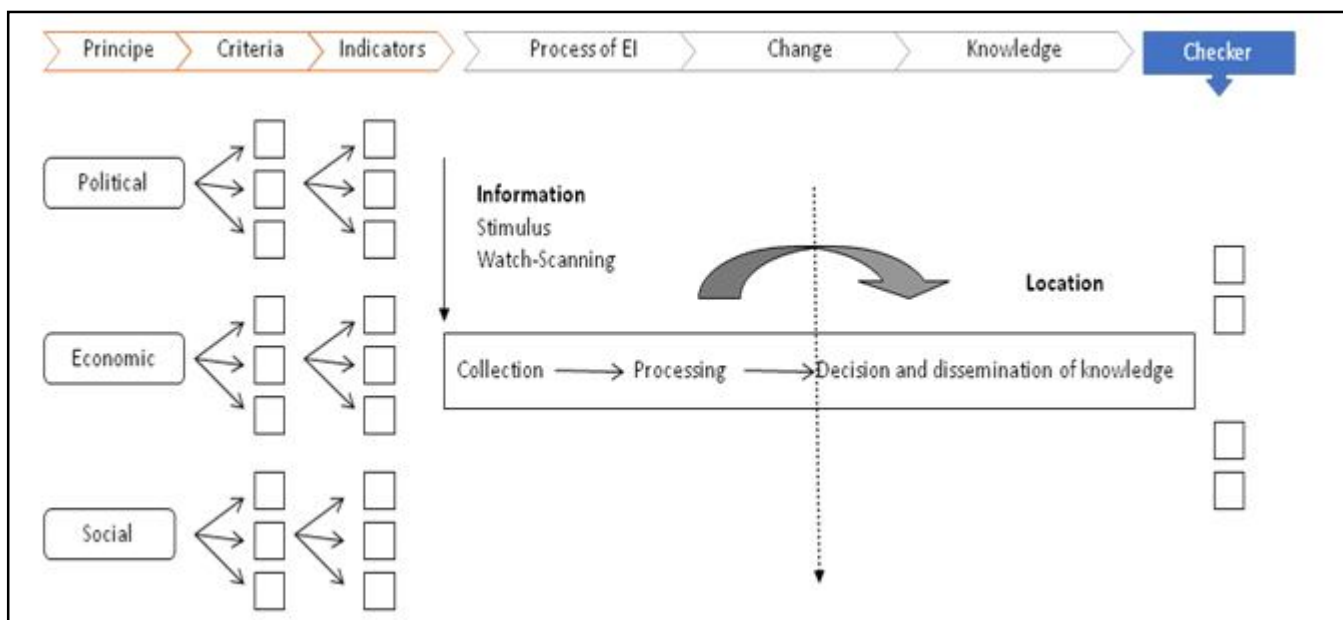


Figure 3: Conceptual model for integrating multi-criteria analysis in the process of economic intelligence [BACHRANE Mostafa 2015]

#### 4. Presentation of data and decision matrix

We will consider as a referential of our decision problem I representing all the countries of the Mediterranean, and on the other hand a number of criteria supporting localization, worthy of mention: the infrastructure indicator that is defined in a set called J, in our case:

- I = Albania, Algeria, Bosnia, Bulgaria, Croatia, Egypt, Spain, France, Greece, Israel, Italy, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, Turkey, and ;

- J = subscribers of mobile telephony (C<sub>1</sub>), electricity consumption(C<sub>2</sub>), performance index, logistics: overall performance (C<sub>3</sub>), foreign direct investment, net inflows (C<sub>4</sub>), inflator, deflator(C<sub>5</sub>), Domestic credit provided by the banking sector (C<sub>6</sub>), GDP growth (C<sub>7</sub>), gross Training capital (C<sub>8</sub>), exports of goods and services (C<sub>9</sub>) and Imports of goods and services (% of GDP) (C<sub>10</sub>), Unemployment (C<sub>11</sub>), total population growth (C<sub>12</sub>), population activates (C<sub>13</sub>), total health expenditure (C<sub>14</sub>), political stability (C<sub>15</sub>), effectiveness and applicability of laws(C<sub>16</sub>), Time required to start a business(C<sub>17</sub>), Time to prepare and pay taxes (C<sub>18</sub>).

The information we have collected are from a series of international institutions such as the World Bank, UNCTAD, of which the evaluation methods are different. The data obtained are quantitative in nature. We clarify that for each indicator; we calculated the simple average because we decided to conduct observation for five-years (2010-2014).

The averaging is performed by adding the data of all the observations, the sum of which is divided on the number of observations performed

$$\bar{x} = \frac{x_1 + x_2 + \dots + x_n}{n} = \frac{1}{n} \sum_{i=1}^n x_i.$$

		Infrastructures criteria			Economic criteria							Social criteria				Political criteria		Administrative criteria		
		INFRA.1	INFRA.2	INFRA.3	ECO.1	ECO.2	ECO.3	ECO.4	ECO.5	ECO.6	ECO.7	SOC.1	SOC.2	SOC.3	SOC.4	POL.1	POL.2	ADM.1	ADM.2	
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	
Unit		[Pour 100 personnes]	[KWh par habitant]	[1=fab et 5=élevé]	[SDP, \$ US courants]	[% annuel]	[% du PIB]	[% annuel]	[% du PIB]	[% du PIB]	[% du PIB]	[% de la population]	[% annuel]	Total	[\$ US courants]	classement (-2.5 (faible) à 2.5 (fort))	classement (-2.5 (faible) à 2.5 (fort))	[Jour]	[Heure]	
		2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	2010-2014	
Actions	PAIS	max	max	max	min	max	min	min	max	max	min	min	max	min	min	max	max	max	max	
		ALBANIA	85,5	2036,07	2,66	1268784699	3,03	67,76	2,25	25,6	32,78	55,46	13,91	0,12	1479137,81	245,9	-0,14	-0,53	5,3	362,6
		ALGERIA	94,4	1086,38	2,44	2724221887	10,73	-4,36	2,68	39,34	34,65	22,4	9,88	1,87	11983165,8	223,32	-1,26	-0,77	25	451
		BOSNIA	86,36	3144,47	2,83	446423205,8	1,87	65,78	-0,04	20,97	40,49	62,62	26,81	-0,17	1511562,75	484,63	-0,65	-0,34	49,4	416
		BULGARIA	81,38	4894,83	2,97	2210601920	3,35	70,95	0,39	23,96	62,83	65,58	10,96	-0,68	3448826,73	517,55	0,32	-0,12	18	528
		CROATIA	88,44	3899,12	2,94	1387815876	1,69	93,72	-1,78	21,02	41,6	42,11	13,29	-0,29	1913097,01	1115,98	0,58	0,16	10,8	196
		EGYPT	86,68	1743,86	2,81	4377730000	10,66	75,51	2,91	17,38	20,36	26,36	9,33	1,67	26635646,2	135,91	-1	-0,22	8	426
		SPAIN	94,07	5636,48	3,68	35166654325	0,42	227,65	-0,88	21,23	29,79	30,24	21,86	0,32	23642489,4	2978,92	-0,23	1,14	34,6	186,2
		FRANCE	95,37	7429,26	3,86	49945649045	1,26	133,92	0,64	19,9	26,49	28,9	9,37	0,51	30063609,2	4872,07	0,56	1,46	6,5	132
		GREECE	90,76	5330,82	2,83	1857911004	0,47	141,53	-5,99	15,63	24,69	32,13	15,96	-0,01	5259756,27	2814,38	-0,04	0,65	15	213,4
		ISRAEL	94,75	6920,23	3,59	9035520000	4,11	83,17	3,93	19,62	35,58	89,01	5,87	1,88	3217877,77	2421,43	-1,31	0,89	19	234
		ITALY	93,91	5410,24	3,66	14606062857	1,33	159,45	-1,04	18,99	28,45	28,85	8,5	0,4	25241342	3391,42	0,47	0,39	6,8	284,4
		JORDAN	91,96	2286,3	2,64	1527056339	5,93	107,81	2,9	25,83	46,11	72,21	12,45	2,2	1682223	387,22	-0,41	0,31	14	145
		LEBANON	79,03	3559,13	3,23	3733543389	4,35	173,66	3,71	30,96	23,07	49,72	11,33	1,25	1555313,53	611,59	-1,66	-0,7	9	180
		LYBIA	74,06	3829,68	2,3	1107450000	16,03	-47,99	1,47	11,21	66,86	21,81	4,66	1,05	2298168,59	403,74	-0,25	-0,96	30	907,6
	MOROCCO	90,22	828,68	2,94	2302032977	0,74	111,33	4,39	35,48	34,66	47,35	9,33	1,3	11420065,7	183,34	-0,45	-0,21	11,8	284,8	
	SYRIA	60,09	1677,98	2,82	1248559955	5,59	49,59	3,27	21,16	41,58	40,36	8,7	2,18	6022199,62	100,5	-1,26	-0,68	14,2	336	
	TUNISIA	96,52	1285,28	2,99	1159321771	4,94	79,03	1,74	24,77	48,43	56,01	13,5	1,05	3895473,49	262,28	-0,19	0,04	12,4	160,8	
	TURKEY	88,66	2712,28	3,35	12509600000	6,95	69,77	4,88	20,58	24,34	30,21	9,8	1,27	26882808,8	707,08	-0,99	0,08	6	225,4	
	assigned weights	1,9	2,1	5,3	8,1	5,2	8,2	7,9	7,6	8,1	8,1	1,9	2,3	3,1	2,7	7,2	7,1	5,9	7,3	

Table 1: Action Matrices award criteria and weights

The development of the matrix of indicators and the deepening of cross diagnosis leads to the development of the information matrix, which will serve later in the decision-making process. Search for countries that respond favorably to the decision maker's requirements will be carried out through querying the database that catalogs criteria (indicators) and actions (choice of countries). Shares represent the various countries of the Mediterranean. The components are the criteria by which countries can be assessed.

Subcritériu	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	
Cluster/Group																			
Préférences																			
Min/Max	max	max	max	max	min	max	max	max	max	max	min	max	max	max	max	max	min	min	
Weights	1,30	2,10	5,40	9,10	5,30	6,30	7,60	7,30	8,10	5,10	1,50	2,30	3,10	2,70	7,20	7,10	3,50	3,30	
Fu. de préférence	Forme V	Forme N	Forme N	Forme N	Forme V	Forme V	Forme V	Forme V	Forme V	Forme N	Forme V	Forme V	Forme V	Forme N	Forme N	Forme N	Forme N	Forme N	
threshold	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	absolu	
-Q. Inf. Préférence	nd	nd	nk	nd	nk	nd	nd	nd	nd	nk	nd	nd	nd	nd	nd	nk	nd	nd	
-P. Préférence	3,00	2,00	2,00	32,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	32,00	2,00	2,00	2,00	2,00	
-S. Coefficient	nd	nd	nk	nd	nk	nd	nd	nd	nd	nk	nd	nd	nd	nd	nd	nk	nd	nd	
Statistiques																			
Minimum	60,39	823,68	2,00	9495403,305	1,40	47,29	-5,59	11,21	20,56	21,81	4,65	-1,68	902220,20	100,500	-1,66	-0,96	3,30	150,00	
Maximum	96,82	7423,26	5,06	9495406,946,0	16,06	227,65	4,68	26,34	66,66	69,01	26,61	2,25	5006590,49	94572,70	0,56	1,46	49,40	507,60	
Average	86,23	3453,95	3,00	97495974,24	4,64	91,22	1,41	20,38	36,26	44,31	11,97	2,88	10339496,36	11214,592	-0,44	0,00	16,49	314,96	
Standard deviation	5,12	1657,07	1,40	115300,367,1	4,12	61,74	2,61	5,51	12,90	16,36	5,20	2,87	10307721,57	11335,592	0,69	0,66	11,24	182,90	
Evaluations																			
ALBANIA		81,90	2050,07	2,66	11280794,69	5,06	67,76	2,25	25,30	22,79	15,46	13,91	1,12	1479157,61	1216,500	-0,14	-0,33	5,30	352,60
ALGERIA		94,40	1055,38	2,49	12724221,88	11,73	-4,56	2,68	26,34	24,65	22,40	9,69	1,87	11583165,75	1223,500	-1,26	-0,77	25,00	451,00
BOSNIA		86,36	3144,47	2,80	9495403,305	1,87	61,78	-0,14	20,37	40,45	62,60	26,21	-0,17	151162,75	1494,500	-0,65	-0,34	49,40	416,00
BULGARIA		81,38	4694,82	2,97	12210510,51	3,30	70,55	1,39	25,36	62,65	65,36	10,65	-1,68	948825,73	1517,500	0,32	-0,10	18,00	529,00
CROATIA		86,44	3059,12	2,94	11472214,67	1,66	95,72	-1,78	21,02	41,67	42,11	13,29	-0,25	193057,61	1115,500	0,56	0,16	10,00	156,00
EGYPT		86,88	1749,86	2,81	14107790,00	11,66	75,61	2,61	17,38	20,35	16,36	9,33	1,67	2633645,18	1133,500	-1,10	-0,20	8,00	426,00
SPAIN		94,07	3059,46	2,96	1053066,674,0	1,40	227,65	-0,63	21,23	29,75	10,24	21,65	2,30	2164249,18	12538,500	-0,23	1,14	34,60	189,20
FRANCE		95,37	7423,26	2,96	9495406,946,0	1,36	133,52	0,64	19,30	36,45	28,90	9,37	1,51	30163023,19	14572,70	0,56	1,46	6,50	150,00
GREECE		90,76	3320,82	2,80	11587511,00	2,47	141,53	-5,55	15,33	24,65	32,10	13,55	-0,01	1099755,27	12124,500	-0,14	0,61	15,00	215,40
ISRAEL		74,75	9020,23	5,76	191035520,00	4,11	61,07	3,69	19,52	25,66	69,01	5,97	1,86	227079,77	12421,490	-1,31	0,86	19,00	234,00
ITALY		93,91	5410,24	2,96	1145006362,8	1,33	136,45	-1,14	19,39	28,45	28,86	8,60	1,40	2524154,65	13521,400	0,45	0,36	6,50	264,40
JORDAN		91,36	2355,30	2,64	19107016,316	5,98	107,81	2,60	25,33	46,11	70,21	12,45	2,25	532523,02	1387,500	-0,41	0,31	14,00	145,00
LEBANON		76,00	3159,13	3,20	137035413,38	4,31	173,66	3,71	20,36	23,07	49,71	11,33	1,25	1556113,10	1611,500	-1,66	-0,70	9,00	160,00
LIBYA		74,76	3829,68	2,30	11107490,00	19,06	47,29	1,47	11,21	66,66	21,81	4,65	1,06	2280163,19	1433,70	-0,25	-0,96	30,00	437,60
MOROCCO		90,22	823,68	2,94	12102102,97	0,74	111,33	4,39	26,40	54,66	47,31	9,33	1,30	11420065,65	1133,500	-0,45	-0,21	11,00	264,80
SPAIN		60,39	1677,66	2,80	112481599,55	5,36	46,89	2,27	21,16	41,66	41,36	8,70	2,16	10210169,62	1000,500	-1,26	-0,68	14,20	336,00
TUNISIA		96,82	1165,38	2,96	112481599,55	4,94	75,73	1,74	24,77	48,42	69,01	13,50	1,06	1899473,45	1252,500	-0,15	0,04	12,40	161,80
TURKEY		86,36	2712,28	3,31	112481599,55	6,91	66,77	4,68	20,38	24,04	10,21	9,60	1,27	26330203,64	1707,500	-0,65	0,06	6,00	225,40

Figure 2: The performance matrix and input information of the location in PROMETHEE-GAIA software

The fig below models the data of the matrix of performances and inputs information on the location of foreign investments. The figure consists of five significant categories. The criteria are combined according to their impact on the process of decision making. The main criteria such as infrastructure, economy, society, politics and administration are represented by green, pink, blue, yellow and purple diamonds. Further down on these criteria, we notice a line of preferences. This interface allows us to notice the options in order to put the criteria as Maximum or Minimum (Max / Min) and the weights that have been allocated to various criteria, hence the preference functions that have been attributed to the criteria and the threshold values assigned to the criteria considered.

Note that the topic of statistics can express important values such as the mean, standard deviation, and maximum and minimum values of each indicator to assess the five categories of location indicators. At the end of the evaluation panel, we find the subset of evaluation matrix, which allows a reproduction of all the previous table information.

This makes it possible to highlight the five categories of indicators that will be the basis of our decision making process. We will display the results that we have generated from our model integration of the method using the multi-criteria decision in economic

intelligence process using the PROMETHEE-GAIA method of the territorial location of investment in order to measure competitiveness, and that from the information gathered above.

**5. The use of Preferential Flow**

This practice results in the calculation of the three categories in addition to, so-called outflow  $\Phi +$ , inflows  $\Phi -$ , and the difference between the two streams is called net flux  $\Phi$ . The calculation of these flows is explained above.

Exploitation of flows allows a ranking of Euro-Mediterranean countries to measure their competitiveness to attract investment from holders of best to worst.

Flux PROMETHEE					
Rang	action		Phi	Phi+	Phi-
1	FRANCE	●	0,3636	0,5976	0,2340
2	MOROCCO	■	0,2035	0,4975	0,2940
3	SPAIN	■	0,2012	0,5106	0,3095
4	ITALY	■	0,1726	0,4906	0,3180
5	LEBANON	■	0,1474	0,4911	0,3437
6	JORDAN	■	0,1438	0,4737	0,3299
7	TUNISIA	■	0,1309	0,4573	0,3264
8	ISRAEL	□	0,0738	0,4498	0,3760
9	CROATIA	■	0,0595	0,4338	0,3743
10	BULGARIA	●	0,0186	0,4207	0,4020
11	TURKEY	■	-0,0367	0,3709	0,4076
12	ALBANIA	◆	-0,0459	0,3776	0,4235
13	GREECE	◆	-0,0686	0,3795	0,4480
14	SYRIA	■	-0,1913	0,2977	0,4890
15	EGYPT	◆	-0,2249	0,2910	0,5159
16	ALGERIA	◆	-0,2254	0,3017	0,5271
17	BOSNIA	●	-0,2644	0,2652	0,5296
18	LYBIA	■	-0,4577	0,1931	0,6508

Figure 4: The use of preferential flow

We will conduct this ranking of the twenty countries object of location. There are two types of classifications. The first part used the PROMETHEE I method and the second is called complete ranking based on the method PROMETHEE II.

The PROMETHEE I method is a method which ranks the stocks (20 Mediterranean countries) by  $\Phi +$  descending flow that reflects the various weaknesses of a stock relative to its peers shares and the other side shows  $\Phi -$  otherwise inflows  $\Phi +$ .

For the PROMETHEE I method, various actions are compared but not necessarily all. Classification includes incomparability. The figure below shows a partial classification of our twenty shares.

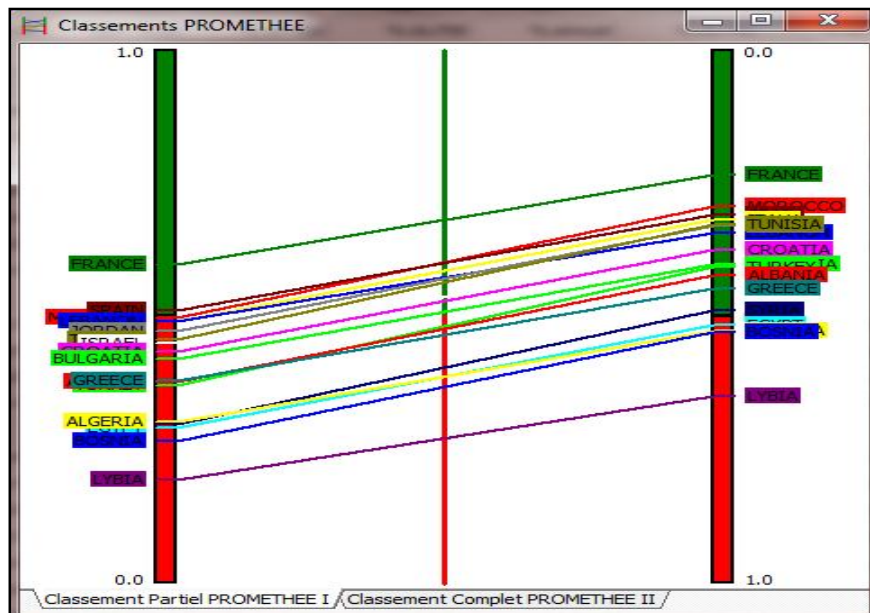


Figure 5: Partial Ranking (PROMETHEE I)



The analysis of the figure presents the ranking of twenty Mediterranean countries on the basis of indicators according to their power  $\Phi +$ . France clearly takes the lead in terms of attractiveness followed by Spain and Libya. The right part shows the ranking of twenty Mediterranean countries according to the degree of their weaknesses  $\Phi -$  France in first position followed by Morocco and finally Libya. The two findings are clearly defined in the figure:

- These indicators will be used for decision support by the PROMETHEE method I. It is found that the net flow of Turkey, Albania, Greece, Syria, Egypt, Algeria, Bosnia and Libya are negative, presaging a deterioration of the socio-economic structures. - France and Morocco, Spain, Italy, Lebanon, Jordan, Tunisia, Israel, Croatia and Bulgaria have positive net flows, presaging improved socio-economic structures.

Before proceeding to analyze the figure, we wish to recall that the PROMETHEE II method allows for a comprehensive ranking of different actions according to the net flux  $\Phi$ . This method allows a complete comparison of all indicators considered in the process of territorial decision. PROMETHEE II method is used to do a combination of the incoming stream  $\Phi -$  and that of outflow  $\Phi +$ .

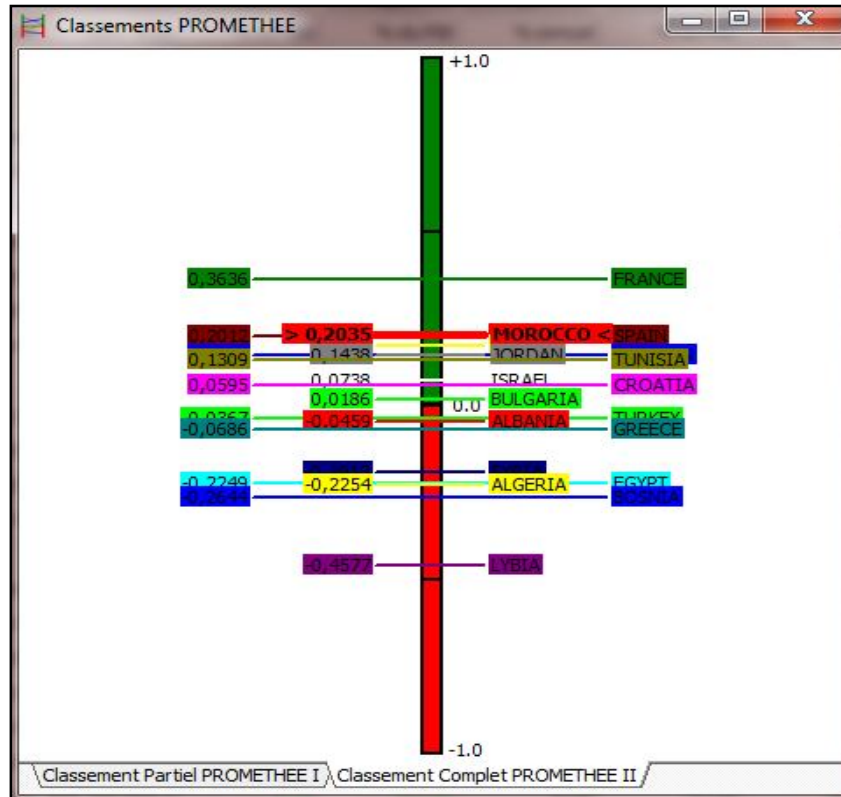


Figure 6: Complete Ranking (PROMETHEE II)

The results display that France holds the first position followed by Morocco, the following figure summarizes  $\Phi$  complete ranking of all countries of the Mediterranean. It shows that France and Morocco outperform other peers.

Diamond PROMETHEE another form of presentation of inflows and outflows by a point contained in a plane where the vertical direction shows the net flow or complete ranking  $\Phi$ . The objective of PROMETHEE Diamond is the easy visualization of the proximity between  $\Phi -$  and  $\Phi +$ .

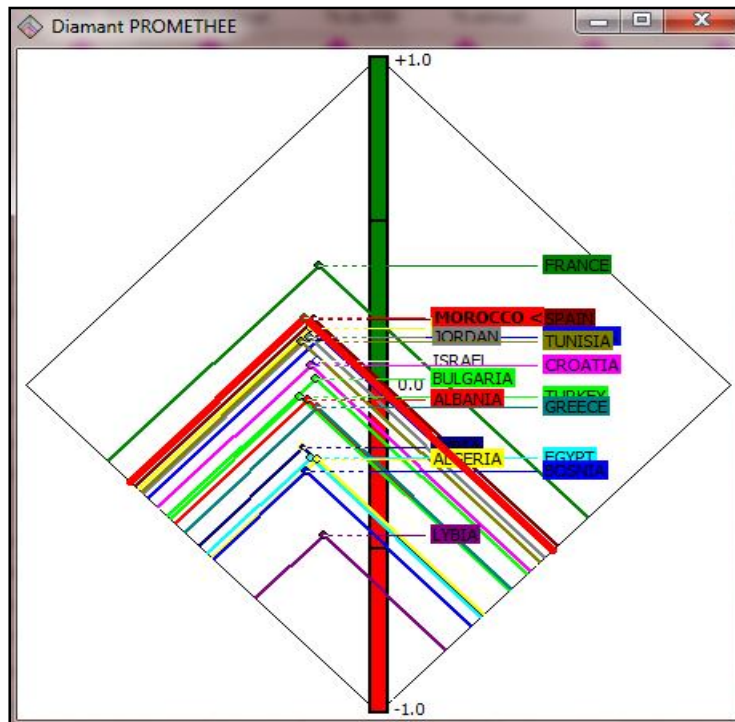


Figure 7: PROMETHEE Diamond

This figure shows the country classification levels by dots. Up the points raised in its peers indicating France and Morocco involve the preference of both countries compared to other peers.

Upgrade graph obtained by the PROMETHEE method to confirm the complete ranking of all countries in terms of Mediterranean territorial competitiveness.

**6. Ranking of Countries with a Total Pre-Order**

The ranking of countries with a total pre-order is used to translate the action discrepancy regarding the choice of the country and of the order's net flows. This ranking measures the competitiveness of the country's best to worst.

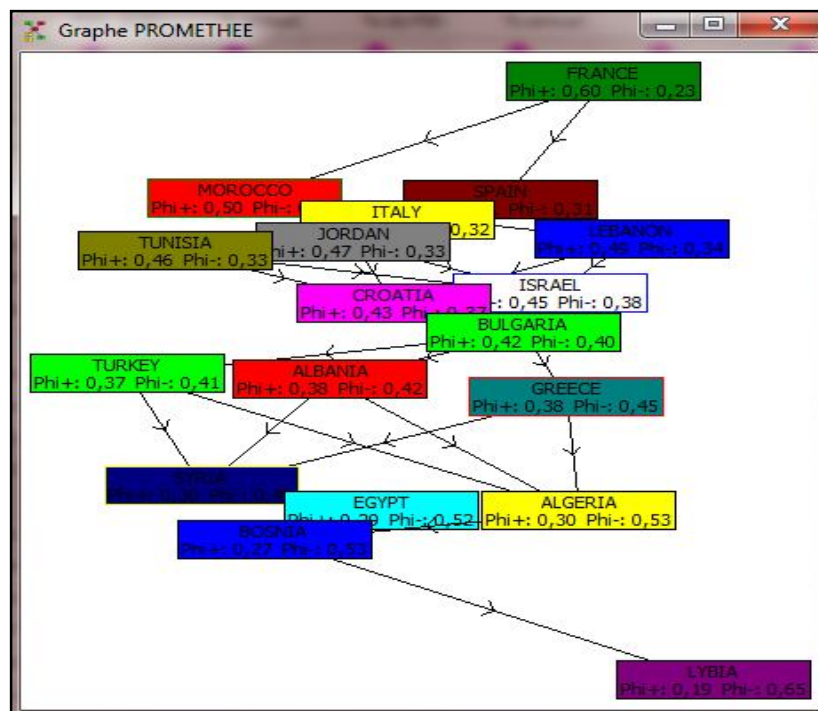


Figure 8: Ranking of countries with a total pre-order

According to all criteria and actions, we note that Libya remains low-ranked, followed by Bosnia, Algeria and Egypt. On this preference system, the commitment to the territorial attractiveness countries is France and Morocco. We can divide the set I in  $I_1$  and  $I_2$  in such a way that  $I_1 = \{\text{France, Morocco}\}$  and  $I_2 = \{\text{Bosnia, Algeria, Egypt, Libya}\}$ .

The action of selected countries for investment localization is a multilateral approach to multi-makers. This action poses various challenges for governments to establish and develop good practices to promote and achieve the benefits of investments.

Countries we classified in the subset  $I_1$  have different policies helping to create the conditions and criteria supporting the economy.

We note that the countries of the  $I_1$  class have an investment policy supported by the development of infrastructure, investment facilitation and good functioning of the administrative system. These indicators were used to develop this diagnosis to identify potential and the links between each country.

Countries like  $I_2$  Experienced unfavorable outcomes to investment Reasons of local character problems, poor governance and weak thesis institutions. For countries, it is Necessary to boost the markets, control exchange rates and insure stability of inflation.

Countries type  $I_2$  experienced unfavorable outcomes to investment reasons of local character problems, poor governance and weak institutions. For these countries, it is necessary to boost the markets, control exchange rates and ensure the stability of inflation.

## 7. Conclusion

The results of the PROMETHEE method have two basic uses:

- The PROMETHEE method enables intelligent information processing. It avoids the problems associated with the economic significance of certain parameters that are not always clear. It is up to the player to determine weights and preference thresholds that formulate the problem of multi-criteria decision despite some hesitation at this level.
- It is possible to explore several scenarios based on the combined weight of the criteria. They are a support that confirms the vision and the area of freedom of the decision maker. The integration of the PROMETHEE method to the process of economic intelligence allows the player to access the phase of knowledge management and learning, as long as he grasps the characteristics of its decision problem.

The integration of the PROMETHEE method in the business intelligence process allows us to rank countries of the Mediterranean according to their territorial competitiveness obtained from the net flow and graph of partial and complete preference.

This method is used to rank the countries likely to be the choice of location in order of preference from good to unfavourable.

The results obtained allow us to affirm that France and Morocco have favourable strategic assets to attract foreign investment.

The method also allows us to get an upgrade chain highlighting two subsets which we named  $I_1$  much favourable investment {France, Morocco} and  $I_2$  representing countries unfavourable investment {Bosnia, Algeria, Egypt, Libya}.

For the subset  $I_2$  unfavourable investment countries present obstacles to bad governance and extroversion that arise in the area, the dependence of crises and retaining investment.

It goes without saying that without internal stability; we would not have external investor confidence because it highlights rationing in a form of negative net flows.

Indicators undergo changes over time and space. They contribute to a change of classification.

Note that the PROMETHEE method can be performed on different periods to evaluate the efforts made by countries to attract foreign investment and even to evaluate the policies of major projects.

The ranking of countries according to PROMETHEE method leads to a modelling of investor's preferences that helps them identify the best choice for territorial location.

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