

THE INTERPLAY BETWEEN THE HANDMADE CARPET “ZARBIA” PRODUCTION AND TOURISM IN GHARDAIA, ALGERIA: A QUALITATIVE AND QUANTITATIVE ANALYSIS

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Abstract: Ghardaia, a prominent tourist destination in Algeria, attracts numerous visitors annually, contributing significantly to the region’s economy. Known for its rich historical, cultural, and natural heritage, the region’s urban landmark earned UNESCO World Heritage status in 1982. One of its most important traditional industries is the handmade carpet “Zarbia” sector, which has been part of the region’s heritage for thousands of years. Despite the challenges posed by modern industries, this eco-friendly craft remains highly valued, providing a source of livelihood for local women and accommodating workers of all ages, from young people to the elderly. However, in recent years, the industry has faced a decline, posing a risk to its survival. The study aims to identify strategies for sustaining the handmade carpet “Zarbia” weaving as a viable income source, while enhancing tourism in Ghardaia and Algeria. This paper explores the relationship between Zarbia production and tourism in Ghardaia, Algeria, using both qualitative and quantitative approaches. The study analyzes survey data, tourism flow statistics, and artisans’ distribution to identify key trends, challenges, and opportunities. The findings suggest that Zarbia production plays a significant role in cultural tourism, but challenges, such as high costs and limited marketing, hinder its full potential. Data analysis utilized SPSS and Excel. The paper concludes with recommendations for integrating Zarbia into the tourism sector and making predictions for future growth.

Keywords: Handmade carpet “Zarbia” weaving, Cultural heritage tourism, Women artisans, Handicraft sustainability, Ghardaia, Algeria

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INTRODUCTION

Traditional industries are increasingly recognized as a vital component of intangible cultural heritage, encompassing the practices, skills, and symbolic meanings passed down through generations (UNESCO, 2003). Beyond their cultural value, they are also an important source of livelihood and identity, linking communities to both their history and their socio-economic environment. Recent scholarship highlights that traditional crafts play a dual role: they safeguard heritage while also functioning as economic assets in the growing global market for cultural and heritage tourism (Richards, 2018; Zargham, 2007; Bano, 2021; Geçikli et al., 2024; Tho-Ard et al., 2026). The relationship between handicrafts and tourism has been well-documented, with studies showing that tourism creates new market opportunities for artisans, while traditional crafts add authenticity and cultural depth to the visitor experience (Zargham, 2007; Mustafa, 2011; John, 2014; Kherrou et al., 2020; Boulhila et al., 2022; Kelfaoui et al., 2021; Domniku & Kacamakovic, 2025; Wang et al., 2024; Tran et al., 2025). In many countries, governments invest in craft-based industries not only for heritage preservation but also as tools for economic diversification and rural development (McAreevey & McDonagh, 2011).

In Algeria, for example, traditional crafts contributed nearly 350 billion DA (2.65 billion USD) to GDP in 2022, underscoring their macroeconomic relevance (MFA, 2022). Algeria boasts a diverse range of traditional crafts, including ceramics, carpentry, leatherwork, jewelry, goldsmithing, silversmithing, metalwork, traditional clothing, local cuisine, and handmade carpets “Zarbia” (Figure 2). These crafts form an integral part of the country’s regional identity and are actively protected and promoted by government initiatives. One such effort is the Horizon 2020 project, launched in 2009 to support artisans by creating jobs, improving access to financial resources, and enhancing marketing and export opportunities (Brahmi, 2016; Djemai, 2019). The project also aims to integrate traditional crafts into a broader economic framework, ensuring their long-term sustainability while boosting competitiveness. Ghardaia, a province in southern Algeria (Figure 1),

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is renowned for its rich artisanal traditions, particularly the handmade carpet industry. Zarbia—a locally crafted carpet—holds deep historical roots, dating back centuries and passed down through generations (Betchim, 2022). Its distinctive geometric patterns, vibrant colors, and intricate motifs (Figure 2) reflect the daily lives and cultural narratives of the crafts women who weave them. More than just a product, each “Zarbia” piece represents an artistic expression of the region’s heritage, making it a significant cultural attraction. An annual cultural festival is held in March coinciding with the spring holidays, locally known as “Eid Zarbia” (Figure 3), in the midst of folkloric groups, women's art is highlighted from local heritage and cultural origins, as this event provides an opportunity for artisans to exchange experiences (Domniku et al., 2025; Xie, 2025) market services and products, attract tourism investments, and thus stimulate the commercial and tourism sectors.

Festivals are the preferred destination during the holiday period (Skoultos, 2014), they act as a bridge of two sides “tourism and culture”, combining both the economic and cultural aspects. The province employs a strategic approach to promote tourism and handicrafts through Cultural festivals, they play a crucial role in attracting and promoting tourism, with the aim of showcasing heritage nationally and internationally (Almuqataf, 2026). In addition to evaluating handicraft activities and integrating them into economic development, this strategy includes organizing national demonstrations, participating in international exhibitions and salons, and contributing to local holiday celebrations, with large numbers of visitors (Kelfaoui et al., 2021; Li & Chen, 2024), revitalizing the commercial and economic activities in the region.

Overall, Festivals are a vital event to promote tourism and support the local economy through the preservation and celebration of cultural heritage particularly traditional crafts. Within this context, handmade carpets represent one of the most resilient and marketable craft traditions. Previous research has explored their artistic and historical dimensions (Taheri et al., 2024) as well as the socio-economic roles they play in sustaining households (Bano, 2016). In Ghardaia specifically, the *Zarbia* has long been a symbol of cultural identity and female economic participation (Sharma, 2021). The craft empowers women, many of whom weave carpets at home while balancing family responsibilities, contributing directly to household stability (Pourmoradian et al., 2021). This dedication to quality distinguishes handmade carpets, as the effort invested in their production is reflected in their enduring value (Goswami, 2018).

At the same time, the literature points to serious challenges facing the sector. Modernization, urban migration, and the influx of cheaper, mass-produced carpets have undermined traditional weaving across North Africa (Hassan, 2020; Elgammal & Refaat, 2013). In Ghardaia, artisans face shortages of raw materials, rising costs, weak integration with tourism markets, and limited marketing skills. These constraints mirror global patterns where artisans struggle to compete in increasingly commercialized craft markets (De Munck, 2019). Despite the growing body of work on cultural tourism and handicrafts, two key gaps remain. First, much of the existing research has been tourist-centered, focusing on consumer demand rather than the lived realities of artisans (Sather-Wagstaff, 2008). Second, while several studies analyze the heritage or artistic aspects of carpets, few address the economic and strategic integration of crafts into tourism development frameworks. This study seeks to address these gaps by adopting a mixed-methods approach that combines artisans’ perspectives with quantitative data on production and tourism flows. By doing so, it contributes to a more holistic understanding of the interplay between craft heritage, local livelihoods, and sustainable tourism in Ghardaia.

MATERIALS AND METHODS

Study area

Administratively, Ghardaia is located in the northern Algerian Sahara, resulting from the administrative division under Law No. 84-09 of February 4, 1984, concerning the territorial organization of the State. Geographically, our study area lies between latitudes 32.80° and 33.20° N and longitudes 0.40° and 4.30° E (Figure 1).

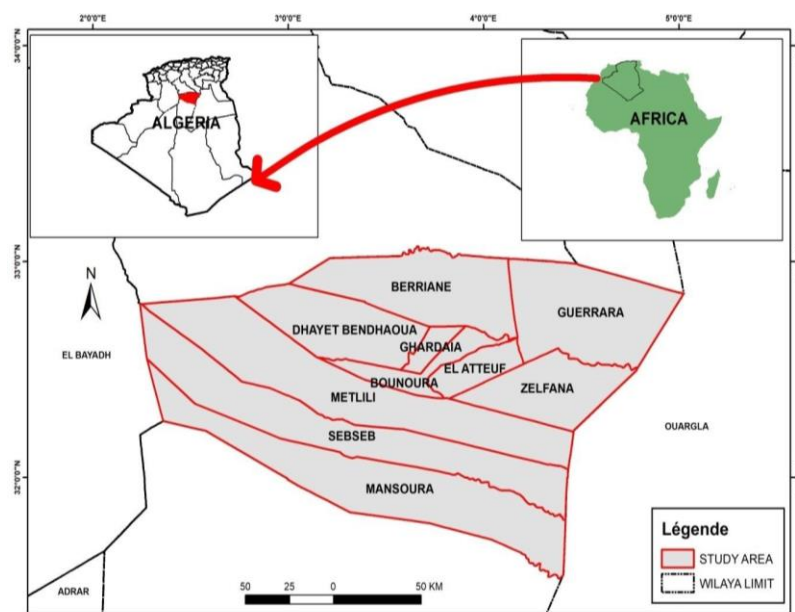


Figure 1. Geographical Situation of the study area, Ghardaia province, Algeria (Source: Generated by authors, 2025)

It is situated approximately 600 km south of Algiers, the capital, with an average elevation of 530 m above sea level and a distance of about 730 km from Oran and Constantine. Ghardaia is accessible via National Road No. 01, which connects Algiers to Tamanrasset. Covering an area of 26,165.13 km², the population was estimated to be 477,953 in 2019, according to the Budget Programming and Monitoring Directorate (DPSB). The province is bordered to the north by Laghouat and Djelfa, to the east by Ouargla, to the west by El Bayadh, and to the south by El Ménia.

It has a dry desert climate, characterized by cold, dry winters and hot, dry summers. According to the Algerian National Office of Meteorology, temperatures range from a minimum of 5°C in winter to a maximum of 50°C in summer. Spring and autumn are mild, and the sky remains clear for most of the year. The area experiences cold northwesterly winds in winter, sand-laden southwesterly winds in spring, and hot southerly winds, known as the Sirocco, in summer. This desert climate provides a comparative advantage for the tourist season. Ghardaia is one of Algeria's oldest cities.

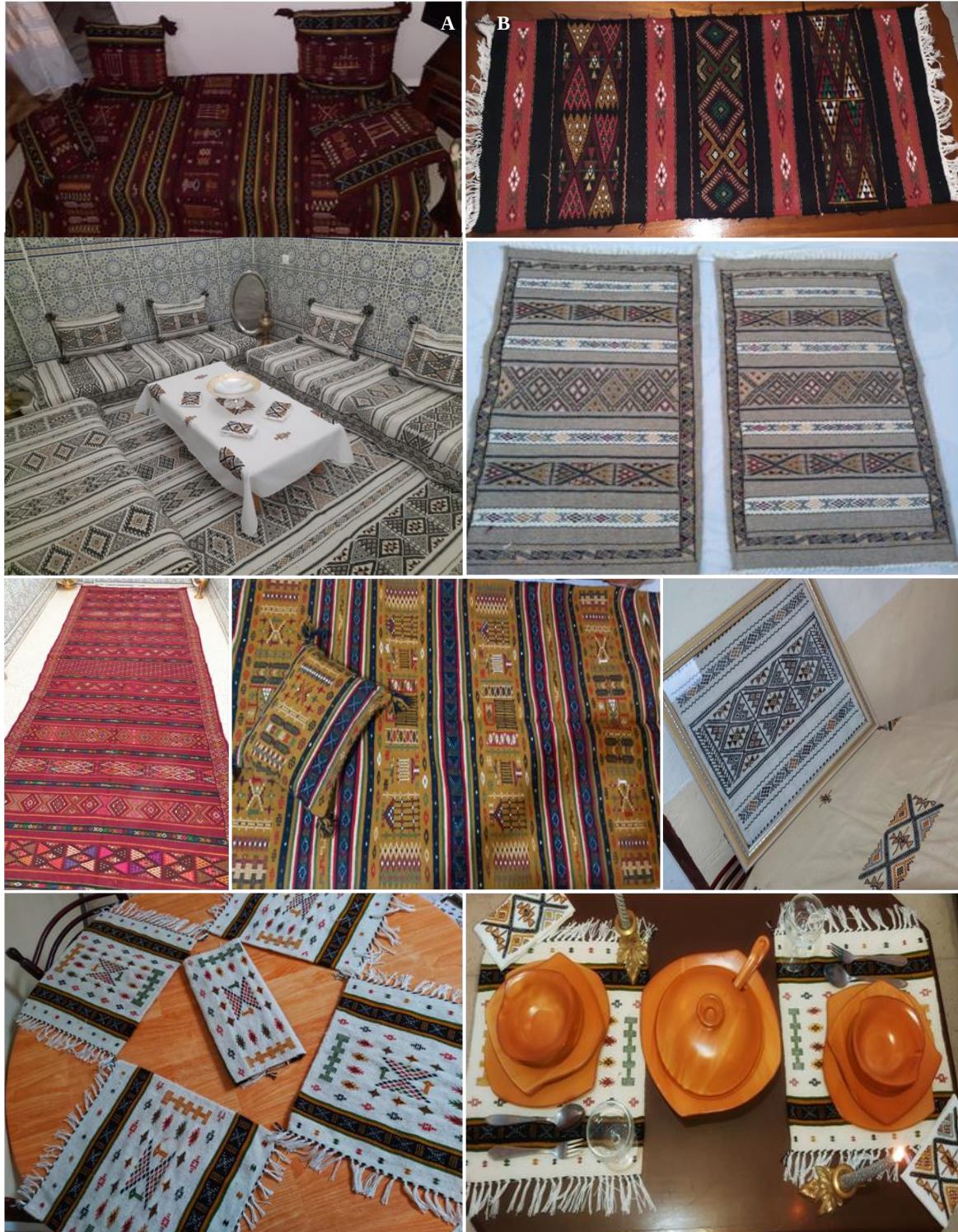


Figure 2. Pictures of Hand made Carpet Industry woven by crafts women
(Source: A and B taken by the authors, 2025, the rest were provided by the Directorate of Tourism and Handicrafts "DTH")

Its historical and cultural significance stems from its wealth of historical landmarks and archaeological sites dating back to different eras, many of which remain well preserved today. These include traditional ksour (fortified villages) that form the core of the region as well as its palm groves (Souid, 2025). This rich history and valuable cultural diversity led to the M'zab Valley zone being designated as part of Algeria's National Heritage in 1971 and being inscribed as a UNESCO World Heritage Site in 1982. Furthermore, the Algerian Ministry of Culture also designated it as a protected area in 2005.

In addition, Ghardaia's strategic location as a gateway to the Sahara and a crossroads linking Northern and Southern Algeria, as well as eastern and western regions, has established it as a cultural hub, providing the region with considerable tourism and economic potential. The province is endowed with diverse natural landscapes and abundant cultural, thermal, and tourism resources that offer significant potential for rural development and positioning Ghardaia as a prominent tourist destination. It is particularly renowned for its historic palaces, known locally as “Ksour”, notably those in the M'zab Valley ksours (El Atteuf, Bounoura, Beni Isguen, Melika, Ghardaia), ksar Metlili, ksar El Guerrara and ksar Berriane.

These traditional residential communities are outstanding examples of the region's urban, historical, and touristic heritage, spanning various historical eras. Their distinctive architectural style, developed over several centuries, has made the region one of the most important examples of Saharan architectural and cultural heritage at both the national and international levels (OPVM). In addition, the region is famous for its oases, which support the cultivation of date palms and other crops, including fruit trees, fodder, and vegetables (Souid et al., 2024). Irrigation is managed traditionally, with unique water division methods. Other natural and cultural features include expansive sand dunes, mineral springs, and an array of traditional industries, such as copperwork, pottery, leather craftsmanship, traditional jewelry, and weaving, particularly handmade carpets “Zarbia” (Figure 2). The region also celebrates folk arts and festivals like Eid El-Zarbia (Figure 3) and Eid EL-Mehri (OPVM), all of which contribute to the rich cultural heritage. These resources position Ghardaia as an ideal site for developing various types of tourism, including cultural, exploratory, thermal, religious, scientific, and commercial tourism.



Figure 3. Pictures of zarbia festivals “Eid Zarbia” (Source: OPVM)

Data Sources

This study integrates primary and secondary data to provide a comprehensive understanding of the relationship between Zarbia production and tourism in Ghardaia. By combining survey evidence with official statistics and scholarly insights, the study ensures both empirical grounding and contextual depth.

- Primary data were collected through a structured survey of Zarbia artisans, focusing on demographics, economic conditions, production practices, market integration, challenges, and perceptions of tourism. The survey was administered in person between January and March 2023, and was designed with both closed-ended (multiple choice, Likert scale) and open-ended questions. A total of *81 artisans participated*, representing a significant share of the active weaving community in Ghardaia. Respondents were selected through purposive sampling, targeting artisans known to be active in the sector. The results were processed using SPSS and Excel to distinguish patterns and generalize the results.
- Secondary data were gathered from local authorities knowledgeable in the field of handicrafts and tourism. These stakeholders include heads and members of local associations, directors of vocational training centers, employees of the Directorate of Tourism and Handicrafts, and traders in traditional industries. Other data were obtained from official reports of the Ministry of Tourism and Handicrafts (MTH), statistical yearbooks, local development plans, and relevant academic studies. These sources provided contextual information on tourism flows, the contribution of the handicraft sector to employment, and national policies affecting traditional industries. *The detailed methodology* is outlined in the flowchart provided below (Figure 4).

Survey Design and Validation

The survey questionnaire included four sections:

1. Demographic characteristics (gender, age, education, marital status).

2. Economic indicators (profitability, reinvestment, exports, income use).
3. Tourism perceptions and engagement (views on tourism's role, participation in events, integration with markets).
4. Challenges and opportunities (production constraints, marketing strategies, policy expectations).

To ensure content validity, the questionnaire was reviewed by two local experts in cultural heritage and tourism, and piloted with five artisans prior to full deployment. Interviews were conducted in Arabic and French, with translation into English for analysis. The Cronbach alpha test was conducted in order to determine the degree of internal consistency between the questions, and the result was that $\alpha = 0,9150$.

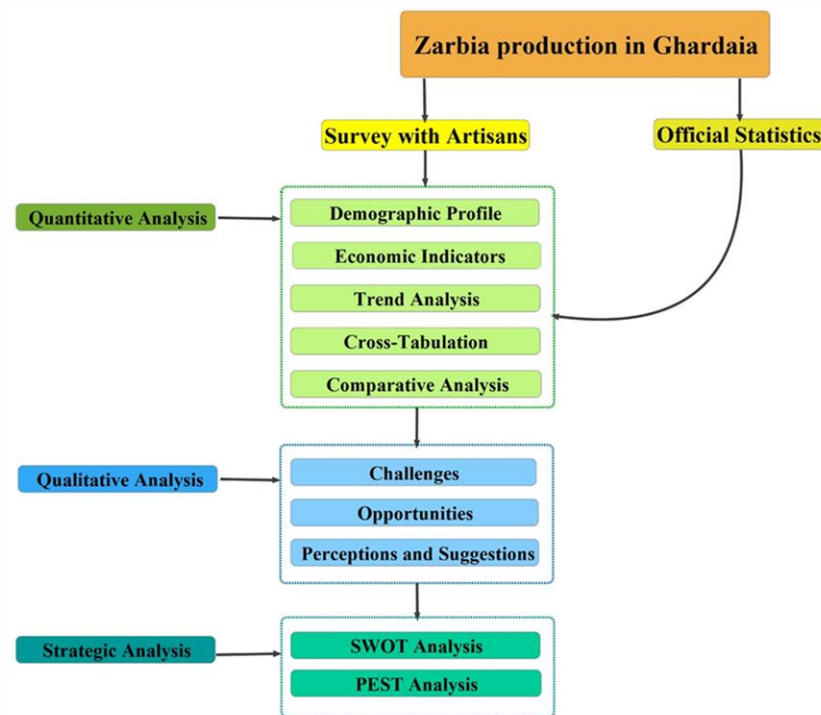


Figure 4. Flowchart illustrating the methodology followed in our study (Source: Generated by the authors, 2025)

Analytical Framework

The study employed a mixed-methods approach, combining quantitative and qualitative analyses:

- Quantitative Analysis
 - Descriptive statistics (frequencies, percentages) to summarize demographic and economic data.
 - Trend analysis of tourism arrivals (2015–2023), Artisan participation in events (2019–2023) and the contribution of handicraft sector to employment (2018–2023).
 - Tourism perceptions according to artisans' responses.
 - ✓ Cross-tabulation to explore relationships between education level and tourism engagement.
 - ✓ Comparative analysis to assess economic outcomes of artisans engaged in tourism vs. those who are not.
- Qualitative Analysis.
 - Open-ended survey responses were analyzed using thematic analysis, focusing on artisans' narratives of challenges, opportunities, and suggestions for sustaining the craft.
 - This allowed the integration of artisans' lived experiences alongside numerical trends.
- Strategic Analysis.
 - A SWOT analysis was used to identify internal strengths and weaknesses as well as external opportunities and threats.
 - A PESTEL framework (Political, Economic, Social, Technological, Environmental, Legal) contextualized Zarbia production within the broader macro-environment. These frameworks provided a strategic interpretation of the findings and informed recommendations.

Limitations

While the study offers important insights, several limitations should be noted:

- The sample size (81 artisans) does not fully capture Ghardaia's artisan population, though it represents a substantial portion of active weavers.
- The purposive sampling approach may introduce selection bias, as more visible or active artisans were more likely to be included.
- Some survey responses rely on self-reporting, which may involve recall bias or subjective interpretation.
- Tourism-related data are limited, particularly regarding the share of Zarbia sales to tourists; proxy indicators such as total handicraft spending, were used where direct measures were unavailable.

RESULTS

Demographic Profile: we have collected several demographic data regarding the 81 artisans surveyed.

Table 1 summarizes the demographic characteristics, including gender, age group, education level, and marital status.

The survey of 81 artisans revealed that Zarbia weaving is overwhelmingly female-dominated, with women representing 97.5% of respondents. The majority of artisans belong to the older age groups (35.8% aged 55–65 and 21% aged over 65), while younger participation is very limited (less than 5% under 34). Educational attainment is also low, with 60.5% of artisans having completed only primary school and just 3.7% holding university degrees. Most participants were married (71.6%).

These findings suggest that Zarbia weaving is sustained mainly by older women with limited formal education, raising concerns about intergenerational transmission and the craft’s long-term sustainability.

Table 1. Demographic characteristics of surveyed artisans (Source: generated by authors, 2025)

Variable	Category	Count	Percentage (%)
Gender	Male	2	2.5%
	Female	79	97.5%
Age Group	25–34	4	4.9%
	35–44	12	14.8%
	45–54	19	23.5%
	55–65	29	35.8%
	65+	17	21.0%
Education Level	Elementary School	49	60.5%
	Middle School	24	29.6%
	High School	5	6.2%
	University	3	3.7%
Marital Status	Single	11	13.6%
	Married	58	71.6%
	Divorced	9	3.7%
	Widowed	3	11.1%

Economic Indicators: The surveyed sample were asked if they achieve self-sufficiency by selling their Zarbia and how they use the money they earn. The results are presented in the bar chart (Figure 5) that illustrates the percentage of artisans who reported that Zarbia production is profitable and contributes to their self-sufficiency.

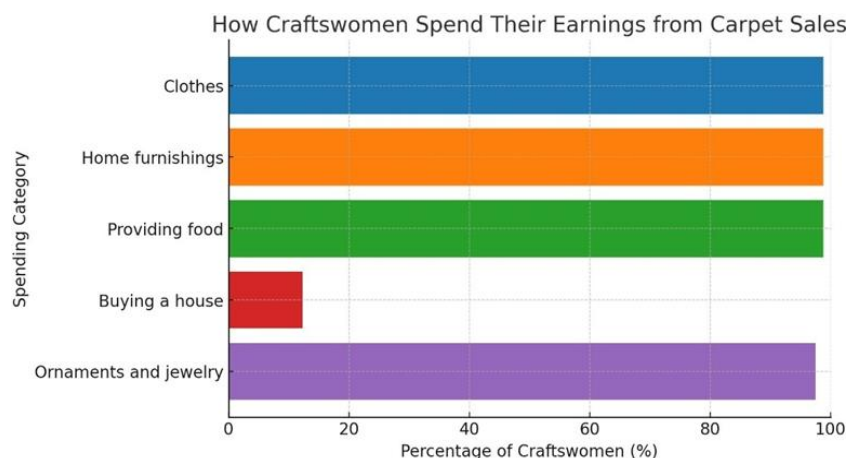


Figure 5. Profitability and Self-Sufficiency of Zarbia Production (Source: Generated by the authors, 2025)

The Figure 5 shows that: almost all artisans (98.8%) reported that Zarbia weaving is profitable and contributes to household self-sufficiency, with earnings used for essential expenditures such as food, housing, and home furnishings. Importantly, 77.8% reinvest part of their earnings back into production, and 80.2% reported exporting their carpets outside Ghardaia (Table 2). These results highlight the economic centrality of Zarbia weaving, not only for household stability but also for its role in local and regional markets.

Table 2. Investment and Exportation in Zarbia Production (Source: Generated by authors, 2025)

Variable	Response	Count	Percentage (%)
Investment	Yes	63	77.8%
	No	18	22.2%
Exportation	Yes	65	80.2%
	No	16	19.8%

Perceptions of Tourism

In order to better understand the relationship between the Zarbia production and tourism, we have asked the surveyed

samples some questions about their perception of tourism integration within their crafts (Table 3). Their answer together with some official statistics from the ministry of tourism and handicraft suggest a complex interaction.

Table 3. Artisans' Perceptions of Tourism's Role in Zarbia Production (Source: Generated by authors, 2025)

Perception	Count	Percentage (%)
Tourism helps maintain tradition	80	98.8%
Tourism improves living standards	80	98.8%
Tourism boosts zarbia sales	65	80.2%

Table 3 illustrates that: The artisans expressed overwhelmingly positive views on the role of tourism. Nearly all respondents (98.8%) believed that tourism helps maintain tradition and improve living standards, while 80.2% considered it a driver of increased Zarbiasales. This indicates that artisans see tourism as both an economic opportunity and a mechanism of cultural preservation, aligning with broader narratives of sustainable cultural tourism.

Trends in Tourism, Artisan Participation in events, and the contribution of handicraft sector to employment

Tourist arrivals (2015–2023): The line chart in figure 6 illustrates the variation in tourist arrivals to the city of Ghardaia from 2015 to 2023. Ghardaia experienced steady growth in tourism until 2019, peaking at 72,775 visitors. Numbers dropped sharply during the COVID-19 pandemic (39,987 in 2020) but rebounded to 69,469 in 2023. Notably, international tourists represented only a small fraction (3,121 in 2023), underscoring the region's reliance on domestic tourism.

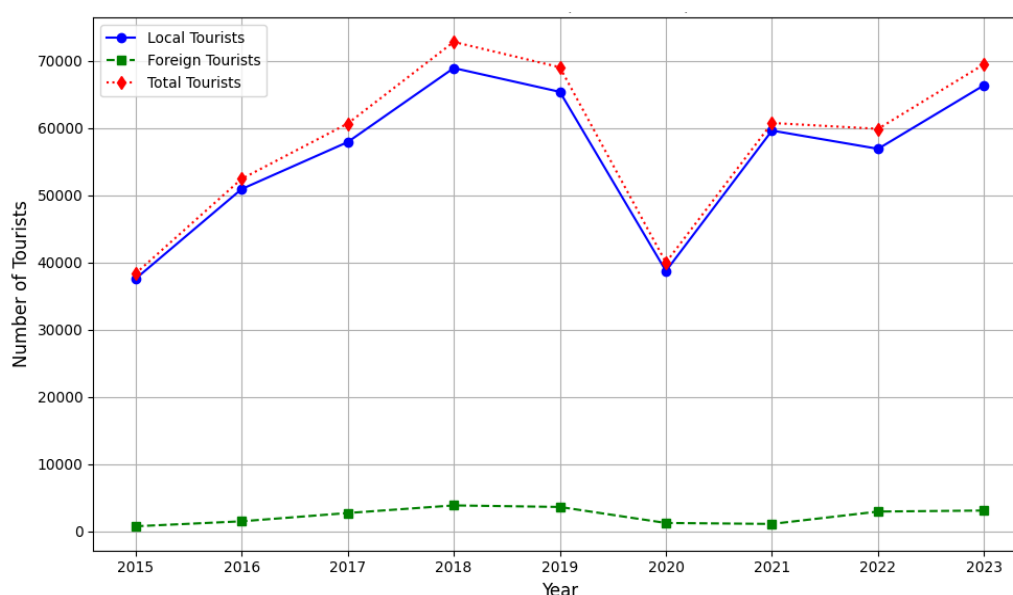


Figure 6. Tourist Arrival Trends (2015–2023) (Source: The authors, generated from the Directorate of Tourism and Handicrafts)

Participation in events: Contribution of culture festivals to tourism. Table 4 shows the number of artisans participating in local, national, and international events from 2019 to 2023. Artisan participation in exhibitions has been uneven. Numbers surged after the pandemic (285 artisans in 2022) but fell again in 2023 (69 + 2 associations), though that year marked the first international presence, with 7 artisans showcasing Zarbia abroad. Together, these trends show that while Ghardaia's tourism sector is recovering, international exposure for Zarbia remains limited.

Table 1. Craftsmen Participation in Events (2019–2023)(Source: authors, generated from the Directorate of Tourism and Handicrafts)

Year	Local events	National events	International events	Total participating artisans
2019	45	COVID-19 pandemic		45
2020	64	COVID-19 pandemic		64
2021	64	0	0	64
2022	270 + 15 associations	0	0	285
2023	27 + 1 association	35+ 1 association	7	69 + 2 associations

The contribution of the handicraft sector to employment: The Table 5 shows the correlation between the number of artisans and employment in the sector over recent years, from 2018 to 2023. The handicraft sector created 14,180 jobs and employed more than 7,090 artisans by the end of 2023. However, the sector's contribution to job creation fluctuated between 2019 and 2020, with job numbers ranging from 14,908 to 15,122. In 2021, a significant drop occurred, with the number of jobs falling to 13,236 due to the COVID-19 pandemic, which led to the closure of many institutions. In recent years, the sector has shown signs of recovery, with job numbers reaching 14,270 in 2022 and 14,180 in 2023. Therefore, it can be concluded that the handicraft sector significantly contributes to social development by creating jobs and reducing unemployment.

Table 2. The contribution of handicraft sector to employment (2018-2023)
(Source: Authors, generated from the Directorate of Tourism and Handicrafts)

Year	Number of artisans	Employment contribution
2018	7.084	20.909
2019	7.454	14.908
2020	7.561	15.122
2021	6.618	13.236
2022	7.135	14.270
2023	7.090	14.180

Education and Tourism Engagement

Table 6 shows the percentage of artisans engaged in tourism-related activities, broken down by education level.

Cross-tabulation analysis revealed a strong link between education level and participation in tourism-related activities. Notably, 45.7% of the total sample had completed only elementary school engaged in tourism markets, whereas just 2.5% were university graduates, this demonstrates a dual impact of education in this field, it serves both as a strength and a limitation. On one hand, the accessibility of the tourism market to artisans across various educational backgrounds promotes inclusivity and broad participation, and therefore, navigate business opportunities, and adapt to market demands. On the other hand, limited education particularly in language proficiency can hinder effective communication with international tourists. Therefore, education must be recognized as a critical enabler for global engagement in tourism, and efforts should be made to address the challenges posed by lower educational attainment (Meng et al., 2024).

Table 6. Education level vs. engagement in tourism-related activities (Source: Generated by authors, 2025)

Education level	Engaged in tourism (%)	Not engaged in tourism (%)
Elementary school	45.7%	14.8%
Middle school	27.2%	2.5%
High school	4.9%	1.2%
University	2.5%	1.2%

Economic Benefits of Tourism Engagement

Table 7 compares the economic performance of artisans engaged in tourism-related sales versus those who are not.

Artisans engaged in tourism-related sales consistently outperformed those who were not. They reported higher profitability (96.3% vs. 77.8%), greater self-sufficiency (95.1% vs. 61.7%), and stronger reinvestment in production (85% vs. 56.8%). They were also more likely to export (90% vs. 54.3%). Tourism integration appears to amplify economic resilience, reinforcing the value of linking Zarbia to the tourism sector.

Table 7. Economic Performance of Artisans Engaged vs. Not Engaged in Tourism (Source: Generated by authors, 2025)

Economic indicator	Engaged in tourism (%)	Not engaged in tourism (%)
Profitability	96.3%	77.8%
Self-sufficiency	95.1%	61.7%
Investment in production	85%	56.8%
Exportation	90%	54.3%

Challenges and Opportunities

The surveyed sample was asked about the various challenges encountered during the production of their craft. The bar chart (Figure 7) illustrates the key challenges faced by artisans.

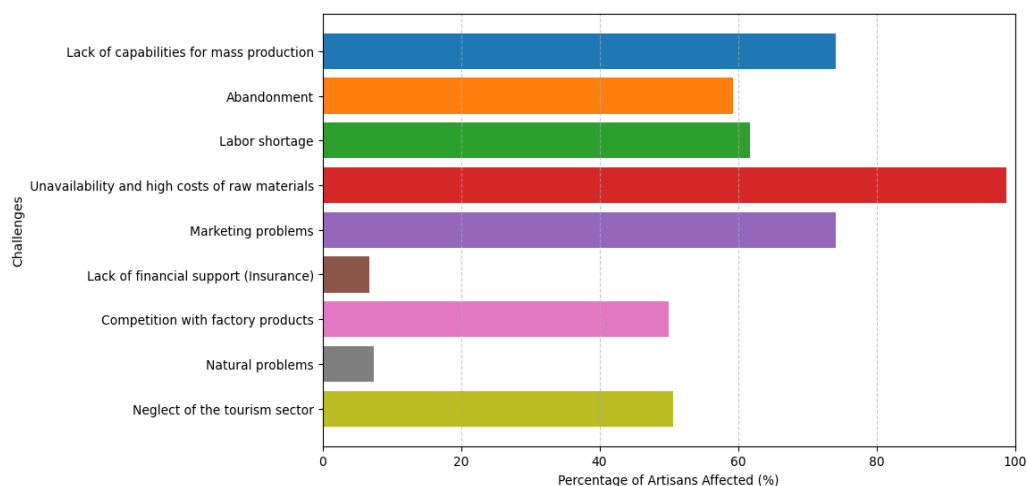


Figure 7. Challenges Faced by Artisans in Zarbia Production (Source: Generated by authors, 2025)



Figure 8. A - Example of Factory-Produced Carpets; B - Original Handmade Carpet "Zarbia" (Source: The authors, 2025)

The most critical challenges reported were shortages of raw materials and high production costs (97.5%), followed by competition from cheaper, mass-produced carpets (86.4%) (Figure 8). Conversely, artisans identified three key opportunities (Table 8): government policy support (98.8%), growth through tourism (55.7%), and digital marketing tools (27.2%). These findings suggest that while Zarbia weaving faces serious structural constraints, artisans are aware of emerging strategies, especially digital platforms and policy interventions, that could sustain the craft.

Table 8. Opportunities for Zarbia Production (Source: Generated by authors, 2025)

Opportunity	Count	Percentage (%)
Growth through tourism	54	55.7%
Digital marketing	22	27.2%
Policy support	80	98.8%

Strategic Analysis

The SWOT and PESTEL analyses provide a strategic lens through which the dynamics of Zarbia weaving in Ghardaia can be understood. The SWOT results, presented in Table 9, reveal a sector rooted in strong cultural identity and women's economic empowerment but weakened by aging demographics, raw material shortages, and limited marketing skills. Opportunities exist in tourism growth, digital platforms, and international exposure, yet these are offset by threats from machine-made competition and the volatility of tourism flows.

Table 9. SWOT Analysis of Zarbia Production and Tourism Integration (Source: Generated by authors, 2025)

Strengths	Weaknesses
• Unique craftsmanship, UNESCO heritage recognition • 97.5% female artisans; 98.8% report profitability • 80.2% export beyond Ghardaia • Strong cultural commitment, community pride	• Aging artisan population (56% above 55 years) • 60.5% with only primary education → weak market access • 97.5% face raw material shortages & high costs • Limited marketing/digital adoption
Opportunities	Threats
• Tourism growth: 70k visitors in 2023, 98.8% see tourism as beneficial • Rising interest in digital platforms (27.2%) • Government policy support (Horizon 2020, subsidies, events) • First international exposure in 2023 exhibitions	• Competition from machine-made carpets (49.4%) • Declining youth participation in weaving only 140 women artisans are graduates in textile in 2023 • Economic volatility: fluctuating raw material costs • Tourism vulnerability to crises (COVID-19, instability)

The PESTEL framework presented in Table 10 complements this by situating Zarbia weaving within broader structural forces: political support and cultural recognition create favorable conditions, but economic pressures, low digital adoption, environmental constraints, and weak legal protections undermine resilience. Together, these analyses highlight that while

Zarbia weaving retains significant cultural and economic value, its sustainability depends on targeted interventions, particularly in education, digital integration, and legal safeguarding, to transform vulnerabilities into opportunities.

Table 10. PESTEL Analysis of Zarbia Production and Tourism Integration (Source: Generated by authors, 2025)

Factor	Key Issues	Implications
Political	Horizon 2020 support programs; weak IP protection	Potential for policy-driven growth, but Zarbia patterns risk imitation
Economic	98.8% profitability; 80.2% exports; high raw material costs	Strong income role, but profitability depends on subsidies & trade access
Social	Female-dominated craft; aging artisans; festivals (Eid El-Zarbia)	Empowerment of women; risk of generational discontinuity
Technological	Low digital adoption (27.2% interested); e-commerce potential	Digital tools could expand markets but require training
Environmental	Reliance on wool & dyes; Sahara water scarcity	Risk to production; eco-labeling as a market advantage
Legal	No geographical indication (GI) protection	Weak protection against counterfeit; limits international expansion

DISCUSSION

The findings of this study demonstrate that Zarbia weaving in Ghardaia remains a cornerstone of both cultural identity and economic livelihoods, yet it is also a fragile tradition facing structural challenges. The results highlight a paradox: while artisans overwhelmingly perceive their craft as profitable and central to household self-sufficiency, the sector is constrained by aging demographics, high production costs, and limited integration into the global tourism economy.

The demographic profile shows that Zarbia weaving is almost exclusively practiced by women (97.5%), particularly those above the age of 55. This confirms the literature that situates weaving as both a form of women’s empowerment (Azil et al., 2020) and a mechanism for sustaining households (Zargham, 2007). However, the scarcity of younger artisans raises serious concerns about intergenerational transmission, according to the statistics of the Vocational Training Center registrations. This lack of interest among young girls is evident in the data, where only 140 graduates specializing in textiles were recorded in the first quarter of 2023, which is a lower record compared to the past generation when Zarbia weaving was a common household activity and used to be woven in all houses in the region. Similar patterns have been observed in Morocco and Tunisia, where younger generations are reluctant to pursue artisanal professions due to lower prestige and economic insecurity (Ratnam, 2014). Unless mechanisms are put in place to attract and train youth, the continuity of Zarbia weaving is at risk, even as its cultural value increases.

The survey revealed that nearly all artisans (98.8%) consider weaving profitable, with earnings reinvested into households and production. This finding is consistent with global studies showing that crafts contribute significantly to women’s financial independence and local economies (Bano, 2016; Goswami & Goswami, 2018; Konjengbam & Chakravarty, 2026). The high percentage of artisans engaged in exports (80.2%) underscores Zarbia’s market potential beyond Ghardaia. However, market integration is uneven: interestingly, many artisans with only elementary education engage actively more with tourism and enjoy higher profits, while the majority of university graduates remain marginalized in formal markets, this highlights the dual role of education in this field, it functions both as an asset and a constraint: the artisan sector is inclusive and capable of accommodating workers with varying educational levels (Ismail & Mohammad, 2020), and those who did not have the opportunity to pursue a professional career, even without formal qualifications still have the chance to learn the craft and benefit financially from it, however education level may act as a barrier for some artisans’ limited language or communication skills can hinder direct interaction with tourists, reducing investment opportunities and potential income. This aligns with studies that highlight education as a critical enabler for artisans’ participation in tourism economies (Guillén-Peñafiel et al., 2024; Refaat & Hassan, 2025).

Artisans’ overwhelmingly positive perception of tourism (98.8% viewing it as a tool for tradition preservation and livelihood improvement) suggests a strong alignment between local knowledge and cultural tourism models. Yet, the results also reveal that Ghardaia’s tourism remains highly domestic, with only 3,121 international visitors recorded in 2023. This reliance on local tourism mirrors findings from desert tourism studies in Algeria, which note the underdevelopment of international tourism infrastructure despite strong cultural assets (Ramdan & Mourad, 2025). The participation of artisans in international exhibitions in 2023 is therefore a promising development, marking the first steps toward broader global exposure. The sector attracts a large labour force and has the flexibility to expand (curbing unemployment by Creating new job opportunities: 20,909 jobs / 7,084 artisans in 2018) especially with the availability of raw materials. And it does not require large capital investments, and relies on simple machines (Ismail & Mohammad, 2020). These limited possibilities can generate substantial returns when fully exploited, contributing to balanced economic development between rural and urban areas (Aissani & Chanbi, 2024). In Australia, in 2012 the number of local and foreign visitors reached 2.82 million people at the festival which contributed to spending more than 58 million AUD (excluding tickets) achieving profits estimated at 62.9 million AUD. As a result, the top 10 Festivals contributed to create 790 permanent jobs (Skoultos, 2014). This is consistent with what (UNESCO, 2015) have asserted that Tourists’ discovery of diverse traditions and cultural festivals of traditional crafts and all that is considered intangible cultural heritage generates revenues and provides jobs for local individuals while nurturing a sense of pride in the community and thus providing inclusive economic development as one of the criteria of sustainable development (Hu et al., 2024).

The challenges identified, scarcity of raw materials, high costs, and competition from machine-made carpets, are consistent with regional trends across North Africa, where industrial imports increasingly displace traditional crafts (Islam & Burmester, 2020). Importantly, artisans themselves pointed to solutions: policy support (98.8%), tourism growth

(55.7%), and digital marketing (27.2%). These align with broader global findings where digital platforms (e.g., Etsy, Instagram) have expanded artisans' access to international buyers (Singh et al., 2022). Yet, without targeted training in digital literacy, most Ghardaia artisans will remain excluded from these opportunities.

The SWOT and PESTEL analyses confirm that while Zarbia weaving is culturally strong and economically viable, it is structurally fragile. Strengths such as heritage authenticity and export potential are undermined by weaknesses including an aging workforce and limited education. Opportunities such as digital marketing and tourism growth are offset by threats like global crises and competition from mass-produced goods. From a policy perspective, this suggests the need for integrated strategies: securing raw material supply chains, protecting intellectual property (through geographical indications), and investing in artisan training (Wu et al., 2025).

The results of this study have clear implications for the UN Sustainable Development Goals. Zarbia weaving contributes to SDG 5 (Gender Equality) by empowering women artisans, SDG 8 (Decent Work and Economic Growth) through income generation and exports, and SDG 11 (Sustainable Cities and Communities) by preserving intangible cultural heritage (Figure 9). However, without intervention, these contributions are at risk due to demographic and market challenges.

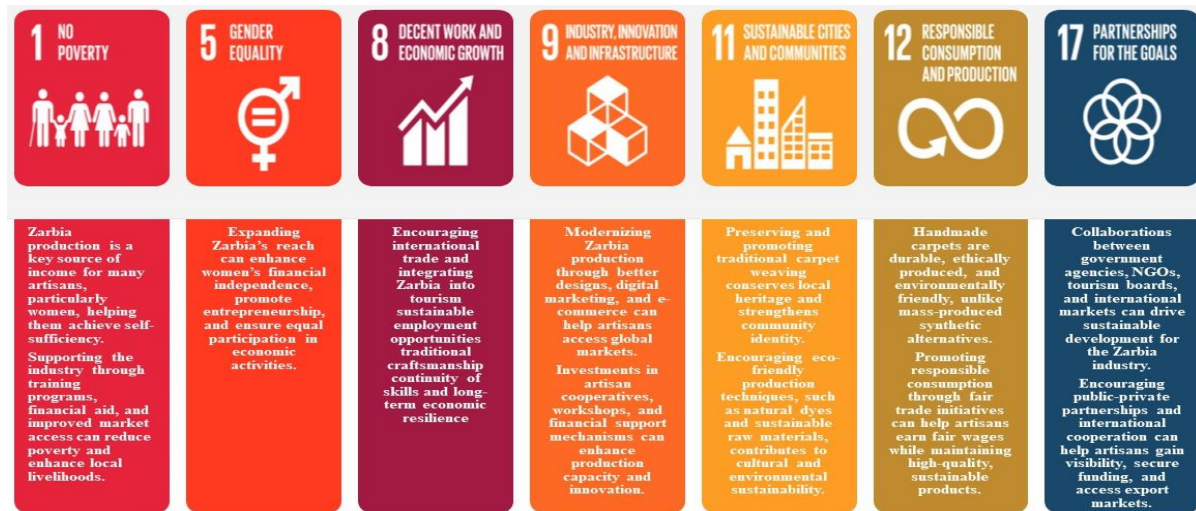


Figure 9. Sustainable Development Goals supported by the development of the Zarbia industry (Source: The authors, 2025)

From a theoretical perspective, this study contributes to debates on the commodification of heritage (Gill-Robinson, 2007), showing that commodification does not necessarily erode authenticity but can provide artisans with economic stability. Practically, the findings point to actionable recommendations:

- Policy interventions to subsidize raw materials and support artisan cooperatives.
- Capacity-building in digital literacy and foreign languages to connect artisans with global markets.
- Youth engagement strategies, such as vocational training programs linking schools with weaving workshops.
- Tourism integration, embedding Zarbia experiences into cultural tours and festivals to increase exposure.

While this study provides valuable insights, it is based on a purposive sample of 81 artisans, which may not fully represent the diversity of Ghardaia's weaving community. Additionally, sales data specific to tourists were unavailable, limiting the analysis of direct tourism–craft linkages. Future research should adopt longitudinal designs to track changes over time, and comparative studies with other North African carpet traditions could further illuminate the regional dynamics of craft survival.

CONCLUSION

This study examined the interplay between Zarbia weaving and tourism in Ghardaia, highlighting the dual role of the craft as both a cultural heritage and a vital source of women's economic empowerment. The results show that while Zarbiaweaving remains profitable and widely practiced among older women artisans, its long-term sustainability is threatened by rising production costs, limited market access, and declining youth engagement. At the same time, artisans overwhelmingly recognize tourism as a key driver of tradition preservation, livelihood improvement, and market expansion.

By integrating survey data, trend analysis, and strategic frameworks, the study contributes to the literature on cultural heritage tourism and women's livelihoods, offering a holistic view that foregrounds artisans' voices. The findings also demonstrate that stronger links between Zarbia production and tourism could generate significant benefits, not only for local households but also for regional economic diversification and Algeria's broader cultural tourism strategy.

To safeguard the future of Zarbia weaving, targeted interventions are needed: policies that stabilize raw material supplies, training programs that enhance digital and marketing skills, legal protections such as geographical indications, and youth engagement initiatives to ensure intergenerational transmission. International exposure and integration into global tourism markets also represent untapped opportunities for growth.

Ultimately, Zarbia weaving embodies more than a craft: it is a living heritage that connects cultural identity with economic sustainability. Preserving and revitalizing this tradition requires coordinated efforts by policymakers, artisans,

and tourism stakeholders. Doing so will not only protect an endangered craft but also position Ghardaia as a model for how intangible heritage can be leveraged for sustainable development in North Africa and beyond.

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