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Performance of Port Institutions in Algeria Between Reality and Challenges: An Analytical Study (2000–2022)

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Abstract:

The aim of this study is to analyze the development of the performance of port institutions in Algeria during the period 2000-2022, as port performance efficiency ensures the flow of global trade. The study's findings reveal that the performance indicators of Algerian ports are closely linked to the oil sector, which has made oil ports more efficient compared to other commercial ports. Additionally, the overall performance of Algerian ports has experienced several fluctuations, leading to a decline in efficiency. This weakness is attributed to the underperforming fleet, which requires improvement. Enhancing the fleet's performance can be achieved through the development of services to make them more effective.

Keywords: Port performance, performance indicators, port institutions, Algeria.

1 Introduction:

In the context of globalization and current global developments, the maritime transport sector has played a fundamental role in the development of economies and societies. This pivotal role has driven countries to invest in new technologies to modernize ports, given their importance as a key driver of global foreign trade. Ports serve as gateways and hubs connecting various transport modes, facilitating the cross-border movement of goods and commodities. Due to their significance, measuring port performance is one of the essential

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elements for assessing the efficiency and effectiveness of port institutions. This measurement enables ports to evaluate their status, identify strengths and weaknesses, and make strategic decisions to improve performance in an increasingly competitive environment.

Algeria, by virtue of its geographical location, possesses a 1,200-kilometer coastline, making it one of the most important maritime routes in the Mediterranean region. This coastline plays a vital role in enhancing maritime trade and allows Algeria to better leverage its economic potential. In this regard, we address the following research question:

- **What level of performance have Algerian port institutions achieved during the period 2000–2022?**

1.1 Importance of the Study :

The importance of this study lies in evaluating the performance efficiency of Algerian port institutions by examining the country's port capabilities, analyzing the evolution of goods movement through maritime transport, and identifying the key challenges facing the sector.

1.2 Objectives of the Study:

- To build a theoretical framework around the concept of port institution performance;
- To determine the most efficient ports in Algeria;
- To assess the performance of Algerian ports during the period 2000-2022;
- To highlight the main challenges faced by Algerian ports.

1.3 Research Methodology:

The study relies on both the descriptive and inductive approaches in order to provide clear and comprehensive concepts related to the topic.

2 Theoretical Framework: An Introduction to Port Institution Performance:

2.1 The Concept of Performance:

The widespread use of the term performance in managerial literature, particularly in research focused on institutions, has not led to a unified understanding of its meaning. It may refer to the degree to

which objectives are achieved, the efficiency in resource utilization, or simply the completion of assigned tasks [1].

Some scholars define performance from a strategic perspective as: "The ability of an institution to sustain itself effectively in a competitive and evolving market-that is, to achieve both efficiency and effectiveness." More broadly, performance can be defined over time as "an institution's ability to achieve its short-, medium-, and long-term objectives" [2].

Other researchers view performance as: "A responsibility center, meaning the effectiveness and productivity through which that center achieves the objectives it has committed to. Effectiveness refers to the extent to which the objectives are met, while productivity compares the results obtained with the resources used" [3].

2.2 Components of Performance:

Based on the concept of performance, it is clear that it consists of three main components: efficiency, effectiveness, and productivity.

1) **Efficiency:** is the ability to perform the required task with the least possible resources. An efficient activity is one that incurs the lowest cost. It is also defined as the optimal use of institutional resources at the lowest possible cost. Therefore, efficiency reflects how the organization utilizes its inputs compared to its outputs, aiming to maximize returns and minimize costs.
2) **Effectiveness:** is the ability to carry out the intended activity to achieve the desired results. It refers to the organization's capacity to meet its objectives.

3) Productivity: refers to the use of resources in quantitative terms. It is used to assess how effectively the organization uses various production inputs. In essence, productivity represents the amount of output attributed to one or more input factors during a specific and defined period of time.[4]

(1) Mezhoudah A. E, Performance Between Efficiency and Effectiveness: Concept and Evaluation. Review of Human Sciences, 1(1), 2001, p86.
(2) Zernouh A, Performance in the Organization, Sociology, 1(3), 2017, p30.
(3) Amzal, F & Chenai A, Internal auditing as a tool for improving the performance of the economic enterprise, Industrial Economics Journal, 12(01), 2022, p 523.
(4) Amzal, F & Chenai A, op cit, p 527.

2.3 The Concept of Ports:

The port, in its literary definition, is "a natural or artificial shelter prepared to receive ships, load or unload their cargo, and ensure their maintenance" (5).

In the classical sense of the term, the port is "a transit area, and a maritime gateway through which travelers and goods pass. As such, the port serves as an interface between the sea and land, a point of convergence and intersection of land and sea transport lines, and a place for the convergence of multimodal transport" (6).

From an economic and industrial perspective, the concept of the port generally refers to a set of facilities designed and operated to ensure the transfer of goods between the ship and the sea and various land transport modes: railways, roads, inland navigation, and various pipelines. Therefore, it is a complex hub that occupies a prominent position, not only in the region where it serves as one of the main drivers of development but also at the national and international levels. Its location, which is usually at the borders of a country and thus has direct contact with the external world, explains the essential functions that the port must perform in the international maritime community:

- Development through foreign and domestic trade via the movement of goods at competitive prices.
- Promoting industrialization (industries related to the port or close to it).
- Contributing to the development of the economic and regional space to improve the integration between the economic and social activities related to it. (7)

2.4 Port Performance Indicators:

Port performance is measured through cargo handling operations at

(5) Le dictionnaire Hachette, Edition 2009.
(6) Chachoua F, La performance des ports algériens: Etude comparative par la méthode d'Analyse d'Enveloppement des Données (DEA), Thèse en vue de l'obtention du doctorat en sciences de Gestion, Management Stratégique International, Université Abdelhamid Ibn Badis Mostaganem, Algerie, 2017/2018, p50.
(7) Guermah H, Les ports : Le maillon faible de la chaine logistique en Algérie. Revue de l'économie financière & des affaires, 5(4), 2021, p 375.

the port. There are four main groups of performance indicators [8]:

2.4.1 Achievement Indicators:

These are considered among the most important indicators, as they allow for effective control over financial performance. Achievement is defined as the amount of goods (in tons) handled during a specific time period. There are three main types of achievement indicators:

1) **Berth Achievement**: Measures the total quantity of goods handled at the berth over a specific period, usually within one year.
2) **Ship Achievement**: Measures the rate of cargo handled to and from the ship at the berth. This indicator reflects the efficiency of cargo handling operations.
3) **Work Group Achievement**: Represents the average number of tons of goods handled by a group of workers per hour.

2.4.2 Service Indicators:

There are many indicators used to assess the quality and type of service offered by the port to its clients. Among these, the key indicator taken into account is the total time the ship spends in the port:

1) **Waiting Time**: The time interval between the ship's arrival at the port and its berthing.
2) **Time at Berth**: The second component of the ship's total time at the port, which it spends at berth, either during loading/unloading operations or while idle. It is measured in hours or days.

2.4.3 Utilization Indicators:

These are practical and realistic measures of how berth facilities and other resources are utilized. Two important indicators in this group are:

1) **Berth Occupancy**: The time period during which the berth is occupied by ships.
2) **Working Time at Berth**: The portion of the ship's berth time that is scheduled for operations (loading/unloading).

(8) Kalbaza A & Yousfi R, Maritime Freight Transport Logistics "The Case of Algeria", Industrial Policy and Development of External Exchanges, 4(2), 2015, pp 182-183.

2.4.4 Productivity Indicators:

While the previous three indicator types offer effective information for management systems, they do not directly measure the efficiency and effectiveness of berth operations. They do not reveal the performance of labor, equipment, and infrastructure used. Efficiency here refers to the ratio between the achieved output and the effort expended. In ports, the suitable efficiency measure for cargo handling operations is the cost of handling one ton of goods.

2.5 Determinants of Port Logistics Performance:

Researchers in the field of port performance have proposed a wide range of determinants to measure performance, without agreeing on a single comprehensive set of indicators. It is important to note that port performance takes various forms due to the complex nature of port operations. Therefore, performance indicators are considered based on the stakeholders assessing the performance. For instance, shippers will use different indicators from those used by shipowners [(9)].

Based on the literature, the following determinants are essential:

- **Marketing strategy aligned with port specificities:** Port competitiveness requires monitoring all components of the economic and political environment in the short, medium, and long term. A marketing strategy will allow port authorities to understand the criteria on which port performance is based, and thus, what users consider when choosing their port.
- **Natural environment of the port:** This determinant refers to factors like land surface area, coastline conditions, and channel depth. These elements affect port productivity and operations, thus providing the essential operational environment that defines the port's impact.
- **Port infrastructure:** Comprises operational facilities and equipment.
- **Port productivity:** Directly affects ship turnaround time. When a ship is waiting at port, capital is frozen, leading to costs for its users.

(9) Kada A & Elouidani A, Déterminants de la Performance Portuaire: Cas du Port d'Agadir, Journal of Business and Economics, 3(2), 2015, 115.

- **Port service pricing:** Port users compare price levels with productivity to assess the value of services and consequently infer port performance.
- **Quality of port services:** Has become a business necessity. It is the result of coordination among stakeholders involved in service delivery.
- **Human resource efficiency:** This factor is the main success driver for any logistics chain. A well-equipped port without qualified staff can never achieve its objectives.
- **Quality of information flow within the port:** All users must have access to complete, real-time information to conduct their transactions effectively.
- **Port efficiency:** Can be reflected in shipping rates charged by shipping companies, vessel turnaround time, etc. The longer the vessel stays at berth, the higher the cost—same goes for cargo. Thus, port efficiency generally reflects the speed and reliability of port services.
- **Frequency of vessel calls:** An indicator that reflects the attractiveness of the port.(10)

3 Analysis of the Development of Port Performance in Algeria from 2000 to 2022:

3.1 Evaluation of Algerian Ports' Performance:

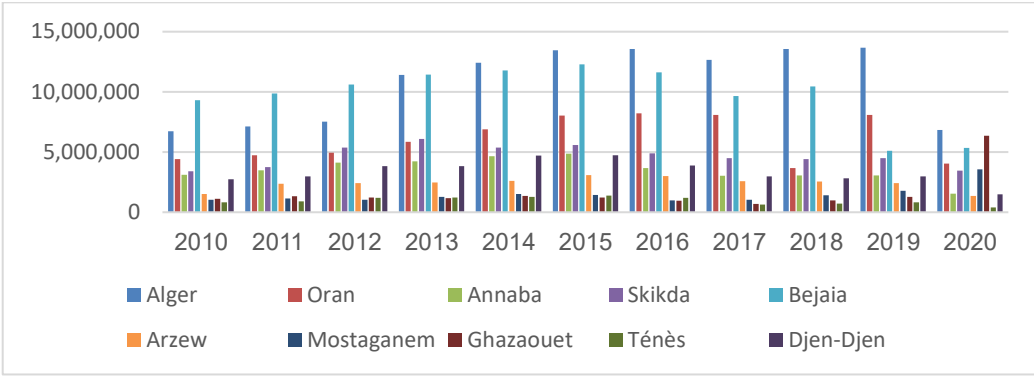
3.1.1 Cargo Traffic in Algeria's Main Ports:

Cargo movement in Algeria's principal ports serves as a vital indicator reflecting the country's economic and commercial developments. These ports represent critical junctions between domestic and international trade, making the assessment of their performance and analysis of their temporal variations essential for understanding economic activity dynamics.

Following our examination of each Algerian port's capabilities, an analysis of cargo traffic across these ports becomes imperative. The figures below present the total imports and exports per port during the 2010-2020 period.

(10) Kada A & Elouidani A, op cit, p 117.

Fig.1. Total Imports at Algerian Commercial Ports for the period (2010-2020).



Source: Prepared by the researchers based on Appendix No. 01.

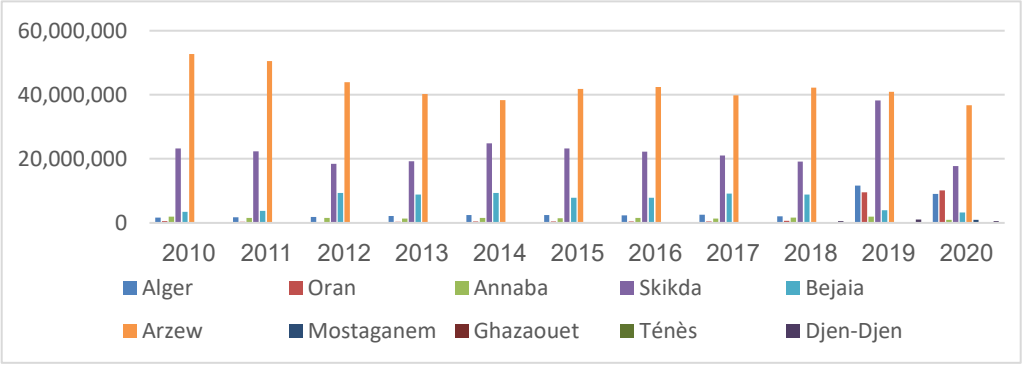
The figure illustrates the evolution of total imports through Algeria's commercial ports during the period 2010–2020. It shows that the Port of Algiers consistently held the top position in terms of import volume, exceeding 13 million tons in some years. This highlights its central role in supplying the national market. It is followed by the Port of Béjaïa, which recorded relatively high levels up until 2019, but experienced a notable decline in 2020. This aligns with the general drop observed across most ports that year due to the direct impacts of the COVID-19 pandemic and the decline in both national and global economic activity. The Port of Oran maintained third place with a slightly upward trend until 2019.

In contrast, the ports of Annaba, Skikda, and Mostaganem recorded similar import levels ranging between 4 and 6 million tons, with no significant changes. As for the Port of Arzew, it did not experience any exceptional increase in imports as its operations are mainly focused on exports, particularly in the hydrocarbons sector. Meanwhile, the ports of Ghazaouet, Tenes, and Djen-Djen remained among the ports with low performance, reflecting their limited role in the national network of maritime trade exchanges.

These data show a concentration of maritime trade activity in three major ports, highlighting the urgent need to develop and modernize infrastructure and logistics services in less active ports. Such development is essential to achieve a more balanced distribution of

maritime trade activity and to enhance the competitiveness of Algerian ports both regionally and internationally, especially in light of global challenges.

Fig.2. Total exports by Algerian commercial ports for the period (2010-2020).



Source: Prepared by the researchers based on Appendix No. 02.

The figure illustrates the evolution of total exports through Algeria's commercial ports during the period 2010-2020. It clearly shows a strong concentration of export activity in the Port of Arzew, which topped the list throughout the period, with export volumes exceeding 50 million tons in some years. This reflects its clear specialization in the export of hydrocarbons and energy products. It is followed by the Port of Skikda, which also maintained high levels, confirming its key role in exporting petroleum and petrochemical products.

The Port of Béjaïa performed well up to 2018, before experiencing a noticeable decline in 2019 and 2020. This drop is mainly attributed to the impacts of the COVID-19 pandemic, the global slowdown in energy demand, and changes in international trade flows during that period.

In contrast, the ports of Algiers, Oran, and Annaba recorded moderate export levels, indicating their contribution to the export of non-energy products, although these volumes are significantly lower than those of ports specialized in energy.

Meanwhile, ports such as Mostaganem, Ghazaouet, Tenes, and Djen-Djen remained among the ports with low export contributions,

with exports not exceeding 2 million tons annually in most years. This weakness reflects either limited infrastructure in these ports or weak industrial and productive activity in their surrounding areas.

Overall, the data reveals a concentration of Algerian exports in energy-focused ports, highlighting the limited diversification of the country's export base. This disparity in port performance is closely linked to the rentier nature of the Algerian economy, which relies heavily on hydrocarbon exports, as well as the state's external trade policies. This reinforces the need to develop other ports and improve their logistical capabilities to support non-oil exports and achieve a better balance in foreign trade.

3.1.2 Cargo Movement in Algerian Ports:

To study the efficiency of Algerian port authorities, it is essential to track the evolution of total cargo movement in ports. This development reflects the ports' ability to handle and distribute goods, which directly impacts national economic performance. This evolution will be presented through the following table and figure, which show data on cargo movement in Algerian ports during the period 2000-2022.

Table 1. Total cargo movement in Algerian ports during the period 2000-2022.

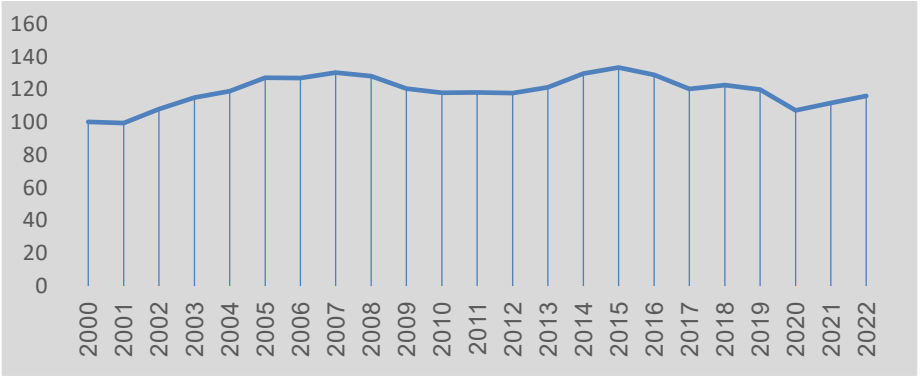
Unit: Million tons

Years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Loaded Cargo	81,8	80,5	84,6	91,9	94,1	100,6	100	100,8	94,3	87,4	83,7	80,5
Unloaded Cargo	18,5	19	23,5	23,2	24,9	26,5	27	29,5	33,9	33,1	34,2	37,7
Total	**100,3**	**99,5**	**108,1**	**115,1**	**119**	**127,1**	**127**	**130,3**	**128,2**	**120,5**	**117,9**	**118,2**
Years	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	
Loaded Cargo	75,5	72,4	77,1	77,4	77	74,5	75,3	75,67	67,716	73,155	76,359	
Unloaded Cargo	42,3	49	52,6	56	52	45,9	47,4	44,262	39,364	38,667	39,636	
Total	**117,8**	**121,4**	**129,7**	**133,4**	**129**	**120,4**	**122,7**	**119,932**	**107,335**	**111,823**	**115,995**	

Source: Statistical Summary 1960–2020, Transport Chapter, p 244.

- Quarterly Statistical Bulletins for the years 2020, 2021, 2022.

Fig.3. Evolution of total cargo traffic in Algerian ports during the period 2000-2022.



Source: Prepared by the researchers based on the data in Table No. 02.

We observe from the table and the graph that the total cargo traffic in Algeria experienced continuous fluctuations throughout the study period. There was an increase in both loaded and unloaded cargo from 2000 until 2008, before declining in 2009 to 120,4 million tons, after reaching 128,2 million tons the previous year. This decline coincided with the drop in oil prices, given that the Algerian economy relies heavily on hydrocarbon exports.

Cargo traffic then gradually increased again, reaching 133,4 million tons in 2015. However, in 2016, it began to decline once more due to the government's adoption of austerity measures (import reduction), as well as the outbreak of the COVID-19 pandemic, which began affecting national and global trade from 2017 onwards. As a result, the total volume of cargo traffic dropped to 107,335 million tons in 2020.

Starting in 2021, with the gradual improvement in health conditions and the resumption of foreign trade activity, cargo traffic witnessed a clear recovery, reaching 115,995 million tons in 2022.

In conclusion, the performance of Algerian port institutions remains weak compared to the available capabilities of the maritime fleet, which calls for the implementation of deep reforms to enhance their efficiency and strengthen their role in supporting foreign trade.

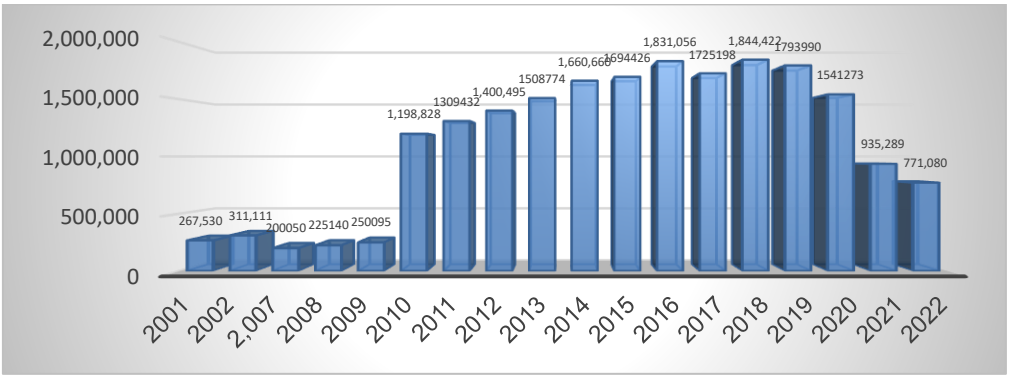
3.1.3 Container Traffic Index in Algerian Ports:

The container traffic index in ports reflects the transfer of containers between land and sea transport and vice versa. It is measured using Twenty-foot Equivalent Units (TEUs), which represent the

standard size of a container. The shipping movement through intermediate ports is counted twice: first, when the container is unloaded from the incoming ship, and second, when it is loaded onto the departing ship. This traffic includes all containers, whether full or empty (11).

The following figure shows the total container traffic in Algerian ports during the period 2001-2022:

Fig.4. Evolution of Container Traffic in Algerian Ports during the Period 2001-2022.



Source: Prepared by the researchers based on World Bank statistics and the quarterly statistical bulletins for the year 2021.

Container traffic in Algerian ports experienced significant development during the period 2001-2022, going through several phases that reflect the dynamics of the country's trade activity.

During the period 2001-2008, container traffic remained relatively low, ranging between 267530 containers in 2001 and 250095 containers in 2008. This indicates the limited port capabilities at that time.

From 2009 to 2018, the sector witnessed a substantial boom. Traffic rose to 1198828 containers in 2010 and reached 1694426 containers in 2014. The peak occurred between 2015 and 2018, with record levels

(11) Brahimi N & Moussaoui S, The Role of Container Maritime Transport Efficiency in Activating Multimodal International Transport in Algeria, International Symposium on: The Role of Customs in Achieving Supply Chain Efficiency and Sustainability in the Face of Crises -The Coronavirus Crisis as a Model, Faculty of Economic, Commercial and Management Sciences, University of Setif 01, 2022, p 9.

exceeding 1834056 containers in 2016 and 1844422 containers in 2017. This growth was due to significant investments in port infrastructure and increased foreign trade activity.

However, the period from 2019 to 2022 saw a sharp decline in container traffic, with figures dropping to 935289 containers in 2021 and 771080 containers in 2022. This decline is attributed to the impacts of the COVID-19 pandemic and the adoption of austerity economic policies, which negatively affected trade activity.

This fluctuation highlights the need to develop sustainable strategies to improve the performance of Algerian ports and strengthen their role in foreign trade.

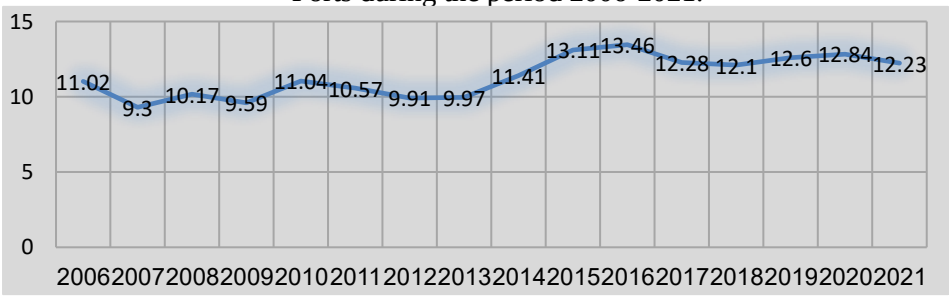
3.1.4 Algerian Ports Connectivity Index with Global Ports:

The port connectivity index with global ports is one of the most important indicators reflecting the strength of maritime transport and the development level of a country's foreign trade. This index measures the quality and efficiency of the connection between Algerian ports and international ports, indicating Algeria's ability to integrate into global logistics networks.

The performance of this index is linked to the number of points achieved, with every 2004 connections representing 100 points. A lower connectivity score indicates a decline in the level of connection with global ports(12).

The following figure illustrates the evolution of Algeria's port connectivity index over the study period, highlighting improvements or declines in connection efficiency and the impact on foreign trade flow.

Figure 05: Evolution of the Algerian Ports Connectivity Index with Global Ports during the period 2006-2021.



(12) AlFiky M S, Fantazi A & Chekirou W, The performance of indicators of maritime transport and foreign trade in Algeria -a statistical study using basic vehicles ACP for the period 2007-2021, Journal of North African Economies, 19(32), 2023, p 50.

Source: Prepared by the researchers based on World Bank statistics.

The Algerian ports' connectivity index with global ports showed slight fluctuations during the period 2006-2021, reflecting limited changes in maritime connection efficiency and Algeria's integration into global logistics networks. In 2006, the index stood at 11,02 points but declined to 9,3 points in 2007, attributed to a drop in global connectivity efficiency. However, the index gradually recovered in the following years, reaching 11,04 points in 2010.

The period from 2014 to 2016 witnessed a notable improvement, with the index rising from 11,41 points in 2014 to 13,46 points in 2016, indicating increased efficiency and the development of logistics services. Afterward, the index remained relatively stable, ranging between 12,1 and 12,84 points from 2018 to 2020, before slightly declining to 12,23 points in 2021, likely due to the effects of the COVID-19 pandemic on global maritime transport.

Nonetheless, the performance of Algerian ports remains very weak compared to global standards. The index never exceeded 14 points throughout the study period, indicating the limited capacity of Algerian ports to keep pace with technological advances and modern services offered by global ports. This weakness is mainly due to the lack of infrastructure investment and reliance on traditional technology in port management and operation, which limits their efficiency in establishing effective connections with international logistics networks.

Based on these findings, there is an urgent need to enhance the infrastructure of Algerian ports and adopt modern technologies to improve their logistics services. Strategic policies must also be developed to focus on improving maritime connectivity with global ports, which will contribute to increasing the competitiveness of Algerian ports and strengthening their role in the global economy.

3.2 Problems of Algerian Ports:

Algerian ports suffer from a number of problems, which can be summarized as follows:

1) Traffic Imbalance: Algerian ports face an imbalance between imports and exports, which negatively affects the profitability of the

national maritime fleet.

2) Outdated Infrastructure: Many ports rely on infrastructure dating back to the colonial era, making them incompatible with modern shipping requirements.

3) Port and Coastal City Congestion: Underdeveloped road infrastructure in coastal cities causes traffic bottlenecks that hinder the movement of goods to and from ports.

4) Lack of Specialization in Ports: Algiers Port monopolizes a large portion of maritime traffic, reducing the role of other ports and affecting the distribution of port activities.

5) State Monopoly over the Sector: The port sector is centrally managed by the state, limiting competitiveness and affecting operational efficiency.

6) Lack of a Railway Network: Algeria lacks a developed railway network connecting ports to inland areas, which hampers the movement of goods.

7) Limited Investment in Multi-Function Ports: Investments are concentrated on oil ports, while other ports suffer from underfunding and outdated facilities, limiting their ability to handle containers and diversified cargo. (13)

4 Conclusion:

Algerian ports are a vital part of the maritime transport network in the Mediterranean Basin, with a strategic location that strengthens their role as a key hub for foreign trade. Despite the significant potential of the Algerian fleet-which includes ten major commercial ports under state control-the performance of these ports has shown noticeable fluctuations in recent years. Performance indicators reveal that the hydrocarbons sector is the main driver of cargo traffic, making oil ports more efficient compared to other ports.

Although Algeria's maritime transport sector has seen some improvement, the level of maritime connectivity and the development of container traffic indicators remain far from global standards. Algerian ports continue to face several challenges that limit their

(13) Guermah H, op cit, pp 384-386.

competitiveness. These include a lack of advanced infrastructure and modern technology found in global ports, as well as the continued reliance on traditional methods of managing and operating port activities, which weakens their ability to keep up with rapid developments in the sector.

Based on the findings of this study, we propose a set of recommendations that could help improve the performance of Algerian ports, including:

- Reducing reliance on the hydrocarbons sector and diversifying the export structure to include sectors such as manufacturing and agriculture, which would reduce pressure on oil ports.
- Increasing the number of oil, gas, and container ships to strengthen port capacity.
- Diversifying port services to include integrated services such as storage, packaging, and distribution, in order to increase added value and boost competitiveness.
- Enhancing investment in port infrastructure and providing specialized facilities to meet the needs of local and international trade.
- Digitizing Algerian ports to improve the management of port operations and the quality of logistics services.
- Promoting public-private partnerships to enhance sustainability and integration between government institutions and the private sector in improving port performance.

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Appendix 01: Total Imports by Algerian Commercial Ports for the Period 2010-2020.

Unit: in tons

Ports	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Alger	6 735 612	7 128 644	7 535 807	11 414 097	12 407 483	13 450 057	13 554 591	12 668 276	13554591	13679600	6839800
Oran	4 420 960	4 726 951	4 947 112	5 838 327	6 892 057	8 025 787	8 226 861	8 094 952	3675937	8094952	4047476
Annaba	3 106 159	3 486 660	4 133 772	4 226 826	4 666 288	4 864 132	3 675 941	3 043 240	3051320	3059400	1529700
Skikda	3 408 623	3 752 249	5 372 100	6 082 141	5 369 620	5 595 363	4 879 717	4 506 555	4411847	4506555	3455948
Bejaia	9 301 676	9 876 089	10 618 525	11 424 286	11 773 839	12 286 764	11 627 009	9 640 106	10452773	5104553	5354028
Arzew	1 512 012	2 355 209	2 432 029	2 485 532	2 618 396	3 094 539	3 017 158	2 580 302	2561174	2 413 371	1 364 866
Mostaganem	1 046 097	1 150 513	1 027 485	1 264 490	1 508 627	1 443 620	985 702	1 041 050	1411243	1781436	3562872
Ghazaouet	1 105 968	1 335 369	1 228 029	1 175 095	1 363 118	1 216 486	952 476	700 817	986238	1271659	6358295
Ténès	821 765	900 959	1 188 012	1 213 319	1 264 916	1 375 747	1 192 166	630 715	723258	815801	407905
Djen-Djen	2 737 444	2 982 729	3 819 573	3 835 511	4 711 216	4 725 732	3 880 475	2 965 560	2819093	2965560	1482780
Total	**34 196 316**	**37 695 372**	**42 302 444**	**48 959 624**	**52 575 560**	**56 078 227**	**51 992 096**	**45 871 573**	**43 647 474**	**43 692 887**	**34 403 670**

Source: Prepared by the researchers based on the National Office of Statistics and Algerian Port Institutions.

Appendix 02: Total Exports by Algerian Commercial Ports for the Period 2010-2020.

Unit: in tons

Ports	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Alger	1 621 615	1 784 655	1 827 845	2 202 339	2 457 051	2 424 817	2 387 092	2 518 610	2036913	11674127	9036852
Oran	579 628	321 741	304 268	409 332	431 332	459 637	419 718	427 991	669788	9561189	10116925
Annaba	1 970 480	1 606 837	1 545 419	1 341 940	1 513 874	1 493 781	1 536 664	1 394 972	1697483	1999994	999997
Skikda	23 257 591	22 361 250	18 492 127	19 240 755	24 876 116	23 215 383	22 214 228	21 080 321	19109089	38278421	17718435
Bejaia	3 419 106	3 729 413	9 307 182	8 852 173	9 382 966	7 871 679	7 889 815	9 147 946	8867201	3972692	3291043
Arzew	52 708 959	50 550 056	43 933 027	40 257 369	38 358 908	41 803 251	42 461 490	39 801 441	42245437	40 928 864	36 695 989
Mostaganem	31 385	38 474	23 452	27 852	16 524	11 319	20 192	44 707	105928	168255	1001284
Ghazaouet	100 353	68 696	61 692	54 067	71 951	73 092	53 842	36 024	45763	55502	277501
Ténès	3 294	114	2	2	0	0	0	11	0	0	0
Djen-Djen	2 760	82 900	2 700	29 998	23 365	10 575	12 666	31 612	553075	1074538	537269
Total	**83 695 171**	**80 544 136**	**75 497 714**	**72 415 827**	**77 132 087**	**77 363 534**	**76 995 707**	**74 483 635**	**75 330 677**	**107 713 582**	**79 675 295**

Source: Prepared by the researchers based on the National Office of Statistics and Algerian Port Institutions.