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Algerian Industry in the Ottoman Era: Between Resource Abundance and Productive Diversity

الصناعة في الجزائر العثمانية: بين غنى الموارد والتنوع الإنتاجي

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Abstract:

This research paper sheds light on the state of industry in Ottoman Algeria through an in-depth analysis of the natural and human resources that contributed to the development of a deeply rooted local production system. It concludes that this industrial framework-despite the absence of mechanized manufacturing-constituted a self-sufficient economic base and expressed a distinct national industrial identity. The findings highlight that this traditional model successfully met the societal needs and positioned itself as an effective alternative within a context of limited technical capabilities. This industrial trajectory reveals its unique character as a continuity of creative adaptation and sustainable productivity.

Keywords: Algerian industry; Ottoman era; natural resourcesproductive activity.

ملخص:

تُسلّط هذه الورقة البحثيّة الضّوء على واقع الصّناعة في الجزائر العثمانيّة، من خلال تحليل المقوّمات الطّبيعيّة والبشريّة التي ساهمت في نشوء منظومةٍ إنتاجيّةٍ محليّةٍ متجذّرة. وتخلُصُ إلى أنّ هذه المنظومة، رغم غياب التصنيعِ الميكانيكي، شكّلت ركيزة اقتصاديّة مكتفية بذاتها، تُعبّر عن هويّةٍ صناعيّةٍ وطنيّة مستقلّة. كما تُؤكّد النتائج أنّ هذا النموذج التقليدي استطاع الاستجابة لحاجات المجتمع، وفرضَ نفسَه كبديلٍ فعّال في سياقٍ محدودِ الإمكاناتِ التقنيّة. ويُبرز هذا المسار الصناعي خصوصيّتَه بوصفه تعبيرًا عن استمراريّة إبداعيّة في التكيّف والإنتاج.

الكلمات الدالة: الصناعة الجزائرية، العهد العثماني، الموارد الطبيعية، النشاط الإنتاجي.

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1. Introduction

The industrial sector constitutes a cornerstone of economic development, reflecting the extent to which societies evolve and their ability to transform natural resources into value-added products. In this context, Algeria under Ottoman rule emerged as a distinctive economic model within the Mediterranean basin. Its prominence was not confined to its role as a naval military outpost; rather, it evolved into a dynamic production space marked by a flourishing array of crafts and industries.

Capitalizing on its abundant natural endowments—including minerals, timber, fertile lands, and a temperate agricultural climate—along with its strategic geographic position and exposure to Andalusian and maritime influences, Algeria succeeded in cultivating a rich traditional industrial fabric. This fabric encompassed various sectors such as food processing, textiles, leatherwork, carpentry, metallurgy, and pottery. Notably, military industries and shipbuilding contributed to enhancing the Regency's defensive capacities and bolstering its economic standing in the region.

Against this historical backdrop, the present study seeks to investigate a central research question: ***What was the state of industry in Algeria during the Ottoman era, and to what extent did natural and human resources shape the development of an effective industrial system?***

To address this main inquiry, the research raises the following subsidiary questions:

- ✓ What were the principal natural resources that stimulated industrial activity?
- ✓ Which industries were most prominent in Algeria during this period?
- ✓ How did the social environment and ethnic diversity influence, support, or impede industrial development?

To tackle these questions, this research employs a historical and analytical methodology, aimed at revealing the unique features of Algeria's industrial identity during the Ottoman period. It further seeks to reconsider the country's economic role beyond reductionist perspectives that limit the Ottoman state's function in Algeria to military and fiscal domains.

By tracing the enabling and constraining factors behind this industrial emergence, the study emphasizes the dynamism of Algerian industry as an expression of a resilient, locally-rooted economic identity—one capable of adaptation and production despite structural and regional challenges.

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2. The State of Industry in Algeria Prior to the Ottoman Era

2.1. The General Concept of Industry

Industry is considered one of the oldest and most enduring human activities, intrinsically linked to humanity's earliest attempts to adapt to and shape the surrounding environment. It emerged as a tangible expression of man's effort to harness natural resources for the fulfillment of daily needs. In its primitive forms, industry began with simple manual crafts, practiced intuitively by early humans to meet their basic requirements—such as crafting stone tools, pottery, and rudimentary weapons. As human societies evolved and accumulated knowledge and experience, industry gradually transformed from isolated individual skills into a complex system founded on specialization, technical methods, and socioeconomic relations[1].

Within this framework, many thinkers- foremost among them Ibn Khaldun—have argued that industry is not merely a practical pursuit, but a profound indicator of intellectual advancement. In his *Muqaddimah*, Ibn Khaldun emphasized that craftsmanship requires mental readiness and a gradual process of learning and practice, distancing it from instinct or spontaneity. He viewed industrial skills as acquired competencies, developed through continuous experience and deliberate training. Thus, in this conception, industry transcends its economic function and becomes a civilizational and cultural expression—one that reflects the degree of sophistication a given society has attained[2].

In modern economic terms, industry is defined as the process of transforming raw materials extracted from nature into final or semi-finished products with added value, intended either for direct consumption or as inputs in further production cycles. This process represents one of the fundamental pillars of comprehensive economic development, serving as a powerful engine for wealth creation, income diversification, and employment generation. For this reason, it is difficult to envision the rise of any state or society in the absence of a robust and competitive industrial sector[3].

Beyond its economic significance, industry also plays a pivotal role in driving social and cultural transformations. It contributes to the formation of new social classes, the emergence of novel lifestyles, and the redistribution of populations between urban and rural areas due to the localization of industrial activity. Furthermore, the advancement of industry has profound implications

for educational systems, compelling the alignment of training and academic programs with the evolving demands of a modern industrial labor market[4].

2.2. Industry in Algeria Prior to the Ottoman Era

Before coming under Ottoman rule, Algeria boasted a diverse and vibrant industrial landscape, reflecting a profound interaction between humans and their environment, as well as a cumulative heritage of artisanal and technical knowledge. This period was marked by the presence of deeply rooted traditional industries that played a central role in the local economy and constituted a key source of livelihood across all social strata—both in major cities and in rural and mountainous regions[5].

These industries encompassed both domestic crafts aimed at fulfilling everyday needs and more specialized artisanal activities grounded in inherited manual skills. Among the most prominent were textile and wool production, leatherworking, pottery, traditional jewelry-making, and the manufacture of bladed weapons. These crafts were widespread in many Algerian cities—including Algiers, Constantine, Tlemcen, Béjaïa, and other coastal and inland centers—renowned for their dynamic economic and artisanal vitality[6].

Textile and wool manufacturing stood out as particularly significant, thriving in mountainous areas and plains where raw materials such as wool and animal hair were abundant. Generations of accumulated expertise in spinning, weaving, and dyeing gave rise to high-quality textile production [7]. Leatherworking also witnessed notable development, particularly in the crafting of traditional footwear, belts, and garments—items that were not only consumed locally but also exported to external markets[8].

In the domain of metallurgy, bladed weapons such as swords and spears were prominent. These were produced in traditional workshops using local wood and metals, with production reflecting both practical and symbolic dimensions: the former seen in the manufacture of armor and siege equipment, and the latter in the detailed ornamentation applied to weapons—demonstrating a high level of artistic and cultural refinement[9].

Algeria also developed fine metal industries, notably in the crafting of gold and silver jewelry bearing Amazigh and Arab stylistic elements. Some of these products found their way into international trade. Historical sources even record the existence of locally minted coins—including gold dinars and silver dirhams—often attributed to the Hafsid and Zayyanid dynasties, pointing to an advanced industrial capacity in monetary production[10].

In terms of chemical industries, Algeria saw activity in the production of soap derived from animal fat and vegetable oils, the extraction of salts, and the

preparation of fabric dyes, which were widely used in textile workshops. Pottery and ceramics were also highly developed, particularly in coastal cities, where locally sourced clay was molded, fired, and decorated with regionally distinctive patterns and colors[11].

It is particularly significant that Algerian industry extended beyond consumer production into strategic and military manufacturing[12]. The country produced various traditional weapons used to resist foreign incursions, contributing to a degree of defensive autonomy—especially in the pre-Spanish period and during the early phases of European threat[13].

Additional evidence of industrial sophistication lies in the specialization of workshops, the organization of production according to functional divisions, and the integration of industrial activity with broader aspects of economic and religious life. This included the manufacture of agricultural tools, construction equipment, furnishings for mosques and schools, and even traditional musical instruments[14].

Taken together, these indicators confirm that pre-Ottoman Algeria possessed a coherent, multifaceted industrial sector, built upon enduring traditions and refined artisanal skills. It constituted the nucleus of a nationally rooted economic system—traditional in character yet functionally effective—and formed an essential part of the country's productive and civilizational identity. This industrial legacy would later serve as the foundation upon which Ottoman Algeria expanded its production capacities and economic structures.

3. The Foundations of Industry in Ottoman Algeria

During the Ottoman period, Algeria possessed a range of natural and economic assets that contributed significantly to the expansion and dynamization of its industrial activity. The French spy Tanévile, in one of his reconnaissance reports, acknowledged the country's wealth in raw materials, stating: *"This kingdom could supply us with all kinds of crops, as well as the raw materials necessary to sustain our factories...*[15]*"*

3.1. Natural Resources

3.1.1. Agricultural Potential

Climatic conditions and fertile soil provided a favorable environment for agricultural development—one of the essential pillars of both the economic and industrial spheres at the time. The American consul William Shaler described the soil in Algeria as follows: *"The soil in this region is known for its fertility;*

in some areas it is black, in others red, but in all cases it is fertile, saturated with nitrates..." Similarly, Tanévile confirmed this observation in one of his military reports, noting *"the fertility of the land, the vastness of productive areas, the regular succession of seasons, and the rainy winters..."* In addition to these features, the abundance of surface water from rivers and streams created a naturally supportive ecosystem for diverse agricultural production, which in turn supplied essential inputs for local food industries[16].

Among the key agricultural products were:

- Wheat Wheat stood as one of the most strategic crops widely cultivated across the Ottoman Regency of Algiers, thanks to climatic diversity and fertile soils. The regions surrounding Algiers—particularly Mitidja and Tenes—as well as the Tell Atlas foothills and interior plains, were known as the country's "breadbasket." According to the observer Heintzstraet, wheat could be harvested twice, or even three times a year in some areas, with an average yield of 8 to 12 quintals per hectare. The quality of Algerian wheat attracted widespread praise from European observers. Its grains were described as long, hard, and resistant to drought, rust, and infestation. Its flour was rich in gluten, making it particularly suitable for pasta production—especially the renowned "Genoese pasta." William Shaler affirmed this, stating: *"Algerian wheat is of the hard variety; the bread made from it is delicious... It is famous in Italian markets and preferred by traders over all other types for pasta-making and similar uses.[17]"*

- Figs and Olives Figs and olives were among the most valued fruit trees in Algeria, especially in the Kabylie region, where they formed a vital pillar of local agricultural and economic life. One foreign report noted: *"The local population devoted their attention primarily to two essential trees: the fig and the olive..."* The oil extracted from these areas was classified as high-quality, pure olive oil, and it was marketed across major Algerian cities such as Constantine, Béjaïa, and Algiers. It was even exported to neighboring territories like Tunisia, attesting to the cross-border commercial importance of this agricultural product[18].

1.3. Wool and Cotton During this period, Algeria produced significant quantities of wool, thanks to the vast pastoral and mountainous regions ideal for livestock breeding. Areas such as Tlemcen, Tiaret, and the Hodna plateau became known for producing the finest quality wool, a key raw material in textile production and traditional garments. This, in turn, fueled local economic activity through a network of spinning and tailoring workshops[19].

As for cotton, it was considered an introduced crop, brought by Andalusian migrants following their expulsion. It was primarily cultivated in the plains of Mitidja and the region of Mostaganem. Later, it became a component of the textile industry, especially in the production of lightweight and cotton-based clothing, contributing to the diversification of local manufacturing and enhancing agricultural resource utilization[20].

- Timber Resources Algeria was among the countries endowed with rich and diverse forest wealth, which constituted a vital natural resource for artisanal production, construction, and shipbuilding. Cedar trees grew abundantly in regions such as Béjaïa, Miliana, the Chréa Mountains, Ouarsenis, Djurdjura, the Babors, the Aurès, and the Blidean Atlas. These species provided an ideal raw material for the manufacture of furniture, ships, and various wooden necessities. The Hodna region, along with the plains of Mitidja, Oued Chélif, and Bona, was also known for its cultivation of flax, which played a crucial role in textile industries. Additionally, pine trees thrived in Kabylia and the western hills near Algiers—especially around Tipaza and Kolea—while oak trees, found in abundance in areas like Bouzaréah, provided another valuable input for woodworking and transformation industries. This botanical diversity enabled local artisans to utilize native resources in crafting doors, windows, ships, furniture, and a wide array of domestic and military tools. Timber, therefore, became one of the foundational pillars of Algeria's traditional industrial activity[21].

- Silk Production :The introduction of silk production in Algeria is attributed to Andalusian migrants who, following their expulsion from the Iberian Peninsula, brought with them the techniques of silkworm cultivation. This knowledge fostered the emergence of a specialized industry centered on natural silk production, which rapidly spread to several regions, most notably Kolea, Cherchell, and the city of Algiers. Notably, this craft was not limited to male artisans; Algerian women played a significant role in raising silkworms within household settings. This social involvement reflects the broad integration of various segments of society in supporting and sustaining this delicate industry. The result was an expanded production base and the integration of silk into local textile industries, particularly in the manufacture of fine garments and luxury fabrics[22].

3.1.2 Mineral Resources

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During the Ottoman period, Algeria possessed considerable quantities of mineral raw materials, which supported both artisanal and traditional industries and paved the way for various extractive activities. These mineral resources included iron, copper, lead, and other metals found across different parts of the territory.Iron mines were identified in areas such as Béjaïa and the Zaccar Mountains near Miliana, while copper deposits were located in the Mitidja Atlas, particularly in Mount Mouzaïa. Lead, in turn, was found in significant quantities in the Hodna region, especially in Mount Boutal. The American consul William Shaler confirmed this geological wealth, stating: "Among the minerals found in Algeria are iron and lead, present in large quantities in the Kabylia region...[23]" This diversity of mineral resources served as a crucial foundation for both military industries and metal transformation workshops. It enabled the establishment of traditional production centers that relied heavily on local raw materials, thus ensuring a degree of industrial self-sufficiency[24].

3.1.3 Human Resources

The rich ethnic and cultural mosaic that characterized Ottoman Algeria significantly enriched the local industrial landscape. The influx of diverse populations—including Ottomans, renegades (European converts), Andalusians, Jews, and Christians—added qualitative value to the indigenous population. Each group brought with it specific skills and techniques that contributed to the advancement of various industrial sectors. For instance, the production of cannons in Algeria was supported by the expertise of resident Spaniards. European captives were employed in agriculture, shipbuilding, woodworking, and blacksmithing. The French spy Tanévile remarked on their contribution, stating: "The European slaves carried out the largest share of labor... Due to their high competence, they armed the ships and repaired their damages..." Jewish communities also played a visible role in developing the jewelry industry and introducing advanced techniques into textile production. This multicultural and multi-technical interaction fostered the emergence of a multidisciplinary industrial base that benefited from the fusion of diverse crafts and knowledge systems present in Algeria at the time[25].

Moreover, Algerian artisans during the Ottoman era were distinguished by their strong work ethic, mastery of craft, and deep pride in their professions. They formed a fundamental pillar in preserving and developing local production despite limited resources. The Spanish historian Luis del Mármol Carvajal expressed admiration for their conduct, stating: "The craftsmen are simple, kind people, proud to work with dignity and produce finely crafted items..."This testimony highlights the moral and professional values that

characterized Algerian artisans, directly contributing to the quality and diversity of industrial products, even under modest technological conditions[26].

4. Light Industrial Products in Ottoman Algeria

Light industries in Ottoman Algeria constituted one of the most vital components of economic activity, primarily geared toward meeting the daily needs of the population. Production was largely centered on the transformation of agricultural raw materials into consumable food products and domestic goods.

4.1. Food Industries : This sector relied on the processing of agricultural crops into storable or directly consumable goods—such as olive oil extraction and grain milling for pasta and its derivatives. These industries flourished particularly in the Beylik of the East, where abundant resources and traditional expertise contributed to a wide variety of food products.Among the most notable items were sugar, natural honey, and various types of fruit preserves—especially fig and apricot jams—produced through simple yet effective local techniques. These products were widely distributed across both urban and rural markets, reflecting their cultural and economic significance[27].

4.2. Cosmetic Products Industry : During the Ottoman period, Algeria witnessed the emergence and development of several cosmetic industries that catered to daily urban life. These included the production of soaps, perfumes, and therapeutic preparations derived from aromatic and medicinal plants native to the region[28].

4.3. Soap, Perfume, and Herbal Preparation Industries : These industries represent some of the most prominent contributions of the Andalusian diaspora to Algerian artisanal life. Renowned for their mastery of aromatic and medicinal crafts, the Andalusians introduced techniques for distilling floral waters—such as rosewater, neroli, and orange blossom—used in the preparation of perfumes and cosmetic products. The city of Jijel became particularly known for its production of liquid soap, a widely used local item made from natural ingredients and vegetable oils. This reflects the depth of artisanal expertise in hygiene-related industries during the period[29].

4.4. *El-Harqus El-Aswad* (Black Kohl) : Among the traditional cosmetic products favored by Algerian women during the Ottoman era was *el-harqus el-aswad*, a type of black kohl used to accentuate the eyebrows and facial features. Its application was aligned with contemporary beauty standards and aesthetic preferences.This powder was derived from a local thorny plant, with the active

substance extracted through traditional distillation methods, often carried out at home or in small workshops specializing in natural beauty products. *El-harqus* was renowned for its quality and durability on the skin, earning it a prominent place among women's cosmetic items in traditional Algerian society[30].

4.5. *Siwak* and *Sekhab* : Algerian women employed a variety of natural products for hygiene and beauty. Notably, *siwak*—traditionally used for dental hygiene—was also utilized as a natural lip tint. It was made from dried and processed walnut tree bark using artisanal methods that preserved its organic properties. Another notable product was the *sekhab*, an aromatic necklace worn especially during major social occasions such as weddings. It was crafted from ground peanuts and the roots of fragrant plants, shaped into small beads, sewn together, and adorned to emit a lasting scent. Beyond its olfactory appeal, the *sekhab* carried cultural symbolism, considered an essential part of a bride's adornment and an expression of feminine elegance rooted in local identity[31].

4.6. Jewelry and Ornament Industry : Algeria developed a refined and intricate tradition of jewelry-making during the Ottoman era, drawing upon a long-standing cultural heritage. Andalusian and Jewish artisans played a leading role in this domain, bringing with them sophisticated techniques in goldsmithing, engraving, and stone inlaying.These craftsmen infused Algerian jewelry with a unique artistic character—merging Andalusian finesse with local aesthetics. Over time, these skills spread to the broader population, inspiring the establishment of local workshops specializing in the production of gold and silver rings, bracelets, anklets, and earrings. These ornaments became not only integral to traditional female adornment but also important commodities in urban markets[32].

4.7. Textile and *Halfawi* (Esparto Grass) Industries : Textile production occupied a central role in the traditional economy of Ottoman Algeria, serving as a continuous engine for value-added production. This sector transformed raw materials such as wool, cotton, silk, and *halfa* (esparto grass) into highly demanded consumer goods. American consul William Shaler emphasized the importance of this sector, stating: *"Among the most important industries in Algeria are those of silk, wool, and tanned leather..."* Textile production followed a tripartite structure: spinning, weaving, and tailoring—each requiring specialized skills passed down through generations. The output included a wide range of clothing and household items: *haïk*, *karakou*, *kaftan*, *djabadouli*, *djellaba*, *burnous*, *sarabil*, *vests*, *ghlila*, *frimla*, *turbans*, *shawls*, carpets, blankets, tents, hair ropes, mats, and palm-woven baskets. Luxury silk items included *mandils* (scarves) and belts, crafted from brightly colored silk threads or adorned with gold and silver embroidery. Among the most iconic products

was the *Hizam esh-Shawshi* (Shawshi belt), famously produced in Algiers, alongside *baniqa*, *qashousha*, and *fouta*, particularly the *fouta es-safiha*, woven with gold and silver threads and considered a hallmark of feminine elegance for special occasions[33].

4.8. Leather Industry: The leather industry experienced significant growth in Ottoman Algeria, driven by the abundance of hides resulting from a flourishing pastoral economy and the wide range of uses for leather in both daily life and military applications. Production was primarily concentrated in the manufacture of traditional footwear. At its peak, approximately 167 workshops and production units were dedicated to this craft, reflecting the sector's vitality and the sustained demand for its products. Beyond shoes, leatherworking encompassed the creation of belts, wallets, coin purses, luxurious equestrian gear, and saddle covers. The city of Miliana became a major center for the production of saddles and stirrups, with its craftsmen renowned for their mastery in crafting djokh (felt) and saddles in the Maghrebi style. Their products achieved regional recognition for their quality and design. This industry combined practical functionality with aesthetic refinement, serving both everyday needs and reinforcing the equestrian and military culture of the period[34].

4.9. Woodworking Industry: The abundance of forest resources in the Regency of Algiers directly contributed to the prosperity of woodworking, which addressed a wide array of societal needs. The industry produced a vast range of items, including household furniture, doors, windows, ceilings, shelves, chests, tables, chairs, sieves, and other wooden goods that varied between functional and decorative uses. Artisans from Miliana were particularly known for their finely crafted wooden drinking vessels, which were highly appreciated for their quality and elegant shapes. Andalusian craftsmen, for their part, introduced a distinctive artistic flair to woodworking by incorporating ivory inlays into their products. This practice elevated their work to the realm of fine craftsmanship, blending skilled labor with refined artistic taste[35].

4.10. Pottery and Ceramics: Pottery and ceramics stood out as one of the most prominent forms of artisanal activity in Ottoman Algeria, playing a central role in supplying households with essential domestic items. This craft included the production of pots, jars, vases, and other everyday wares fashioned from processed and hand-shaped clay.What distinguished this industry was not only the variety of its products but also their durability and decorative precision. Of particular note was the glazed ceramic known as

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céramique de l'émail, which involved small, square tiles coated with a glossy, glass-like finish—referred to in traditional Algerian settings as zelidj. These tiles were widely used to cover walls and floors, offering both aesthetic appeal and structural resilience. The craftsmanship behind these pieces reflected a deep sense of artistic sophistication and technical mastery among ceramic artisans of the time[36].

4.11. Glassmaking Industry: Glassmaking emerged as a refined artisanal tradition practiced by select segments of Algerian society during the Ottoman period. Historical sources indicate that the Jewish community played a particularly prominent role in this craft, introducing advanced techniques in glass melting, molding, and coloring. This industry produced a variety of items such as glass containers, flasks, goblets, and stained-glass windows. These were employed both in domestic interiors and religious spaces. Glass products added a touch of elegance and precision to the Algerian built environment and enjoyed significant popularity in urban centers with vibrant economic and commercial activity[37].

5. Heavy Industrial Production in Ottoman Algeria

5.1. Iron, Steel, and Metalworking Industries

Metallurgical industries—particularly those involving iron and steel—held significant importance in the Regency of Algiers, especially in light of the growing demand for metal materials in construction, warfare, and artisanal manufacturing. Mining activity was primarily concentrated in northern Algeria, with notable sites including:

- The Ain Barbar mine;
- The Mitidja Mountains;
- The Beni Aqil mine near Tenes;
- The mines of Constantine;
- The Kef El-Teboul mine near El Kala (specialized in copper);
- The Bouhmouda mine (specialized in iron ore).

The traveler William Spencer described Algerian iron as "the finest in the region," noting its exceptional quality and durability, which made it particularly suitable for manufacturing window and door frames, balconies, and even weather-resistant steel. Historical accounts suggest that metal-based industries were widespread; approximately 200 goldsmiths' shops were recorded in Algiers alone during the 16th century (10th century AH). Some European travelers observed that Algerian metalworkers used unique

techniques to shape metal without resorting to fire, achieving both solidity and artistic precision in their products[38].

Copper-based industries flourished as well, especially in the production of household items such as plates, trays, sugar bowls, basins, baskets, buckets, and pitchers. These goods were widely used in everyday life and prominently featured in local markets, underscoring the deep integration of metalcraft into the broader social and economic fabric[39].

4.2. Military Industry

The military industry held a position of critical importance in the strategic priorities of the Ottoman state in Algeria, driven by the complex geopolitical dynamics of the Mediterranean and the recurring conflicts between European powers and the Regency. Ottoman authorities recognized that the survival and strength of the state were intrinsically linked to its military advancement and superiority in armament production. Algeria's military manufacturing during this period was notably diverse. Among the most significant products were firearms, including finely crafted rifles produced locally in the Kabylia region. These rifles were often adorned with multicolored gemstones and encased in polished copper or wood. In addition to rifles, the industry encompassed the production of cannons, muskets, gunpowder, swords, daggers, spears, cannonballs, and pistols. One of the most iconic Algerian-made weapons was the Baba Merzoug cannon, which became infamous among European fleets. Nicknamed "La Consulaire" by Europeans, this bronze cannon—crafted in 1542—measured seven meters in length and had a firing range of 4,800 to 5,000 meters, making it a formidable coastal defense weapon. Despite such achievements, some European travelers criticized the quality of Algerian gunpowder and weaponry. The French spy Boutin remarked: "The locals manufacture their own gunpowder and firearms, but their quality is poor..." Similarly, Schlösser noted deficiencies in powder refinement: "They produce their own gunpowder, but it is coarse and unevenly grained due to a lack of purification methods for saltpeter, resulting in weak explosive power..." Nevertheless, both observers acknowledged that certain regions, particularly Kabylia, produced rifles of superior quality that occasionally outperformed their European counterparts. As noted in their reports: "Kabylia is renowned for crafting high-quality rifles that offer greater precision and reliability..."

Moreover, the scholar al-Hajj Beneddine al-Aghwati provided a detailed description of how gunpowder was made in southern Algeria: "All inhabitants of the desert know the art of making gunpowder. They collect soil from

abandoned villages, boil water over it until a thick solution is formed, then mix one pound of this extract with four pounds of sulfur and four pounds of charcoal derived from the oleander tree. The mixture is blended thoroughly for three to four hours until it becomes usable powder.[40]"

4.3. Shipbuilding Industry

The Regency of Algiers placed significant emphasis on naval shipbuilding, particularly warships, as part of its broader strategy to secure its coastline and assert maritime strength against European adversaries. This industry was sustained by the ample availability of raw timber—especially cedar, pine, and oak—sourced from regions such as Cherchell, Béjaïa, Jijel, El Kala, and Annaba. Algerian shipyards became known for producing a variety of vessels tailored to different functions and technical specifications. Notable among these were:

- The Brigantin (from the Italian Brigantino), also referred to in French as Brick and in English as Brig—a light pirate vessel;

- The Chaloup, a small, fast ship used in tactical maneuvers;

- The Jabeque, recognized by the Spanish name and valued for its agility and maneuverability in shallow waters;

- The Galleon (Gallion in French, Galleon in English), large vessels used for long-distance navigation and heavy artillery.

This naval industry played a crucial role in solidifying Algeria's maritime power, positioning the Regency as a major military and economic actor in the western Mediterranean during the Ottoman period[41].

6. Obstacles to Industrial Development in Ottoman Algeria

In the later stages of the Ottoman era, Algeria's industrial sector faced a range of structural and functional challenges that hindered its development and contributed to a decline in output and its capacity to meet the population's basic needs. Chief among these obstacles was the increasing penetration of European colonial economies, which exerted growing control over local markets by flooding them with a wide array of manufactured goods. Meanwhile, traditional Algerian industries lacked the technical and organizational foundations necessary to compete effectively[42].

This situation led to the marginalization of local industries and created an imbalance between supply and demand within the domestic market. European products came to dominate internal trade, reducing demand for traditional crafts and causing a marked contraction in local production. The crisis was

further exacerbated by weak infrastructure and the absence of a coherent industrial policy, leaving the sector ill-equipped to satisfy national needs or keep pace with broader economic transformations[43].

Additionally, burdensome tax policies and the lack of targeted investment in modernizing the industrial sector contributed to the decline. Heavy taxes were imposed on local craftsmen and manufacturers, while privileges and monopolies were often granted to foreigners or agents linked to the ruling authorities. This further weakened the already fragile national industrial fabric[44].

The concentration of political and economic power in the hands of the Ottoman elite also redirected industrial activity toward quick-profit or luxury goods at the expense of strategic industries essential for self-sufficiency and economic diversification. This elite control was one of the core barriers that prevented the emergence of a robust national industrial class capable of innovation and expansion[45].

Culturally, prevailing traditional mentalities at the time resisted the adoption of modern production methods, posing both cognitive and institutional obstacles to the development of an advanced industrial system. Industry was often viewed as inferior to agriculture or trade, which resulted in a shortage of skilled labor and a lack of specialized training programs[46].

Finally, Algeria's growing reliance on imported goods—particularly from Europe—fostered economic dependency and weakened demand for locally produced goods. This trend gave rise to a consumer culture that ran counter to the imperatives of national industrial advancement and ultimately posed a threat to both the economic and social security of the state[47].

Conclusion

The evidence presented throughout this study reveals that Ottoman Algeria was not merely a peripheral province of the central administration in Istanbul; rather, it was an economically active space that relied on its own natural, environmental, and human resources to develop a diverse and balanced industrial sector.

The analysis highlights the wide spectrum of industrial activities—ranging from light to heavy industries—and spanning critical domains such as food processing, textiles, leatherworking, ceramics, metalwork, shipbuilding, and military production. These industries were grounded in the transformation

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of locally sourced raw materials into finished goods, some of which were in demand in regional and international markets.

Historical records confirm that Algeria benefited from fertile soil, abundant water resources, rich forests and mineral deposits, as well as a deep-rooted artisanal tradition. However, despite these strengths, Algerian industry remained confined to traditional modes of production and failed to evolve into an organized, mechanized system similar to the industrialization processes that later took place in Europe. This structural limitation was one of the primary factors preventing comprehensive industrial development.

In sum, the industrial system in Ottoman Algeria constituted a distinct economic and social foundation. It contributed to a form of localized self-sufficiency and played a stabilizing role in both urban and rural communities. This experience deserves to be reexamined within its historical context—not marginalized—but analyzed through a lens that highlights Algeria's pre-colonial productive capacity and industrial agency prior to the advent of colonial industrialization.

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