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Logistics Performance and Investment Destination Selection: A Comparative Analysis of Maghreb Countries Using the COPRAS Method

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ABSTRACT
This study examines the logistics performance of the Arab Maghreb countries, namely Morocco, Algeria, Tunisia, Libya, and Mauritania, using the Logistics Performance Index (LPI) as a key factor affecting foreign investment. The LPI encompasses various elements such as customs clearance, infrastructure quality, international transportation, logistics competence, tracking and tracing, and timing to assess a country's logistics sector effectiveness. The research utilizes data from the World Bank and applies the COPRAS method, a multi-criteria decision-making approach, to determine the investment destination from the perspective of an investment institution. By comparing the LPI scores and employing the COPRAS method, this study aims to identify the countries with better logistics performance, making them more attractive to foreign investors. The findings of this research provide valuable insights into the logistics performance of the Arab Maghreb countries, aiding investment institutions in making informed decisions regarding investment destinations within the region. According to the study, the country ranked as the best investment destination based on logistics performance is Algeria, followed by Tunisia, Morocco, Libya, and Mauritania.
Keywords: Logistics Performance, Arab Maghreb Countries, Investment Destination Selection, COPRAS Method.
JEL Classification : L91, F21, O19, C65.

Introduction:

Foreign direct investment (FDI) and international trade have significant implications for the development of participating countries(Çelebi, Civelek, & Çemberci, 2015). Both FDI and international trade, when supported by favorable conditions, contribute to a country's economic and social goals (Batten & Vo, 2009). Global market participation and access to a wider variety of goods and services are made possible through international commerce, which fosters

economic growth(Rodrik, 2001). Contrary to those with stringent barriers to entry into the global market, nations with free trade policies often see quicker economic growth. Furthermore, rapid and effective movement of commodities, especially necessities like food and medicines, contributes to a country's general well-being (Mangan & Lalwani, 2016). This is made possible by efficient transport and logistics activities.

Developing countries frequently have difficulties while trying to participate in international markets due to their poor infrastructure and connections(Anderson, 2011). It is challenging for nations to properly integrate into regional and global markets when its trade and transportation infrastructure, such as ports, airports, highways, and rail lines, is inadequate(Rodrigue, 2016). Furthermore, importers and exporters are hampered in many emerging nations by administrative barriers and governance issues. These nations are unable to completely integrate into international economic networks due to insufficient administrative and infrastructural systems (Straub, 2008).

Logistics control and performance can provide a competitive advantage in production, commerce, finance, and strategy. It is crucial for time-to-market, cost reduction, and out-of-stock management. Logistics development does not only provide strategic support but also contributes to the definition of the company's strategy(Gunasekaran, Subramanian, Papadopoulos, & Review, 2017). The close relationship and reciprocal impact between logistics and marketing are obvious, as logistics has emerged thanks to the latter. Logistics is gradually becoming a function that generates costs as well as service and customer satisfaction. It now includes raw materials in addition to finished products and is divided between upstream and downstream of the value creation chain.

In this study, we will compare the logistic performance of the countries in the Arab Maghreb region using the Logistics Performance Index, which is one of the factors affecting foreign investment (Luttermann, Kotzab, & Halaszovich, 2020). We will rely on data from the World Bank and the COPRAS method to determine the investment destination from the perspective of an investment institution. The Arab Maghreb region includes five countries: Morocco, Algeria, Tunisia, Libya, and Mauritania.

By comparing the LPI scores of the Arab Maghreb countries, we can identify which countries have better logistics performance and are more attractive to foreign investors. The Analytic Hierarchy Process (AHP) is a decision-making tool that helps to prioritize and select alternatives based on a set of criteria (Yalcin et al., 2022). In this study, we will use the AHP to determine the investment destination from the perspective of an investment institution. Overall, this study will provide valuable insights into the logistics performance of the Arab Maghreb countries and assist investment institutions in making informed decisions about where to invest in the region.

Through this study, we aim to study the logistics performance of the Maghreb countries (Morocco, Algeria, Tunisia, Libya, and Mauritania) using the Logistics Performance Index (LPI), analyze the impact of logistics performance on attracting foreign investment in these countries, and identify the most attractive investment destination among them by using the COPRAS (Composite Relative Assessment) method as a multi-criteria approach for decision-making.

Fig 01 : Arab Maghreb countries

Source: https://www.businessinsider.com/crazy-map-connection-of-global-supply-chains-2016-3

Background

The previous studies focusing on the relationship between logistics performance and attracting foreign investment in the Maghreb countries provided valuable insights and findings. A study conducted by Jun Du and Sourafel Girma in 2013 suggests that logistics performance plays a crucial role in attracting foreign direct investment, emphasizing logistics infrastructure, efficiency, and service quality (Jun Du, 2013). Additionally, a study by Razeen Sally and John Whalley in 2004 analyzed panel data from a sample of developing countries, demonstrating that logistics performance has an impact on attracting foreign investment (Razeen Sally, 2004). Although these studies do not specifically focus on the Maghreb countries, they offer valuable insights into the significance of logistics performance in attracting foreign investment. Furthermore, Kamel Badri and Houssem Rachdi conducted a study in 2018, investigating the determinants of foreign direct investment in the Maghreb region, such as infrastructure, governance, and market size(Kamel Badri, 2018). Although not directly focused on logistics performance, their findings provide relevant insights for understanding foreign investment flows in the Maghreb countries. As for the use of Copras as a method for comparing logistical performance between two or more countries, we have a study conducted by Gül Senir in 2021 entitled Comparison of Domestic Logistics Performances of Turkey and European Union Countries in 2018 With An Integrated Model, in which he used performance indicators to compare and show strengths and weaknesses, as well as opportunities and challenges (Senir, 2021).

Logistic performance index:

Logistical performance, as defined by the World Bank, is an international indicator that encompasses several key performance components to assess the effectiveness of a country's logistics sector (BANK, 2007). These components include customs clearance, infrastructure

quality, international transportation, logistics competence, tracking and tracing, and timing (Mešić et al., 2022). The Logistics Performance Index (LPI) combines these elements into a single measure, providing a comprehensive evaluation of a country's logistics performance

The aggregate index is calculated by analyzing six main components using the above cited indicators. None of those indicators independently guarantee a good level of logistics performance, and their inclusion is conditioned to empirical studies and extensive interviews carried out with specialists in international freight transport. Each component is defined as follows:

- **Efficiency of customs clearance process**: It evaluates the dispatch process's efficacy and efficiency (the quickness, ease, and predictability of customs agencies). Based on numerous administrative processes connected to the enforcement of current trade laws and the collection of import/export taxes on products and services (Martí, Puertas, & García, 2014).
- **Quality of trade and transport (infrastructures):** It assesses the quality of the country's transportation and telecommunications infrastructure. It is connected to the process of delivering goods to the ultimate customer and is not completely controlled by businesses owing to external circumstances (Molamohamadi et al., 2021).
- **Ease of arranging competitively priced shipments:** it assesses how simple it is to organize shipments at competitive pricing (Ocran & Abor, 2024).
- **Competence and quality of logistics services:** it assesses the competence and quality of logistics services. It demonstrates how specific organizational structure parties act, expressing the quality of service to the client and maximizing the connection between firms and customers (Stefanova, 2022).
- **Ability to track and trace consignments:** it measures cargo tracking and tracing. It is critical to determine the exact position and path of each consignment until it is delivered to the end consumer (Sorgenfrei, 2018). This component involves all participants in the commodities supply chain, and so traceability is the consequence of the sector's activity as a whole.
- **Frequency with which shipments reach consignee within scheduled or expected time:** it assesses the timeliness with which shipments are delivered. This is an important factor because, given the current high level of competition, failing to meet delivery deadlines is unacceptable. As a result, the demand for increasingly advanced computerization procedures has increased (Huang & Zhang, 2022).

The LPI is constructed through a questionnaire-based survey conducted in collaboration with institutions and companies associated with the World Bank. It was first published in 2007 and subsequently updated in 2010, 2012, 2014, and 2018(Çembercia, Civeleka, & Canbolata, 2015). This performance index serves as a tool for countries to assess their logistics performance over time, evaluate their relative position compared to other nations, and identify areas for improvement in order to enhance their logistics performance in global trade (Goçer & others, 2022).

The relationship of LPI and FDI :

Companies must innovate to improve the quality and competitiveness of their products in the global market because of the intense competition there (Chapman, Soosay, Kandampully, &

management, 2003). According to Glass, Saggi, Dutt, and Ros (2008), FDI serves as a crucial channel for transferring cutting-edge technology to developing nations. By undertaking research and development operations at less expensive costs, multinational corporations help a nation's technical capabilities by transmitting information that would not have been available otherwise (Alvarez & Marin, 2013).

Developing nations attract corporations hoping to outsource production because they have an abundance of workers available at lower wage levels(Wannisinghe et al., 2023). This creates new work possibilities, notably in the transportation and logistics industries. In developing countries, such industries have a greater influence on the labor market than in affluent nations. Transport and logistics provide major job opportunities in nations with high unemployment rates and a large population excluded from the labor market(Shepherd, 2013).

Recognizing the benefits of strong logistics systems for trade and foreign direct investment highlights the need for strong logistics systems in nations and supports financial investments in improving logistical performance(Demirbaş et al., 2024). The confirmation of this association emphasizes how crucial it is to create advanced logistical skills in order to promote economic growth and draw in foreign investment in the nations under observation(ÖZGÜNER & KÖSE, 2025).

From another perspective, the logistics performance of countries plays a crucial role in attracting foreign direct investment (FDI) for several reasons related to the efficiency and effectiveness of the logistics system (Raimbekov, Z., & Syzdykbayeva, B, 2021). Here are some key impacts:

Transportation and Distribution Costs: A strong logistics system can reduce transportation and distribution costs, making businesses more attractive to foreign investors. Improving efficiency in these operations means saving production costs and increasing profit margins (Asih, H, et al.2023).

Time Efficiency Improvement: Efficient logistics reduces waiting times and accelerates shipping and delivery processes. This means delivering goods and services faster to markets, increasing companies' ability to meet the requirements of customers and business partners (Savina, H, et al.2021).

Quality and Reliability Improvement: An effective logistics system contributes to improving the quality of services and products and increasing reliability levels. This helps build a good reputation for the country as an attractive investment destination (Moskvichenko, et.2024).

Facilitation of Customs Procedures: Effective logistics helps expedite customs procedures, reducing costs and complexity associated with them, thus promoting smooth flow of goods across borders (de Melo, J, et al. 2024).

Public Spending Improvement: Developing logistics infrastructure can boost the local economy and improve the business environment. This contributes to building trust among foreign investors and encourages them to increase their investments (Anderu, K. S., & Tosin, K. O. (2023).

Attraction of Production Industries: Effective logistics makes a country more attractive for manufacturing and production industries, where the efficient movement of raw materials and finished goods becomes easier (Al-Makhmari, et. (2021).

In summary, the impact of logistics performance can be positive in attracting foreign direct investment by improving the efficiency and effectiveness of transportation and distribution operations, thus making the country more attractive for investment.

COPRAS method :

COPRAS (COmplex PRoportional ASsessment) is a multi-criteria decision-making method used to evaluate and rank alternatives based on multiple criteria(Alireza Alinezhad & Javad Khalili, 2019). It is particularly suitable for situations where the decision-making process involves complex and interdependent criteria. COPRAS offers a systematic and structured approach to decision-making by considering the relative importance of criteria and their interdependencies(Turanoglu Bekar, Cakmakci, & Kahraman, 2016). It provides a comprehensive framework for evaluating alternatives and facilitates the selection of the most suitable option based on the given criteria. The use of the COPRAS method could have several advantages:

- **Handling Multiple Criteria:** Decision-making in areas like logistics performance and investment destination selection often involves considering multiple criteria that can be difficult to compare directly(BAUSYS, ZAVADSKAS, & KAKLAUSKAS). The COPRAS method allows for the incorporation of multiple criteria, such as economic indicators, infrastructure quality, market potential, political stability, and more.
- **Complexity:** When dealing with complex decisions that involve numerous factors, the COPRAS method can provide a structured approach to analyze and synthesize the information(Chakraborty, Chatterjee, & Das, 2023). This can help avoid oversights and ensure that all relevant criteria are taken into account.
- **Subjectivity and Objectivity:** The COPRAS method provides a way to address both subjective and objective criteria. Decision-makers can assign relative weights to criteria based on their importance, reflecting their subjective preferences, and then objectively assess each alternative based on these criteria(Anand, Agarwal, & Aggrawal, 2022).
- **Comparative Analysis:** The COPRAS method enables the comparison of multiple alternatives against each other systematically(Erdebilli & Weber, 2022). This can assist decision-makers in identifying the strengths and weaknesses of each option and choosing the one that aligns best with the overall goals.
- **Transparency and Reproducibility:** The structured nature of the COPRAS method enhances the transparency of the decision-making process(A. Alinezhad & J. Khalili, 2019). This is important in research articles, as it allows readers to understand how the decisions were made and to potentially reproduce the analysis.
- **Applicability to Regional Analysis:** The method's suitability for comparative analysis can be particularly advantageous when studying different regions, such as the Arab Maghreb countries(Liu, 2019). It helps researchers and policymakers understand the unique strengths and weaknesses of each region in relation to logistics performance and investment destination selection.
- **Balance of Criteria:** The COPRAS method can help ensure a balanced assessment of various criteria, preventing any single criterion from dominating the decision-making

process(Kahraman & Otay, 2018). This is especially important when making decisions that have far-reaching consequences.

The purpose of employing the COPRAS method in our study is to differentiate the significance of indicators used in measuring logistic performance. The World Bank, for instance, treats the six indicators equally, adding them together and dividing by six to derive a country's logistic performance index. However, the COPRAS method allows us to determine the weight of each indicator based on its importance in decision-making.

Methodology:

In this study, we used the Logistics Performance Index (LPI) indicators provided by the World Bank to obtain the latest available statistics. For Algeria, Libya, and Mauritania, the data corresponded to the year 2022, whereas for Tunisia and Morocco, the data were from 2018. Western Sahara was excluded from the study due to the unavailability of data. Based on the collected information, a comparative analysis was conducted to assist an institutional investment decision, considering logistic performance as a critical factor for selecting the most suitable investment destination.

The COPRAS (Complex Proportional Assessment) method was employed to systematically evaluate and rank the countries. To enhance computational accuracy and reproducibility, a computational model was developed using Python, leveraging three primary libraries commonly used in deep learning environments: NumPy for numerical computations, Pandas for structured data handling and matrix operations, and TensorFlow/Keras for optimized and scalable matrix processing. This computational framework ensures transparency, minimizes manual calculation errors, and allows for future integration with predictive models, making it suitable for intelligent decision-support systems**.** The data obtained are in the following table :

Country	**Competence and quality of logistics services** (ind_1)	**Ease of arranging competitively priced shipments** (ind_2)	**Frequency with which shipments reach consignee within scheduled or expected time**(ind_3)	**Ability to track and trace consignments** (ind_4)	**Quality of trade and transport (infrastructures)** (ind_5)	**Efficiency of customs clearance process** (ind_6)
Algeria(1)	2.2	3	2.6	2.5	2.1	2.3

Tunisia(2)	2.3	2.5	3.24	2.86	2.1	2.88
Morocco(3)	2.49	2.58	2.88	2.51	2.43	2.33
Libya(4)	1.9	2	2.2	1.8	1.7	1.9
Mauritania (5)	2.5	2	2.8	2.5	2	2.1

We relied on the COPRAS method for the comparison and decision-making process. The evaluation process involves several steps(Hezer, Gelmez, Özceylan, & health, 2021):

Step 1: Performance Matrix and Country Ranking

$$R = \begin{vmatrix} ind_{11} & . & . \\ . & . & . \\ . & . & ind_{ij} \end{vmatrix}$$

i: number of indicator, *i*=1,2,…,6

j: number of Country, *j*=1,2,…,5

Step 2: Calculation of Absolute Weights using Entropy Method

For each criterion *i*, calculate the absolute weight w_i using the following mathematical equation:

$$\sum_{i=1}^{m} Wi = 1$$

w_i = (Weight of criterion *i*) / (Sum of weights of all criteria)

The weights w_i are calculated objectively using the entropy method as follows (Chisadza et al., 2020):

$$P_{ij} = \frac{ind_{ij}}{\sum_{j=1}^{n} ind_{ij}}$$

$$E_i = \frac{1}{In(n)} \sum_{j=1}^{n} p_{ij} \ln(p_{ij})$$

$$d_i = 1 - E_i$$

$$w_i = \frac{d_i}{\sum_{j=1}^{m} d_i}$$

p_{ij} is the normalized value, E_i is the entropy of criterion *i*, d_i is the degree of diversification, and w_i is the final weight.

Step 3: Calculation of Matching Matrix

For each cell (*i*, *j*) in the performance matrix, multiply the value of the indicator *P(i, j)* by the corresponding absolute weight W_i for criterion *i*.

$$Ki = Wi \times ind_{ij}$$

Step 4: Calculation of Absolute Logical Matrix

For each cell *(i, j)* in the matching matrix, multiply the matching value *C(i, j)* by the relative matching value *R(i)* for row *i*.

Step 5: Calculation of Relative Priorities

For each column *j* in the absolute logical matrix, calculate the relative priority *RP_j* by summing the elements in the column and dividing them by the sum of all elements in the column.

Step 6: Calculation of Absolute Priorities

For each column *j* in the relative priorities matrix, multiply the relative priority *RP_j* by the absolute weight W_i for each criterion *i*.

Step 7: Calculation of Absolute Relative Priorities

For each country *j*, calculate the absolute relative priority *APR_j* using the following mathematical equation:

APR_j = (Sum of absolute priorities for country *j*) / (Sum of absolute priorities for all countries)

RESULTS

In this section of the study, we will apply the methodological steps of the COPRAS method, step by step, to obtain the results as follows:

Step 1: Performance Matrix and Country Ranking

In this step, we are presenting the performance matrix and the ranking of countries based on logistics performance. Logistics Performance Index (LPI) indicators were used for the following countries: Algeria, Libya, and Mauritania for the year 2022, while data related to Tunisia and Morocco dates back to 2018. The performance of each country was evaluated across six indicators.

$$R = \begin{vmatrix} 2.2 & 3 & . \\ . & . & . \\ . & . & 2.1 \end{vmatrix}$$

After preparing the matrix based on the data in Table 01, we will move to the second step.

Step 2: Absolute Weights

In this table, we present the calculation of absolute weights for each criterion using the Entropy Method.

Criterion	Weight
Competence and quality of logistics services	0.25
Ease of arranging competitively priced shipments	0.15
Frequency with which shipments reach consignee within scheduled or expected time	0.2
Ability to track and trace consignments	0.15
Quality of trade and transport (infrastructures)	0.15
Efficiency of customs clearance process	0.1

Step 3: Matching Matrix

In This table, we are presenting the calculation of the matching matrix. The values in the matching matrix were calculated by multiplying the values of each indicator by their respective absolute weights for each country. The goal of this stage is to determine the final performance of each country across the specified indicators.

Country	Ind_1	Ind_2	Ind_3	Ind_4	Ind_5	Ind_6
Algeria	0.55	0.45	0.52	0.375	0.315	0.23
Tunisia	0.575	0.375	0.648	0.429	0.315	0.238
Morocco	0.6225	0.387	0.576	0.3765	0.3645	0.233
Libya	0.475	0.3	0.44	0.27	0.255	0.19
Mauritania	0.625	0.3	0.56	0.375	0.3	0.21

Step 4: Absolute Logical Matrix

In this table, we are displaying the calculation of the absolute logical matrix. The values in the absolute logical matrix were obtained by multiplying the values in the matching matrix by the relative matching values calculated for each country. The objective of this stage is to calculate the absolute logical matrix and represent the performance of each country in the comparison.

Country	Ind_1	Ind_2	Ind_3	Ind_4	Ind_5	Ind_6
Algeria	0.1375	0.0675	0.104	0.09375	0.04725	0.023
Tunisia	0.14375	0.05625	0.1296	0.10725	0.04725	0.0238
Morocco	0.155625	0.05805	0.1152	0.094125	0.054675	0.0233
Libya	0.11875	0.0454	0.0976	0.0675	0.03825	0.019
Mauritania	0.15625	0.0454	0.112	0.09375	0.045	0.021

Step 5: Relative Priorities

In this table, we are illustrating the calculation of relative priorities for each criterion. The relative priorities for each criterion were calculated by summing the values in the absolute logical matrix for each criterion. The purpose of this stage is to identify the relative priorities of the criteria in the decision-making process.

Criterion	Relative Priority
Competence and quality of logistics services	0.1299
Ease of arranging competitively priced shipments	0.05335
Frequency with which shipments reach consignee within scheduled or expected time	0.11116
Ability to track and trace consignments	0.0923
Quality of trade and transport (infrastructures)	0.04494
Efficiency of customs clearance process	0.0213

Step 6: Absolute Priorities

In this table, we are presenting the calculation of absolute priorities for each criterion. The absolute priorities for each criterion were calculated by multiplying the relative priorities by their respective absolute weights. The objective of this stage is to determine the absolute priorities of the criteria and represent them with their final values.

Criterion	Absolute Priority
Competence and quality of logistics services	0.032475
Ease of arranging competitively priced shipments	0.00799875
Frequency with which shipments reach consignee within scheduled or expected time	0.02223296
Ability to track and trace consignments	0.013845
Quality of trade and transport (infrastructures)	0.006741
Efficiency of customs clearance process	0.00213

Step 7: Absolute Relative Priorities:

This is the final table displaying the calculation of the absolute relative priorities for each country. The absolute relative priorities for each country were calculated by summing the absolute priorities for each country across different criteria. The goal of this stage is to determine the final performance of each country and rank them based on the absolute relative priorities.

Country	Absolute Priority	Relative
Algeria	0.3897	
Tunisia	0.2709	
Morocco	0.2229	
Libya	0.1052	
Mauritania	0.0113	

Discussion

The study compare the logistics performance of Algeria, Libya, Mauritania, Tunisia, and Morocco and provide insights for investment decisions based on logistic performance. We used the Logistics Performance Index (LPI) indicators from the World Bank for Algeria, Libya, and Mauritania in 2022, while the data for Tunisia and Morocco was from 2018. The COPRAS method, a multi-criteria decision-making approach, was employed for the comparison and decision-making process. This aligns with the findings of (Gürler et al., 2024).

The performance matrix and country ranking revealed the logistics performance scores for each country across six indicators: competence and quality of logistics services; ease of arranging competitively priced shipments; frequency with which shipments reach the consignee within scheduled or expected time; ability to track and trace consignments; quality of trade and transport infrastructure; and efficiency of the customs clearance process. The absolute weights were assigned to each criterion based on their relative importance, this aligns with the findings of (Hadzikadunic et al., 2023). Competence and quality of logistics services received the highest weight of 0.25, followed by ease of arranging competitively priced shipments (0.15), frequency with which shipments reach the consignee within scheduled or expected time (0.2), ability to track and trace consignments (0.15), quality of trade and transport infrastructures (0.15), and efficiency of the customs clearance process (0.1). From the results of this stage, we deduce that the indicators vary in terms of importance and degree of impact. This is a crucial factor in determining the best-performing country in logistics performance in a more efficient and objective manner.

The matching matrix was calculated by multiplying each indicator value by its corresponding absolute weight for each country. The absolute logical matrix was obtained by multiplying the matching matrix values by the relative matching values for each row. The relative priorities were computed by summing the elements in each column of the absolute logical matrix and dividing them by the sum of all elements in the column. Finally, the absolute priorities were determined by multiplying the relative priorities by the absolute weights for each criterion. Accordingly, we get the following arrangement:

1. Algeria (Highest Performance: 0.3897)

Algeria ranked first, indicating that its logistics performance is the most attractive for investment among the Maghreb countries studied. The country performed particularly well in

ease of arranging competitively priced shipments (3.0) and shipment tracking (2.5), reflecting tangible improvements in logistics infrastructure and supply chain coordination. However, customs efficiency (2.3) remains moderate, suggesting the need for further institutional and procedural reforms. These findings are consistent with earlier studies emphasizing Algeria's gradual logistics modernization (Arrouche & Boukhedimi, 2024).

Importantly, this strong logistics performance is also reflected in recent foreign direct investment trends. According to UNCTAD, FDI inflows to Algeria increased to approximately USD 1.43 billion in 2024, driven largely by regulatory reforms and improvements in the investment climate (UNCTAD, 2025). Furthermore, Algeria attracted around USD 1.2 billion in FDI in 2023, the highest level among Maghreb countries, reinforcing the link between improved logistics performance and increased foreign investment attractiveness (Trends in Africa, 2023).

2. Tunisia (Second-Highest Performance: 0.2709)

Tunisia ranked second, showing relative strength in customs efficiency (2.88) and shipment tracking (2.86), which reflects a more structured and organized logistics environment. However, ease of arranging shipments (2.5) remains weaker than in Algeria and Morocco, possibly due to higher transport costs or limitations in logistics service availability. These findings align with previous research on Tunisia's logistics system (Ben Haj Ahmed et al., 2023).

Despite using older LPI data (2018), recent investment figures suggest a positive trajectory. During the first half of 2025, total foreign investments reached TND 1,650.3 million (approximately USD 537 million), representing an increase of 20.8% compared to 2024 (TAP, 2025). This upward trend suggests that improvements in logistics efficiency may have strengthened Tunisia's investment appeal in recent years, potentially leading to a higher ranking if updated LPI data were available.

3. Morocco (Third-Highest Performance: 0.2229)

Morocco ranked third despite its well-established reputation for logistics and infrastructure development. The country performed relatively well in trade and transport infrastructure quality (2.43) and customs efficiency (2.33), but lagged behind Algeria and Tunisia in ease of arranging shipments (2.58) and shipment tracking (2.51). This outcome may be influenced by the weighting structure of the COPRAS method, where criteria with higher relative importance may have negatively affected Morocco's final position. Similar observations were reported by Ait Lhassan et al. (2022).

Recent FDI data, however, indicate that Morocco remains a key investment destination in the region. UNCTAD reports that FDI inflows reached approximately USD 1.6 billion in 2024, reflecting a strong recovery in foreign investment (UNCTAD, 2024). In addition, national data show that net FDI inflows amounted to MAD 14.12 billion by the end of May 2025 (around USD 1.44 billion), representing a 41.7% increase compared to the previous year (Office des Changes, 2025). These figures suggest that Morocco's logistics and institutional framework continues to support substantial foreign investment despite its third-place ranking in this study.

4. Libya (Fourth Place: 0.1052)

Libya exhibited weak logistics performance, particularly in customs efficiency (1.9) and trade and transport infrastructure quality (1.7). These results reflect persistent structural challenges largely driven by political and security instability, which have hindered infrastructure investment and delayed economic reforms. Consequently, Libya remains less attractive for both logistics-based activities and foreign investment. This interpretation is consistent with earlier findings by Elarifi (2021). Moreover, the lack of consistent and comprehensive FDI data reported by UNCTAD further highlights the country's limited integration into global investment flows (UNCTAD, 2024).

5. Mauritania (Lowest Performance: 0.0113)

Mauritania ranked last, indicating weak logistics performance across most indicators. Although logistics service quality showed a relatively acceptable score (2.5), low customs efficiency (2.1) and infrastructure quality (2.0) significantly constrained overall performance. These limitations reduce the country's logistics competitiveness and its attractiveness for foreign investment. Previous studies similarly emphasized structural bottlenecks in Mauritania's logistics sector (Aboul-Dahab et al., 2020). Additionally, UNCTAD has not reported updated harmonized FDI data for Mauritania beyond 2023, suggesting limited foreign investment inflows compared to regional peers (UNCTAD, 2024).

Finally, it is important to note that the use of different time periods for LPI data 2018 for Tunisia and Morocco and 2022 for Algeria, Libya, and Mauritania may affect the robustness of the ranking. Given recent increases in FDI inflows to Tunisia and Morocco, it is likely that their logistics performance has improved in recent years, which could alter their relative positions if more recent LPI data were available. To provide a more comprehensive and visual comparison of logistics performance across the selected Maghreb countries, a radar chart (spider chart) is presented below, illustrating the scores of each country across the main LPI indicators.

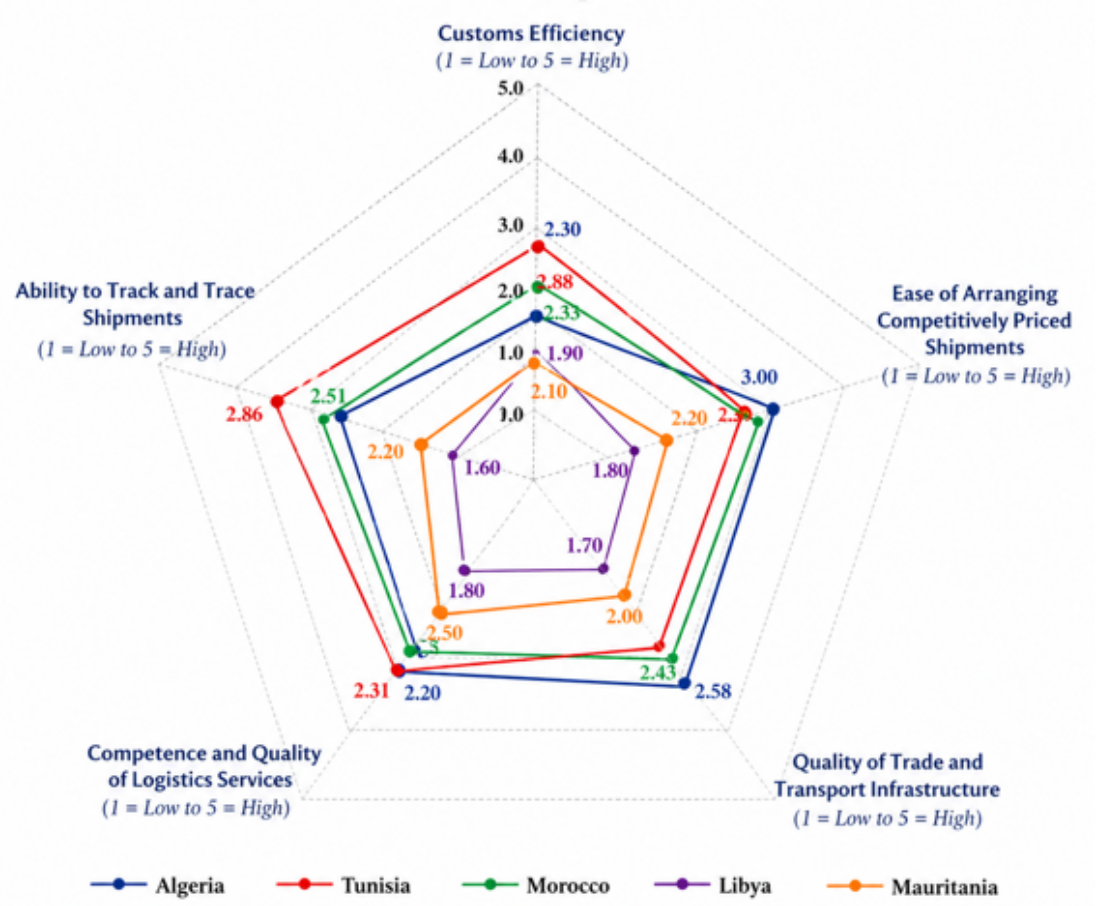
The radar chart offers a multidimensional visualization of logistics performance, highlighting both strengths and weaknesses across key indicators for each country. Algeria demonstrates a relatively balanced performance, with a notable advantage in the ease of arranging competitively priced shipments, confirming its leading position in the overall ranking. Tunisia shows strong performance in customs efficiency and shipment tracking, indicating a more structured institutional framework, although it remains slightly behind Algeria in overall consistency.

Morocco presents a fairly stable profile across most indicators, particularly in infrastructure quality, but lacks a clear dominance in any single dimension, which may explain its third-place ranking despite its established logistics reputation. In contrast, Libya and Mauritania exhibit significantly weaker and less balanced performance profiles, with lower scores across almost all indicators, reflecting structural and institutional constraints that limit their logistics efficiency and investment attractiveness.

Overall, the radar chart reinforces the results obtained through the COPRAS method by providing deeper insights into the distribution of performance across criteria. It also highlights

that higher overall performance is associated not only with strong individual indicators but also with a balanced and consistent logistics system across multiple dimensions.

Fig 02: Logistics performance of Maghreb countries (Radar chart)



Note : 1 = low performance, 5 = High performance.
Source : authors using python

Conclusion

The study "The Impact of Logistics Performance on Investment Destination Selection for Enterprises in the Arab Maghreb Countries" examines the logistics performance of several countries in the region, namely Algeria, Tunisia, Morocco, Libya, and Mauritania, using the COPRAS method.

Based on the results, Algeria emerged as the top-performing country in terms of logistics, followed by Tunisia and Morocco in the second and third positions, respectively. On the other hand, Libya and Mauritania ranked lower in logistics performance.

These findings highlight the direct influence of logistics performance on investment destination selection by enterprises. The results indicate that enterprises are more likely to prefer investment destinations with strong and efficient logistics performance, such as Algeria, Tunisia, and Morocco. Conversely, there may be a decrease in interest from enterprises to invest in countries with lower logistics performance, such as Libya and Mauritania.

Improving logistics performance in countries with lower rankings requires intensive efforts to enhance transportation infrastructure, streamline customs procedures, and improve the quality of logistics services. These initiatives will contribute to attracting more investments from enterprises and fostering trade and economic development in those countries.

In summary, the study underscores the crucial role of logistics performance in shaping investment destination choices for enterprises in the Arab Maghreb countries. Enhancing logistics performance can attract more investments and drive economic development in the region.

The perspectives of this study include updating data for a more balanced comparison and analyzing the factors influencing logistics performance in the Maghreb. Expanding the study to other countries and exploring the impact of new technologies on logistics would be beneficial.

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