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# Climate Research for Furniture-making (CRAFT)

## Project Final Report

### Part 1: Social Capital Network in Damietta **Damietta's Furniture Networks: A Heritage Asset Facing Climate Emergency**

(Project Activities 1 Dec 2020 - 30 Nov 2021)

### *Part 2: The Future of Furniture Industry in Damietta* **Damietta's Furniture Industry Patterns in a Digitised Global Market**

(Project Activities 1 Dec 2021 - 31 Mar 2022)

University of Salford

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## Technical References

<b>Project Acronym</b>	<b>CRAFT</b>
<b>Project Title</b>	<b>Climate Research for Furniture-making</b>
<b>Project PI</b>	<b>Professor Hisham Elkadi</b> University of Salford, Manchester
<b>Project Co-Is</b>	<b>Prof Stuart Walker</b> University of Lancaster  <b>Dr Ahmed Abdelrehim</b> CEDARE Egypt
<b>Project Research Team</b>	<b>Dr Nourhan Heysham</b> University of Salford, Manchester  <b>Yusuf Yunis</b> CEDARE Egypt
<b>External Consultants</b>	<b>Amr Orensa</b> Egyptian Furniture Export Council
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<b>Project Activity</b>	<b>Part 1: Social Capital Network in Damietta</b> Damietta's Furniture Networks: A Heritage Asset Facing Climate Emergency  <b>Part 2: The Future of Furniture Industry in Damietta</b> Damietta's Furniture Industry Patterns in a Digitised Global Market
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# Executive Summary

## Project Background

Damietta's furniture industry is culturally embedded in the livelihoods of its community. The industry continues to thrive while facing several ecological and industrial challenges. In order to sustain its socio-cultural and heritage assets and its positive role as a regional economic power, there is a need to develop conservation, protection and ecological strategies.

The project aims to examine, document, and promote Damietta's cultural and craft/industrial heritage. This intangible heritage encompasses the industry's long term **social capital networks** and the **traditional craft practices** of furniture-making, which have both been formulated and passed down through generations. Documenting cultural heritage in Damietta will help to make a strong case for protecting these practices and networks through inclusion in the **UNESCO Intangible Cultural Heritage listings** (WHL). The project also examines the challenges that face traditional craft in light of new digital manufacturing processes. These relatively recent innovations potentially enable the fruitful **conservation of traditional craft in conjunction with** innovation via these **evolutionary industry trends**, thereby helping to ensure the sustainable economic growth of the city and its furniture making community.

The CRAFT project is funded by the Arts and Humanities Research Council (AHRC) in the UK and brings together research partners and expertise from the UK and Egypt. Project partners include the University of Salford, University of Lancaster and the Center for Environment & Development for the Arab Region & Europe (CEDARE) in Cairo.

The project addresses several UN Sustainable Development Goals (SDGs) that relate to cultural heritage, economic growth/reform and sustainability in terms of climate action: **SDG #8** decent work and economic growth; **#9** industry and innovation; **#11** sustainable cities and communities; **#12** sustainable production; and **#13** climate action. This study raises concerns about the continuance of work within the furniture industry, and maintaining local value chains that contribute to a sustainable and socially inclusive economy (SDG #8, #9). The furniture industry is also production-based, and this will be examined and documented in terms of responsible and sustainable patterns of production, value chains and stakeholders (SDG #12). As rising sea levels significantly impact enforced spatial disruption, the project investigates the actions needed to mitigate this threat (SDG #11, #13).

## Challenges

The city of Damietta is situated in the Nile Delta. In this region, some 6.1M inhabitants are at risk of sea level rise (*FitzGerald, Fenster, Argow, & Buynevich, 2008*). The furniture industry also accounts for 2.1% of the total production in Egypt (*ILO, 2016*) with Damietta furniture industry alone producing more than £290M in exports (UNIDO, 2015).

Due to the low-lying nature of the Delta region, climate change in Damietta poses a major threat to the conservation of cultural and industrial heritage conservation in the city and its environs. Not only does **sea level rise** endanger significant heritage sites, but it also puts at risk the conservation and continuance of values, practices and networks that form the irreplaceable living culture this community. Critically, this interrelated tangible-and-intangible cultural heritage directly affects the **city's resilience and economic growth**.

The furniture industry in Damietta also finds itself at a crossroads between the inherited traditional crafts, and the use of digital tools. The latter are used in the production of more contemporary designs and products that are increasingly desirable by customers in local and global markets. The pressures of **mass production and new technologies** are forcing the local makers to either forsake their original crafts or abandon furniture-making altogether. The uncoupling of **design education** and **industry skills** also adds to the magnitude of this dichotomy.

## Methods and Approach

To tackle the abovementioned objectives, six methods have been deployed in the project, namely:

- 1) An **On-ground Urban Survey** of furniture industry enterprises in Damietta,
- 2) **Geo-spatial Analysis** of the city's climate vulnerability to sea level rise,
- 3) A **Stakeholder Engagement** workshop in Damietta,
- 4) **Building Partnerships** to promote Damietta's UNESCO enlisting,
- 5) An **Online Global Survey #2** of global market preferences regarding traditional vs new designs in Damietta, and
- 6) A **SWOT Analysis** of traditional and digitised trends in Damietta.

Findings from these methods have contributed information to an **Online Platform** to support the furniture industry network in Damietta.

**On-ground Urban Survey** – an urban survey was conducted to map the connections and magnitude of the network of the furniture industry in Damietta. Aspects such as trust, norms, contribution to the craft and production chain, and awareness of climate change vulnerability were measured through the survey.

**Geo-spatial Analysis** – the survey data of the social capital network was geographically mapped using GIS software, as well as IPCC sea level rise scenarios. This helped to identifying the vulnerability and resilience of the city's industry network to climate change.

**Stakeholder Engagement Workshop** – a workshop involving different stakeholders in Damietta (decisionmakers, companies, SMEs, individual workers, NGOs in the industry) was held to communicate the project outputs from the survey and analyse stakeholders' views on the challenges and opportunities for a sustainable future of the industry in Damietta.

**Building Partnerships for UNESCO enlisting** – conversations with the UNESCO Egypt office, Damietta Governorate and the Egyptian Furniture Export Council were fruitful and supportive in pushing forward the formulation of a case for support to enlist Damietta in the UNESCO's WHL.

**Online Global Market Survey** – tested the relevance of traditional versus digitised production trends in Damietta. The survey examined international customers' engagement with different types of products from Damietta which helped to analyse strategies for future industry trends.

**SWOT Analysis for sustainable strategies** – all previous methods and outputs were utilised to formulate a comprehensive analysis towards the strategies that would capitalise on the strengths and opportunities in Damietta's industry. These strategies offer resolutions for the sustainable economic growth for Damietta's industry and consider the challenges of climate change, technological pressures, and limitations to design education.

**Online Platform** – the project aims to provide a digital space to share the project outputs and to provide a space to maintain and grow the social capital network in Damietta. It also proposes a digital solution to help integrate new technologies into traditional industry patterns.

## Results and Conclusions

The data collection and engagement activities of the project resulted in multiple conclusions that provide a multivalent understanding of the nature, patterns and significance of Damietta's furniture industry as a local, regional and national economic and cultural hub. The conclusions can be summarised as follows:

- The social capital network (trust, networks, and norms) in Damietta is strong and highly effective compared to other industrial cities in Egypt and globally. This is a significant cultural asset that provides an economic advantage to Damietta as a hub for furniture-making. The provision of effective support of, and engagement with, this network would accelerate the economic growth of the city's industry, both regionally and internationally.
- Sustaining the social capital network in Damietta's furniture industry is essential for preserving the community's livelihoods, work-life patterns, and cultural values.
- Traditional furniture-making production patterns and craftsmanship skills have a unique heritage value that is worthy of conservation and protection.
- Multiple variations can be adopted within furniture-making, ranging from art-oriented product design to full commercial mass production. It is important to advocate for the full spectrum of these practices and support local enterprises to adopt different stances that fit their individual scope, needs and business direction.
- It is imperative to encourage entrepreneurial mentorship and professional art agency to take prominent roles in Damietta's furniture industry. This would maximise the outreach of products in both the local and global markets.
- There is a need to develop distinct and diverse lines of productions to suit different markets. A balance between arts and crafts direction and mass production movements needs to be upheld in the industry. This is through diversifying Damietta's production to include a balanced approach between egalitarian industry and elitist-oriented art production.
- Matching design-oriented education to the local makers is essential for the future development of the craft skills and industry production and in meeting the needs of the global market. This also encompasses educating the public in Damietta on the importance of crafts to their identity and daily lives.
- Digital support and the provision of digital tools to makers in Damietta are important in counteracting the community's pressure and the fear of "new technologies". Advocating that hand-tools and digital-tools are both "instruments" that enable innovation would provide a crucial driver for the integration of new technologies within the industry.
- Exposure to contemporary designs which are popular in other places (Europe etc.) would help to raise awareness of external markets and what people are looking for amongst furniture makers.

- Makers working with young designers (for example through government-sponsored internships with Denmark, UK, etc.) would keep the designs fresh, encourage two-way knowledge exchanges and implicitly 'educate' both sides on needs, skills, etc.

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## PART 1

# Damietta's Furniture Networks: A Heritage Asset Facing Climate Emergency

## Project Scope and Rationale

Climate change in Damietta poses a major threat to cultural and industrial heritage conservation in Damietta. Rising sea levels are endangering significant heritage sites, which risk the conservation and continuance of cultural values and practices which form irreplaceable layers of history in this community. Critically, the interrelated tangible and intangible cultural heritage directly affects the city's resilience and economic growth.

Situated where the Nile meets the Mediterranean, Damietta has been identified by the Intergovernmental Panel on Climate Change (IPCC) as highly vulnerable to sea level rise (IPCC, 2007). In the larger delta area, the homes and livelihoods of some 6.1M inhabitants are at risk (FitzGerald, Fenster, Argow, & Buynevich, 2008). The furniture industry accounts for 2.1% of total production in Egypt (ILO, 2016) with Damietta furniture industry alone producing more than £290M of exports (UNIDO, 2015).

This project aims to examine and promote the cultural and economic resilience of Damietta, which is under threat from climate change and contemporary political decision-making that is insensitive to its socio-cultural heritage. By documenting and highlighting the tangible cultural heritage of this craft industry and its social networks, a strong case can be made to protect these practices and save the economic livelihood of the city's inhabitants. The purpose is to identify the areas at risk and how it would disrupt the network (through GIS mapping). This would enable the development of a contingency plan to maintain the networks and conserve the industry values. Notably, Egypt is included in the ODA list on reporting for 2020 aid to mitigate against climate change. This research investigates threats from climate change on Damietta's cultural heritage, as embodied in its local craft furniture industry and networks. Damietta's furniture industry is grassroots in nature, and as such is local, culturally rich and with generations of inherited knowledge. This intangible cultural and industrial heritage is articulated in two integral elements: 1) Its furniture craft and value chain (e.g. craft called "Oyma", currently at risk), and 2) The social capital network connecting long term MSMEs owners that influences the pattern of business interactions, giving Damietta a unique cultural and economic asset.

This project tackles several UN Sustainable Development Goals (SDGs) that relate to: cultural heritage, economic growth/reform and sustainability in terms of climate action; decent work and economic growth; industry and innovation; sustainable cities and communities, and climate action (SDG 8, 9, 11, and 13). This study raises concerns about the continuance of work within the furniture industry, and the maintenance of local value chains that contribute to a sustainable and socially inclusive economy (SDG 8, 9). As the furniture industry is also production-based, this will be examined and documented in terms of responsible and sustainable patterns of production, value chains and stakeholders (SDG 12). Sea level rise substantially impacts enforced spatial disruption, therefore the project will investigate the actions needed to mitigate this threat (SDG 11, 13). The project aims to build a case for the recognition of Damietta's furniture industry network as an intangible cultural heritage

according to UNESCO's ICH programme. This would affirm and help to protect one of Egypt's most important traditional industrial heritages.

## Objectives, Context and Methodologies

### 1.1.1. The Case of Damietta City

Damietta city is one of the most famous Egyptian cities for furniture-making and Arabesque. The advantageous location of the city with its many ports meant that it had the potential to succeed; these ports were used as a destination for wood import, which also helped the city to export its products, especially to Arabic and African countries (Elsaggan, 2020).

This industry was associated with Mohammed Ali's policy at the beginning of the 19th century which emphasized the development of the woodcraft industry through commercial boats and ship-making. He built a huge shipbuilding arsenal which became the core of the wood-making industry in Damietta. It involved not only ship-making but also the crafts and furniture industry. After, many political and economic eras the industry further evolved to become a key destination for furniture, woodwork, and carpentry (Elsaggan, 2020).

#### 1.1.1.1. Alawites' Era: The Muhammad Ali dynasty (1805-1907)

The furniture industry in Damietta has undergone an incubation period since the emergence of ship manufacturing and a period of perfection and professionalism.

Muhammad Ali adopted a policy of forcibly collecting boys to teach them to work on large machines in the arsenals; these were not just a nucleus for industrialization, but also served as schools teaching the art of furniture and woodwork (al Frid, 1985; Elsaggan, 2020).

Mohamed Ali's policy aligned to the global industrial revolution when machines were imposed on crafts making, although his aim was to merge industry and commerce to the army and fleet. However, the industry collapsed after his policy's failure to enable external expansion, and factories shut down which drove a significant recession in wood making. Small crafts and furniture making industries later returned as small workshops forming a handicraft industry away from industrialization with elementary hand tools (al frid, 1985).

#### 1.1.1.2. World Wars and the Furniture Industry in Damietta (1907-1952)

Unlike the recession that impacted other industries after the World Wars, the furniture industry in Damietta flourished and grew. World Wars were accompanied by various difficulties with imports that were followed by price increases. At that time, the local crafts making became more prevalent and offered a viable alternative (Lotfy, 1988).

The furniture industry widened to involve "Moblya-making" while workshops diversified to include: Furniture, kitchens and chests, and wood and paint engraving. However, due to the war, Damietta faced difficulties in importing machines, which meant that crafts and furniture making in the city depended on handicrafts rather than mass production. Furthermore, the labour force decreased due to the migration of craftsmen to upper Egypt away from areas of conflict (Elsaggan, 2020; Lotfy, 1988).

#### 1.1.1.3. The Egyptian Revolution of 1952 (1952- 1973)

The Egyptian Revolution of 1952 was followed by great interest in the industrial sector. Damietta received significant investment in its furniture-making industry due to its location and external port that provided a water link to Almanzla Lake, which provided opportunities to board wood from Port Saeed and Alexandria. This investment encouraged labourers to separate from workshops owners and built their own businesses in areas around the main city, which expanded the industry to the suburbs. This development gathered pace after the

installation of electricity networks within suburban areas following the building of the High-Dam (Elsaggan, 2020; Mabro, 1985). Furniture-making flourished to involve new branches of the industry, such as woodturning workshops, arabesque workshops, and paints workshops (Elsaggan, 2020).

#### **1.1.1.4. Economic Openness to Present (1973- date)**

This phase represents the maturity and development phase of industrial growth at all levels, from local to global. Since 1977, and after the publication of Egypt's economic-development plans, the country started to increase the export of local products with special economic advantages such as cotton textile, furniture, and fruits. As a result, the furniture industry in Damietta developed to meet local and global tastes, and Damietta furniture became a brand that depended on local and imported materials, and local skilled craftsmen (Elsaggan, 2020).

The country encouraged Arabic and Egyptian investment in furniture factories while marketing attracted labour and increased the skills of craftsmen through training and demonstrating an interest in international furniture exhibitions. The country also facilitated the import of raw materials and the wood, especially after the establishment of New Damietta port that included shipping container docks and wood storage (Elsaggan, 2020).

The furniture industry in Damietta has faced many challenges and economic pressures on both local and global scales. At the local level, increasing production costs also increased the price of items prior to demand. As a result, the demand for Damietta's products decreased despite their quality. At the global level, many events affected the industry including: the General Agreement on Tariffs and Trade (GATT), privatization, and the revolution between 2011 and 2016 (Ahmed, 1997; Center for Information and Decision Support, 2010, 2016; Elsaggan, 2020)

##### **General Agreement on Tariffs and Trade (GATT)**

GATT aimed to encourage free trade by imposing low tariffs and eliminating government subsidies. Egypt was one of the countries that signed the agreement to impose open markets on member countries. The agreement was expected to increase the quality of the final product and open the gate for global markets to increase exports (Center for Information and Decision Support, 2010).

However, there were side effects to the GATT including the spread of foreign products in local markets (such as goods from China) at lower prices than local rates. This resulted in decreased import rates compared with export rates. Accordingly, Damietta's furniture was put under pressure to preserve its quality, and at the same time maintain competitive pricing with other products in the market (Center for Information and Decision Support, 2010; Elsaggan, 2020).

##### **Privatization**

Privatization emerged as a proposed program that aimed to offer a economic and financial solution to get Egypt out of the debt crisis that it faced at that time. The proposal suggested selling the public sector and turning to privatization because of the problems that the industrial public sector faced, such as: low demand for its products, low import capability, a lack of skilled labour, a lack of investment, and the exacerbated public debit (Ahmed, 1997).

Due to the lack of a legal framework for the privatization process and a lack of regulation, the government transferred factories and companies to the private sector including all the



plywood, crust, and bano industries. However, many irregularities occurred in this process (Ahmed, 1997; Elsaggan, 2020).

#### The Egyptian Revolutions

The period of the Egyptian Revolutions between 2011 and 2016 witnessed high prices, the disappearance of goods and the accumulation of debt. This led to paralysis in manufacturing, which in turn affected the furniture industry in Damietta. The furniture manufacturing movement stopped, the timber trade decreased, and an economic recession impacted the Egyptian market (Center for Information and Decision Support, 2016).

The state has since tried to support the furniture industry in Damietta by restoring it to its former prosperity through the Damietta Furniture City project. Damietta Furniture City represents one of the most important national projects to receive the attention of political leadership. It aims to support this industry, which is the first craft amongst the people of Damietta Governorate, and in turn supports the city that was established to develop the industry and keep pace with global competition (Center for Information and Decision Support, 2016).

From studying the temporal dimension of the wooden furniture industry in Damietta, it is clear it passed through many eras that affected its evolution, expansion, and development. In Mohamed Ali's era, the industry started as ship-building, which was supported by the Industrial Revolution and the emergence of machine-based production. The industry flourished alongside the growing labor workforce in the city. The wooden furniture industry diversified between 1907 and 1952, to include "Moblya", a particular style of furniture, which is now the mainstay of its wooden manufacturing (Ahmed, 1997; Center for Information and Decision Support, 2016).

In conclusion, between 1952 and 1973, the furniture industry witnessed a turning point in the history of modern Egypt and the establishment of the first national program for industrialization, while the wooden furniture industry grew significantly between 1973 and 2010, suggesting that the Egyptian government encouraged this type of manufacturing. However, between 2011 and 2016, the furniture industry faced economic changes at both local and global levels due to several political and economic challenges. High prices, the disappearance of raw materials, and the spread of metal furniture products from China impacted the Egyptian market. Nevertheless, the amount of industrial workshops increased, affected by young people traveling through Damietta and their experience of new independent industrial workshops within the 'furniture city'.

### 1.1.2. Conceptual Underpinnings and Theories

CHERISH project primarily considered the theoretical and conceptual underpinning of urban and network mapping and perceives social capital as a driver for the industry in light of climate change resilience. These underpinnings included the works of Putnam (2002., 1993), Coleman (1988, 1990), Lin (1999, 2003), Bourdieu (1986), Hunt (Hunt et al., 2015) and Burt (Burt, 1992; 2015). CHIDE also investigated the grassroots economic concepts introduced by Ruddick (Ruddick et al., 2015; Dissaux and Ruddick, 2017; Ruddick, 2015), and interpreted Porter's Competitive Advantage theory (Porter, 1990) in the setting of developing countries.

CHERISH's proposed scope of research included the dynamics of motivation, and the values and drivers for action-taking. This was achieved by investigating a specific framework of

making, that capitalised on the works of Schwartz (1992, 2012) and Walker (Walker et al., 2019; Zhang et al., 2019), where reflections of the relationship between place, values and the nature of the craft and industry were investigated. This helped to unlock the potential for transitioning the craft-based industry in Damietta with the view to conserving its cultural heritage in a digitised context. The complexities that accompany an investigation of a dense and enclosed community such as Damietta also adds variables of meaning to the social and cultural bonds between individuals. The argument in this sense transcends economic profit and maps the specific pattern of living that evolved in the city.

### **1.1.3. Methods and Data Collection**

#### **1.1.3.1. Interviews and Survey**

This project utilises interviews and on-ground surveys as tools to collate the opinions and understandings of individual workers and enterprise owners in Damietta on their work-based motivations and values. These tools enable an investigation into the community drivers and decision-making rationale for undertaking their particular pattern of work. These are comparative analysis tools where workers and enterprise owners from both traditional craft and modernised mass-production trends are targeted for the data collection. In doing so, the team seeks to investigate the gaps and complementarities between the two trends.

#### **1.1.3.2. Mapping Motivations and Values**

In accordance with Schwartz's work, the collated data were mapped onto the motivations and values of the community for both trends in order to understand the relationship between place, values and the craft/industry. This methodology adopts a similar approach to the research conducted on China and Cumbria's craft makers (Walker, et al., 2019; Zhang et al., 2019). The mapping of values includes innovation, benevolence, conservations of craft and self-advancements (Schwartz, 1992; 2012). This mapping is presented as qualitative analysis and geolocation layers comprising the primary data collated in CHIDE's GIS mapping.

#### **1.1.3.3. Limitations and Considerations**

The community in Damietta is a rather 'closed' circle, with strong social bonds. Finding gateways into the community to carry out the urban survey and to organise workshops and observational studies was challenging. It was necessary to deploy the research team's local connections with Damietta residents (Gate-keepers) to facilitate access to this community. This was facilitated through the survey carried out in CHIDE project, where links were established in the community and with municipalities in Damietta.

The sociocultural preferences and behavioural patterns of individuals working in the furniture industry will also be considered, since this could pose a challenge during the surveys and workshops. To minimize errors, training and orientation will be conducted on cultural preferences in Damietta, and how to apply the research tools. The research team and enumerators will ensure they are sensitive to and abide by the cultural values of the community, such as adopting modest forms of dress, since most of the participants will be men, who could be offended by more modern clothing.

## 1.1.4. Data Analysis (Survey)

### 1.1.4.1. The Relevance of 'Place' to the Craft Enterprises

The questionnaire considered the 'relevance of 'place' to craft enterprises in terms of the reputation of the place, the attraction of Damietta city, the infrastructure available to enhance access to the city, the policy support provided by the government, and big entities, the role of cultural organizations, opportunities for cultural events, training opportunities, and the local resources available.

Damietta's status as a tourist attraction and a site of inheritance heritage for the furniture industry added value to the enterprise on both the local and global scale. Based on the survey answers, 84.2% of responses asserted that Damietta's UNESCO world heritage status, National Park, and Heritage Area are very important to the marketing of enterprises. They stated that some organizations have a crucial role in the recognition of such enterprises. These organizations include: the trading room, Ministry of Industry, Trade and Small Industries, Ministry of Foreign Affairs, Egyptian Micro, Small and Medium Enterprise Development Agency (MSMEDA), and some local exhibitions such as those on 'Dayrna and Torasna', and the temporary furniture exhibition.

Within the survey responses, 87.7% of the participants confirmed that the famous sites and landmarks in the city, such as mosques, museums, hotels, restaurants, and business facilities, are important to the vitality of the furniture industry in the city.

In terms of accessibility and its importance to the industry generally and enterprises specifically, 79.8% thought that traffic links worked very effectively to connect the city. About 66.5% asserted that road transportation and car\bus\other modes of transportation are very important to their business. However, 18.2% indicated that increasing and providing parking is most important while 14.8% expressed the importance of railway transportation to their business and only 0.5% highlighted the importance of airports (as shown in **Error! Reference source not found.**). Participants additionally highlighted that other transportation hubs play a vital role in the industry such as the New Microbus station in Shata and Diamtta port.

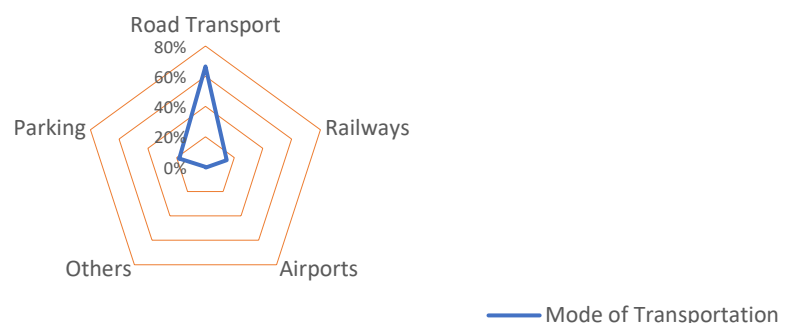


Figure 1: The most important mode of transportation for city accessibility based on the survey results

In addition, 82.3% of the participants believed that the government could have a very powerful role in supporting the industry through policies and regulations. They summarized some of the policies in which they believe would help their grow and reinvigorate their business:

1. Censorship on prices
2. Regulating the renting process
3. Supporting exports abroad
4. Tax exemptions
5. Focusing on industry workers and providing safe places to live
6. Worker social and health insurance
7. Quality control
8. External exhibitions
9. Appropriate marketing
10. Providing a permanent exhibition for small workshops and galleries
11. Better priced material
12. Providing the required materials
13. Service centers
14. Recording the product petitions
15. Censorship on factories and workshops
16. Reducing energy prices such as electricity and water
17. Opening a channel to export to Arabian countries

When the participants were asked about the importance of the local and regional organization to the enterprises in the city, such as museums, galleries, libraries, trade centers, and exhibitions, about 69.7% stated that they are very important, while 12.5 indicated they are not important at all. They believe that such organizations need greater capabilities, and only the big entities are supported. Participants also highlighted some problems such as a lack of furniture exhibitions.

Some local opportunities seemed to have a strong impact on enterprises such as local sales opportunities, demonstrations, workshops, profile-raising shows and fairs, and commercial shows. According to 80.4% of the survey opinions these cultural events are very important to the furniture industry, while 63.7% highlighted the importance of furniture sales and 27.6 referred to furniture-related workshops. Only 4.1 and 4.4 declared the importance of profile-raising for the business and the shows, and fairs respectively. Some cultural events were stated by participants, such as: the Carpenters' Syndicate Goods Fair, the Cairo-Minya Festival, and international festivals including Doha Festival City, as shown in Figure2.

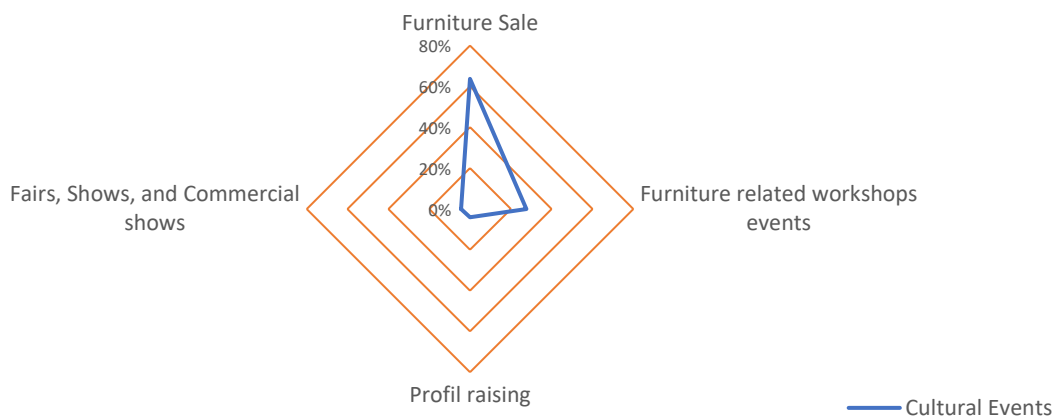


Figure 2: The most important mode of cultural events to the industry based on the survey results

In addition, 84.4% of respondents expressed the importance of providing ongoing training and facilities for the acquisition of new knowledge and skills to support enterprises. In addition, 43.1% stated that they have access to skills training, 14.3% have facilities to acquire new knowledge and skills, 26.7% gain knowledge through contacts/furniture industry community, and 12.7% gain training on finance. Moreover, 3.2% expressed that they were unable to find training, or they do not know what training they should undertake, as shown in Figure 3.

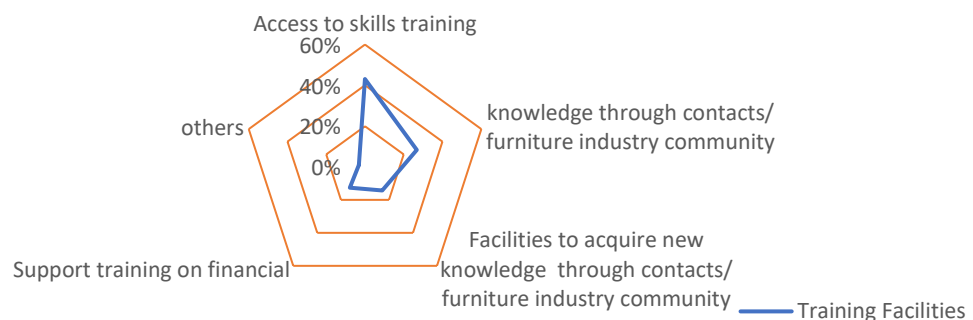


Figure 3: The importance of access to training and facilities for the acquisition of new knowledge and skills

Results concerning the importance of using local materials and resources in participants' enterprises were distinguished, as 61.3% agreed on their high importance, while 31.5% thought they were not very important as wood could be imported from abroad to ensure quality.

#### 1.1.4.2. The Priorities of the Craft Makers and Associated Stakeholders

This part of the questionnaire determined the value and priorities that participants felt supported both enterprises and the stakeholders. This considered the use of new or innovative materials and technologies, the style and varieties of products, the use of traditional materials and design, industrial and individual development, the level of income, awarding and encouragement and affirmation receiving from customers and peers.

Furthermore, 54.5% agreed on the importance of introducing new materials and technology to develop the industry, such as CNC, and digital technologies. Interestingly, 26.4% indicated that new materials and innovation were not important at all to the development of the industry.

The new materials and technologies suggested by participants were:

- CNC laser stainless steel woodcutters
- DVC, counter, and laser cutters
- Lamination, organic and polypropylene acrylic high gloss, Polyurethane wood, MDF, African veneer wood, plywood stainless steel, and vacuum membranes
- New and modern fabrication and materials like Kajal
- Accessories and modern finishing materials
- Pressing foam, epoxy, wood glue, and sanding
- Nickel Chromium technology hydrographic
- Automated robots for furniture spraying

In addition, 91.1% of the participants expressed the importance of introducing new designs to the market on an ongoing basis, as consumers are affected by changing life patterns and trends which furniture has to reflect. Four style options were given to choose from - European Neoclassic, Arabesque, European modern, and contemporary styles, - or they could specify any other styles they produce. In response, 89.7% of the results indicated a European style, comprising 49.1% for European Neoclassic and 40.6% for a European contemporary style. Only 8.5% selected arabesque, and 1.8% added other styles, such as smart furniture, Turkish style, half modern, and wooden veneering models, as shown in Figure 5.

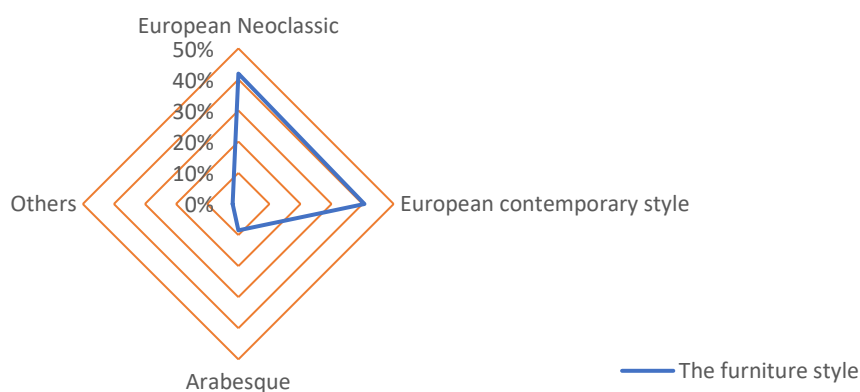


Figure 4: The furniture style produced by enterprises

Client feedback is a very powerful tool for developing any industry, enhancing the quality, and meeting the client demand and need. When the participants were asked about the importance of client feedback to the kinds of products they produce, 94.2% believed it is very important. Specifically, they indicated that feedback allows them to control product quality in terms of materials, finishes, and durability, and provides them with the different client directions.

The participants expressed that one of the main reasons for the industry's deterioration in the city is the gap between the manufacturer and final customer. They indicated that this is due



to the existence of intermediate exhibitions, so feedback does not return appropriately to the manufacturer.

In addition, 91.1% of the participants highlighted the importance of introducing a new range of products that have not regularly been offered, and of being productive and recreational in frequently developing new product collections and styles. However, some expressed their fears in undertaking such approaches due to the current recession. Among the survey responses, 84.6% indicated that integrating traditional materials with new styles and designs is very important, such as the innovative new styles and modern accessories, and painting traditional classic and steel designs.

Furthermore, 91.2% of participants confirmed that it is important to provide opportunities for individual development and advancement in the industry. The participants suggested some opportunities such as:

- Cooperating with governmental organizations
- Developing cognitive knowledge and using technologies to facilitate more precise and accurate methods to develop the industry
- Increasing income
- Attending workshops and teaching others about their craft
- Providing support and funding

Moreover, participants were asked to highlight to what extent it is necessary to have regular income increases and 92.1% indicated it is highly important to moderately increase income and workers' wages on a regular basis. In comparison, 93.1% believed it is very important to increase income levels on a regular basis at the business growth level. Additionally, 89.1% believed it is very important to regularly increase incomes through collaboration with others.

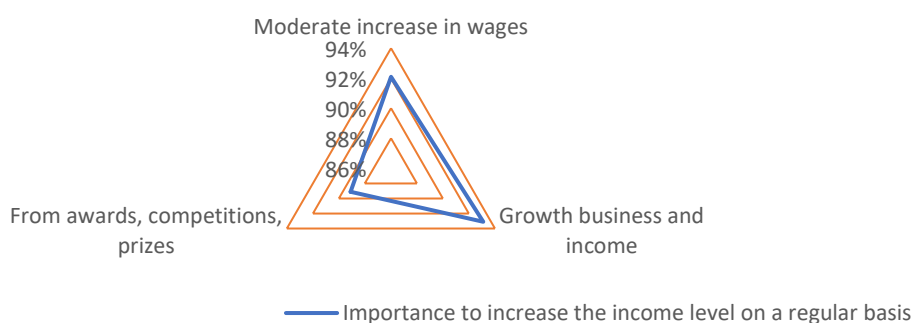


Figure 5: Importance of increasing income levels on a regular basis

Participants were asked to express how important it is to receive affirmation for their work from peers and customers; 88.1% indicated that it is very important and can be achieved by stimulating appreciation among workers and through governorate support. Furthermore, 58.1% agreed that it is important to offer affirmation in the form of awards, competitions, and competitive pricing. This could be given by the trading room, the governorate, ministry competitions for the industry, and other design competitions and exhibitions.



### 1.1.4.3. The Relationship of Craft Enterprises to Sustainability

The survey addresses the relationship between various factors that characterize furniture-making craft practice(s) in Damietta and the principles of sustainability. This depends on three contextualized essential factors:

- Environmental impacts emphasizing the usage of recycled materials, reduction of waste, and energy saving;
- Social contributions in terms of the potentially positive and/or negative effects of a design on other people or the wider society;
- Person fulfilment tackles the importance of conserving and passing the tradition of the city of Damietta

When the respondents were asked to state the importance of using local recycled materials to support sustainability and environmentally friendly products and practices, 45.9% highlighted the importance of using recycled wood in the industry. However, 35.6% said that using recycled materials is not important at all and they do not depend on it. In comparison, 87.8% of participants believed in the importance of reducing electricity consumption to enhance sustainability, while 91.1% asserted the importance of reducing waste in the production process to enable greater environmental conservation and sustainability.

In terms of social contributions to society, 85% of participants stated it is very important for enterprises to contribute profit to charity, 81% said that it is very important to provide support to other small enterprises and makers through buying goods and training. Furthermore, 83.2% showed that buying suppliers from local suppliers in Damietta is highly important, and 72.6% expressed that securing local support from cooperatives or similar groups, such as the wooden furniture chamber, is very important.

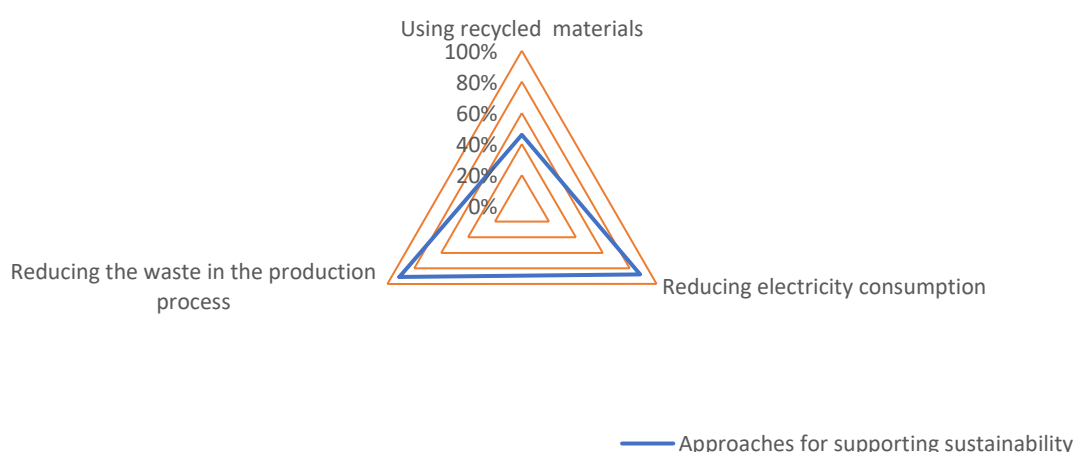


Figure 6: Environmental Impacts

Regarding personal fulfilment, when respondents were asked to define the extent to which it is important to enterprises to continue traditional modes of practice, 72.9% thought it is very

important. Additionally, 81.2% believed that it is very important for enterprises to continue and pass on the traditions of the region.

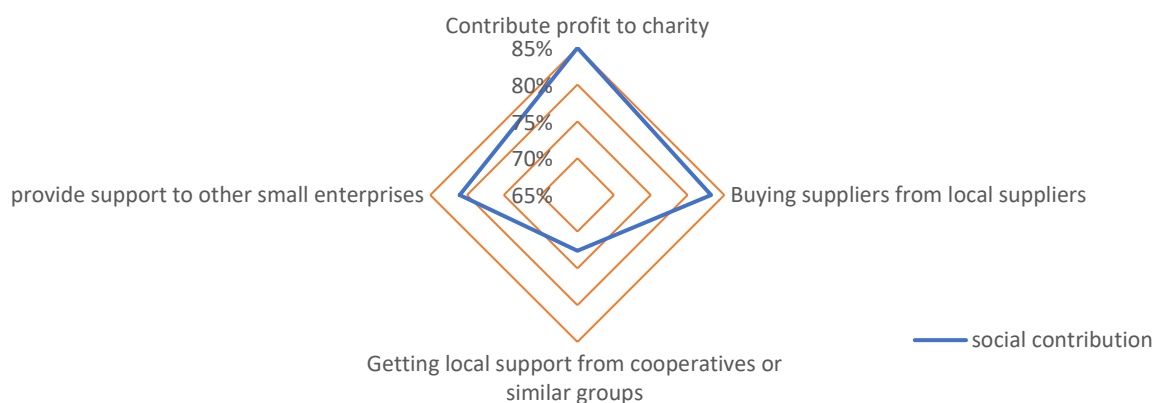


Figure 7: Social Contribution

## Craft in Damietta: Values and priorities, relationship to place, and sustainability

### 1.1.5. Introduction

This research project investigated furniture-making crafts in the city of Damietta, located on the Nile Delta of Egypt. This section will address the following research questions:

- What are the key factors that characterize furniture-making craft practice(s) in Damietta?
- What is the relevance of 'place' to these craft practices?
- What are the 'values and priorities' of craft makers and related stakeholders in Damietta?

Damietta has a significant and culturally rich furniture-making heritage. Currently, the area is home to c.400,000 craftsmakers across c.60,000 businesses. There are also some 2,500 showrooms and 1,500 stores and warehouses (Tantawi, 2021).

Its history and links to Paris, saw a 17<sup>th</sup> century French style of furniture emerge in Damietta that derived from the ornate Louis XVI designs. This style, known in the region as Neo-Arabesque, was popular in Egypt and the larger region during much of the 20<sup>th</sup> century. In recent times, however, the market has been less buoyant as younger customers often regard this type of furniture as too expensive, old fashioned or both. Consequently, some enterprises today are producing simpler, more contemporary styles. This transition means that there are fewer opportunities for traditional handmaking skills, especially the woodcarving hand skills, that make the Neo-Arabesque furniture so distinctive.

Although some machinery is employed, traditional furniture-making relies strongly on the hand-skills of craftspeople, which include hand-making and hand-assembly. Consequently, the industry employs experienced carpenters and cabinetmakers as well as very accomplished wood carvers, painters and upholsters. Rather than producing whole furniture pieces from start to finish within the same enterprise, different firms often specialize in and complete discrete parts of the process, such as the carving, painting, or assembly. For this reason, furniture making in the city is dependent on highly effective, context-specific business networks. These networks are essential to the functioning of furniture-making in this area and can be understood as a vital aspect of Damietta's social capital.

We will now address the research questions associated with the **Craft and Design** section of the project. The key-informant survey included Likert scale questions and the results have been plotted in various iterations to visualize the findings according to different interests. For example, results can be plotted on one comprehensive chart to show the values and priorities of skilled craft-makers, which could be compared with similar results for hand carvers, gallery owners or industry support organizations.

### 1.1.6. Factors that characterize furniture-making craft practice(s) in Damietta?

To determine the key factors that characterize furniture-making craft practice(s) in Damietta, three primary areas of inquiry were identified, as follows:

First, we considered the relevance of the place itself in characterizing and supporting the furniture-making businesses in this region. Place-based factors might include geographically determined elements such as access to a port, locally available materials which are important to the businesses, or even climatic conditions. They might also include social factors, such as local knowledge, skills and networks, local facilities, and a supportive local government.

Second, we looked at the values and priorities of the craft makers themselves and why they do what they do. We were interested to know if they find their work fulfilling and conducive to their sense of achievement and well-being. We also wanted to assess whether they were open to new innovations, and how they perceived the contribution of their work to their community, traditions, and local heritage. The practical utility of the furniture made here is also important. An industry like furniture making is based primarily on a renewable resource, which, if managed responsibly, can have relatively low environmental impacts. In addition, as with any business, an enterprise has to be financially viable. This research addresses all these values-based areas and sought to assess their relative importance for craft makers.

Thirdly, we considered the relationship of these various factors to the principles of sustainability, which is understood as the integration of four key factors (Walker, 2011, 2014):

- Practical meaning** – utilitarian benefits and their environmental impacts;
- Social meaning** – the potentially positive and/or negative effects of a design on other people, or society at large, in its creation, use and disposal;
- Personal meaning** – the relevance of a design in relation to a person's inner development and spiritual well-being; and
- Economic means** – financial viability is a necessary element but should be regarded as a *means* to achieve the other three factors, rather than an end in itself.

Together, these areas of inquiry cover a wide-range of considerations that help to determine the nature of furniture-making crafts in Damietta. The factors were determined from previous research into the characteristics of culturally significant designs, products and practices (Walker et al., 2018)

The results of these three areas of inquiry are presented below:

### 1.1.7. The Relevance of ‘Place’ to Craft Enterprises

Answering this research question requires firsthand information about the use of local materials and suppliers, and access to training through apprenticeships and professional development as well as the presence of suitable training facilities. It also includes opportunities to exhibit work in suitable surroundings such as galleries, trade fairs and festivals, as well as the ability of the place itself to attract visitors and potential buyers by, for example, being a well-known business hub, or by building/maintaining a reputation for heritage, its waterfront, natural beauty, and so on. Suitable infrastructure to support visitors is also important, including roads, airports, rail links, hotels, restaurants and museums. Finally, there may be government policies to help support businesses which are important to individual enterprises, for example, government-facilitated grants, awards and business conventions.

Interviews were conducted with a wide range of furniture makers and associated stakeholders. One category of survey questions specifically addressed place-based issues. Answers were indicated on a Likert scale ranging from 1 (not important at all) to 5 (very important). This section of the survey included questions about the importance of:

- Using local materials and resources.
- Using local suppliers.
- Having access to training and facilities for the acquisition of new knowledge and skills to support enterprises.
- Having local opportunities for sales, demonstrations, workshops and profile raising – shows, fairs, festivals, commercial shows, etc.
- The presence of local/regional facilities to enable viability of each enterprise, such as museums, galleries, libraries, trade centres, exhibition centres, etc.
- Tourism and Damietta’s status on the national or international stage (e.g. through UNESCO world heritage status, National Park, Heritage Area, etc.).
- Famous sites and landmarks in attracting customers, e.g. mosques, heritage sites, visitor information, etc.
- Accessibility to Damietta - roads, railways, airport, car parks, way finding, etc.
- Government policy that supports and facilitates small businesses.

*The results from these ‘relevance of place’ questions are shown in*

Figure 17

### 1.1.7.1. The 'Relevance of Place' to Craft Makers in Damietta

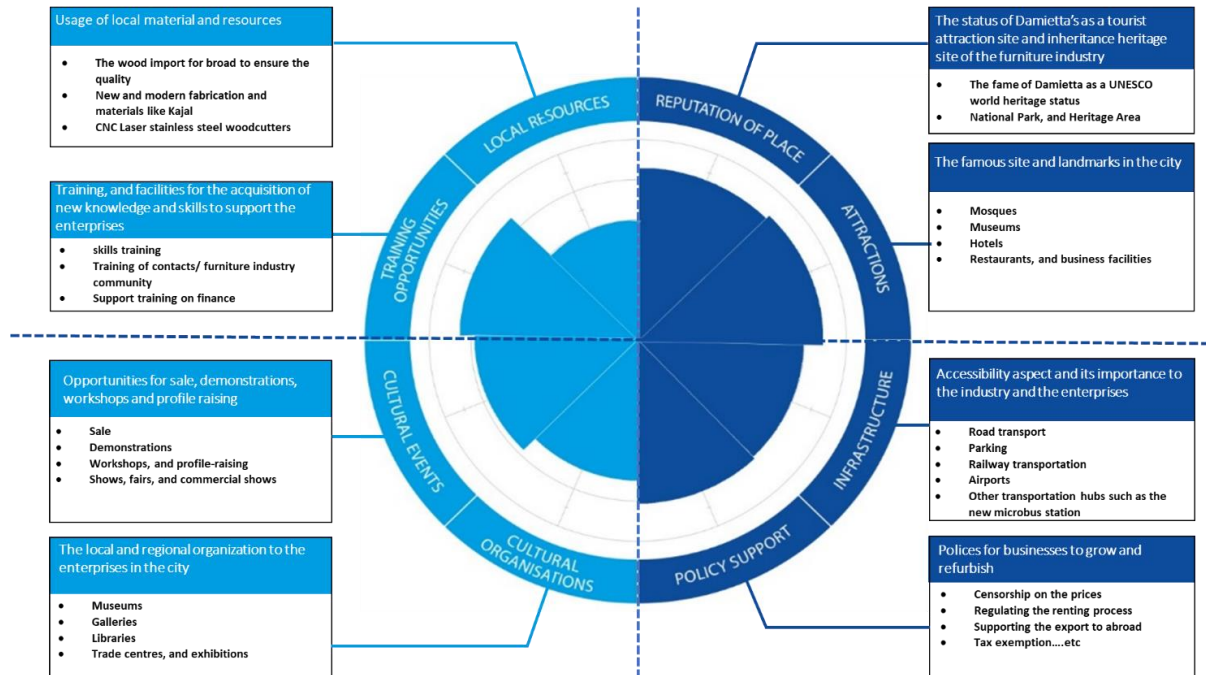


Figure 8 - The Relevance of 'Place' to Craft Makers in Damietta

Adapted from: (Walker, Evans, & Mullagh, 2019)

Where: innermost circle = not important at all  
outermost circle = very important

In

Figure 17, we can see that crafts in Damietta are well-integrated into, and strongly dependent on, the particularities of context across a wide variety of place-based indicators. However, some of these place-based indicators are weaker than others. For example, the use of local resources is limited as timber is primarily imported from other countries. This inevitably makes the industry susceptible to foreign markets and therefore vulnerable, especially when timber prices increase, such as following the COVID-19 pandemic. Another aspect that needs attention is the presence of organizations such as museums, libraries, and trade and exhibition centres that, collectively, could help affirm the importance of craft traditions in Damietta and raise their standing and profile to visitors and on the national and international stage. Other place-based aspects appear to be reasonably strong in the region. Similarly, there seem to be opportunities and room for development in profile raising activities through, for example, skills demonstrations, workshops tours, fairs and commercial shows. Other ways of profile raising might include TV documentaries, dedicated websites to the furniture industry that showcase various firms and the work they produce.

From this place-based analysis, several opportunities are evident:

- Where possible, increasing the use of local resources, for example through tree planting and harvesting regimes in the region that could offer a sustainable supply of local woods in the future.
- Consider the development of museums, libraries and trade and exhibition centres that, collectively, affirm the importance of craft traditions in Damietta, traditional carving skills, the history and traditions of wood crafts in the area, the socio-business networks on which the crafts depend, and the stories of individual craft-makers and their

interdependencies, which would give crafts a human face. These would raise the standing and profile of these crafts – both to visitors to Damietta and on the national and international stage.

- Develop opportunities for profile raising through skills demonstrations, workshops tours, fairs and commercial shows. TV documentaries, dedicated websites and short films on the furniture industry which showcase firms, their work, skills, history and stories. All these can raise the profile, while also affirm and increase the perceived value of crafts in Damietta.

### 1.1.8. The Priorities of the Craft Makers and Associated Stakeholders

This area of the research aims to characterize the values and priorities that underpin the practices of an enterprise and/or their related stakeholders. In this case, the lines of inquiry were based on Schwartz's Theory of Basic Values (Schwartz, 2012), which be divided into four overarching categories of values and priorities that:

1. Transcend self, such as looking after the natural environmental, and showing kindness and compassion to other people;
2. Conform to long-determined approaches which conserve traditional practices;
3. Enhance one's own interests, such as being ambitious and seeking power, pleasure and wealth; or
4. Embrace change through novelty, innovation, the incorporation of new approaches and technologies, etc. (Holmes et al., 2011).

As with the place-based questions, one section of the survey specifically addressed craft-maker priorities and answers were placed on a Likert scale ranging from 1 (not important at all) to 5 (very important). This part of the survey attempted to determine the relative importance of the following to craftmakers:

- The use of new or innovative materials and/or processes (e.g. digital technologies, CNC or similar).
- New kinds of designs.
- The styles being produced (traditional or contemporary, which may be indicative of a willingness to change).
- The importance of client feedback in determining the kinds of items produced.
- The importance of producing a new range of products regularly.
- The use of traditional materials in new ways/designs.
- Opportunities for individual development and advancement in the industry.
- The importance of increasing one's income level on a regular basis in the form of:
  - Moderate increases in wages,
  - Growth in business and income,
  - The importance of receiving awards, or winning competitions and prizes.
  - The importance of receiving affirmation for one's work from peers or customers.



### 1.1.8.1. Priorities of Craft Makers in Damietta

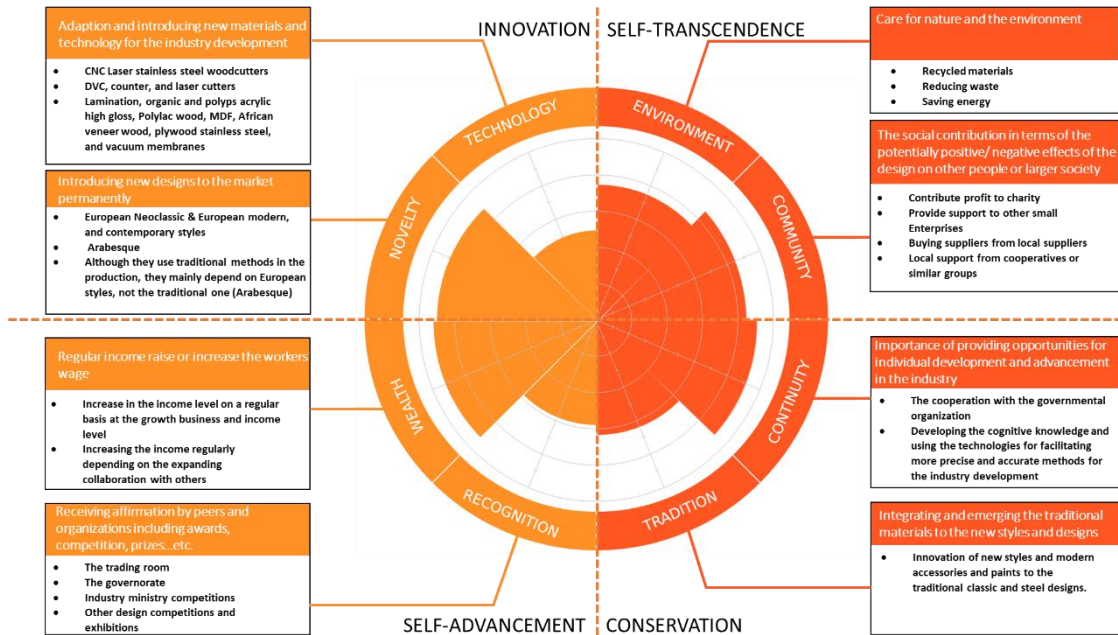


Figure 9 - Priorities of Craft Makers in Damietta  
Adapted from Schwartz's theory of basic values (Schwartz, 2012)  
Where: innermost circle = not important at all  
outermost circle = very important

From the data plotted in

Figure 18, we can see that the craft-makers of Damietta particularly value community and maintaining the continuity of crafts in the area. Making a decent living is also a major priority, which has become more difficult in recent times – crafts mostly comprise piece work with no associated benefits meaning it is variable and precarious, with little job security. In addition, craft companies are open to introducing new designs and styles, as long as the traditional furniture making skills can be maintained and valued. They are less enthusiastic about introducing machine-based making practices and new technologies that would, they believe, devalue the skills, of which they are rightly proud. As reflected in the place-based analysis, we find that emphasis on the wider recognition and affirmation of crafts is rather weak.

From this, we can conclude that a key priority for skilled craft-makers is the ability to continue practicing and passing on their skills. This, however, depends on the sustainability of the industry and, in turn, will depend on other elements being given greater priority, which could include:

- Increased profile raising and affirmation of the crafts in the region – nationally and internationally – through branding, packaging, brochures, films, internet and through dedicated trade fairs which showcase the high-quality work produced in the region which simultaneously conveys its history and cultural meaning.
- Selectively adopting new technologies and methods so that: a) non-skilled work is introduced that can be more effectively completed using modern methods, and b) hand-making, carving and other highly skilled, hand-based processes are sustained and celebrated as unique selling points of the Damietta furniture industry.
- Environmental awareness in manufacturing among customers is becoming an increasingly important consideration and, when undertaken correctly, can become an



important selling point. In Damietta, the resources being used - wood - is fundamentally renewable. However, products can only be considered environmentally responsible if the raw materials come from certified sustainable forestry practices. This factor is likely to become increasingly important in the future.

### 1.1.9. The Relationship of Craft Enterprises to Sustainability

As previously mentioned earlier, sustainability results from four interrelated factors: practical benefits which account for and ameliorate negative environmental impacts; social benefits which contribute to community cohesion, providing fruitful, fulfilling employment and good work; personal well-being through inner fulfilment, creativity and being part of a tradition; and economic viability in the form of decent wages and fair financial returns for a worker's efforts and skills.

Rather than directly asking these questions, we phrased them in more practical terms, while additional questions addressed:

#### Environmental Impacts

- Using recycled materials.
- Reducing electricity consumption.
- Reducing waste.

#### Social Contributions

- Contributing to charity.
- Providing support to other small enterprises and makers.
- Buying supplies from local suppliers.
- Sourcing support from local cooperatives or similar groups.

**Personal Fulfilment** – in addition to the questions in earlier sections, this section concerned:

- The importance of continuing traditions in the region,
- The importance of passing on these traditions to others.

*From the answers to these and the earlier questions, the importance given to sustainable principles was estimated, as shown in*

Figure 19, below.

#### 1.1.9.1. The Relationship of Craft Enterprises to Sustainability

In Figure 10, comprehensive compliance to sustainability is indicated where each quadrant is completely filled with colour (white space indicates areas potential for improvement).

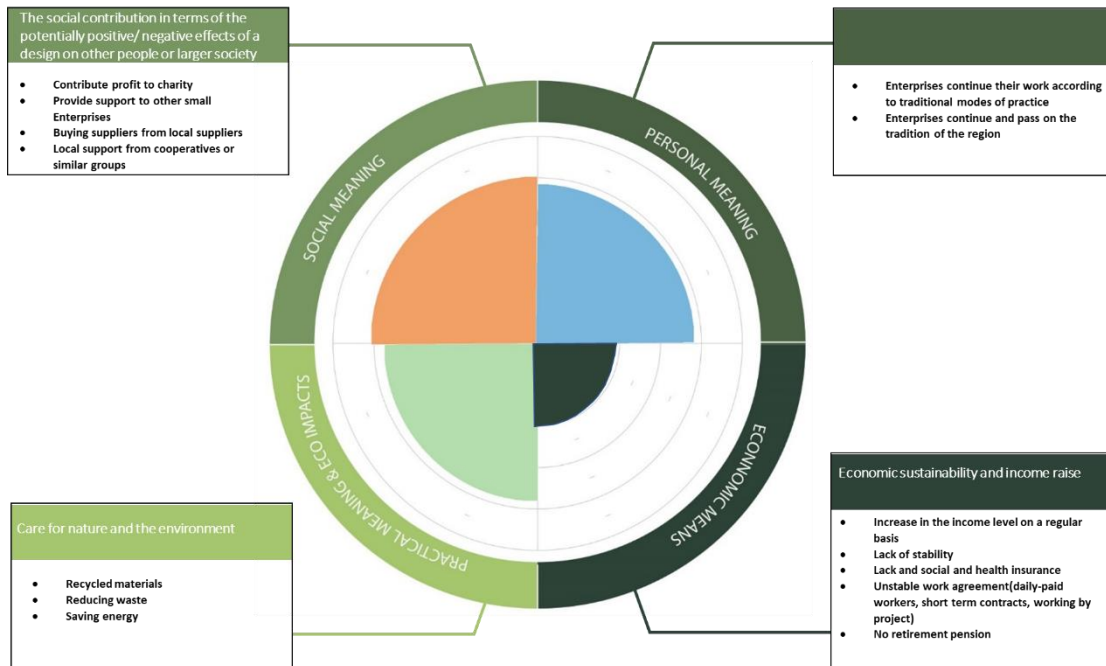


Figure 10 - Relationship of Craft Enterprises to Sustainability

Adapted from Walker's Quadruple Bottom Line of Design for Sustainability (Walker, 2011, 2014)

Where: innermost circle = not important at all  
outermost circle = very important

Figure 10 shows three main factors of the Quadruple Bottom Line of Design for Sustainability, which are reasonably well fulfilled:

- **Practical meaning, including environmental impacts** – the products being manufactured are beneficial in terms of their use. Their production uses relatively low-energy, hand-making process, and their dominant material is renewable. However, the wood used in these operations needs to come from sustainable sources, and this factor could be improved if local resource production could be developed.
- **Social meaning** – there is a strong commitment to community and place, and the industries here are intimately interconnected and interdependent for their success.
- **Personal meaning** –craft-makers find their work personally fulfilling and are proud of their skills, which they want to sustain.

However, as Figure 10 indicates, the weakest element in the sustainability evaluation is:

- **Economic means** – these are needed to sustain the other three factors. A business can only survive if it is economically viable for the business itself and the skilled craftspeople who work within it. Here, we found that for many people the work is highly precarious; sometimes they have no work at all, and when working, there is a lack of stability and certainty with no additional benefits such as health insurance, pension, etc. Given the precariousness of the work, it would be unsurprising if some of the skilled craftspeople sought more dependable work in other industries.

### 1.1.10. Reflections: Values and Place in Damietta's Craft

Craft furniture making in Damietta is susceptible to the same pressures as crafts everywhere – primarily the importation and ready availability of inexpensive mass-produced alternatives.

There are essentially two main options to effectively sustain these industries in an internationally competitive environment:

First, adopt new mass-production technologies and try to compete against cheap, mass-produced imports by increasing production rates and reducing costs through automation. This option, however, does not sustain jobs or craft skills, both of which are very important to Damietta.

Second, recognize that with hand-crafted goods, production rates are limited but the value of these products lies in their unique, hand-made qualities and relative rarity. The cultural importance of these traits can be realized by making considerable effort to raise the perceived value of these products. This can be achieved in a variety of interconnected ways:

Receiving UNESCO Intangible Cultural Heritage (ICH) recognition of the craft-making methods that are present in Damietta, including:

- The unique designs produced and the continuation of a tradition that goes back over a hundred years;
- The high-skilled furniture-making and woodcarving crafts practiced in Damietta;
- The socio-business networks operating within cities mean that a host of different skills and areas of expertise are used within each unique piece of furniture.

UNESCO ICH recognition would raise the profile implementing measure to ensure these crafts are passed from one generation to the next.

A range of opportunities could be developed to actively raise the profile and simultaneously affirm the cultural significance and perceived value of skilled craft-making in Damietta through:

- Branding and packaging;
- Telling the history and stories of the crafts and makers in Damietta;
- Developing up-to-date marketing approaches that effectively communicate these crafts through films, documentaries, photography, articles etc;
- Developing a dedicated craft museum with a physical and virtual presence, that researches, archives, publishes, demonstrates and showcases the work produced in Damietta.
- Developing or contributing to an annual fair(s) that showcases work on an international stage.
- Working with universities, including art and design schools, to develop young designers, and establishing apprenticeship programmes in traditional crafts.

These kinds of measures would help to raise the economic viability of these crafts for skilled makers by raising the perceived value and financial returns across the industry.

In addition, the sustainability of the industry could be improved by considering the potential viability of localized tree planting and developing expertise in sustainable practices related to the planting, husbandry and harvesting of locally-produced woods suited to both the industry and environmental conditions of the region.

## Social Capital Networks

The GIS (Geographic Information Systems) mapping aims to understand the spatiotemporal patterns of the furniture industry in Damietta by integrating survey-based data and spatial datasets. The survey conducted at Damietta collected primary data from workers, traders and other businesspeople in the local furniture industry. The sample included 303 respondents, representing around 1% of the estimated 30,000 furniture workshops in the city .

The GIS mapping concerned 12 selected questions extracted from the 55 which constituted the whole survey. These 12 were indicative of temporal and spatial patterns and thus more suitable for mapping. The software utilised for this task was ArcGIS Pro, with base maps provided online by Esri and OpenStreetMap contributors and extra layers from CAPMAS (Central Agency for Public Mobilization and Statistics), the Egyptian national statistics agency (CAPMAS, 2019; ILO, 2016).

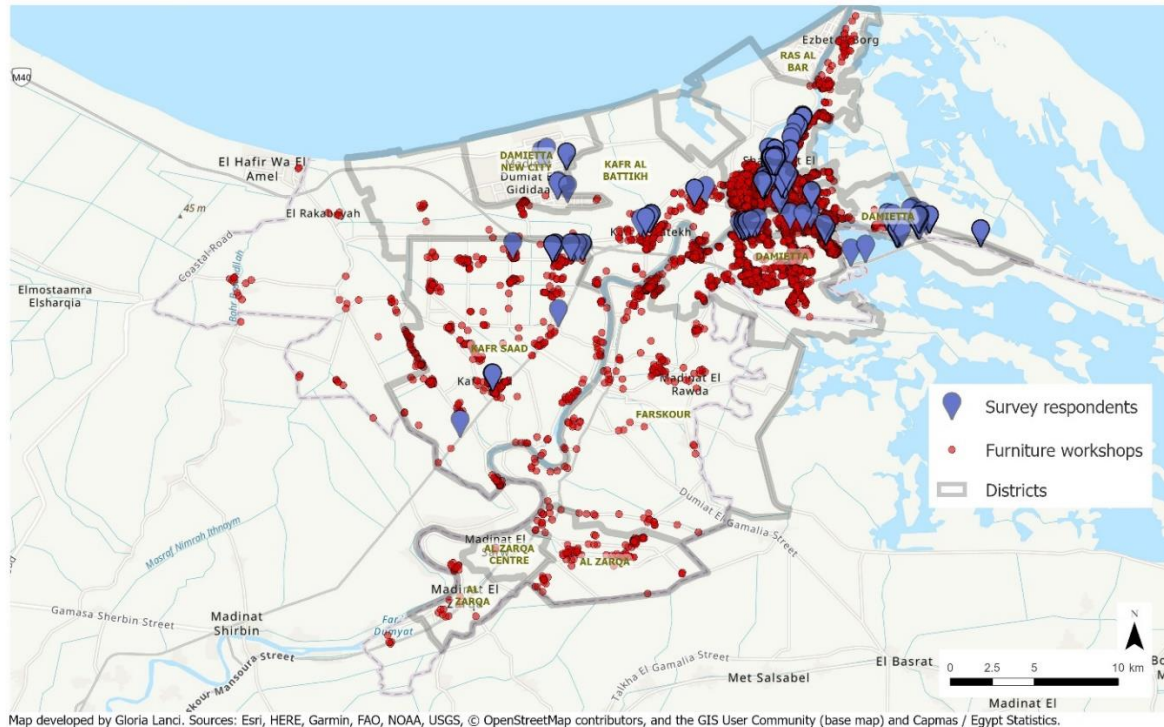
### 1.1.11. The Survey's Geographical Coverage

The respondents' addresses or their location at the time of the interview were geocoded and the XY coordinates given were used to create a point feature class. This was overlaid on the base map and, with the addition of the CAPMAS 'Districts' GIS layer ('Shyakha'), it is possible to visualise that the survey covers five zones or districts: Damietta Centre (First and Second Districts), Damietta (including Damietta Furniture City), Kafr Saad, Kafr Al Battikh, and Damietta New City. The number of respondents from each district are listed in Table 1:

*Table 1: Survey's geographical coverage*

District	Sub-districts	Number of respondents	Percentage
Damietta Centre	Damietta First	5	1.5
	Damietta Second	124	41.0
Damietta		115	38.0
Damietta New City		8	2.5
Kafr Al Battikh		23	8.0
Kafr Saad		28	9.0
TOTAL		303	100.0

The map in Figure 11 shows this coverage compared with the CAPMAS 'Furniture Workshops' GIS layer derived from the Census 2017, which includes 8,452 points or workshops.



## DAMIETTA SURVEY DISTRIBUTION OF THE SURVEY SAMPLE

Figure 11: Distribution of the survey sample

It must be observed that the survey includes two areas that are not included in the CAPMAS dataset: Damietta Furniture City (DFC) and Damietta New City. In the case of the DFC, it must be observed that the base map was used as a backdrop for the map series produced in this report. As such, it did not display the claimed land from Al Manzalah Lake, where DFC now stands. Further information on climate change vulnerability in Damietta is explored in section 0 of this report.

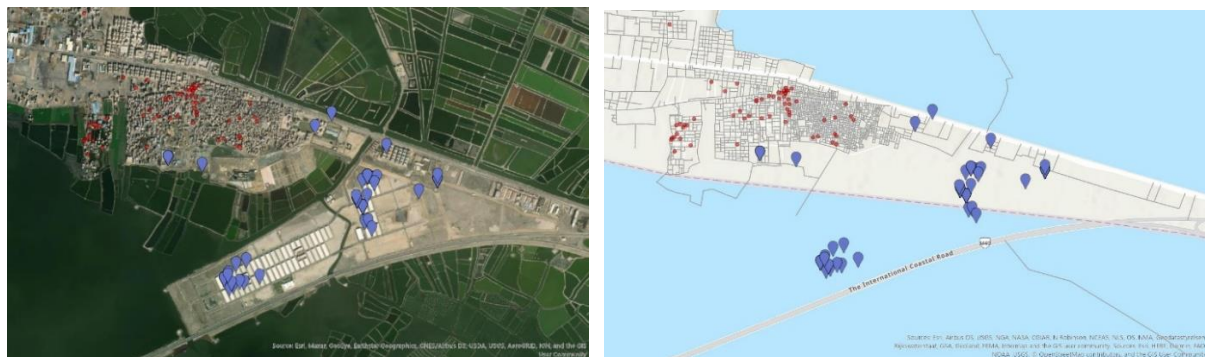


Figure 12: Damietta Furniture City as shown in a satellite image (left) and the backdrop vector map (right)

Considering the geographical coverage of the survey, the following maps (Figures 13 and 14) focus on the five districts: Damietta Centre (First and Second Districts), Damietta, Kafr Saad,



Kafr Al Battikh, and Damietta New City. The distribution of the survey in those districts is characterised by ‘clusters’ that concentrate a high number of respondents, some of whom share the same geocode. Therefore, the data breakdown in the tables that accompany the maps are established according to district, although the majority of respondents are clustered in small areas. The major clusters with their respective number of respondents are indicated in Figures 13 and 14.



Figure 13: Map of the five districts

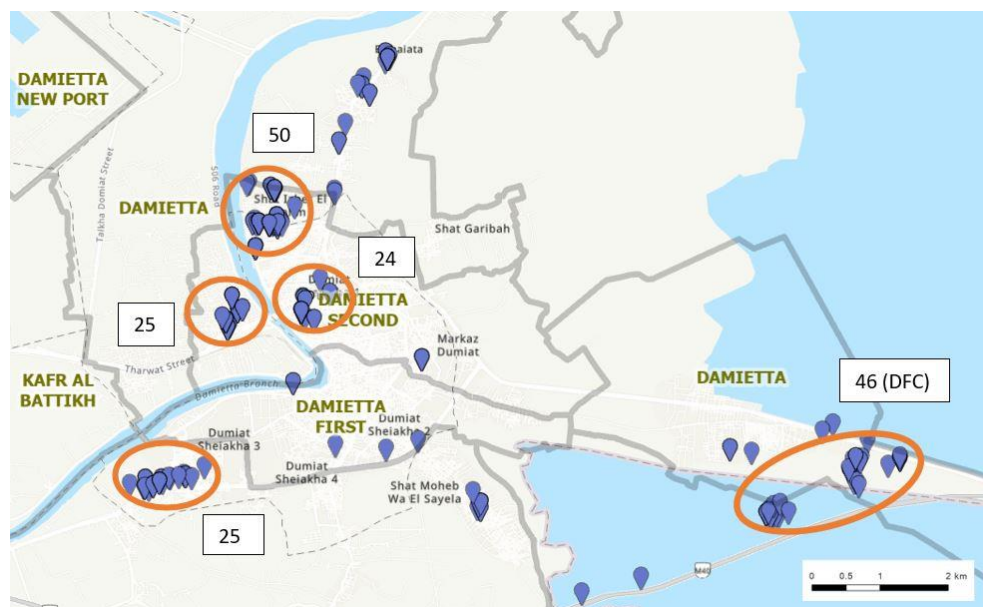


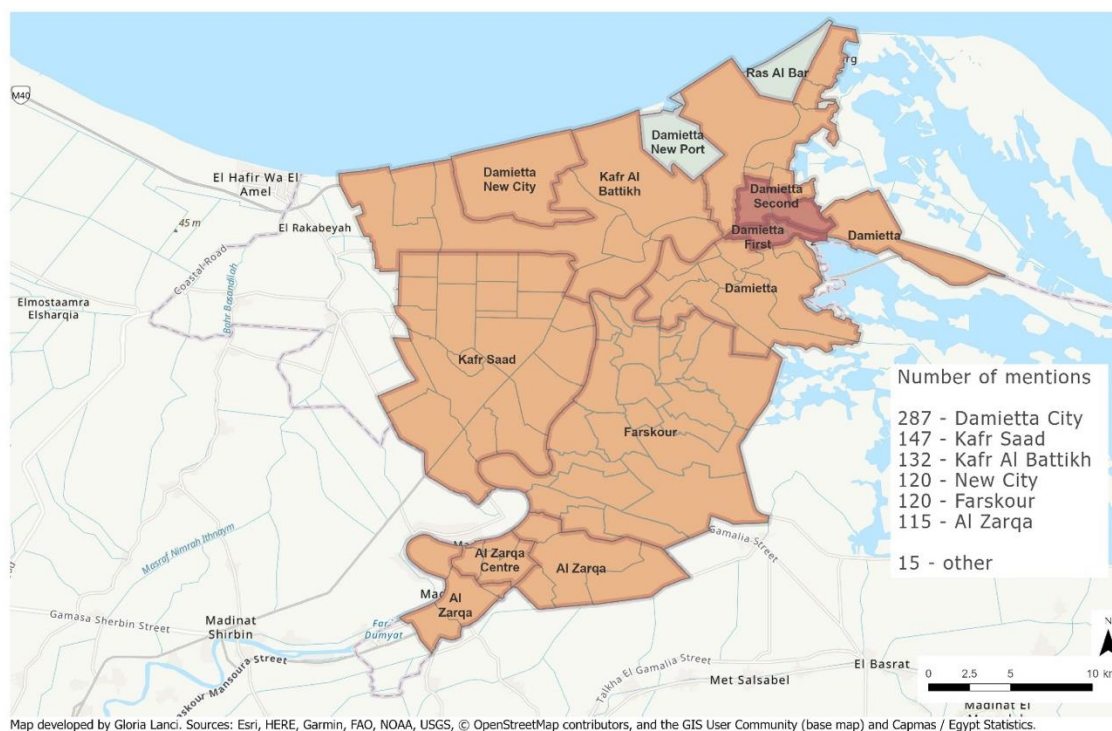
Figure 14: Clusters of respondents in the five districts

### 1.1.12. Spatial and Temporal Patterns

GIS mapping is an effective way to visualise and identify spatial patterns from the survey responses. The following maps (Figures 15 and 16) will be discussed in terms of the possible patterns they present when associating the distribution of similar responses according to the selected districts and subdistricts.

The first two maps (Figures 15 and 16) present the results of two questions related to places of business and places of social life and wellbeing. These were multiple choice questions, so respondents could mention as many places as they wanted, and there was the option to include one or more places of their choice.

The results indicated two very different scenarios. Amongst the important places for business almost all districts were mentioned, with a high count in Damietta City, mentioned by almost 95%, while other districts were between 40-50%. The main absence is 'Port', which would be a key area for businesses as a point of trade and international commerce. However, it was not mentioned.



## DAMIETTA SURVEY

### IMPORTANT PLACES FOR BUSINESS

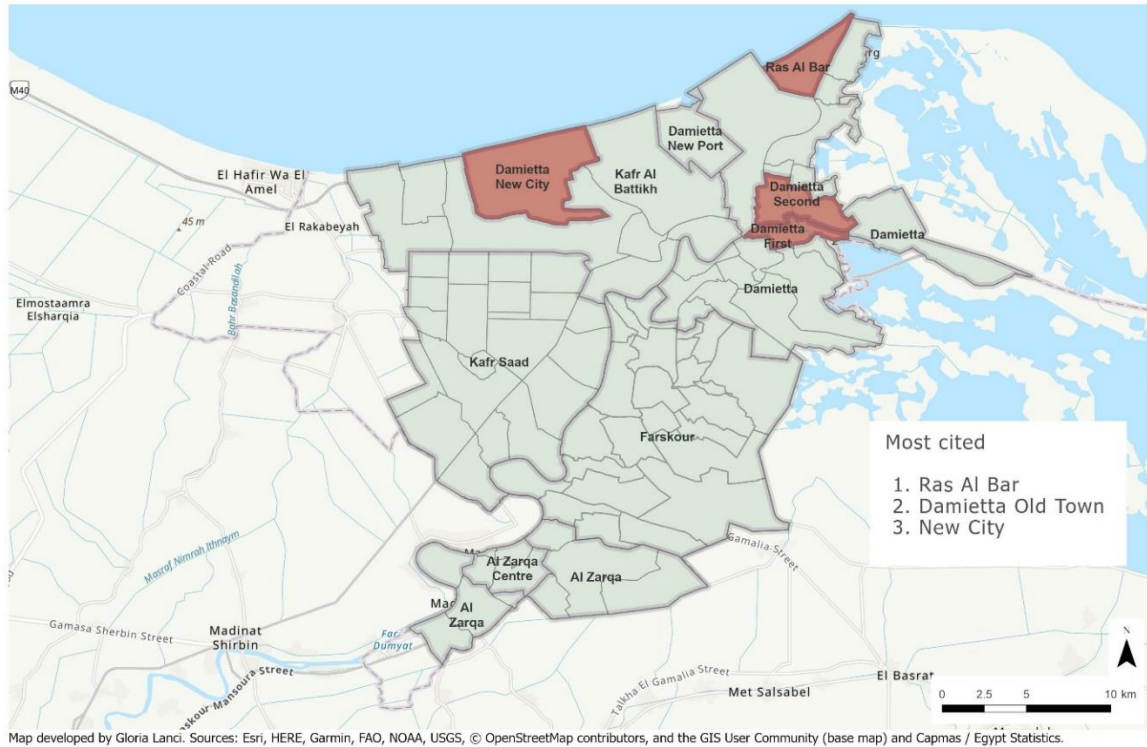
Figure 15: Important places for business

Table 2: District, participant count and percentage for business

District	Count	Percentage	District	Count	Percentage
Damietta City	287	94.7	Damietta New City	120	39.6
Kafr Saad	147	48.5	Farskour	120	39.6
Kafr Al Battikh	132	43.6	Al Zarqa	115	38.0
			other	13	4.3



Moreover, three districts were frequently selected as important places for participants' social lives and wellbeing: Ras El Bar, Damietta Old Town (Damietta First / Second) and Damietta New City. Although smaller in number, they also mentioned the Port, 'fish/food market' and Al Manزالah Lake, indicating that areas around these water bodies play a significant role in their social lives.



## DAMIETTA SURVEY

### IMPORTANT PLACES FOR SOCIAL LIFE

Figure 16: Important places for social life

Table 3: District, count and percentage regarding social life

District	Count	Percentage	District	Count	Percentage
Seafront / Ras Al Bar	262	86.5	Fish / food market	19	6.3
Damietta Old Town	87	28.7	Damietta New Port	6	2.0
Damietta New City	76	25.1	Al Manزالah Lake	1	0.3
			other	13	4.3

#### 1.1.12.1. Age Group and Level of Education

Table 4 gives an overview of the age groups and their location in Damietta governorate. The predominant age group (31 to 44) is concentrated in Damietta and Damietta Second, but the number of surveys received were also much higher in those districts (38% and 41%, respectively). This pattern was observed for the other age groups, and no significant differences were found between the districts in relation to age. The numbers highlighted in bold correspond to the highest in each category.



Table 4: Respondents' district and age group

District	Sub-districts	17 to 30	31 to 44	45 to 57	58 to 70	Missing	TOTAL
Damietta Centre	Damietta First	0	<b>2</b>	<b>2</b>	0	0	4
	Damietta Second	25	<b>49</b>	30	11	9	124
Damietta		22	<b>50</b>	22	5	2	101
Damietta New City		0	<b>4</b>	2	1	1	8
Kafr Al Battikh		2	<b>11</b>	8	2	0	23
Kafr Saad		3	<b>14</b>	11	0	0	28
	Missing	3	6	3	3	0	15
	TOTAL	55	136	78	22	12	303

Similar findings were observed in relation to the level of education, and the results show a slightly different pattern from the previous data, with Damietta New City presenting a significant number of respondents with a university degree.

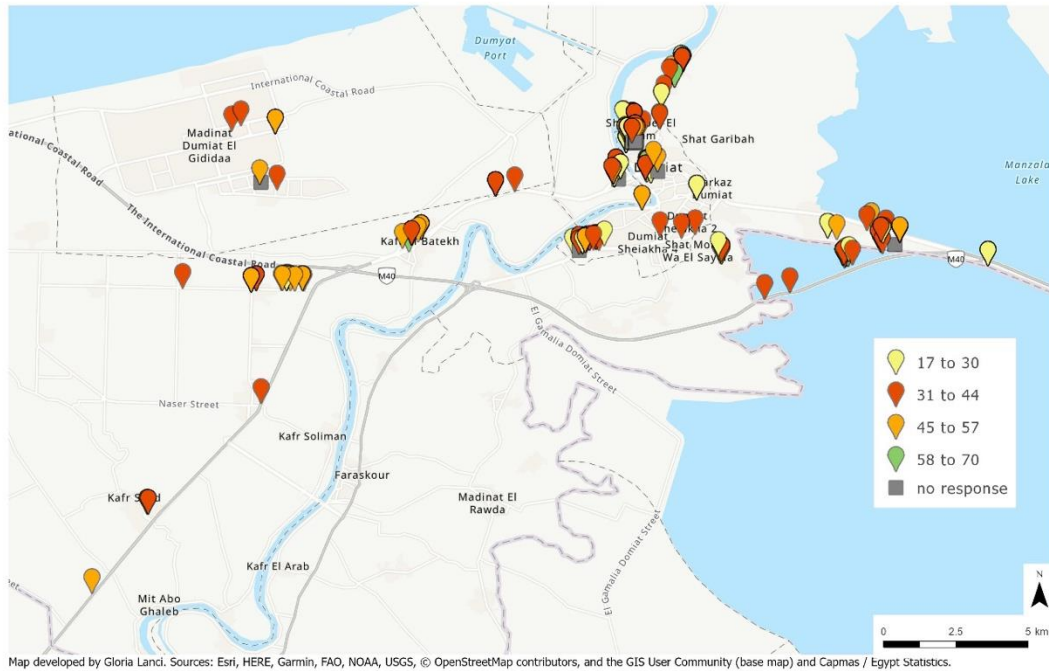
Table 5: Respondents' district and level of education

District	Sub-districts	PostG	UniD	UniD-I	Sec	Sec-I	Elem	NoCert	Missing	TOTAL
Damietta Centre	Damietta First	0	<b>2</b>	0	0	<b>2</b>	0	0	0	4
	Damietta Second	1	27	2	3	<b>42</b>	13	35	1	124
Damietta		1	<b>36</b>	5	0	34	7	18	0	101
Damietta New City		0	<b>6</b>	0	0	1	0	1	0	8
Kafr Al Battikh		0	5	0	0	<b>12</b>	0	6	0	23
Kafr Saad		1	4	0	0	<b>11</b>	2	9	1	28
	Missing	0	5	2	0	3	4	1	0	15
	TOTAL	3	85	9	3	105	29	70	2	303

KEY:

PostG: postgraduation; UniD: University Degree; UniD-I: University Degree Industry related; Sec: Secondary Level; Sec-I: Secondary Level Industry related; NoCert: No Certification.

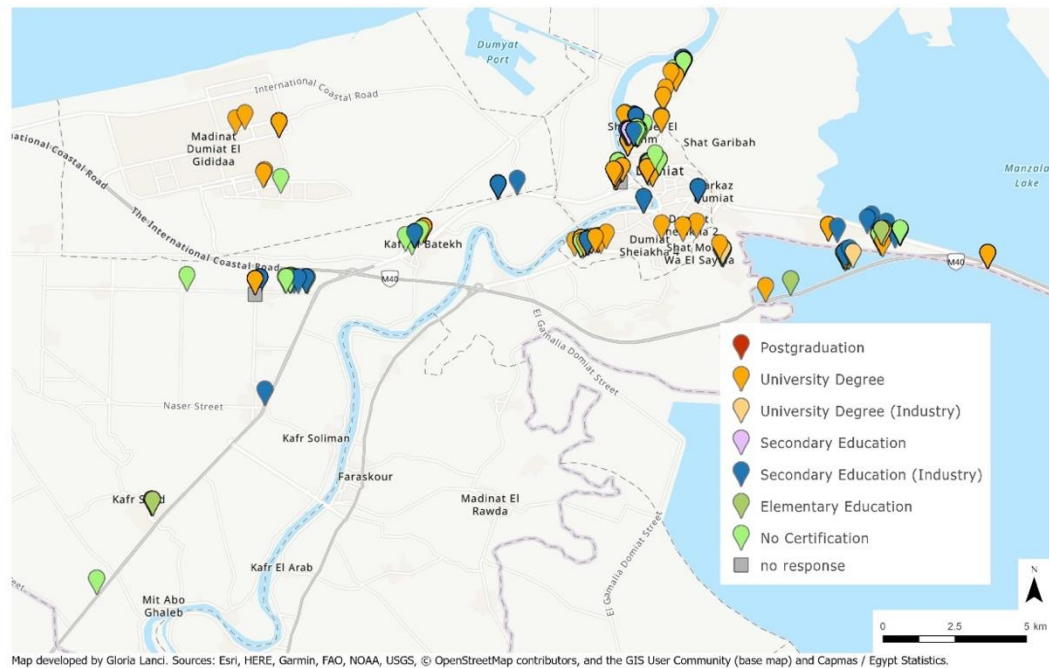
The two maps in Figures 17 and 18 correspond to the results regarding age group and education level, respectively.



## DAMIETTA SURVEY

### RESPONDENT'S AGE GROUP

Figure 17: Respondent's age group



## DAMIETTA SURVEY

### REPODENT'S LEVEL OF EDUCATION

Figure 18: Respondents' level of education

### 1.1.12.2. Role in and Size of the Enterprise, and Generations Living in Damietta

The next set of maps (Figures 19-20) relate to the role that respondents have in the workshop, which is divided into six categories. The predominant category 'sole owner' corresponds to

53.5% of the responses, followed by 'senior worker' at 19%. In contrast, very few of the respondents stated they were an 'employee' or 'junior worker', as both combined totalled 3%.

Table 6: Respondents' district and role in the enterprise

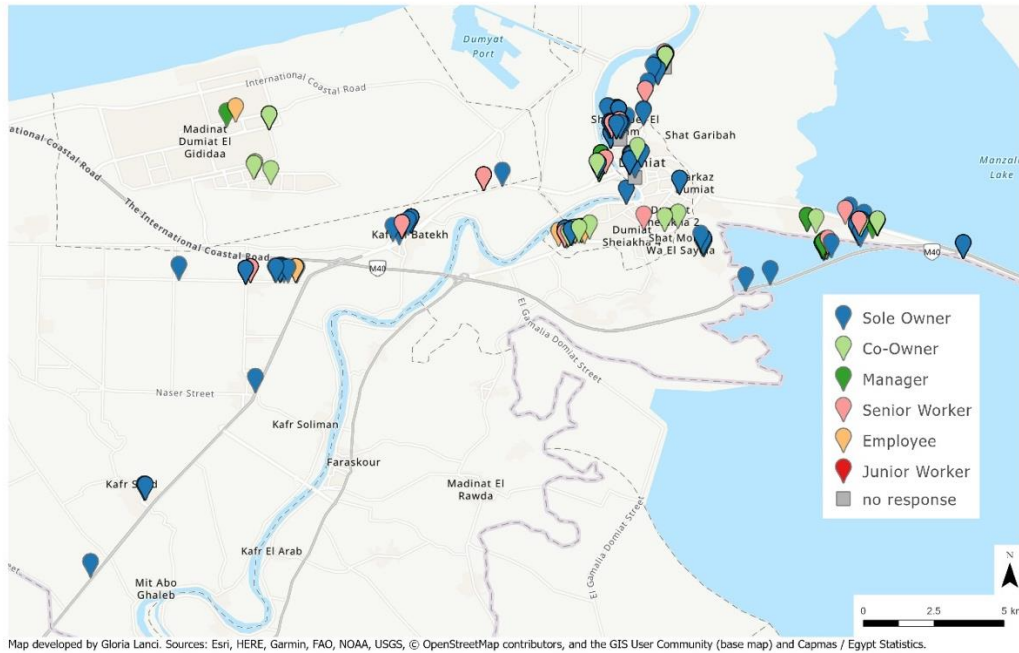
District	Sub-districts	Sole owner	Co owner	-Manager	Senior worker	Employee	Junior worker	Missing	TOTAL
Damietta Centre	Damietta First	2	1	0	1	0	0	0	4
	Damietta Second	79	11		623	0	3	2	124
Damietta		41	28	10	18	2	1	1	101
Damietta New City		1	4	2	0	1	0	0	8
Kafr Al Battikh		14	1	0	8	0	0	0	23
Kafr Saad		20	1	1	4	1	1	0	28
Missing		5	0	7	3	0	0	0	15
TOTAL count		162	46	26	57	4	5	3	303
TOTAL percentage		53.5	15.0	8.5	19.0	1.3	1.7	1.0	100.0

These results align with the typical characteristics observed in Damietta, namely small, family-run business enterprises, as confirmed by the data related to the size of the enterprise whereby 69% of the workshops only have between 2 to 4 workers. Interestingly, from the five enterprises with more than 50 workers three are located in Damietta New City, which can be explained by the easy access and larger land plots. However, there is one big workshop in Damietta Second that is located by the riverfront.

Table 7: Respondents' district and number of workers in the enterprise

District	Sub-districts	Only one	2 to 4	5 to 9	10 to 24	25 to 49	More than 50	Missing	TOTAL
Damietta Centre	Damietta First	0	3	1	0	0	0	0	4
	Damietta Second	21	86	16	0	0	1	0	124
Damietta		5	68	19	8	1	0	0	101
Damietta New City		0	2	0	2	0	3	0	8
Kafr Al Battikh		3	19	1	0	0	0	0	23
Kafr Saad		1	24	2	1	0	0	0	28
Missing		0	8	3	2	1	1	0	15
TOTAL count		30	210	43	13	2	5	0	303
TOTAL percentage		10.0	69.0	14.0	4.0	1.0	2.0	0	100.0





## DAMIETTA SURVEY

### RESPONDENT'S ROLE IN THE ENTERPRISE

Figure 19: Respondent's role in the enterprise



## DAMIETTA SURVEY

### ENTREPRISE'S NUMBER OF WORKERS

Figure 20: Number of workers in the enterprise

The family-run business characteristic is evidenced by the number of generations living in Damietta, whereby 51% of respondents stated their families had lived in the city for more than two generations. Moreover, the large number of respondents surveyed in Kafr Al Battikh and

Kafr Saad (65% and 53% respectively) stated that two or more generations had lived in the city.

Table 8: Respondents' district and number of generations living in the city

District	Sub-districts	More than 2 generations	Two generations	One generation	No previous generations	Missing	TOTAL
Damietta Centre	Damietta First	2	1	1	0	0	4
	Damietta Second	66	12	17	27	2	124
Damietta		47	16	26	12	0	101
Damietta New City		1	1	0	6	0	8
Kafr Al Battikh		15	2	4	2	0	23
Kafr Saad		15	1	6	6	0	28
	Missing	8	3	2	2	0	15
	TOTAL count	154	36	56	55	2	303
	TOTAL percentage	51.0%	12.0%	18.5%	18.0%	0.5%	100.0



## DAMIETTA SURVEY RESPONDENT'S FAMILY LIVING IN DAMIETTA

Figure 21: Respondent's family living in Damietta

### 1.1.12.3. Enterprises' Activity Type and Economic Success

The next set of maps (Figures 22 to 23) concern the type of activity found in the workshops and their economic success. The main categories of activity include 'cutting and carpentry' and 'furniture factories', which are mostly located in Damietta Second and Damietta district. However the map clearly indicates a concentration of factories around Damietta Furniture City (part of Damietta district) and the area north of the city centre. The map also helps to identify a concentration of 'furniture galleries' in the southern area of Damietta. Another unique

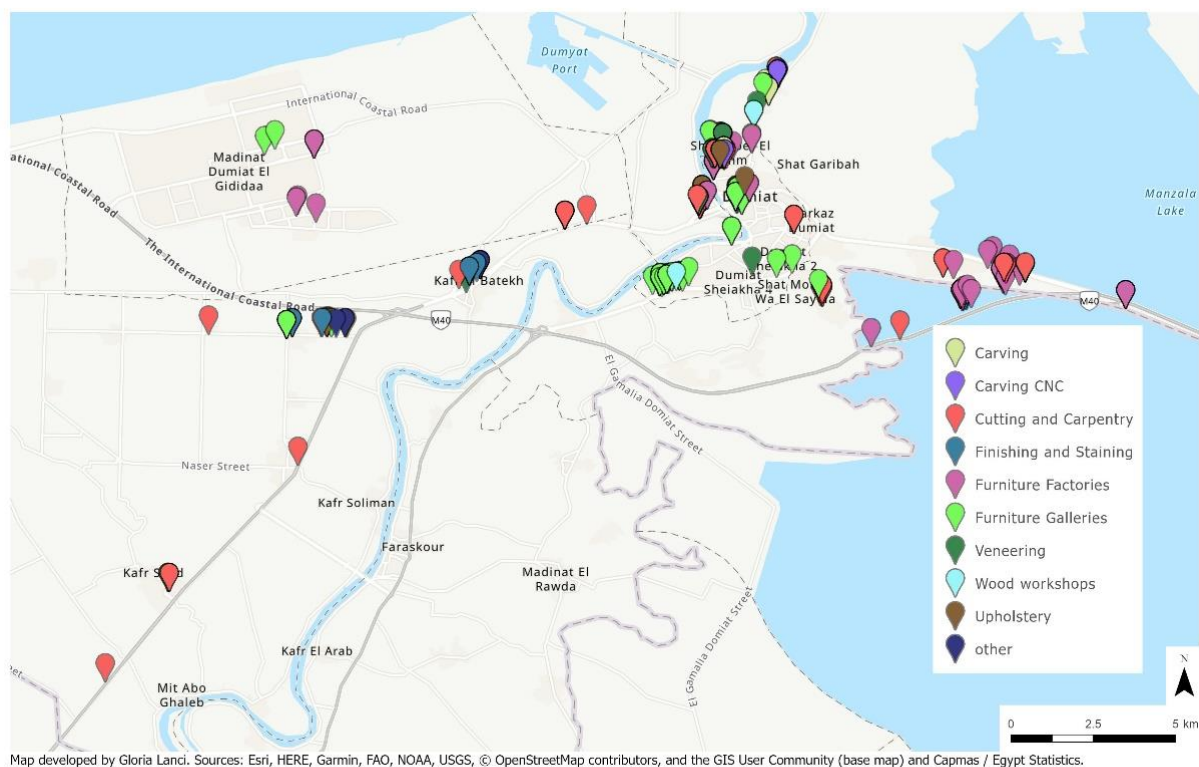
locational pattern can be observed in Kafr Saad, which has the largest concentration of 'upholstery' enterprises in this survey.

Table 9: Respondents' district and types of workshop activity

District	Sub-districts	1	2	3	4	5	6	7	8	9	10	Missing	TOTAL
Damietta Centre	Damietta 1st	0	0	0	1	0	2	1	0	0	0	0	4
	Damietta 2nd	18	3	34	4	22	21	10	1	5	6	0	124
Damietta		8	4	17	5	26	25	6	5	4	1	0	101
Damietta New City		0	0	2	0	4	2	0	0	0	0	0	8
Kafr Al Battikh		3	0	9	2	1	1	2	0	3	2	0	23
Kafr Saad		0	0	9	3	2	4	0	1	7	2	0	28
	Missing	0	1	4	2	7	0	0	0	0	1	0	15
	TOTAL count	29	8	75	17	62	55	19	7	19	12	0	303
	TOTAL %												100.0

KEY:

1: Carving; 2: Carving CNC; 3: Cutting and Carpentry; 4: Finishing and Staining; 5: Furniture Factories; 6: Furniture Galleries; 7: Veneering; 8: Wood workshops; 9: Upholstery; 10: other



## DAMIETTA SURVEY

## ENTREPRISE'S ACTIVITY TYPE

Figure 22: Enterprise's activity type

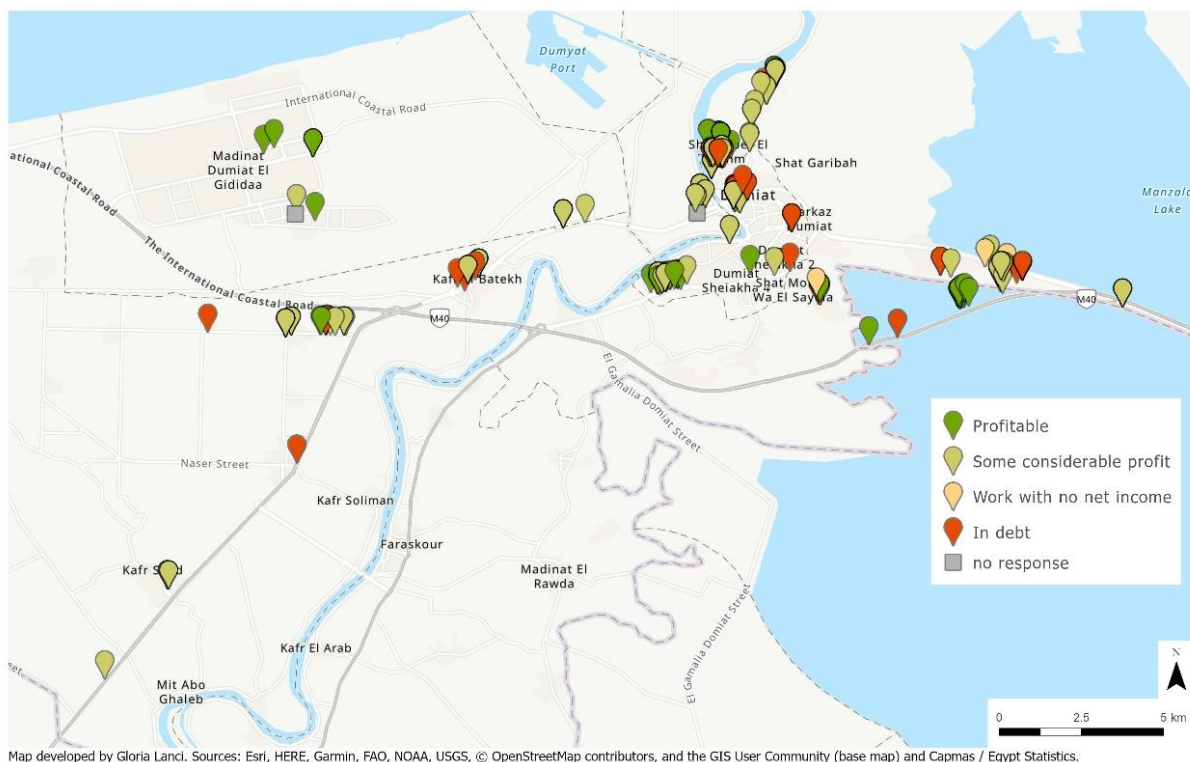
When asked about the economic situation of enterprises (Table 10 and Figure 23) the majority of respondents (52%) indicated there is 'some work with considerable profit', while almost 21%



indicated that the enterprise was 'profitable'. In both categories most of the enterprises are also concentrated in Damietta Second and Damietta, while the enterprises with some profit are also present in Kafr Al Battikh and Kafr Saad. Among the enterprises in debt, the majority are concentrated in Damietta Second.

Table 10: Respondents' district and enterprise's economic situation

District	Sub-districts	Profitable	Some profit	No net income	In debt	Missing	TOTAL
Damietta Centre	Damietta 1st	1	2	0	1	0	4
	Damietta 2nd	17	64	0	42	1	124
Damietta		23	51	10	17	0	101
Damietta New City		6	1	0	0	1	8
Kafr Al Battikh		1	17	0	5	0	23
Kafr Saad		3	21	0	4	0	28
	Missing	12	2	0	1	0	15
	TOTAL count	63	158	10	70	2	303
	TOTAL %	20.8	52.1	3.3	23.1	0.7	100.0



## DAMIETTA SURVEY ENTREPRISE ECONOMIC SUCCESS

Figure 23: Enterprise's economic success

### 1.1.12.4. Risk awareness: climate change and socio-economic risks

The results for the questions on risk awareness depict two contrasting scenarios. In relation to climate change and sea level rise, the majority of the respondents are 'not worried' (50.2%) or 'not so worried' (29.7%), while only 52 respondents stated that they 'worry a lot' (17.2%).

However, when asked about socio-economic risks the majority (56.8%) replied that they ‘worry a lot’, while 79 respondents (26.1%) are not worried.

In relation to climate change the results (Table 11 and the visualisation provided with the map (Figure 24) shows a concentration of ‘worry a lot’ responses in a small area around Damietta Second and north of Damietta, in two neighbour clusters. In Kafr Al Battikh and Kafr Saad, the majority is ‘not worried’, and this might be partly explained by their location away from water bodies.

**Table 11:** Respondents’ district and level of worry about climate change and SLR

*Q. Are you worried about your business being affected by climate change and sea level rise?*

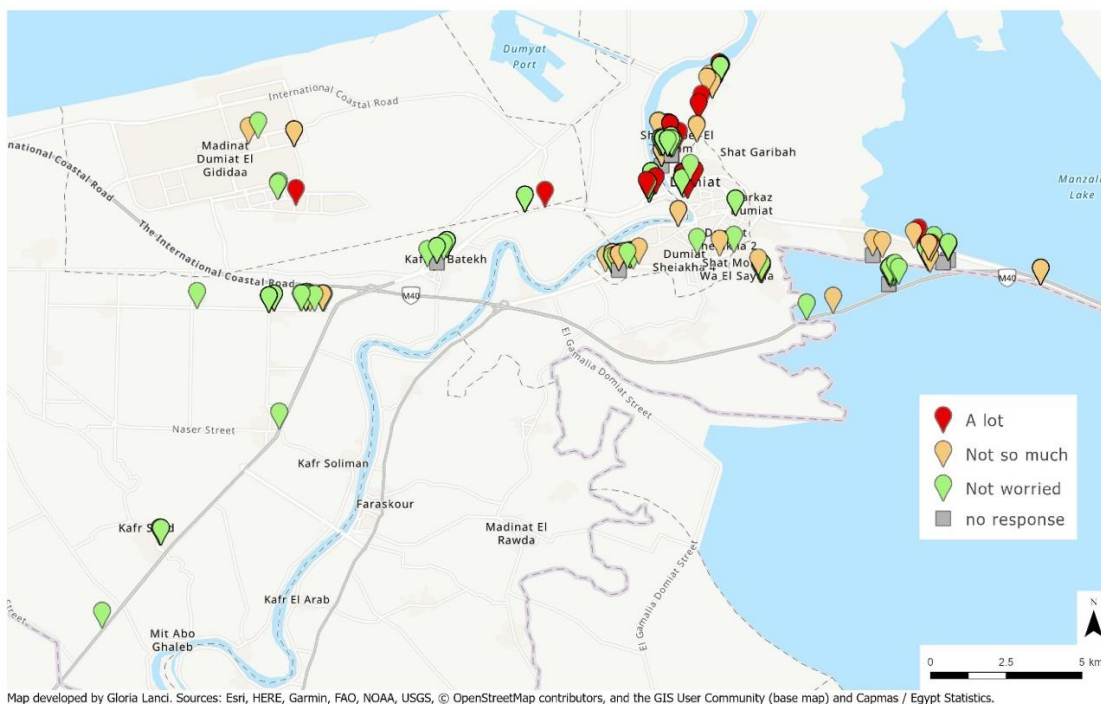
District	Sub-districts	A lot	Not so much	Not worried	Missing	TOTAL
Damietta Centre	Damietta First		2	2	0	4
	Damietta Second	<b>33</b>	22	<b>66</b>	3	124
Damietta		13	<b>49</b>	35	4	101
Damietta New City		1	4	3	0	8
Kafr Al Battikh		2	3	<b>17</b>	1	23
Kafr Saad		2	7	<b>19</b>	0	28
	Missing	1	3	10	1	15
	TOTAL count	52	90	152	9	303
	TOTAL percentage	17.2	29.7	50.2	3.0	100.0

In relation to socio-economic risks, the results and visualisation (Table 12 and Figure 25) provided with the map shows that the ‘worry a lot’ responses are fairly distributed in all districts, with no particularly distinct cases. In Kafr Al Battikh and Kafr Saad, the majority stated that they ‘worry a lot’, which contrasts with the results for the awareness to climate change risk.

*Table 12: Respondents’ district and level of worry regarding social or economic risk*

*Q. Are you worried about your business being affected by other social or economic risks?*

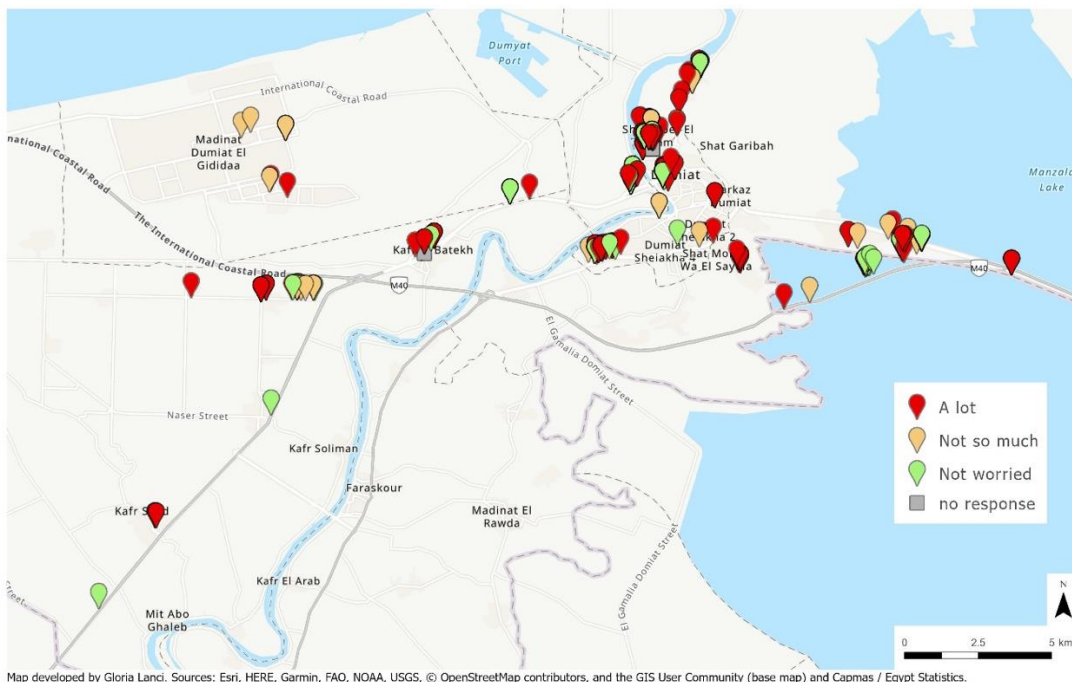
District	Sub-districts	A lot	Not so much	Not worried	Missing	TOTAL
Damietta Centre	Damietta First	1	2	1	0	4
	Damietta Second	<b>73</b>	10	<b>39</b>	2	124
Damietta		<b>59</b>	<b>19</b>	23	0	101
Damietta New City		2	6	0	0	8
Kafr Al Battikh		<b>17</b>	3	2	1	23
Kafr Saad		<b>16</b>	7	5	0	28
	Missing	4	2	9	0	15
	TOTAL count	172	49	79	3	303
	TOTAL percentage	56.8	16.2	26.1	1.0	100.0



# DAMIETTA SURVEY

## CLIMATE CHANGE RISK AWARENESS

Figure 24: Climate change risk awareness



# DAMIETTA SURVEY

## SOCIO-ECONOMIC RISK AWARENESS

Figure 25: Socio-economic risk awareness



### 1.1.13. Temporal Working Patterns

In the survey, two questions related to temporal working patterns. The first question aimed to capture the general working pattern from a choice of three options ('all week every week', 'all week biweekly' and 'certain days every week'). The results are as follows:

*Table 13: Respondents' weekly pattern of work*

*Q. What is your weekly pattern of work?*

	Responses	Percentage
1 – all week every week	262	86.5
2 – all week biweekly	0	0
3 – certain days every week	36	11.9
No response	5	1.7
Total	303	100.0

The second question was subdivided in three sections, each corresponding to a period of the day ('morning', 'afternoon' and 'evening'). These results identified the predominant 'all week every week' pattern in more detail and shows a clear predominance of 'Saturday to Thursday' working days, observing Friday as a day off (680 responses). This was followed by a minority of respondents who worked every day of the week (28 responses in total). The results were as follows:

*Table 14: Respondents' daily pattern of work*

*Q. Which times of the week do you work?*

Morning (7:00 – 12:00)	Responses	Percentage
Sun, Mon, Tue, Wed, Thu, Sat	163	53.8
Sun, Mon, Tue, Wed, Thu, Fri, Sat	5	1.7
Other	4	1.3
No response	131	43.2
Total	303	100.0

Afternoon (12:00 – 17:00)	Responses	Percentage
Sun, Mon, Tue, Wed, Thu, Sat	277	91.4
Sun, Mon, Tue, Wed, Thu, Fri, Sat	13	4.3
Other	4	1.3
No response	9	3.0
Total	303	100.0

Evening (17:00 – 22:00)	responses	percentage
Sun, Mon, Tue, Wed, Thu, Sat	240	79.2
Sun, Mon, Tue, Wed, Thu, Fri, Sat	10	3.3
other	11	3.6
No response	42	13.9
Total	303	100.0

It is observed that the ‘no response’ result to this particular question might relate to ‘no working’. This assumption is based on the high number of ‘no response’ results for the morning period.

By combining these results in a matrix it is possible to identify two main patterns, which were highlighted in the map in Figure 26. The first, named ‘working pattern A’, is characterised by working from Saturday to Thursday (with a day off on Fridays), in the morning, afternoon and evening. This pattern corresponds to 43% of the total responses. The second, named ‘working pattern B’, is characterised by from Saturday to Thursday (with a day off on Fridays) in the afternoon and evening periods. This pattern corresponds to 34,5% of the total responses. The remaining 23,5% of the responses were named as ‘other’ in the map and can be identified in Table 15.



## DAMIETTA SURVEY TEMPORAL PATTERN OF WORK

Figure 26: Map of temporal patterns of work

Table 15: Temporal patterns of work (daily periods)

	Morning 7:00 – 12:00	Afternoon 12:00 – 17:00	Evening 17:00-22:00	Count	Percentage	Pattern
Saturday to Thursday	yes	yes	yes	131	43.0	‘A’
Saturday to Thursday	no	yes	yes	105	34.5	‘B’
Saturday to Thursday	yes	yes	no	19	6.5	‘other’
Saturday to Thursday	no	yes	no	12	4.0	‘other’
Every day of the week	-	-	-	15	5.0	‘other’
Other	-	-	-	21	7.0	‘other’
<b>TOTAL</b>				<b>303</b>	<b>100.0</b>	



#### 1.1.14. Social Capital Network Analysis

Following the statistical analysis of the survey sample and reflections on its spatial distribution, a wider scale investigation was conducted into the relationships between network actors. This included investigating the sample in terms of spatial network connections (source and target) and observing the patterns of interaction between different users.

Figures 27 and 28 show a regional network map for Damietta, and a sectional zoom in that focuses on Damietta Old City, DFC and New Damietta City. Together these maps exhibit patterns of proximity between the source (green nodes) and target (blue nodes). Another significant identifier of the network patterns is the distance between source and target in terms of spatial proximity (short distance identified as orange line and long distance as purple).

Patterns that can be deduced from this map include the centrality of Old Damietta City centre, where most nodes (both sources and targets) have been mapped. This indicates the impact of spatial proximity between MSMEs on the magnitude of business transactions between enterprises in Damietta. Similarly, we can see that New Damietta City exhibits both sources and targets, with connections to the old city as well as regional connections to Mansoura City. It is worth mentioning that New Damietta City holds a largescale factory typology, which is not generally found in large numbers in the Damietta region.

When observing Damietta Furniture City (DFC), we can see that the number of actors are mostly sources, with few targets within the sample. This is an indicator that the magnitude of business dealings within DFC are not compatible with the largescale business currently taking place in Old Damietta.

Further investigation of the types of network connections can be cross referenced with the statistical analysis in the above section to highlight more detailed patterns.

Figure 27: [Map 1](#)

Figure 28: [Map 2](#)

### Climate Vulnerability in Damietta: Impacts of Climate Change on the Governorate of Damietta

Climate change has been a major global concern over the past decades. This is strongly attributed to the threats imposed by the impacts of climate change on the sustainable development of countries. The impacts of climate change will disproportionately affect development plans, food security, water availability and, consequently, the national security of countries, as the world will suffer from higher poverty rates and other challenges

#### 1.1.15. Impacts of Climate Change on the Governorate of Damietta

The Arab Republic of Egypt is located between 22 degrees and 32 degrees north latitude. The country's farthest distance from north to south is 1,024 kilometers, and its farthest distance from east to west is 1,240 kilometers. It is in the northeast corner of Africa, facing the west side of Asia through the Sinai Peninsula. Egypt has a total area of 1.0145 million square kilometers and a land area of 995,450 square kilometers. The Mediterranean and Red Sea coastlines are 3,500 kilometers long. Most of the Egyptian



territory is in the Nile Valley in northern Africa. Egypt borders Palestine to the northeast, Sudan to the south, and Libya to the west. The entire geographic area of Egypt is one million square kilometers. The terrain of the Sinai Peninsula ranges from 133 m below sea level to 2,629 m above sea level (Figures 29 and 30).

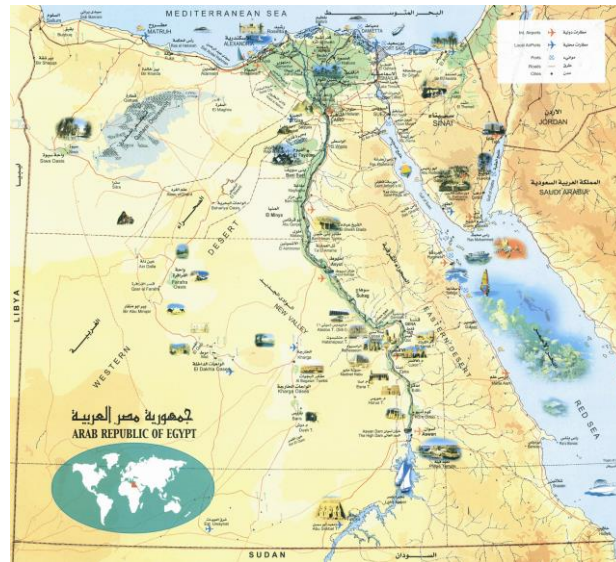


Figure 29: Map of Egypt

Source: State Information Service ([www.sis.gov.eg](http://www.sis.gov.eg))

Egypt is a democratic republic, divided into 27 provinces. Governance follows a constitutional semi-presidential system. The head of state is the President of the Republic who, with a term of 6 years, can appoint 5% of the members and dissolve parliament through Article 137.



Figure 30: Egypt official map with Governorate boundaries

Source: The Central Agency for Public Mobilization and Statistics ([www.capmas.gov.eg](http://www.capmas.gov.eg))

Damietta is one of the provinces of Egypt. It is in the northeast of the country, with a population of more than 1.516 million (January 2018) and an area of 910.30 square kilometers, and its capital is Damietta. The term 'two-sail boat' refers to the coastal environment and waterways surrounding Damietta from most angles, as well as the unique craftsmanship of the fishing industry (Figure 31).



Figure 31: Damietta Governorate borders and logo  
Source: State Information Service ([www.sis.gov.eg](http://www.sis.gov.eg))

The weather in Damietta is hot, with dry summers and light rain in winter. Damietta's industrial activities are considered the best economic model; it depends on human factors, as most small production units are private. The province is famous for its handicraft industry that mainly includes furniture (Figure 32), dairy products, desserts, shoes, textiles, canned fish, edible oil, soap, rice milling, freezing, and the packaging of wheat, vegetables, and fruits.



Figure 32: Furniture industry in Damietta  
Source: El-Wafd local newspaper ([www.alwafd.news](http://www.alwafd.news))

In addition, Damietta Port, which is a reciprocal port with Alexandria, is the largest transit port in Egypt with the largest container space. The governorate has an industrial free zone, while an area to the east of the port comprising 190 feddans is dedicated to the export of industrial products. Moreover, another industrial zone is located to the south of the city - New Damietta - in an area of 200 feddans. A global logistics center for the storage of cereals and seeds in the port of Damietta is also to be established. This is a huge national project to meet the needs of the local and surrounding regional grain markets. The project area is approximately 3,350 million m<sup>2</sup>. Modern silos and stone houses with a capacity of 7.5 million tonnes will be installed as part of the initiative.

### 1.1.16. Exposure and Sensitivity to Climate Change

The port of New Damietta and the coast of Ras Al Bar are characterized by low and moderate yield soils. The area is exposed to sea level rise with limited protection. The rate of inland subsidence is estimated to be 1.0 to 2.0 mm/year, while the rate of sea level rise is estimated to be 2.3 mm/year (M. ; D. Kh. ; El-Raey, 2009; El-Shinnawy, 2008a, 2008b) .

The currently observed high erosion rates will increase in all scenarios; this is mainly attributed to the coastline retreat due to sea level rises (El-Fishawi, 1989). In addition, the high risk of flooding will increase in all scenarios. Figure 33 illustrates Damietta's hotspot showing the main coastal processes

and rising sea level scenarios considered in the assessment. The total protected area is 12 km, or about two-fifths of its total length (M. ; D. Kh. ; El-Raey, 2009; El-Shinnawy, 2008a, 2008b) ..

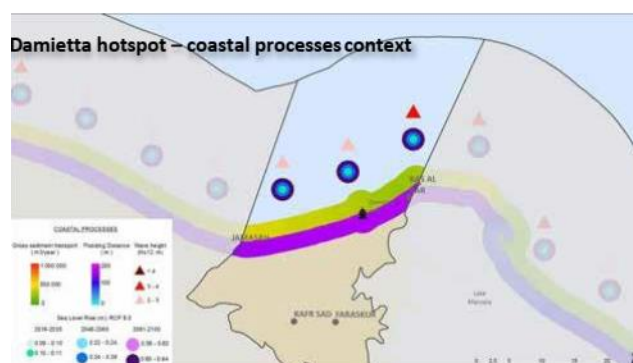


Figure 33: Damietta hotspot to sea level rise

Source: FP053: Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt

Egypt has always shown political commitment and seriousness in the fight against climate change through the approval and ratification of various climate change agreements. Egypt ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and the Kyoto Protocol (KP) in 2005. In 2015, Egypt signed the Paris Agreement (PA), which was ratified by the Egyptian Parliament in June 2017. In addition, Egypt ratified the Doha Amendment (AD) in 2020 (el Raey, 2004).

In 2015, the Paris Agreement (PA) was adopted by 196 Parties during the 21<sup>st</sup> Annual Conference of the Parties (COP 21) within the UNFCCC in Paris. As part of the PA, all parties agreed to communicate their national efforts and plans to support climate change mitigation through their “Nationally Determined Contributions (NDCs)” which considers the national circumstances and capacities of each country. Egypt submitted its planned NDC (INDC) to the UNFCCC Secretariat on November 16, 2015, which became the first NDC after the ratification of the PA. In addition, the agreement obliges developed countries to provide financial resources to developing countries to enable them to achieve the objective of the agreement by supporting the implementation of policies, strategies, and action plans which focus on mitigation and adaptation.

### 1.1.17. Most Affected Population in the Governorate

Farmers, fishermen, and workers in the furniture industry are the most affected communities in Damietta. There are many specific problems for workers in the furniture industry, which relate to the manufacturing, design, financing, development, modernization, and training of the sector, alongside its administration and governance. This includes questions, licenses, customs, taxes, financial insurance, regulatory agencies, and export support.

There is a very large group of furniture manufacturers who have found themselves out of work due to the high price of materials used in the industry, as well as the lack of marketing for these products. About 400,000 people work in 60,000 small workshops, as well as 2,500 showrooms, 1,500 stores and warehouses selling lumber, plywood, and minerals (Figure 34).

*"We have tried a lot to submit complaints to the officials by reducing the price of the materials, so the merchant responded, we import at the price of the customs dollar, despite that the prices rise, which has a negative impact On the small manufacturers" - Yasser Jaafar, furniture carpenter*

*"The problem of furniture makers became evident in 2017, due to the flotation, which made matters worse" - Muhammad Al-Arabani, owner of small furniture factory*



Figure 34: Small furniture factory owner  
 Source: El-Wafd local newspaper ([www.alwafd.news](http://www.alwafd.news))

Some importers have also introduced Oyama 'furniture hand craft' machines, which has led to the unemployment of large numbers of Oymiya 'hand crafters'.

*'We are facing a very hard situation and we do not know what to do. The situation has become more difficult than it can bear. There is no selling, buying or marketing in the first place. Despite the recession that the industry witnessed before the emergence of the Corona virus, but the latter came and made matters worse' – Ashraf Aboueita, furniture carpenter*

### 1.1.18. Impacts of IPCC Climate Change Sea Level Rise Scenarios on Damietta

According to the Intergovernmental Panel on Climate Change (IPCC), Egypt is one of the countries most vulnerable to climate change (IPCC, 2007) meaning that climate change is expected to have a negative impact on the country. These impacts include: increased morbidity and mortality rates from extreme weather events, sea level rise, endangerment of biodiversity, reduced availability of groundwater, and increased salinity in some areas, decreased crop yields, fish migration, desertification and the erosion of agricultural land and its resources (Gornitz, 1995).

Egypt shares its exposure to natural disasters resulting from climate change and the associated risks with the rest of the world. The density and concentration of the population in the narrow belt around the Nile and Delta exacerbates the dramatic effects of climate change and natural disasters.

Recent ocean model simulations indicate that without the introduction of effective adaptation measures, Egypt's Mediterranean coast will experience substantial sea-level rise (SLR) this century with recurring flood episodes by 2100. Several researchers have shown that more than two-thirds of the world's sandy shores have receded in recent decades and that only 10% have progressed (Gornitz, 1995; Hoozemans et al., 1993). The predicted impacts of SLR on the Nile Delta, such as coastal flooding or salt intrusions, are consistent with the results of global coastal vulnerability assessments. A further rise in sea level is the continued subsidence of land in the delta which is currently estimated at 15 mm/year.

Damietta is characterized by flat and moderate yielding soils (the natural ground level is between 1.2 and 1.8 m above the MSL). The area is extremely exposed to SLR, while the rate of subsidence in the hinterland is estimated between 1 and 2 mm / year and the rate of SLR is estimated at around 2.3 mm / year. The total protected area is 12 km.



### 1.1.19. Impacts of Climate Change on the Furniture Industry

Coastal areas are adversely affected by sea level rise and coastal flooding risk. They host nearly 15% of the population and economically important cities, and are characterized by development potential due to their access to the sea. The spatial concentration of cities on the Nile Delta (~1 m above mean sea level) and along the Mediterranean coast amplifies the impacts of climate change due to sea level rise, land subsidence, saltwater intrusion and coastal flooding & storm surges. These amount to projected damages of \$2.1 billion/year to \$14.8 billion/year in coastal communities, including key urban centers such as Alexandria, Damietta, Port-Said, Ismailia, Suez. Without defensive investment, coastal cities like Damietta, Port Said, and Alexandria will be fully flooded in a 50cm sea-level rise scenario, which could occur by 2070. This poses a substantial risk of destruction to infrastructure, economic loss, mass displacement and migration (World Bank 2021)

Despite the problems with COVID19 and its impacts on furniture production processes in Damietta, the negative effects of this predicted climate change complicates matters. Geologically, the territory of the governorate of Damietta is considered lowland and is threatened with flooding by seawater if sea levels rise due to the expected melting of the ice due to climate change.

The economic damage caused by climate change-induced sea level rise on the northern coast of Egypt has been and will continue to be direct and far-reaching. Since 2017, a large part of Egypt's population, industry, agriculture, private sector, infrastructure development and tourism have been located along the northern coastal lowlands. These depend on the Nile Delta for prime agricultural land meaning the area is of fundamental importance to the country's economy.

Damietta vulnerability studies have indicated that a 0.3m sea level rise would result in billions of dollars of infrastructure damage, the displacement of more than 50,000 million people and the loss of 'approximately 20,000 jobs. In addition, the coastal lagoons of the Nile Delta are among the most productive natural systems in Egypt and internationally recognized for their abundance of birds. About 60% of Egypt's annual catch comes from the three main lagoons of the Delta - Idku, Burullus and Manzella - separated from the Mediterranean by 0.5 to 3 km of sand belts and dune systems. Coastal flooding and/or the permanent flooding of these areas would result in lower water quality in coastal freshwater lagoons and corresponding negative impacts on the furniture industry, fisheries and biodiversity.

All these factors make the north coast and Nile Delta region a high priority for climate change adaptation in Egypt. These concerns are reflected in Egyptian National Communication Reports (1999, 2010 and 2016) under the United Nations Framework Convention on Climate Change (UNFCCC). The 2030 Sustainable Development Strategy also includes an adaptation of coasts to climate change, and investment in infrastructure to combat climate change is a priority. Moreover, \$200 million is needed for the construction of robust coastal protection structures, while it is also important to develop long-term planning ICZM for the entire north coast in the face of climate change. Two of the most significant obstacles to ICZM in Egypt is the complex and sometimes unclear institutional framework that guides development activities, and the limited and often ad hoc approach between different agencies. There is no systematic approach to: coordinate the tasks of ministries and institutions, establish agreed priorities and clarify overlapping mandates. Despite these obstacles, there have been some developments in Egypt which have advanced compatible strategies and plans within an ICZM framework. Some of the main developments are briefly summarized in the following points:

- EEAA Vision 2007 - 2012: The report identifies approaches to mitigate and adapt to the impact of climate change. It presents an overview of efforts in areas such as education, information, public awareness, institution building and capacity building in relation to climate change and the integration of related action plans within the general State plan.
- National Strategy/Action Plan for Wetlands: Medwet, UNDP and EEAA have developed a National Strategy/Action Plan for Wetlands as part of a project funded by the Global Environment Facility (GEF) focused on the conservation of wetland and coastal ecosystems in the Mediterranean region. The aim was to create or improve wetland management facilities. One of the main results of this project is the promulgation of a national strategy for the conservation of wetlands (EEAA, 2016).
- Integrated management of the coastal zone between Mersa Matrouh and Sallum: The Government coastal protection measures cover, among others, a length of 200km of semi-desert and an underdeveloped coastal strip near the Libyan border. Over the coming decades, the region will be the subject of extensive development plans aimed at promoting tourism, agriculture, industries, and local services. Among other national measures, a strategy and guidelines will be created to define an ICZM plan for the north-west area of the Mediterranean coast of Egypt and to approach the management of coastal areas through sustainable development.
- MAP Protocol on Integrated Mediterranean Coastal Zone Management: This is an initiative relating to a Protocol on Integrated Mediterranean Coastal Zone Management (ICAM Protocol) between parties, including Egypt. This was developed during the Barcelona Convention (Convention for the Protection of the Mediterranean Sea against Pollution). The protocol includes key definitions, general principles governing sustainable development, institutional coordination protocols, protection and the use of coastal areas.
- The costs of environmental degradation to the coastal areas of Egypt: The "METAP" project within the Mediterranean environmental technical assistance program "Strengthening the capacity of certain METAP countries to assess the cost of environmental degradation in coastal areas" conducted a study into the costs of environmental degradation in the coastal areas of Egypt. The study recommended the adoption of ICZM and land use plans to improve land use, avoid unnecessary habitat loss, and establish the appropriate enforcement of existing legislation to protect the coastline of the construction.
- Egyptian Pollution Reduction Project (EPAP II) Alexandria Integrated Coastal Zone Integrated Management (AICZM) Project Sub-Program: The Government of Egypt received GEF funding for the preparation of the Integrated Management Sub-program of the Alexandria Coastal Zone (AICZM) of the Egyptian Pollution Reduction Project (EPAP II). The main objectives of the program are to provide a strategic framework and immediate small-scale investments to reduce the burden of land-based sources of pollution entering the Mediterranean Sea in the "hot spots" of EIMex Bay and Alexandria. It also aims to protect/restore its coastal heritage and the ecosystems of global significance by supporting the efforts of the Egyptian government to develop and implement a national coastal zone management plan.
- SMAP III ALAMIN Alexandria (funded by the EC) "Integrated management of Lake Maryut of Alexandria": The main objective of this project is to promote



ICZM approaches and to strengthen the institutional and human capacities to effectively manage and monitor Lake Maryut in Alexandria. Its specific objectives are: to assist in the preparation of an integrated management action plan for the Lake Maryut region in Alexandria involving key stakeholders; to conduct a strategic environmental assessment for the integrated development action plan; develop an integrated management and monitoring system (#40 and #41) for the Lake Maryut area; develop the institutional and human capacities of the Governorate of Alexandria and the EEAA for the Western Delta to effectively monitor and manage the area and raise public awareness.

## **Social Awareness and Adaptive Capacity**

Egypt registered a 7.3% unemployment rate in the second quarter of 2021, which when compared to 7.4% in the first quarter of 2021, marked a decline of 0.1% and a decline of 2.3% during the same quarter in the previous year. Damietta was ranked as having the highest unemployment rate at 18.8% according to the Central Agency for Public Mobilization and Statistics (CAPMAS) (EEAA, 2021a).

The study of human and social development in the governorate of Damietta could be a prelude to any political consideration. Organizing governorates according to their development performance makes it possible to focus on those making least progress. There are few social impacts associated with coastal protection infrastructure as neither involuntary resettlement nor land acquisition is necessary. Therefore, any negative impact on the surrounding land during construction activities which will be of a temporary nature.

## **Level of Awareness of the Impacts of Climate Change on the Local Community and Furniture Industry**

### **1.1.20. Knowledge and Awareness of the Level of Climate Change Impact on Egypt**

Climate change adaptation efforts, especially in low-income communities, are more effective when local communities are empowered, and their knowledge is used. A lack of accommodation can be attributed to low motivation and limited action, a or lack of government knowledge or initiatives.

Environmental planning in Egypt has largely followed a centralistic approach. Community involvement was not considered in the master plans for urban development. In recent years, the effects of climate change on Egypt's economy, ecosystems, and communities, as well as on the country's overall vulnerability, have been studied in some detail. Options for adaptation in general were outlined, and specific measures about agriculture were suggested. There is also a trend towards greater community involvement in these adaptations to climate change. No study or programme has yet focused on the combination of urban and rural adaptation issues, nor tried to bridge the gap towards policymaking.

Local communities, including furniture industry workers, need site-specific policies and special funds to encourage capacity building and networking, and to make climate data and adaptation knowledge available. There is a need for capacity training and local campaigns on climate change to increase the knowledge and engagement of the local community

### **1.1.21. Climate Change Pressures at the Social Level on Damietta**

According to the World Bank (WB) report, Egypt is considered one of the five countries that is expected to be most affected by a 1m SLR in the world (Dasgupta et al., 2007). Several general analyses have been conducted into the potential impact of SLR on the Nile Delta coast. As a result, areas of high vulnerability in the Nile Delta and possible socio-economic impacts have been defined. These high-risk areas include parts of the governorates of Alexandria and Beheira, the governorates of Port Said and Damietta, and the governorate of Suez. In addition, several other smaller areas, such as those located near Matruh governorate and north of Lake Bardaweel, have been identified as endangered areas. The effects of SLR on the environmental and socio-economic structure of these areas have been recognised.

Egyptian GDP would be strongly impacted by this SLR. Following an SLR of one meter, it was ranked third most affected country, with a 6.44% impact on GDP. This is partly due to the impact of an SLR on the agricultural expanse of Egypt, as the this sector plays an important role in the Egyptian national economy, contributing around 20% to its GDP (Dasgupta et al., 2007). In addition, the investments in the industrial zones along its coastal line, such as the furniture industrial zone, would be negatively impacted.

Rising temperatures and sea levels will be the most direct impacts of climate change in Damietta. About 768,164 people, including 377,189 women, will be directly affected by the impacts of climate change, and people in urban/rural communities will be indirectly affected (totalling 16.9 million people) along the Mediterranean coast of Egypt.

To mitigate the effects of climate change, the country needs to take more action to decouple its greenhouse gas (GHG) emissions from economic growth. Between 1990 and 2016, emissions in Egypt increased in both absolute terms (over 40% increase) and intensity (per capita). Egypt is the third largest GHG emitter in MNA, with 247k metric tons of CO<sub>2</sub> emissions in 2019. The largest contributors to national GHG emissions are the energy industries - electricity generation and oil refining (20.2%), followed by road transportation (15.0%) and emissions from managed soils (6.9%) (BUR, 2018).

### **1.1.22. The Community's Adaptive Capacity to Climate Change in Damietta**

Coastal flooding is having a negative impact on public health by straining the limited public health facilities in Damietta. The installation of coastal protection measures will help reduce disruption to agricultural activities, education, public and medical services, and thus improve the local perception of safety during storms. The benefits of protecting the Delta from a combination of sea level rise and land subsidence are existential in nature, and exceed that which can be captured or quantified in the range of social benefits, such as education, health and safety.

There is a lack of community-based adaptation and adaptive capacity to climate change in Damietta; meanwhile, a preliminary study has been conducted by local authorities belonging to the Coastal Protection Area Agency to assess the vulnerability and adaptation of local communities. The study concluded that a capacity development strategy is likely to have additional social benefits. The capacity development approach focused on the collection and management of coastal data, the diagnosis and modelling of storm surges due to sea level rise, and the development of regulatory and planning protocols will address the challenges

inherent in the development of the Delta. It also included methods and tools to integrate knowledge, and the evolution of data on coastal threats induced by climate change and generated by national observing systems, including regional and international bodies.

### **1.1.23. Gender Responsive**

As women are key actors in the management of basic household resources, as caregivers and participants in income-generating activities, the proposed project design addresses the cultural, physical, information and skills barriers that prevent women from becoming actively involved in, supporting, promoting and maintaining the mitigation and adaptation solutions that the project will implement. To this end, a gender analysis and action plan was prepared when conducting preparatory studies for the project<sup>1</sup>. The analysis considers the implications of gender and social inclusion, including the level of awareness, commitment, and accountability of all stakeholders. To ensure women's participation in climate resilience processes, the following measures should be considered:

- Develop a stakeholder participation plan, as well as a monitoring plan and gender indicators to ensure the equal representation of women and men in the development of climate change activities.
- Develop training courses for capacity building, communication campaigns and awareness-raising messages on gender and social inclusion mechanisms that are contextually relevant to the issue of climate change and are culturally and gender sensitive.
- Involve national gender institutions and organizations as key stakeholders and ensure engagement between the National Council of Women (NCW), Equal Opportunities Units (EOU), and the climate change units from relevant ministries.
- Establish complaints mechanisms, which are accessible to both women and men, to ensure they can raise issues during the implementation of any climate change activity.
- Conduct micro-level consultations in the hotspot governorates ensuring that all segments of the population, including women, youth, the elderly, and people with disabilities, are equally represented.
- Establish explicit rules in procurement procedures to ensure gender equality and the equal participation of women in award programs.
- Prepare qualitative assessments of the gender benefits which may be directly associated with climate change.

### **1.1.24. Laws, Regulations, and Policy Responses**

#### **1.1.24.1. Lack of High-Quality Data to Inform Planning Decisions**

One of the most difficult tasks when developing climate change activity in Egypt is the lack of reliable and consistent data. Therefore, there is a need to create accessible databases to obtain the data necessary to assess the risks and vulnerabilities of local communities. These databases should contain data from the field, monitoring systems, and the future predictions of climate change impacts obtained through statistics and modelling techniques.

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<sup>11</sup> Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt- Funding Proposal submitted to (GCF, 2015)

For the Nile Delta, there are no comprehensive databases relating to population, economy, infrastructure, and vulnerability indices which could be used to feed digital tools to perform a survey.

There is currently no adequate national observing system. This results in a data gap and makes it difficult to perform the required high resolution analysis on the physical impacts of climate change over different time periods (simulations and climate change forecasts). These are particularly needed in priority areas to support effective decision making (El-Raey et al., 1999). Specific data gaps which have emerged correspond to coastal and hydrodynamic processes, such as erosion (shoreline retreat) and sedimentation, as well as flooding due to sea level rises induced by storm surges and saltwater intrusion (Frihy & Lotfy, 1997).

To overcome the lack of high-quality data to inform planning decisions, it is important to involve government authorities and relevant agencies in a consensus-based stakeholder engagement approach to coordinate data collection and monitoring.

#### **1.1.24.2. Lack of an Adequate Framework for the Implementation of Integrated Approaches to Adaptation**

Several planning barriers currently prevent the implementation of adaptation options on the north coast of Egypt, and the integration of these options into national planning.

A high-resolution analysis of coastal problems and risks has not yet been carried out. While the main threats to climate change along the northern coast have been identified by local and international studies, including medium to long term physical, environmental and socio-economic issues, a high-resolution assessment of coastal threats from climate change for the coastal region has not yet been developed. A high-resolution assessment of the multi-hazard risks facing coastal areas and the potential damage caused by sea level rise and other climate change threats is essential in making informed decisions under conditions of uncertainty. This would involve the periodic mapping and update of vulnerable areas, and the implementation of coastal protection measures, including sensitivity and resilience analyses of different coastal dimensions.

There has not yet been a systematic identification and assessment of options for adaptation to climate change. This is partly due to the lack of a consensual set of criteria for application when mapping and assessing hazards, vulnerabilities, and risks, including the cost of damage. Moreover, there has been a history of relying on rigid coastal protection as the preferred engineering solution that reduces the potential within coastal planning communities to systematically explore the effectiveness of a full range of adaptation options.

Currently, the Ministry of Environment is coordinating with several local entities - including the Egyptian Meteorological Agency (EMA) - to develop an interactive vulnerability map. The map aims to provide an assessment of the vulnerable areas and possible adaptation measures.

#### **1.1.24.3. Weak Institutional Coordination to Strengthen Resilience to the Impacts of Climate Change**

Previous approaches to reducing climate vulnerability in Egypt can be characterized as institutionally autonomous. This generally involved little coordination and data sharing between ministries and government agencies, and less between government agencies and local communities. The reasons for this can largely be explained by following institutional barriers:

First, there is no single unifying vision among the responsible institutions on how to address the challenges of climate change. Some agencies continue to favour traditional mechanical engineering measures to address coastal protection despite their negative results, while other agencies favour a wider range of intervention options.

Second, there is no single agency in charge of monitoring and updating climate data. The result is a set of surveillance activities spread across various agencies which are inaccessible due to the lack of well-regulated data sharing networks.

To overcome weak institutional coordination and strengthen resilience, a short-term commitment from relevant government authorities should be secured to exchange climate data. It would be necessary to ensure their commitment to implement the regulatory/legislative changes necessary for long-term, sustainable development in the vulnerable areas.

#### **1.1.24.4. Low Institutional Capacity to address Climate Change Impacts**

The lack of technical capacities associated with relevant regulatory, institutional and stakeholder dimensions is linked to the aforementioned obstacles. Low capacity inhibits evidence-based decision-making as climate resilience decisions are often determined by short-term budgetary considerations rather than long-term sustainability criteria. The existing system includes many regulations concerning the management of vulnerable sectors and their resources.

Although these laws and regulations were updated in a move towards the adoption of the National Climate Change Strategy in 2011, the current regulatory framework is unable to address existing gaps and overlaps in vulnerable sectors, or directly address adaptation needs and measures. With respect to institutional capacity, there is currently a lack of sufficient technical capacity to conduct the types of high-resolution modelling needed to understand the associated climate risks, for example through projections of sea level rises.

Currently, Egypt is developing the Fourth National Communication report, in which changes to the assessment of climate change vulnerability has been agreed. This means such assessments will be changed from a sector-wise approach, as followed in the previous three National Communication reports, to a climate risks approach that covers a set of risks identified by local experts and prioritized according to severity. The group of priority risks include sea level rises, temperature and heat waves, sudden heavy precipitation, flash floods and droughts. It is planned that this new approach will be adopted in the development of the first ever National Adaptation Plan (under development).

## **Egypt's National Policies on Climate Change**

The Government of Egypt (GoE) has addressed the impact of climate change in its Nationally Determined Contributions (CDNs, 2015) and aspires to become a regional model. The GoE also presented a strong framework to support the compilation of a sustainable development strategy (Egypt Vision 2030, currently under update). The GoE's global proactivity against climate change is also reflected in its National Climate Change Strategy for Egypt 2050 (currently under preparation) and its sectoral ambitions, for example its Integrated Sustainable Energy Strategy (ISES) 2035 and its National Action for Energy Efficiency Plan (NEEAP). Moreover, it is also reflected in its international commitments, for example, through its NDCs,



the adoption of Zero Gas Flaring 2030 from the Global Gas Flaring Reduction (GGFR) initiative, and Egypt's role in the Energy Transitions Council (ETC) to COP26.

However, Egypt's NDC commitments lack specific targets and focus only on a set of policies and measures alongside the political and financial tools needed to implement the necessary mitigation and adaptation measures at scale. Furthermore, as the possibility of hosting COP27 in Egypt has emerged, and the Egyptian government would like to be able to display the highest national ambitions through its strategies and achievements on climate change and thereby portray its important regional and global role.

There are several donor-supported initiatives in Egypt that address climate change adaptation. In 2011, the National Strategy for Climate Change Adaptation and Disaster Risk Reduction (NSACC) was published. As Damietta is most vulnerable to sea level rise, the NSACC primarily adopts coastal area protection as a basis for adaptation to climate change risks. These are based on plans prepared in anticipation of any potential exposure of coastal areas to extreme weather events. This strategy provides the following: 1) detailed studies on the effectiveness of any proposed adaptation measures in addressing sea level rises and other threats to climate change; 2) new coastal development rules integrating the threats of climate change; 3) the construction of protective works, including hard and soft measures, to prevent the flooding of built-up areas and damage to the economic infrastructure; 4) the rehabilitation/strengthening of existing coastal protections such as the banks of the Al Salam canal (from Damietta to Sinai); and 5) the maintenance of soft protective measures, such as stabilizing sand dunes through the cultivation of wild plants and wooden barriers, and the preservation of natural defenses against sea invasion or sea level rises.

Egypt's Third National Communications Report (TNC) outlined the understanding of extreme events, which included the risk of torrential rains and flooding, erosion, and socioeconomic factors. In particular, the TNC established a framework for approaching coastal adaptation planning to guide future decision-making.

In 2010, Egypt's first coastal adaptation project launched major activities that continue to this day. The "Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management in Egypt (ACCNDP)" is an initiative of the Coastal Research Institute (CoRI) and the Shore Protection Authority (SPA) that is supported by the UNDP. It is funded by the Egyptian Ministry of Water Resources and Irrigation (MWRI) and the UNDP. The objective of the project is to improve Egypt's resilience and reduce its vulnerability to the impacts of climate change, with the aim of mainstreaming the assessment of sea level rise risk management in the development of the Egyptian LECZ in the Nile Delta.

### **1.1.25. Progress in the Implementation of the National Strategy for Climate Change**

Egypt's Sustainable Development Strategy - Vision 2030 highlights the social, economic, and environmental dimensions of sustainable development. Adopted in 2015, Vision 2030 reflects strategic outcomes targeted for 2030 under 10 pillars, and serves as an umbrella for Egypt's development plans.

Along with other development priorities for 2030, the climate change outcomes include: a 10% reduction in GHG emissions from the energy sector; increasing renewable energy generation



by 35%; decreasing air pollution by 50%; increasing areas under natural reserves by over 50%, and increasing water availability by five billion cubic meters. However, Vision 2030 does not fully articulate the investment needs and pathways to achieve the targeted outcomes.

Egypt has actively contributed to international efforts to address climate change risk during the past three decades. The country ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and signed the Kyoto Protocol in 1999 and submitted the first, second and third National Communications in 1999, 2010 and 2016, respectively on the country's progress on climate action. The country signed the UNFCCC Paris Agreement in 2016 (ratified in 2017) and the Presidential Decree 566 of 2016 that mandates all governmental agencies in Egypt to comply with the Paris Agreement.

Egypt was among the first countries in the region to highlight its progress on mitigation policies, actions and proposed actions. The first Biennial Update Report (BUR1) presents the mitigation policies and actions implemented between 2005-2015; and the actions proposed beyond 2015 which were conditional on international financial support. Preliminary financing estimates were needed to implement the adaptation and mitigation priorities of the first NDC and were estimated at about 73 billion USD. Thus, the priority is to link financing needs with domestic and international funding from public and private finance to international climate finance within the Green Financing Framework articulated in Egypt Vision 2030.

At the national level, the Ministry of Environment coordinates the design and implementation of climate change policies. The National Climate Change Council (NCCC) coordinates mitigation and adaptation strategies and the Egyptian Environmental Affairs Agency (EEAA) within the Ministry of Environment acts as a nodal agency to implement climate change policies. The new National Climate Change Strategy 2050 is currently under preparation.

The current policy focuses on improving the capacity to adapt to and minimize the impacts of natural disasters associated with climate change. The National Strategy for the Adaptation to Climate Change and Disaster Risk Reduction (2021) highlights the adaptation priorities of sectors over a 20-year period covering four five-year plans. These focus on regulations for coastal development, legislation for risk reduction, monitoring systems for coastal zones and public and private sector partnerships. It also highlights the importance of strengthening people's participation. The implementation costs of the strategy were estimated at EPG 53 billion; however, information on its progress is not available. Similarly, ministries such as the Ministry of Water Resources and Irrigation (MWRI) have sector strategies, but the status of drought-related policies requires further clarification as a matter of urgency for climate adaptation. Finally, the institutional link between planning, budgeting and budget execution is weak.

At the strategic level, Egypt prepared its first National Strategy for Climate Change Adaptation and Disaster Risk Reduction in 2011. In 2018, Egypt developed a framework for the Low Emission Development Strategy (LEDS) which accounts for the development needs of the country and has been officially adopted by the National Climate Change Council (NCCC). In addition, the government is currently working on the development of a National Strategy on Climate Change (NCCS) and the update of SDS 2030, in which climate change is integrated as one of the environmental pillars that no longer exists. This was not explicitly taken into account in the first version. Relevant efforts in this climate change related update have aligned SDS 2030 with the Egyptian NDC, and with sector strategies such as Energy Strategy 2035, Sustainable Development Goals (SDGs), and LEDs.

Therefore, by following a resilient, low-emissions approach the NCCS will enable Egypt to plan and govern climate change at different levels and support the achievement of the sustainable development goals and targets of Vision Egypt 2030.

Egypt is also developing the National Plan to Combat Climate Risks and Extreme Weather Events. This plan aims to: identify how to best manage and take advantage of cases, increase adaptation and flexibility to address the dangers and disasters caused by these cases, and reduce the effects on lives and property, including the associated impacts on sectors and structures. These activities may be directly or indirectly applied.

### **1.1.26. The Effectiveness of Current and Future Coastal Protection**

The Egyptian government is working on the development of an Integrated Coastal Zone Management (ICZM) plan for the entire north coast to manage long-term climate change risks and provide Egypt with the capacity to adapt to imminent flood risks. The north coast is protected by 69km of sand dune dams which were installed along five vulnerable hot spots along the Nile Delta. These hotspots were identified during a technical assessment and technical feasibility studies. This comprised a "beneficial reuse" of existing maintenance dredging material from a range of local sources, which operated under the existing approval of the Egyptian government.

The ICZM plan will provide benefits through capacity building that enables a high-resolution diagnosis of coastal threats, updated regulatory and institutional frameworks which take into account sea level rise, and a coastal observation system for the data collection/analysis in progress.

Obstacles were identified which, according to national studies, represent the challenges facing existing actions to protect the coastline. This includes: the lack of high quality data to inform planning decisions; the lack of an adequate framework for the implementation of integrated approaches to coastal adaptation; weak institutional coordination to strengthen the resilience of the coastline to the impacts of sea level rises; the significant reduction in dredged material that would otherwise be released into the marine environment, and the lack of institutional capacity to anticipate and manage the anticipated impacts of sea level rises.

### **1.1.27. Current and Future Rural and Urban Plans for the Governorate**

Egypt has a unique opportunity to reconcile its challenges and opportunities and become a regional model for change. It can achieve this by shifting to a green, resilient, and inclusive development (GRID) model that, in addition to mitigating and adapting to climate change, supports job creation and enables resilient and sustainable growth across the country. Evidence shows that investments in green activities across sectors, including the furniture industry, can bring significant benefits in net job creation and economic growth, but only if the types of skills demanded in the labor market draw a dynamic response from the education sector.

Moreover, increasing adaptation and mitigation measures in the agriculture and water sectors, in cities, and mainstreaming the use of clean energy options (renewable energy -based electricity and gas sector decarbonization, energy efficiency and renewable energy) can help

the country respond to the rising demand for energy, electricity, food, and water while reducing the adverse effects of future climate stresses and shocks. Responding to climate change also brings opportunities for environmental and social sustainability through the increased adoption of digital technology, net green jobs, and the inclusion of vulnerable groups in climate action and decision making.

Coupled with climate change, the rapid and continuous population growth and high urbanization rate places considerable strain on urban infrastructure services, urban management, and natural resources. With an annual growth rate of around 2%, Egypt's population is projected to reach 159.9 million by 2050 (World Population Review, 2021). Moreover, an estimated 43% of the population resides in urban areas, and it is expected to rise to 56% by 2050 (BUR 2018). Egypt's urban population has grown at a faster pace than services and infrastructure in cities. This translates into unplanned urban (spatial) expansion, inadequate access to urban services, traffic congestion, inadequate land-use management, and insufficient natural resources available to meet the needs of growing cities.

Egypt's projected annual mean temperature increases will result in the greater severity, frequency and duration of heat waves and wild-fires. It will thereby critically impact the liveability in cities/urban clusters and amplifying the prevalent Urban Heat Island (UHI) effects of the built-infrastructure, emissions, and population density. Moreover, informal settlements - cover ~38% of the total built area in urban communities (2019) and housing 5.2% of the urban population. However, they typically lack even the basic infrastructure despite being close to urban centers. Yet they face a disproportionately high risk of suffering the aforementioned climate change impacts.

Cities, such as Damietta, which are densely populated and economically important, are highly exposed and vulnerable to climate change impacts and risks. Yet, they offer a great potential to contribute towards green, resilient, and inclusive growth. A green urban transition and sustainable urbanization are critical for both climate adaptation and mitigation. Coordinated action on land use management, spatial planning and transport infrastructure which addresses climate risks has the potential to significantly improve climate resilience and reduce the intensity of emissions in cities.

# Damietta's Furniture Industry Patterns in a Digitised Global Market

## Project Scope

### 1.1.28. Project Rationale and Justification

This proposal builds on the current AHRC project (CHERISH) which focuses on the conservation of the cultural and industrial heritage networks in Damietta the mitigation of threatened sea level rises. CHERISH develops the case for conserving furniture MSMEs networks in Damietta through a data-driven network geolocation mapping dataset. As the mapping and investigation in CHERISH proceeded, two major trends in the industry were identified: craft-based traditional and modernised digital mass-production. There seems to be clear tensions between the community of workers and owners working on both sides. Damietta's craft furniture-making tradition has been unaffected by the modernization of the Arts and Crafts Movement in 19<sup>th</sup> Century Europe that was pioneered by Ruskin and Morris and later inspired the Bauhaus. This led to transformation of the craft industry and the creation of mass production in the German Werkbund. In Damietta, the craft furniture industry remained faithful to the creativity of its indigenous heritage. Combined with threats from sea level rise, the craft industry is now on a crossroads that will influence its future and existence.

The current project has been successful in attracting UNESCO attention with an imminent announcement to be made in support of our project. The proposed follow-on project, CRAFT, would allow the team to investigate the forces that influence the two trends and to build possible resilience scenarios. These would form a data-driven approach to propose sustainable recommendations for the future direction of the industry in Damietta.

The proposed investigation focuses on the motivations and values of the furniture industry community informed by two approaches to the craft based industry. Following the work of Schwartz (1992, 2012) and Walker (Walker et al., 2019; Zhang et al., 2019), the proposed project will examine the differences and gaps and the complementary values and modes of production between the two furniture industry communities in Damietta. Understanding the strengths of each will inform the development of a strong industrial hub and lead to a more resilient and cohesive community that contributes to its economic prosperity. This would particularly benefit the craft-based traditional carving MSMEs (known as "oyma"), who are currently struggling as new technologies push them to extinction. This project will also provide additional means to strengthen the significant network assets in the city (social capital), which were investigated, mapped and highlighted in the CHIDE Project. Together, CHERISH and CRAFT will provide a well-formulated set of recommendations on an urban, social and MSME scale, which will provide a valuable tool for decision makers in Egypt, enabling the provision of directed support to the industry through infrastructure, policies, and socio-economic initiatives. This research is needed to support a major regional economic hub in Egypt, which is especially significant given the threat Damietta faces from climate change (sea level rise).

CRAFT will build on the objectives of CHIDE to contribute to a number of UN Sustainable Development Goals (SDGs). These relate to cultural heritage, economic growth/reform and sustainability in terms of: climate action: decent work and economic growth; industry and innovation; sustainable cities and communities, and climate action (SDG 8, 9, 11, and 13). This follow-up project will also prompt conversations on the continuity of work within the

furniture industry while maintaining local value chains that contribute to a sustainable and socially inclusive economy (SDG 8, 9). The furniture industry is a production-based activity, and this will be examined and documented in terms of responsible and sustainable patterns of production, value chains and stakeholders (SDG 12). As sea level rise is the main factor related to enforced spatial disruption, the project will continue to investigate the actions needed and awareness required to mitigate this threat (SDG 11, 13).

## Objectives, Context and Methodologies

### 1.1.29. Research Aim and Objectives

To determine how the values and motivations of workers and enterprises in Damietta, as represented in two prevalent trends (traditional craft vs digitised mass-production), inform possible ways forward for contemporary and sustainable industrial development by building on the uniqueness and strength of the city's social capital networks and preserving the traditional craft of Oyma.

#### 1.1.29.1. Project Objectives:

- To map the values and motivations of workers and enterprises in the furniture industry in Damietta according to Schwartz (1992).
- To produce a comparative dataset presenting the significance of place and values for the two main industry trends in Damietta, and reflect the network mapping dataset produced in the CHIDE project.
- To present comprehensive recommendations for the transition of the craft and industry in Damietta towards a modernised industry that conserves traditional craft and its values.

#### 1.1.29.2. Research Questions:

- How can digitisation boost traditional craft production in the furniture industry in Damietta?
- What is the value incurred in the two prevalent trends (traditional craft versus digitised mass-production) of furniture production in Damietta that is relevant to enterprises and workers?

### 1.1.30. The Case of Damietta City

Damietta has been known for its industrial heritage since its origins in the Pharaonic eras. Over the past century, Damietta has been a strong economic cluster comprising 36,000 furniture industry enterprises (UNIDO, 2015) with strong social capital networks, where the culture of production of goods influenced the region and country (ILO, 2016). This strong industrial pattern is interlinked with the community's way of living, as residents associate their living patterns with the entrepreneurial essence of the furniture industry. Spatial damage and/or uninformed political decisions to relocate the industry would lead to serious disturbances in patterns of interaction and networking, which in turn would negatively affect the economy of the city and wider region. Highlighting and celebrating intangible heritage, on the other hand, would boost the practices and enhance tourism similar to the recognised ceramic industry in Sassuolo, Italy.



### 1.1.31. Methods and Data Collection

The research team at the University of Salford will work closely with researchers at the University of Lancaster and CEDARE-Egypt (Centre of Environmental Development in the Arab Region & Europe). The partnership will also include a large industrial partner in Damietta which has been at the forefront of the modernisation of the industry (Amr Orensa). The Built Environment at the University of Salford performs strongly in the ERFs, maintaining top 10 positions in the last three exercises. Led by Professor Elkadi, Smart Urban Futures (SURF) at UoS is a top-rated research group in urban research in the UK. Research revolves around applying urban ecology principles for urban regeneration. The group attracted research income exceeding £20M in 2018/2019. Recent projects include ERDF Energy House 2 (£19M), UIA IGNITION (€1,6M), AHRC MOVE project (£234K), Geelong VISION2 (2014), Victoria State Government (AUD\$108,000) among others.

ImaginationLancaster at Lancaster University is an open and exploratory creative research lab that investigates emerging issues, technologies, and practices to advance knowledge that contribute to the common good. ImaginationLancaster conducts both theoretical and applied research into products, places, and systems using conceptual design techniques that combine traditional and social science methods with practice-based design methods. CEDARE is highly knowledgeable about the city, the cultural context and language, and is currently undertaking studies in Damietta, which has allowed access to its closed community and provided datasets about the study area. Along with the Ministry of Environment, CEDARE is responsible for the development of the annual State of the Environment Report in Egypt. CEDARE is also engaged in a number of research projects on the conservation of intangible heritage in Egypt. This research team offers higher collective and multi-disciplinary knowledge with experience in a number of different approaches to industry-based urban research. The team is also partnered with the Board of the Egyptian Furniture Export Council for this follow up phase of the project. This includes an exchange of expertise between the project team and the council that focuses on experiences associated with the digitisation of furniture industry production in the UK.

UoS will lead the project. A steering team of Prof. Elkadi (UoS), Prof. Walker (UoL) and Dr Abdel Rehim will plan work packages, define tasks and activities, oversee the management and monitor the progress to punctually achieve the deliverables. In addition, Professor Martyn Evans, Head of Manchester School of Art Research Centre and a member of the AHRC Advisory Board, will provide an arms-length oversight as the project progresses. A quality assurance plan will be formulated in order to audit the budget expenses, deliver periodical reports for the WPs, and monitor the project outcomes. Regular monthly meetings will be arranged between the UK and Egyptian teams using video conferencing and other methods.

### 1.1.32. Research Outputs and Contributions

The CRAFT project outputs include: 1) A geospatial dataset of values and motivations in the industry in Damietta, 2) A comparative analysis of craft-based vs digitised mass-production trends in Damietta, and 3) Recommendations for decisionmakers, municipalities, MSMEs and community members on the sustainable development of the industry in order to conserve the craft and ensure the economic prosperity of the industry in Damietta. Recommendations aim to create dialogues between stakeholders and advocate for inclusive development strategies, aided by a supportive industrial community.

The combined effect of the CHERISH and CRAFT projects outputs should positively impact the economic return of the furniture industry in Damietta by facilitating communication and proposing culturally oriented alternative development directions. The findings can also inform, and be appropriated for, other local industries and urban settings that have similar characteristics to Damietta and face similar climate change threats to their coastal communities. The approach is scalable in terms of applicability and can be utilised for different geographic areas and population sizes working in industry. Hence, findings from this study will contribute to the future resilience of local economies facing the risk of climate change.

## The Role of Digitisation in Craft Industries

Add examples that reflect this.

### 1.1.33. Global Furniture Industry Trends

Crafts comes from the Old High German language word "kraft" which means strength. Crafts refer to all objects that have been created and developed based on a specific skill. Crafts used to be characterized by their elegance, ornamentation, fine patterns, and rich details (Stankiewicz, 1992). However, the Industrial Revolution changed this holistic thinking.

The Industrial Revolution saw the invention of the steam engine and its subsequent application to manufacturing in the 1880s; new steam engines replaced craftsmen providing cheaper, faster, and more productive manufacturing (Mark, 2011). Craftsmen shifted from creativity to serving the machines by feeding them with raw materials. Accordingly, crafts making decayed and suffered from a lack of aesthetics, meaning that such products moved away from art (Mark, 2011). This shift to mass production inhibited artists' creativity and limited their capabilities to machine-handling (Tuberman, 2017).

As a result, many design movements emerged to connect the rapid development of industry and the revitalization of craft industry by preserving its value and aesthetic. These movements began with the arts and crafts movement in the 1880s and was followed by other design periods, which were rich in concept and approach, and highly creative (Willetts, 2019). The following section describes the different design periods of crafts making and their impacts on the industry's features and characteristics (Kaufmann, 1975; Willetts, 2019).

#### 1.1.33.1. Arts and Crafts (Aesthetic) Movement (1850-1915)

The Arts and Crafts movement was developed to promote handicrafts and decorative arts and emerged as a reaction against the impact of the Industrial Revolution on crafts and artmaking. These impacts included a decline in standards as a result of the dependency on machinery and factory production (Krugh, 2014; Stankiewicz, 1992).

Crafts Artists were inspired by the medieval decorative elements in their design as they believed the medieval decorative school was an honest and pure example of craftsmanship. However, they did not copy previous old pieces, but rather added modern spirit lines and simple designs to geometrically shaped furniture, as illustrated in

Figure (Kaufmann, 1975). The movement refused to adopt machines and instead highlighted the importance of manual work.

The movement was well received among the global markets. It criticized the rise of consumer society, and the poorly designed goods entering the market. Their worldview was influenced by populist and socialist principles, whereby art and design was created "by the people, for the people", with particular emphasis on the skill of workmanship. Their aesthetic and critical concepts influenced the Arts and Crafts movement's philosophy and style, as well as new design trends (Anika, 2018).

Although the arts and crafts movement originated in Britain, it spread to Europe, North America, and later all over the world (Krug, 2014; Stankiewicz, 1992).



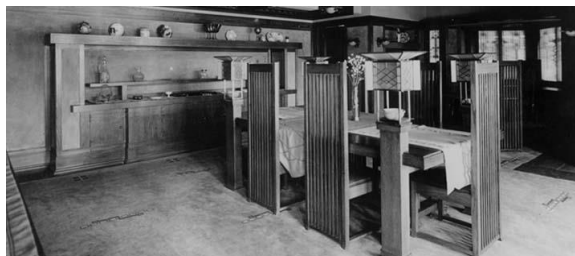
*Figure 34: Furniture style inspired by the Arts and Crafts Movement  
Source: (Vinterior, 2022)*

#### **1.1.33.2. Frank Lloyd Wright (1867 – 1959)**

The spread of factories and production came at the expense of taste, quality, and craftsmanship. However, one of its pioneers, Frank Lloyd Wright, argued that machines were useful in saving time and effort. Wright was an architect who merged the building to its context by creating a homogeneous built-up and natural environment (FLWT, 2017; Turner, 2021).

*Wright designed each aspect of the building from the structure itself to the furniture and lighting. He focused on the natural qualities of materials in his work by using simple and abstract geometric forms without excessive ornamentation (*

Figure 11). However, the obvious difference between the arts and crafts movement and Wright's designs was the value placed on the machine, which Wright believed could enhance quality and beauty (FLWT, 2017). Frank Lloyd Wright's ideas appealed to the community and the market as part of the arts and crafts movement, which already aimed at meeting people's needs with high-quality products.



*Figure 11: Dining Room, Frederick C. Robie House, 1910, Collection of the Frank Lloyd Wright Trust  
Photograph: Henry Fuermann  
Source: (FLWT, 2017)*

#### **1.1.33.3. Art Nouveau (1880 – 1910)**

The Art Nouveau movement originated in Europe and the United States as an ornamental style of art that was inspired by organic, long, and sinuous lines (as shown in

Figure 126). It appeared in crafts, jewellery, glass, furniture, interior design, and buildings. It created a new style away from historical tradition in seeking new, vital, energetic, and powerful designs (Kuiper, 2021).

Crafts in this area were deeply inspired by flora and fauna featuring curvilinear lines and a sense of danger to elicit feelings towards the designed piece. Art Nouveau emphasized the affect on people's modes and similarly adopted Wright's approach in supporting the use of machines to enable the distribution of products to a wider spectrum of the population (Anastassakis et al., 2016; Carson, 2019; Kuiper, 2021).

Art Nouveau was cutting-edge and reflected the new generation's style. It was neither the preserve of the nobility nor conservative society but rather targeted the younger generation and emerged as a new style from the industrial era. Although it struggled at first to gain social acceptance, the designs were later accepted and developed to target specific social classes (Maciej Serda, 2013). The designs became richer in detail and choice of material than the objects made for the nobility to attract the elite (Horth, 2009)



Figure 126: Chair inspired by the organic lines of the Art Nouveau Movement  
Source: (Mēbeļu Restaurators, 2012)

#### 1.1.33.4. Vienna Secession (1897)

The Vienna Secession was established by a group of architects, artists, sculptors, and partners with a motive to introduce contemporary art to the public. It was driven by a desire to experience the new and reject the old (Takac, 2018). The group aimed to unite the building's structure and interior design to formulate one identity and give the user a homogeneous experience. They believed in the power of integrating art into all aspects of life (Takac, 2018; The Art Story, 2017).

*The Vienna Secession aimed to introduce pure arts and design in a contemporary style. It viewed all forms of arts and crafts as having equal status and needing comprehensive group work from all designers with their respective backgrounds and expertise to introduce designs that encompassed all aspects of the visual environment. Modern materials were embedded in furniture design while the wood and designs emphasized simple forms and geometric motifs*

Figure . The furniture was designed to include aluminum and steel materials in simplified forms (Takac, 2018)).

The artistic language of the Vienna Secession never found popular acceptance, and most design institutions refused to acknowledge it, as it was believed it would destroy traditional design. However, prior to the outbreak of World War I, a small number of Central European immigrants brought their direct interpretation of this design modus to the US and other areas of the world, and their efforts inspired Modernism (Long, 2007).



Figure 13: Adding metal to wooden furniture in the Vienna Secession movement  
Source: (Daderot, 2022; Long, 2007; Wagner, 2003).

#### 1.1.33.5. Early Modernism (1900 – 1914)

Modernism is a design and artistic movement that originated in Europe at the beginning of the 1900s with a strong belief in the necessity for change. Modernist designers thought that existing styles were outdated and did not meet the needs of the age or the industrial world. They aimed to define a new aesthetic for all forms of art, design, and furniture. The style was distinguished by its simplicity which moved away from decorated elegance; thus, it was developed to be functionally practical and comfortable without any unnecessary ornamentation, as shown in Figure 14 (Silka, 2016).

Modernism began as a broad collection of ideas rather than a style, which appealed to people's minds first and their taste second. Thus, modernist design gained a social appeal in the market as customers felt that it met their needs (V&A, 2022).

Another aspect that took priority in this movement was affordability. In order to manage the cost of products and enable widespread access, mass production was introduced to the furniture industry. This produced convenient and affordable furniture pieces (Anastassakis et al., 2016; Silka, 2016).



Figure 14: The functional and practical furniture style of Early Modernism  
Source: (Frearson, 2015)



#### 1.1.33.6. Wiener Werkstätte (1903)

The Wiener Werkstätte movement was established by a group of designers who broke away from the Vienna Secession. They believed in the strength of individual work over mass production and the perceived 'evils of cheapness' (Itzkowitz, 2021).

The furniture design was characterized by its highly geometrical and rectilinear forms, which used inlays to create gradations of colour in otherwise blocky, massive pieces (DMA, 2017; Itzkowitz, 2021).

*The Wiener Werkstätte movement was inspired by the Arts & Crafts Movement in the importance of emphasizing construction and materials in furniture making. The structure of the furniture was light and adopted a grid of squares that punctured the wood panels with only the material necessary for the piece to function, as shown in Figure 15 (Itzkowitz, 2021).*



Figure 15: Using a structure frame in furniture making in the Wiener Werkstätte Movement  
Source: (Johnson, 2017)

#### 1.1.33.7. German Werkbund (1907)

The Dutcher Werkbund (German Association of Craftsmen) was a movement that originated in Germany in 1907 with a group of designers, artists, architects, industrial and craftsmen who worked in a partnership with mass production (Hadi, 2018).

The movement aimed to improve the quality of mass production by increasing the competition between the German manufacturing companies with the aim of enhancing the quality and competitiveness of German products in the global market. This aim was achieved by building a partnership between product manufacturers and design professionals by mixing the benefits of mass production in terms of cost and affordability and the advantage of good design, adopting sophisticated design flair. It emphasized the form and function over ornamentation (Carson, 2019; Hadi, 2018; Pigeonsblue, 2014).

The Werkbund was distinguished by its low artistic sense, as it tended more towards economics and politics as a means to introduce and integrate traditional crafts within the mass production process and to establish a competitive base for Germany in the global market. Furniture making and crafts in this era were characterized by the simplicity of designs and high quality manufacturing. Steel and metal were highly introduced in crafts making because of their durability and affordability, as shown in Figure . The movement was well received by

the market as it met the needs of most economic classes due to its aesthetically appealing, durable, and affordable products (Hadi, 2018; Pigeonsblue, 2014).



Figure 16: Steel and metal design in the Werkbund movement  
Source: (DWB, 1924)

#### 1.1.33.8. Bauhaus School (1919 – 1934)

The Bauhaus was a school rather than a movement and in 1919 became the most influential modernist art school of the 20th century. It gained major public interest in Europe and the United States as it established a relationship between the arts, technology, and the community (Chernick, 2019; Richman, 2021; Winton, 2016).

*Teachers and students of the Bauhaus school were distinguished by their design style which was simple and practical. Above all the other design principles, furniture and craft-making were practically efficient. The basic components - like table surfaces and legs - were abstracted into simple geometric shapes as shown in*

Figure 17 (Chernick, 2019; Winton, 2016).

Bauhaus designers had a desire to build aesthetically pleasing objects which were available and affordable to the public; therefore, simple designs were easier to produced efficiently en masse. Like the German Werkbund, the movement succeeded in gaining customer approbation due to its simple, practical, and durable products (Winton, 2016).



Figure 17: Aesthetically simple geometric shapes of the Bauhaus School's furniture  
Source: (Hitti, 2018)

#### 1.1.33.9. Art Deco, Europe (1920 - Approx. 1939)

The Art Deco movement's first appearance was in France, Europe after World War I, when people were depressed and traumatized by the war. However, there was a significant sense of nationalism between people and their nation. This design movement emerged to help restore people and countries following the impact of disruption, conflict, and wars (Anastassakis et al., 2016; Keener, 2020).

*Accordingly, crafts and furniture making adopted luxurious ornamental styles and were inspired by the fashion trends as a reaction to the forced austerity of war. Heavy and expensive materials were ornamented which were used, as shown in*

Figure 18. However, the movement did not influence many spectrums of society because it only targeted only the elite class. Moreover, the reappearance of heavy ornamented designs after periods modern, practical, and light designs was not widely accepted by the market (Encyclopaedia Britannica, 2022; Judith, 2017).



*Figure 18: Extensive ornamentation of Art Deco interior design*  
Source: (Judith, 2017)

#### **1.1.33.10. King Tut (1922)**

*Furniture-making was widely inspired by discovery of King Tut's tomb in 1922. Crafts and furniture started to evolve inspired by different cultures and civilizations, especially those of Egypt, Africa, and Asia (*

Figure 19). The products were designed in unique and distinguished shapes compared to the previous eras (Peters, 2018).



*Figure 19: New distinguished furniture piece inspired by Egyptian pharaonic civilization*  
Source: (Peters, 2018)

#### **1.1.33.11. Art Deco, United States (1930 - Approx. 1940)**

The Art Deco movement in the United States took place in the 1930s and targeted the middle class who were becoming prosperous at that time. New designs followed the same approach as the European Art Deco movement, and the designs were considered a symbol of modernity and luxury, as shown in Figure 45 (Encyclopaedia Britannica, 2022; Judith, 2017).

Unlike the Art Deco movement in Europe, the movement was introduced to the middle class with more practical, elegant, and functional designs. This meant it succeeded in gaining market acceptance in meeting both customer needs the requirements of the age. Targeting the middle class, created publicity for the crafts, which were selected by both the low and high classes (Encyclopaedia Britannica, 2022).



Figure 20: Simple and luxurious furniture design from the Art Deco movement in the US  
Source: (Encyclopaedia Britannica, 2022)

#### 1.1.33.12. Surrealism/Streamlining (Approx. 1930 - Approx. 1950)

*The Surrealist/Streamlining movement appeared as a reaction to Art Deco and was influenced by the Great Depression when demand decreased. As the Great Depression progressed, designers started to develop dynamic shapes to give people hope and encourage them to move forward (*

*Figure 21) (Gestalten, 2020).*

New, dynamically curved shapes - such as the teardrop - reflected a sense of efficiency and movement, and prioritised customers' feelings over their needs at that time. The products were designed to give people hope and fantasy, as a way out of repression. This prompted a positive reaction from the market. To achieve affordability, mass production and the assembly line were used as ways of increase production and decrease cost (Anastassakis et al., 2016; Gestalten, 2020).



Figure 21: Dynamic design of a watch inspired by the streamlining design movement  
Source: (Assier, 2014)

#### 1.1.33.13. Scandinavian Modernism (Approx. 1935 – Present)

The Scandinavian Modernist era emerged after World War II as people generally experienced greater satisfaction and prosperity. The era has been distinguished by increased consumption and a greater control by capitalism. Cheap, returnable, exchangeable, and replaceable products have become the desire and demand amongst customers who seek durability and affordability (Carson, 2018; O'Neill, 2017; SB, 2016).

Universal designs have appeared to meet these needs which means buying and disposing of products easily. Accordingly, the term DIY (Do It Yourself) appeared at this stage to provide an enjoyable and affordable method for furnishing homes (Figure 22) (Carson, 2018).



Figure 22: DIY product introduced by Scandinavian Modernism  
Source: (The Awesome Orange, 2021)

The movement has brought about a qualitative leap in the timber industry, which is limited to design and implementation, while the installation phase is undertaken by the consumer rather than the factory or workshop (O'Neill, 2017; SB, 2016).

This new idea has contributed significantly to reducing the prices of products because the installation price is deducted from the product and completed by the consumer. This helped the growth and prosperity of the furniture industry, and meant it could increase the offer and demand for products that are sold at reasonable prices (Carson, 2018; O'Neill, 2017; SB, 2016).

#### 1.1.33.14. Pop Art (1958 – 1972)

Pop-art was a movement that included design, music, fashion, and filmmaking where imaginary new colourful characters were introduced (Figure ). It was one of the most significant art and design movements in the 20th century, and was characterized by new themes, tools, and techniques that were derived from popular culture, such as comic books and advertising (Schenker, 2021).

Pop art influenced all arts and crafts - such as graphic design and furniture - and attracted a wide range of consumers. Designs were distinguished by their brightness, colouring, and vitality. New materials were introduced in furniture making, such as plastic (Schenker, 2021; Sisson, 2017).

#### MISSING IMAGE

Figure 23: Pop Art chair inspired by comic characters  
Source: (Emma's Home Ideas, 2013)



#### 1.1.33.15. Space Age (1960-1969)

*Travels into space in the 1960s had a direct impact on art and design. New trends appeared to simulate life in space and new features were introduced to design. Furniture and craft making were most influenced by designs inspired by the space invasion. Spherical and curvilinear shapes and lines were widely used, and plastic was the dominant material because of its fixability and its modernist dynamic sense (*

Figure 24). It was a pop-up art that appeared to go with the age and attracted people's interest in the new era of space invasion. However, it soon disappeared due to its low practicality (Vinterior, 2019).



Figure 24: Chair inspired by the space age era  
Source: (Rost, 2006)

#### 1.1.33.16. Modernism/Minimalism (Approx. 1967 - Approx. 1978)

*The modernist movement was inspired by industrial development and an increasing dependency on machines. The most suitable expression to represents this movement was "less is more", uttered by Ludwig Mies van der Rohe (1886-1969) who believed in the power of simplicity in design. He believed that the most efficient design can meet the user's needs with the least ornament, size, structure, and materials (*

Figure 25). The movement rebelled against the ornamentation of older design periods and provided products that responded to the age in order to gain society's support in the market (Carson, 2018; P, 2016).

Products were designed to be simple, light, and sleek and the aesthetics depended on the form of the materials. The modernist era was mainly inspired by the Bauhaus school and originated in Germany; however, there was not much recognition of the school at the time (Creative Bloq, 2013).



Figure 25: Prototype of minimalist movement's furniture making ("MR" Armchair)  
Source: (TheMet, 2022)

#### 1.1.33.17. Postmodernism (Approx. 1978 – Date)

The postmodernist era emerged as a reaction to and rebellion against modernism including all the previously described design periods and movements in which ornamentation was marginalized. Postmodernism aimed to enhance the "baldness" of modernism although it did not appeal to the mass market as the designs were considered elitist, intellectual, and impractical (Brittney, 2021). Many people felt that the designs did not meet their needs, but

rather were intended as status symbols. The clean, sleek aesthetic designs of the modernist era were thought of as cold and sterile (Artincontext, 2022; Brittney, 2021).

*Groups of designers believed that exuberant design that inspired the imagination were more suitable for an age when music and fashion moved away from traditional habits. They thought that designs needed to change to elicit feeling; thus, instead of adopting the mantra "form follows function", this movement selected "form follows emotions". Postmodern designs mixed texture, colour, and pattern to create a rich visual environment that stimulates emotions as a "visual feast" for the user, as shown in*

Figure 26 (Artincontext, 2022; Brittney, 2021).

*Figure 26: Colourful, cheerful, bright chair inspired by the Postmodernism movement, Robert Venturi, Denise*



*Scott Brown, Queen Anne Side Chair  
Source: (Howarth, 2015b)*

#### 1.1.33.18. Memphis (1981 – 1988)

The Memphis movement consisted of groups of designers inspired by the patterns of the earth. This was considered a branch of post-modernism with brighter and more colourful designs (Sisson, 2017).

Designers created shocking bold, colourful and bright designs that spread widely. These products were not tested for market acceptance and so disappeared immediately as they were not well received due to their odd and inconsistent style, as shown in Figure 52. Most of the designs were influenced by the cracked lines of the earth that occur due to droughts or volcanoes (Anastassakis et al., 2016; Feroletto, 2010). The designs had a string of vitality, but were considered a fad by the public, which posed an obstacle to its sustainability (Feroletto, 2010).



*Figure 52: A colourful, bright Memphis design inspired by cracks in the ground  
Source: (Howarth, 2015a)*

#### 1.1.33.19. Synthesis of the Global Crafts and Industry Design Movements

The crafts and furniture industry have developed and been affected by arts and design movements over the ages. When a design movement emerges, it affects all aspects of art - including the crafts and furniture industry - and leaves a remarkable imprint on the industry.

Crafts have developed from handicrafts to a machine-based industry to mass-produced products. Some of these design movements were accepted by the market and appealed to customers, while others appeared suddenly, only to disappear just as quickly. The success or failure of any design movement to gain public attraction is always attached to economic, social, or political circumstances and pave the way for public acceptance or rejection. Some factors emerge on how a design movement can develop products to succeed in the market:

- Gradual change by influencing people's thoughts towards the design and then introducing designs to the market;
- To meet the needs of the customer, develop designs that reflect the spirit of the age and are attractive and practical;
- Include customers in the design process by considering their opinions in the design; in addition, give them the opportunity to install products on their own, as greater customer participation suggests more interest in preserving the products encouraging greater attachment to the products
- Targeting the middle classes, because they encompass a broad societal base, also encouraging both the social and richer classes to acquire them.

Figure to 55 summarize the different design movements and their characteristics, while Table 16 summarizes the movement's acceptance or rejection drives of the crafts and furniture market.

## DESIGN PERIODS AND CRAFT MAKING

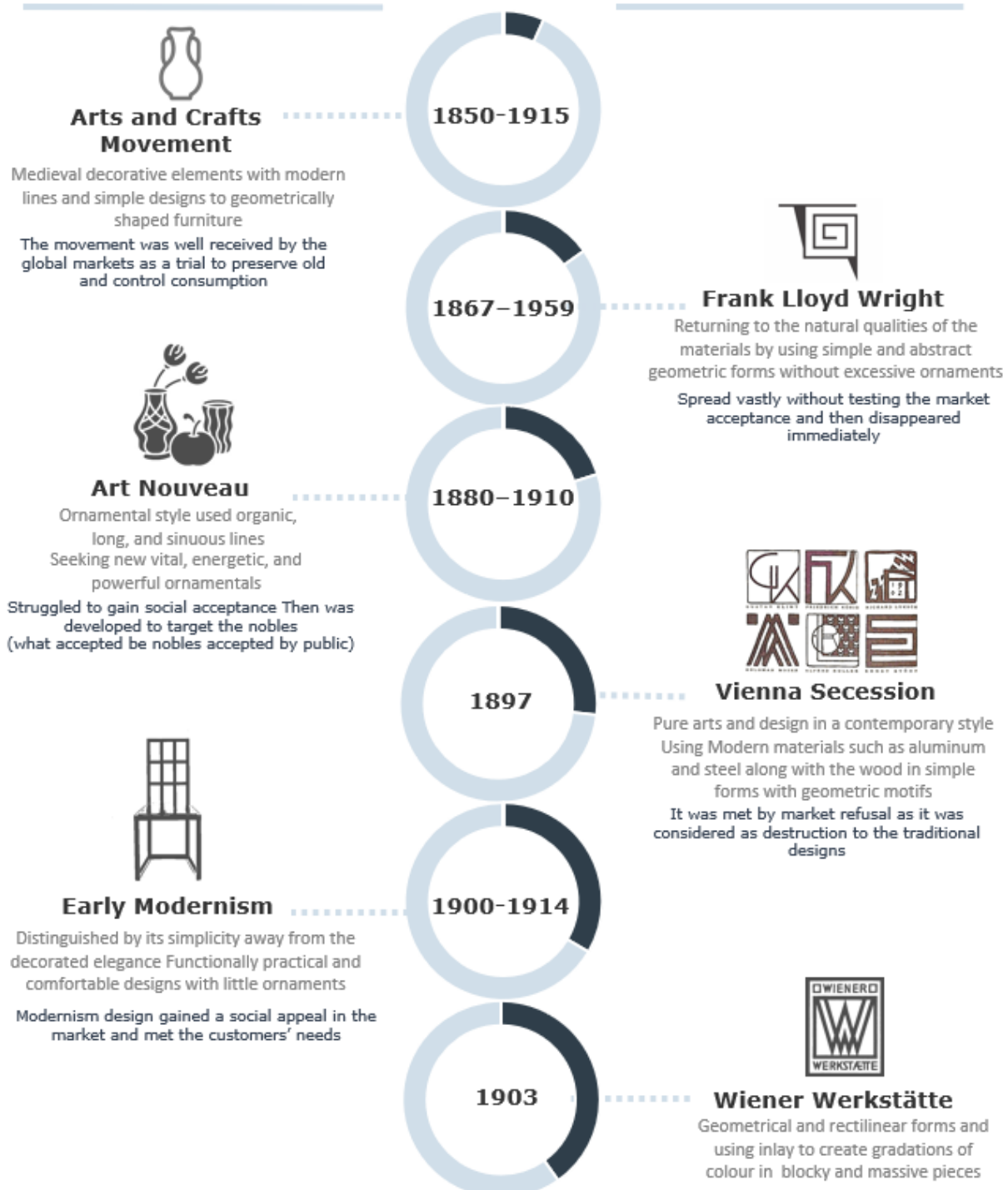


Figure 53: Design periods from 1850 to 1903

# DESIGN PERIODS AND CRAFT MAKING

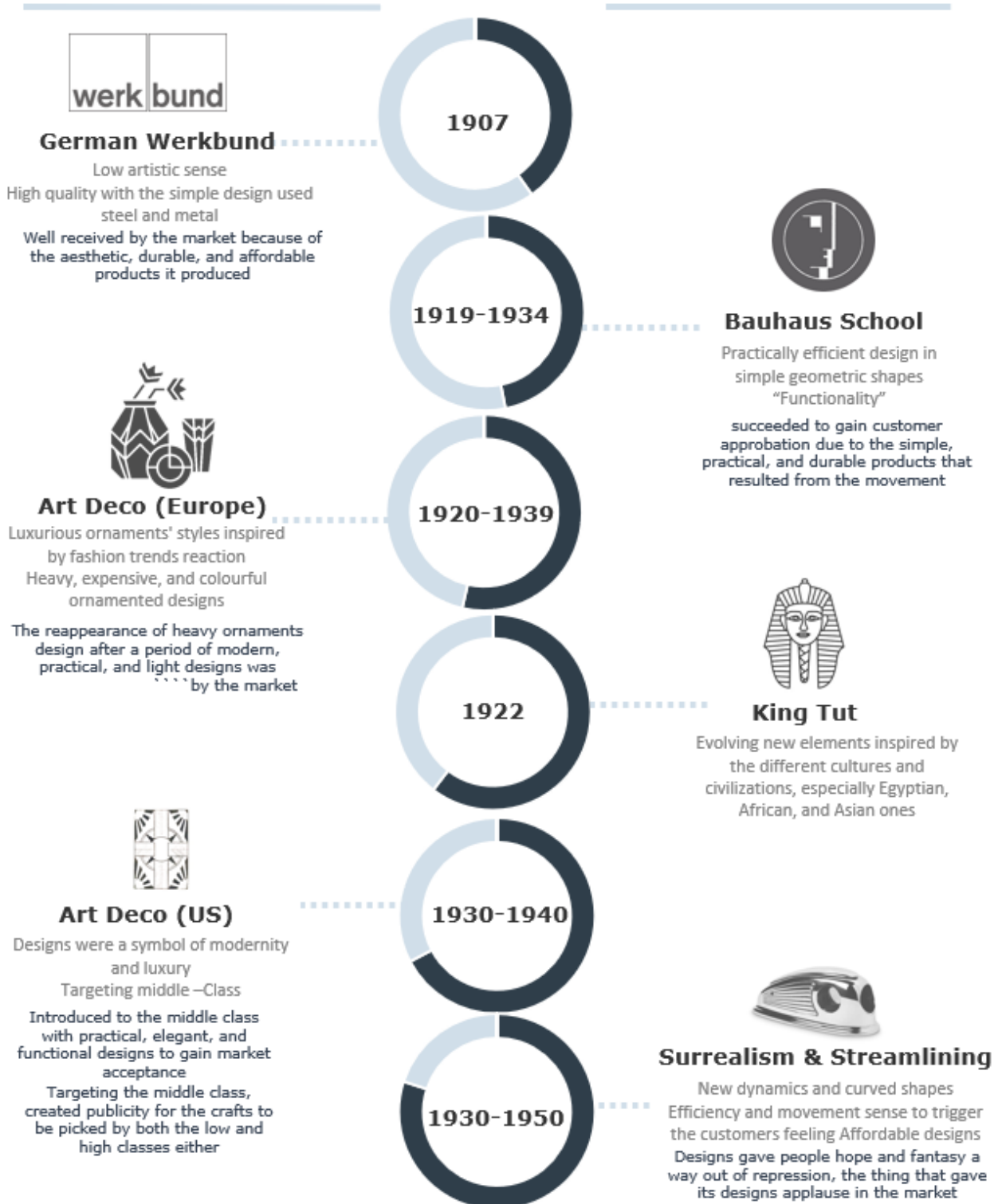


Figure 27: Design periods from 1907 to 1930



# DESIGN PERIODS AND CRAFT MAKING

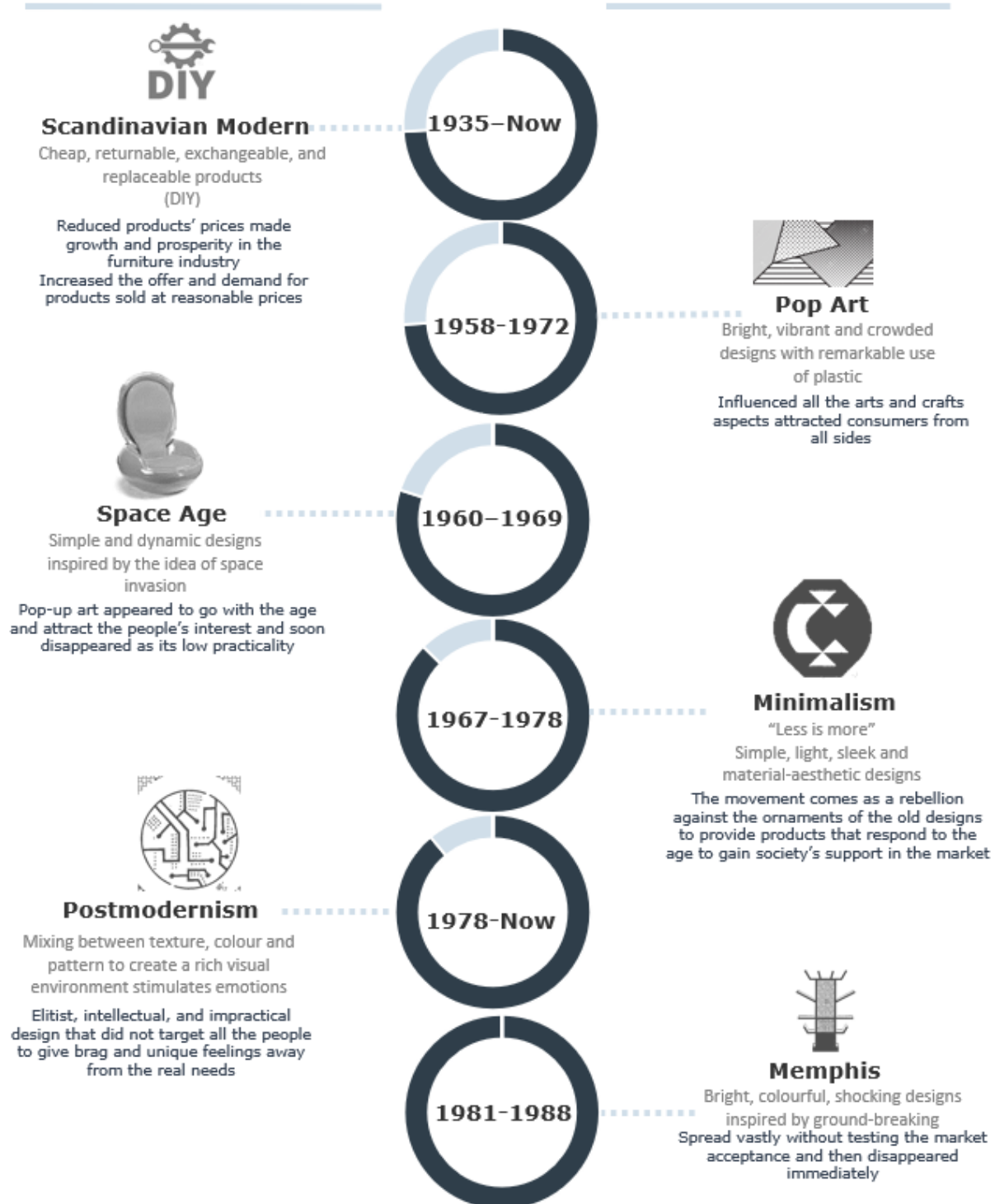


Figure 55: Design periods from 1935 to date



Table 16: Summary of movements' acceptance or rejection of the crafts and furniture market.

Design Movement	Arts and Crafts Movement	Frank Lloyd Wright	Art Nouveau	Vienna Secession	Early Modernism	Wiener Werkstätte	German Werkbund	Bauhaus School	Art Deco (Europe)
<b>Era</b>	1850-1915	1867–1959	1880–1910	1897	1900-1914	1903	1907	1919-1934	1920-1939
<b>Characteristics</b>	<ul style="list-style-type: none"> <li>• Medieval decorative elements</li> <li>• Modern lines and simple designs</li> <li>• Geometrically shaped furniture</li> </ul>	<ul style="list-style-type: none"> <li>• Returned to the natural qualities of materials</li> <li>• Used simple and abstract geometric forms</li> <li>• No excessive ornamentation</li> </ul>	<ul style="list-style-type: none"> <li>• Sought new vital, energetic, &amp; powerful ornamental design</li> <li>• Ornamental style used organic, long, and sinuous lines</li> </ul>	<ul style="list-style-type: none"> <li>• Pure arts and design in a contemporary style</li> <li>• Using Modern materials such as aluminum and steel along with wood in simple forms with geometric motifs</li> </ul>	<ul style="list-style-type: none"> <li>• Distinguished by its simplicity distinct from the decorated elegance</li> <li>• Functionally practical and comfortable designs with little ornaments</li> </ul>	<ul style="list-style-type: none"> <li>• Geometrical and rectilinear forms and using inlay to create gradations of colour in blocky and massive pieces</li> </ul>	<ul style="list-style-type: none"> <li>• Low artistic sense</li> <li>• High quality with the simple design used steel and metal</li> </ul>	<ul style="list-style-type: none"> <li>• Practically efficient design in simple geometric shapes</li> <li>• “Functionality”</li> </ul>	<ul style="list-style-type: none"> <li>• Luxurious ornaments' styles inspired by fashion trends</li> <li>• Heavy, expensive, and colourful ornamented designs</li> </ul>
<b>Market Acceptance</b>	●	●	○	○	●		●	●	○
<b>Drivers</b>	The movement was well received by the global markets and sought better quality	Gained the appeal of the community and the market as part of the arts and crafts movements which already targeted people's exact needs with high-quality products	Struggled to gain social acceptance then was developed to target the nobility with the belief that products accepted by nobles would be accepted by public	It was met by market refusal as it was considered as sudden destruction to the traditional designs	Modernism design gained social appeal in the market as it met the customers' needs in practical designs		Well received by the market because of the aesthetic, durable, and affordable products it produced	Succeeded to gain customer approbation due to the simple, practical, and durable products that resulted from the movement	The reappearance of heavy ornaments design after a period of modern, practical, and light designs was not accepted widely by the market



Design Movement	King Tut	Art Deco (US)	Surrealism & streamlining	Scandinavian Modern	Pop Art	Space Age	Minimalism	Postmodernism	Memphis
Era	1922	1930-1940	1930-1950	1935–Now	1958-1972	1960–1969	1967-1978	1978-Now	1981-1988
Characteristics	Evolved new elements inspired by different cultures and civilizations, especially those of Egypt, Africa, and Asia	Designs were a symbol of modernity and luxury. Introduced to the middle class with practical, elegant, and functional designs to gain market acceptance	New dynamics and curved shapes. Efficiency and movement to elicit customer feelings. Affordable designs	Cheap, returnable, exchangeable, and replaceable products (DIY)	Bright, vibrant, and crowded designs with remarkable use of plastic	Simple and dynamic designs inspired by the idea of space invasion	“Less is more” Simple, light, sleek, and material-aesthetic designs	Mixing between texture, colour and pattern to create a rich visual environment stimulates emotions	Bright, colourful, shocking designs inspired by ground-breaking
Market Acceptance		●	●	●	●	○	●	○	○
Drivers		Targeted the middle class, created publicity for crafts, and selected by both the social and high classes	Targeted people's feelings and provided designs that appealed to customer's emotional needs. participated in the success of the products in the market	Reduced product prices and enabled growth and prosperity in the furniture industry Increased the offer and demand for products that were sold at reasonable prices	Influenced all aspects of arts and crafts and attracted consumers from all sides as it was inspired by the spirit of the age	Pop-up art appeared to reflect the interests of the age and attracted people's interest and soon disappeared due to its limited practicality	The movement comes as a rebellion against the ornaments of the old designs to provide products that respond to the age to gain society's support in the market	Elitist, intellectual, and impractical designs that did not target all the people gave brag and unique feelings away from the real needs	Spread vastly without testing the market acceptance and then disappeared immediately

### **1.1.34. Investigating Global and Local Market Approaches through Partnerships**

#### **1.1.34.1. Global Partnerships: UK Crafts Council and The New Craftsmen**

Add information from the visit to London and meeting with Crafts Council

Reflections of the UK context as a representative of the global market, on the local context of Damietta.... The team has met with the (affiliations)... to discuss possible overlaps and how to address gap within

In order to investigate how to integrate Damietta's local crafts and products with the global market, it was important to observe existing successful practices undertaken by the crafts council as well as private agencies in the UK ..... The New Craftsmen –

#### **1.1.34.2. Local Partnerships: Egyptian Furniture Councils and Industry Leaders in Damietta**

1-2 paragraphs ... the rest in appendix.

#### **1.1.34.3. Local Partnerships: Investigating Educational Links with Industry Horus...**

### **1.1.35. Successful Shift from Traditional to Digitised Crafts: The example of the Orkney Chair**

Many craft industries across the world have been affected by the change associated with industrialization, digitalization, and globalization. Although change is essential for development and growth, it has been thought that globalization would remove local cultural identity, and that industrialization would kill traditional crafts and blur its identity (Twigger Holroyd et al., 2017).

While preserving traditional crafts and preserving them against change, there has been a struggle to find mass-produced alternatives that are distinguishable by their affordability and efficiency. Modernism and the instinct for development can evoke the sense that traditional arts and craft look unappealing, old-fashioned, and are incompatible with the requirements of the age (Twigger Holroyd et al., 2017).

The traditional craft industry needs revitalization to develop and sustain its position in the market. The term revitalization refers to any initiatives that aim to reinvigorate traditional arts and crafts and help them to develop sensitively so as not to lose their identity but enable greater compatibility with the age. In this section, four case studies will be illustrated to study the revitalization that they have experienced (Hamstech, 2018).

#### **1.1.35.1. Orkney Chair, Scotland as a Traditional Handicraft**

The Orkney Chair of the Orkney Islands in Scotland is a key case study on the revitalization of the art craft industry. While many straw crafts have disappeared and been replaced by modern industrialization and digitalization, the Orkney chair represents traditional furniture that

is still in production. However, mass-produced alternatives threaten its position in the markets like any other traditional design; thus, it represents one of the products and practices that face challenges from modernization, industrialization, and globalization (Twigger Holroyd et al., 2017).

The Orkney chair is simple and functional. It is manufactured from driftwood that is found floating on the shoreline of the island and is used as an alternative source of wood. This is a necessary adaptation due to the island's lack of natural wood sources. Thus, while the chair body is made of straw, the four legs are built of wood (Fraser Anderson, 2018).

Although the Orkney chair was designed in different sizes and shapes according to preference, a common set of preferences was found in most designs. These characteristics involve the drawers under the chair (typically used for the storage of books and magazines), the low height of the chair, the high round back, and limited ornamentation (**Error! Reference source not found.**) (Carruthers, 2009; Fraser Anderson, 2018).



*Figure 56: The traditional Orkney chair*  
Source: (Lewis, 2022)

#### 1.1.35.2. The Role of Design in Protecting the Orkney chair from Extinction

In 2012, the furniture designer Gareth Nail and traditional Orkney chair maker Kevin Gauld launched an interesting initiative to develop the chair. They worked together to develop its traditional style and produce designs that reflected the traditional aesthetic of the Orkney chair in a compatible modern design (Holroyd et al., 2017).

They mixed the Oaken Windsor and Orkney chair to develop a new contemporary design that preserved the Orkney tradition in a modern-functional product. The Windsor chair is characterized by its seat which is made from one piece of wood that cradles the sitter with spindles that are carved, later turned, and fixed through the seat and into the crest rail (**Error! Reference source not found.**). The Oaken Windsor chair's legs splay outward and are separated from the seatback (Segal, 2019). The new design combined the straw back and drawers underneath from the traditional Orkney chair and the legs of the Oaken Windsor chair. This design was called the Brodgar Chair (**Error! Reference source not found.**). The designs gained the community appeal to be sold and displayed internationally. The chair was acquired by the Victoria and Albert Museum (Lewis, 2022) in London to be permanently displayed



beside the traditional Orkney chairs as a successful example of traditional industry revitalization (Lewis, 2022; The New Craftsmen, 2022; Twigger Holroyd et al., 2017)



*Figure 28: Windsor Chair*  
*Source: (Lewis, 2022)*



*Figure 58: The Brodgar Chair*  
*Source: (Davidson & Biddle, 2020)*

The new designs were also developed into a collection of furniture pieces (Figure ) called the Brodgar collection, which included:

- Brodgar Occasional Chair (With Drawer)
- Brodgar Side Table (With Drawer)
- Brodgar Occasional Chair (Without Drawer)
- Brodgar Lounge Chair (Without Drawer)
- Brodgar Dining Chair (Without Drawer)
- Brodgar Side Table (Without Drawer)
- Brodgar Straw Back Bench (With Drawers)
- Brodgar Straw Back Bench (Without Drawers)
- Brodgar Lounge Chair (With Drawer)
- Brodgar Dining Chair (With Drawer) (The New Craftsmen, 2022).

The cooperation between Gareth Nail and Kevin Gauld was sponsored by the New Craftsmen Galley in London who sell the designs. This gallery promotes contemporary craft design based on traditional craftsmanship. The gallery seeks to support inherited British crafts through

developing the aesthetic traditional shape of a product and promoting it digitally in the market (The New Craftsmen, 2019).



*Figure 59: The Brodgar collection inspired by the traditional Orkney chair  
Source: (The New Craftsmen, 2022)*

The New Craftsmen depends on a digital platform (using their website <https://www.thenewcraftsmen.com/catalogsearch/result/?q=BRODGAR>) to commercialize and sell the collection. They use an attractive and interactive design to represent and sell the collection by displaying interactive photos of the pieces of furniture, providing the price and the estimated date for delivery (The New Craftsmen, 2022).

Traditional craft and design face many challenges over all the world due to industrialization, modernization, and globalization. The fear of losing their cultural identity prompts many traditional crafts practitioners to preserve the old and refuse change. However, a lack of compatibility with the requirements of the age exposes their existence to extinction (The New Craftsmen, 2022; Holroyd et al., 2017). The crafts which have been developed could force traditional practices and products to become static by leaving them to become "a hollow sense of history" without any contemporary meaning (Holroyd et al., 2017). Many interventions have been made to revitalize traditional craft designs, products, and practices with the intention of preserving the authenticity of the product and developing it to meet the needs of current customers in the current global market. These revitalization initiatives aim to develop traditional crafts in a modernized and digitalized way by preserving their cultural value, protecting them from extinction (Holroyd et al., 2017).

### 1.1.35.3. Conclusion

The case study showed how designers could play a key role in helping traditional crafts to survive while preserving them from the threat of mass production and loss of cultural identity. Two designers, Gareth Neal and Kevin Gauld under the sponsorship of the New Craftsmen gallery developed a distinctive design from the Orkney chair with modern features which were

compatible with current global taste (The New Craftsmen, 2022; Holroyd et al., 2017). The new design received support from distinguished museums such as the V&A in London which placed it on display to the public. At the same time, The New Craftsmen gallery offers and sells the new Orkney furniture collection on its digital platform in order to reach as many customers as possible. This initiative helped to sustain the Orkney chair in the current age by blending traditional taste and modern sense. This case study highlighted the importance of interventions which develop traditional crafts and indicated that a lack of such interventions could be more harmful to sustainability than radical change (Holroyd et al., 2017).

## Role of Education in Maintaining, Protecting and Promoting Crafts Industries

### 1.1.36. CRAFT Questionnaire

The project aims to determine how the values and motivations of workers and enterprises in Damietta, represented in two prevalent trends (traditional craft vs digitized mass-production), inform possible future directions for contemporary and sustainable industrial development. These future directions need to build on the uniqueness and strength of the city's social capital networks and preserve its traditional craft. This online survey is part of the AHRC-funded "Climate Research for Furniture-making (CRAFT)" project that aims to map the preferences of design-oriented professionals and students on contemporary furniture. These intend to jointly design and produce work by local designers in the renowned local furniture hub in Damietta in Egypt, and the Royal Danish Academy of Fine Arts in Copenhagen.

This part of the project measures the compatibility of Damietta's furniture with a global test that considers design, manufacture, and functionality. Damietta's furniture-making has a significant economic value to the Egyptian economy, and is taking steps to expand the export of furniture abroad. As a result, this survey targets UK furniture makers, designers, academics, and students in the field of design to gather their opinions about these furniture pieces and determine the possibility of exporting them.

The survey displays images of distinct pieces of furniture to participants through a web link in order to gather their preferences and determine the extent to which participants appraise certain styles or design values. This weblink was developed using Microsoft Forms, made available by the University of Salford.

The survey aimed to determine the degree of acceptance of some modified typologies of Damietta's heritage furniture for an international design-oriented audience (and market). It used a Likert scale rating from 1 to 5, whereby 1 denotes least preferred and 5 means most preferred. It displayed 17 stools which were developed by 24 individuals, 17 were Danish students and 7 were Egyptian students and designers. The design of these stools were inspired by Damietta furniture heritage styles and produced with modern materials and tools. The stools embraced the spirit of iconic Danish designers who were deeply influenced by ancient Egyptian design, creating world-famous pieces such as the Egyptian Chair. The designs were made by Danish students from the Design Department of the Danish Royal Academy. The students made the designs after having attended a workshop on ancient Egyptian furniture design conducted in Copenhagen by Mr. Amr Orensa, Design & Marketing Manager at Pinocchio wooden products. The prototypes were manufactured by Pinocchio in Damietta during a five-day workshop from November 26 – 30 and were taken to Cairo in the early morning of December 2 to be exhibited at the New Museum of Egyptian Civilisation. Photographs of the stools were captured and published with the consent of The Danish Egyptian Dialogue Initiative (DEDI) and PINOCCHIO Furniture, Egypt. A copy of the survey is attached in Appendix 1.

### Respondents' Background and Ethnicity

Due to the limited time available for the project, the survey was published on the Internet for four weeks to collect at least 150 responses from students or workers in the furniture-making

industry or field of design. Respondent roles ranged from students to professional designers. The survey was disseminated through the University of Salford's social media channel (Yammer), public social media (LinkedIn and Facebook), and via email invitation. It was published on social media groups that host UK furniture makers and designers, and students and academics from UK arts and design universities. The calculated actual average time to complete the survey was 7 minutes, 11 second. A total of 160 survey responses were collected, which achieved the intended participation record. Moreover, 158 of these participants accepted the terms and conditions, and elected to complete the survey. This represents a 98.75% completion ratio; only 2 individuals (1.25%) did not wish to proceed, as shown in Figure . The survey participants ranged between students, academic researchers, designers, workers in furniture industries, and others as shown in Figure . The participants were as follows: 39 academics and researchers (24.38%), 39 designers (24.38%), 38 students (22.50%), 27 workers from the furniture industry (16.88%), and 19 others (11.88%).

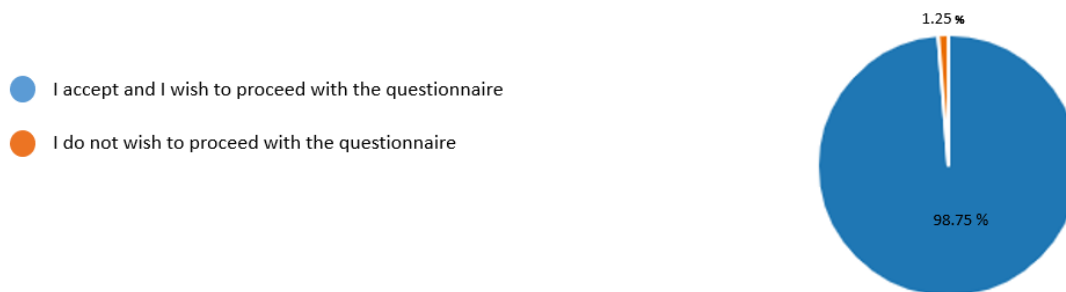


Figure 60: Participation rate in the online survey



Figure 61: Working professions of participants

Regarding ethnicity, 51.90% of the participants were diverse selecting Asian or British Asian, Black, Black British, Caribbean or African, Mixed or multiple ethnic groups, and White. While other ethnic groups, such as Arab, represented 48.10%. Overall, 8.23% of the participants selected White (English, Welsh, Scottish, Northern Irish or British/Irish/Gypsy or Irish Traveller/Roma/Any other White background) and 10.76% chose Black, Black British, Caribbean, or African (Caribbean/African/Any other Black, Black British, or Caribbean background). In addition, 5.70% indicated Mixed or multiple ethnic groups (White and Black Caribbean/White and Black African/White and Asian/Any other Mixed or multiple ethnic backgrounds) backgrounds. Figure shows the diversity and percentage of ethnic groups amongst the survey participants.



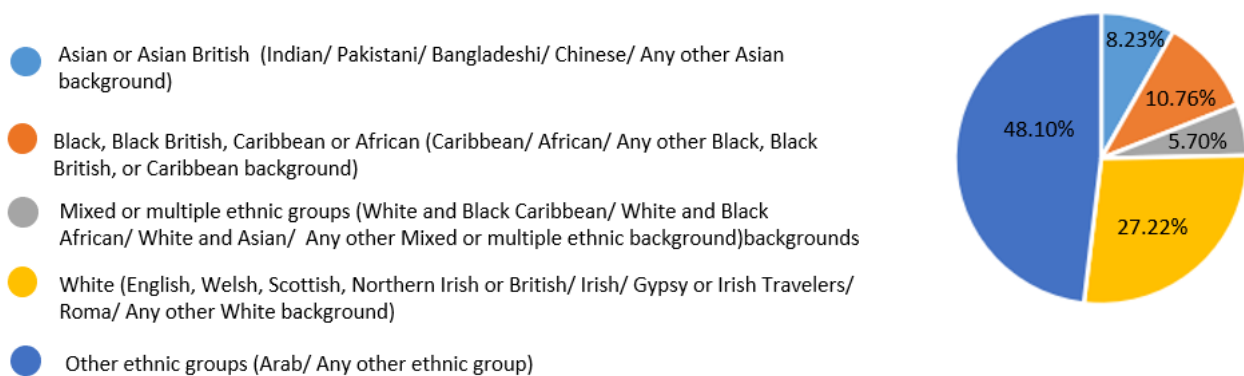


Figure 62: Ethnicity group of participants

## Survey Data Analysis

The statistics were gathered and analysed using Microsoft Excel, and SPSS. Descriptive analysis was used as the analytical method for studying the survey data. The stools received preference rates ranging between 2.53 and 4. The highest-rated was Stool\_05 that was developed by an Egyptian student, Ahmed Hussien, followed by Stool\_13, that was developed by another Egyptian student, Nadeen Kahiry. Also, Stools\_14 and 15, which were developed by the professional designer Amr Oransa received high approbation values of 3.83, and 3.80, respectively. Moreover, Stool\_09 that was developed by two Danish students, Karl Christian and Emma Khan, also had a high approval rate of 3.91. Figure 63 represents the preference rates of the chairs.

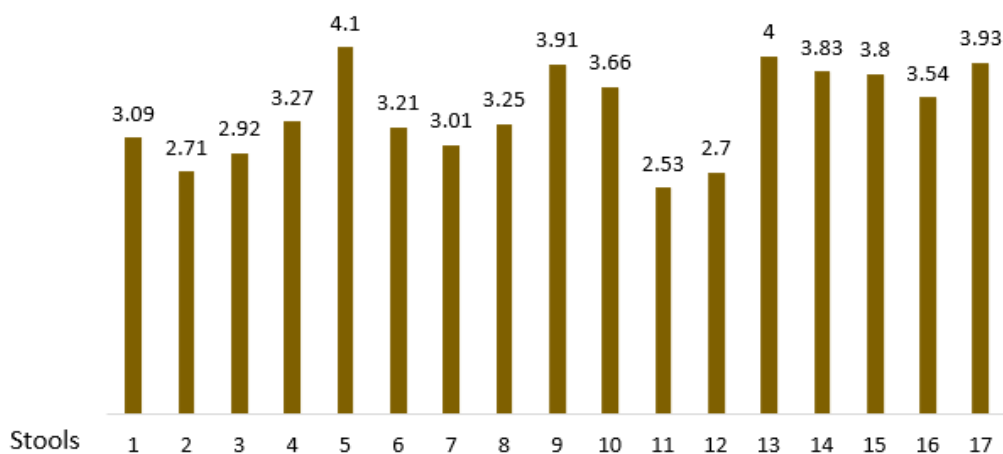


Figure 63: Stools preferences rate according to the survey's respondents

From the preference and profession data shown in Table 1, respondents' preferences varied significantly from one group to another. According to the working professions, the researcher and academic groups showed the highest preference percentage for the stools with an average value of 3.54. Compared with other professions groups, workers in the furniture industries rated the stools with the lowest values reaching an average rating of 3.43. The designers also gave a higher rate at 3.46, while students gave a 3.52 rating. The participants

who worked in other professions and represented the public also gave the same rating as workers in the furniture industry (3.43).

According to ethnicity group, stools were generally rated above 3 with the average scale ranging between 3.38 to 3.60. The Black, Black British, Caribbean or African ethnic group (involving Caribbeans, Africans, and any other Black, Black British, or Caribbean background), gave the stools the highest rate overall at 3.60. This contrasts with 'Any Other Ethnic group' which involved mainly Arabs and people from the Middle East who gave the stools an average rate of 4.38. Also, the chairs received approval from the Mixed or Multiple Ethnic, Asian and Asian British, and White groups with preferences rated 3.53, 3.49, and 3.40 respectively. Some stools were highly rated according to the ethnic and professional analysis, namely: Stool 05 (designed by Ahmed Hussein), Stool 09 (Karl Christian and Emma Khan), Stool 13 (Nadeen Khairy), Stools 14 and 15 (Amr Oransa), Stool 16 (Zahraa Alshafeei), and Stool 17 (Morph Studioi).

Some respondents offered comments on the stools; some of these were encouraging and expressed an intention to purchase if they were affordable. They liked the stools because they were lightweight, practical, innovative, and had a strong sense of materiality and workmanship. Some of the comments also referred to potential bias as the photographs did not have the same position, lighting, and context. Thus, they suggested editing the photos to ensure the same in the properties. In addition, most of the participants explained that they rated the stools based on the extent to which they would be considered comfortable and could be used in their homes; these qualities were prioritised over the beauty of the designs.

However, some of the comments were based on ideas for improvement and enhancement. The participants added a list of advice for improving the designs of stools. These comments are represented as follows:

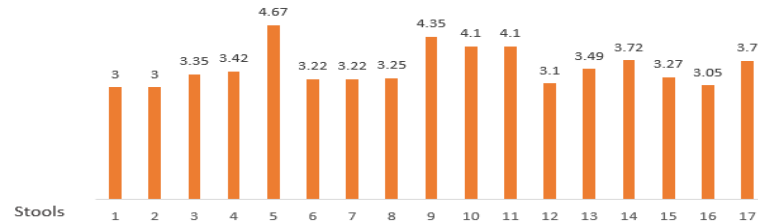
- Redesigning the stools to ensure sufficient height so that legs are not folded up and can move around freely;
- The possibility of adding a bar underneath to rest the legs on;
- Stools need more depth in order to relax and sit comfortably;
- Stools should be exhibited in a real exhibition for a more realistic experience and reliable rating;
- More descriptions and dimensions should be included with the images of each stool to make it easier to understand the dimensions.



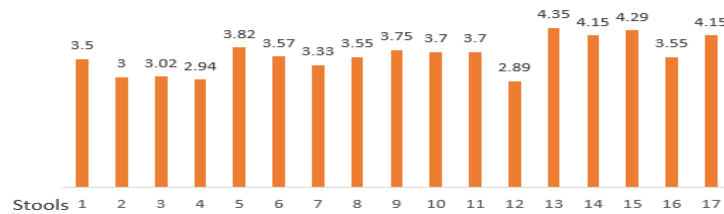
Table 17: Survey statistics according to ethnicity and profession

## Ethnicity and Stool Preference

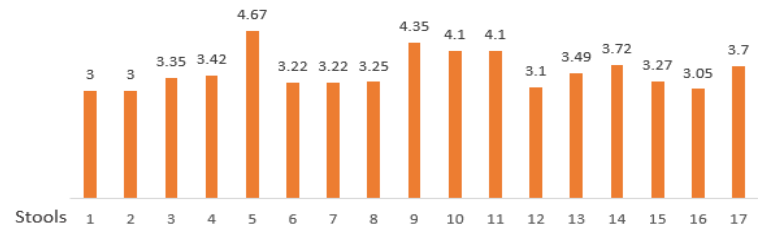
### Asian or Asian British



### Black, Black British, Caribbean, or African

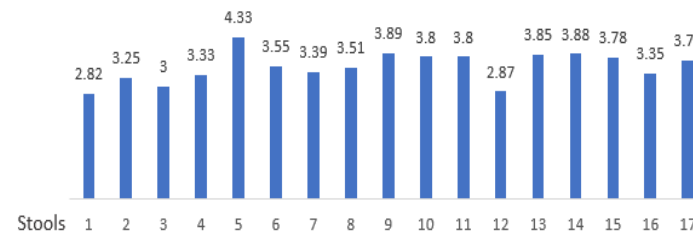


### Mixed or multiple ethnic groups

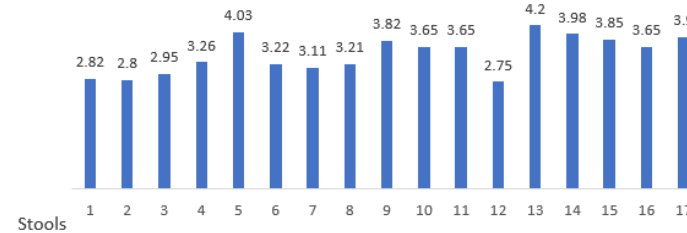


## Profession and Stool Preference

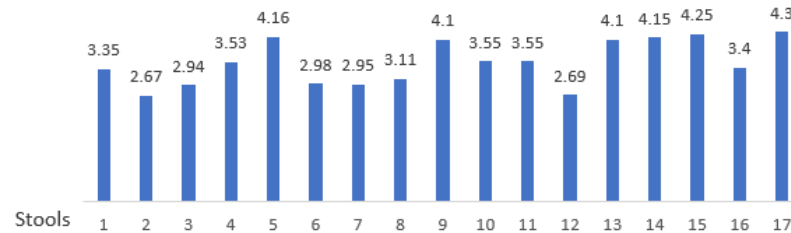
### Researcher/Academic



### Designer



### Student



## Statistics

### Asian or Asian British:

Min. 2.83

Max. 4.11

Average 3.49

### Researcher/Academic:

Min. 2.82

Max. 4.33

Average 3.54

### Black, Black British, Caribbean or African:

Min. 2.89

Max. 4.35

Average 3.60

### Designer:

Min. 2.75

Max. 4.20

Average 3.46

### Mixed or multiple ethnic groups:

Min. 3.00

Max. 4.67

Average 3.53

### Student:

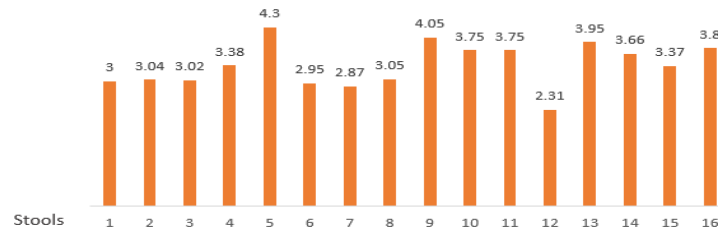
Min. 2.67

Max. 4.30

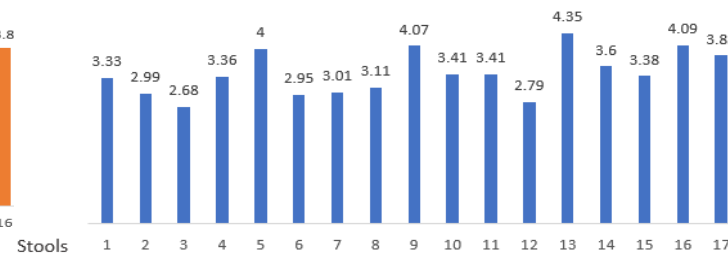
Average 3.52



## White



## Working in Furniture Industry



### White:

Min. 2.31

Max. 4.30

Average 3.40

### Working in Furniture

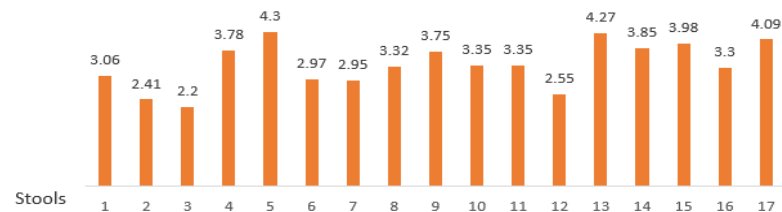
Industry:

Min. 2.68

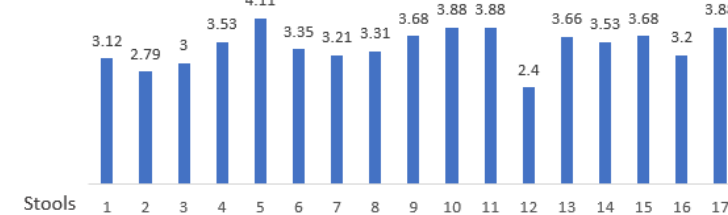
Max. 4.35

Average 3.43

## Other ethnic groups



## Others



### Other Ethnic Groups:

Min. 2.20

Max. 4.30

Average 3.38

### Others:

Min. 2.4

Max. 4.11

Average 3.43

## Survey Discussion

This survey was conducted as part of a project to test the extent to which pieces of furniture that are inspired by Damietta's designs and manufactured with modern tools, can be part of the global furniture market. By examining the preference rates according to professional groups, academics/researchers and designers see potential in the displayed photos as indicated by the higher ratings they gave (3.54 and 3.52 respectively). This contrasted with those working in the furniture industry whose rate (at 3.43). Although variances between the lowest and the highest percentages seem minimal, the small rating scale (out of 5) means every percentage is significant. However, all average ratings were higher than 3, which reflects significant approbation from all professions and suggests the potential for such items in the UK and global markets.

The stools were highly rated by many ethnic groups, especially Black and Black British which contrasts with those from the Arabs and Middle East groups. On average, all other groups rated the stool at 3.40, which indicates the potential for such furniture pieces in international markets, with the possible exception of the local Arab market that may not select less traditional designs. Furthermore, a desire amongst Westerners to experience new styles of furniture could be a key motive to choose these new styles. Overall, whether based on ethnicity or profession, most of the displayed stools had a high average rate of over 3. Indeed, the potential for Damietta's furniture is its functional development to meet the needs of a global market.

Most of the high-rated stools were developed by Egyptian students and designers, which suggests that a combination of Egyptian spirit and modernized form could play a vital role in developing Damietta's furniture globally. It is important to note that most of the stools were non-professional and student work. Thus, it is interesting to consider the rating a professional design might receive if a student's work can gain such approval.

In conclusion, Damietta's furniture has the potential to compete in the global market as they provide new and different styles that appeal to Westerners. Researchers, academics, designers, workers and students in the furniture industry can encourage the development of new furniture styles, enabling the development of strong competition in the global furniture world. Moreover, style, spirit, and design will not only contribute to the success of a product but also its functionality and practicality. The affordability and production of furniture pieces at reasonable prices are one of the most important aspects that should be considered because regardless of its beauty, if a piece is not within the budget of the customers, it will not be bought. Three keywords behind the success of Damietta's furniture globally are renovation, comfort, and affordability.



## Formulating Strategies for the Future of Damietta's Furniture Industry

### 1.1.37. SWOT Analysis: Synthesising and Unravelling Complexities

The project's data collection methods and literature review investigated the nature of craft in Damietta, the community's relationship with furniture-making as an inseparable part of their livelihoods, and how these relate to the bigger picture of global and regional challenges (climate change vulnerability and global economic pressures on industries).

The next step examines different perspectives in a singular consolidated synthesis that provides an account of the existing scenario in Damietta (traditional furniture-making practices) and prospective scenarios that result from global, regional, and local pressures. These "new scenarios" carry opportunities and threats that affect the sociocultural and economic fabric of Damietta.

To consolidate all investigated standpoints, SWOT and PEST analysis models have been conducted. The SWOT model (Strengths, Weaknesses, Opportunities and Threats) enables the systematic academic analysis of the current context in Damietta. In comparison, the PEST model (Political, Economic, Social and Technological factors) offers a more market-oriented outlook on the landscape of possible scenarios and changes in Damietta in light of the project's investigations. Together the two models offer a single synthesis that provides a comprehensive overview of how the industry and community are currently affected, and how new strategies can arise from ongoing pressures identified in this research. The aim of this synthesis is to outline possible development strategies and approaches to sustainably support local cultural craft patterns, while adapting to new technological developments in the market.

Figure 64 illustrates the synthesis model adopted in this research. This is a cross-examination of multiple factors within the SWOT and PEST models, namely:

1. **Community**
2. **Craft** and production
3. **Market** development
4. **Profitability**
5. Makers' **values**
6. Relationship to **place**

Figure 64: Synthesised SWOT and PEST models **Diagram** – file [here](#).

### 1.1.38. Strategies for A Sustainable Future in Damietta

According to the SWOT and PEST synthesis, recommended strategies for sustainable development can be identified. This would include the adoption of digitised technologies, while considering constraints, limitations and significant values that need to be preserved in the current traditional crafts in Damietta. These can be summarised as:

- The need for a **spectrum of development directions rather than a dichotomy between traditional vs digitised approaches**. This can range from 1. The production of singular pieces that exhibit full traditional skills and crafts (art production), 2. A

limited approach to mass production, where merchandise handcraft is valued for specific clientele, 3. Hybrid digitised production with traditional handcraft finishing which brings a different dimension to final products, and 4. The fully automated mass production of standardised products.

This diversity would drive the following:

- The utilisation of Damietta Furniture City (**DFC**) as a **strong logistic body and facilitation hub**, that primarily connects local enterprises (MSMEs) to the global market.
- **The introduction of (currently lacking) sectors to the industry**, such as marketing agencies that specifically address the introduction and management of high-end products to elite art communities in Egypt and globally (development approach 1 above).
- The empowerment of local industry bodies within Damietta (crafts councils and similar) to:
  - Advocate and **maintain a continuous link between MSMEs and decision-makers**, in order to influence positive **updates to critical laws and regulations, such as taxes and employment laws**. This would enable the development of policies to support and enhance the processes needed to adopt new technologies, and protect local crafts in the city.
  - Advocate to **establish funding strategies and programmes** that ensure an inclusive supported shift to new digitised production for MSMEs in Damietta alongside largescale enterprises.
  - Raise awareness of existing successful pilot examples of digitised production enterprises as positive 'deviants' in the industry in Damietta.
  - Provide **business plan support to MSMEs** to ensure **all price ranges in the market are covered** and accord with the degree of traditional and digitised skills and technologies that fit different enterprises.
- **The establishment of an ongoing link between education providers and industry MSMEs** through intermediary councils. These would be utilised to introduce **new educational requirements and standards** based on the needs of the local and global market.
- The establishment of a **set of central standards of production** which consider the traditional craft of the city and the global requirements for production, whilst also catering for the variety of abovementioned development approaches.



# Appendices

## Appendix 1: Survey

### 1.1.39. Survey Template



## CRAFT Exhibition

Damietta's craft furniture-industry has been a resilient economic cluster since the early 20th century. Its success is based on working Norms and Social Networks characterized by enduring Values of Trust. Classed as a regional and national industrial hub, this is the basis of Damietta's reputation and its strong contribution to Egypt's GDP. This important example of cultural heritage is now at risk from both sea-level rise and current changes in the structure of the Industry.

The project examines how Damietta's practices and livelihoods, and hence its inhabitants, can be protected. Sea-level rise may inundate much of the area and current changes in the structure of the Industry will erode irreplaceable networks that represent important social capital and are vital for the people's survival due to the variety of roles this industry provides.

This questionnaire aims to address the extent to which some pieces of furniture are compatible with a global taste for determining the appropriate typologies that fit with the global market standards and meet the customer's needs and preferences.

This project is funded by Arts and Humanities Research Council (AHRC), Global Challenges Research Fund (GCRF), Department for Digital, Culture, Media and Sport (DCMS), UK. To know more about the project, please visit the following URL <https://gtr.ukri.org/projects?ref=AH%2FV006479%2F1> (<https://gtr.ukri.org/projects?ref=AH%2FV006479%2F1>) - <http://damiettafurniture.net/> (<http://damiettafurniture.net/>).

\* Required

### Terms and Conditions

1

You are invited to participate in this survey and you should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide it is important for you to understand why the research is being done. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

This survey includes displaying some pieces of furniture and presenting them to the participants to collect preferences to determine the extent to which the participants prefer the displayed pieces. That is for studying the extent to which the public taste is compatible with these modern and modified typologies of Damietta heritage furniture.

This questionnaire comes as a part of the CRAFT project that aims to determine how the values and motivations of workers and enterprises in Damietta, as represented in two prevalent trends (traditional craft vs digitized mass-production), inform possible ways forward for contemporary and sustainable industrial development that builds on the uniqueness and strength of the city's social capital networks and preserves the traditional craft.



If you have any queries or if you are unhappy with anything that happens concerning your participation in the study, please contact: Prof. Hisham Elkadi Principal Investigator, School of Built Environment, Salford University (UK). Email: [H.Elkadi@salford.ac.uk](mailto:H.Elkadi@salford.ac.uk) or Dr Ahmed Abdel Rehim, Co-Investigator, Centre for Environment and Development for the Arab Region and Europe (CEDARE-Egypt). Email: [ahrehim@cedare.int](mailto:ahrehim@cedare.int) (<mailto:ahrehim@cedare.int>), and from Lancaster University, prof. Stuart Walker, Email: [s.walker@lancaster.ac.uk](mailto:s.walker@lancaster.ac.uk). It is up to you to decide whether or not to take part. If you do decide to take part, you will be asked to agree to the consent question.

All the data that we collect will be kept strictly confidential. You will not be able to be identified in any ensuing reports or publications and your answer will be identified by anonymous ID. Results will be disseminated in standard academic outlets. Results may also be disseminated via general interest magazines/newspapers/journals. You will not be identifiable in any report or publication.

The data controller for this project will be the University of Salford Manchester. The university protects the data through oversight activities involving the processing of personal data.

This project is funded by Arts and Humanities Research Council (AHRC), Global Challenges Research Fund (GCRF), Department for Digital, Culture, Media and Sport (DCMS), UK. To know more about the project, please visit the following URL <https://gtr.ukri.org/projects?ref=AH%2FV006479%2F1> (<https://gtr.ukri.org/projects?ref=AH%2FV006479%2F1>) and <http://damiettafurniture.net/> (<http://damiettafurniture.net/>)

\*

- ☐ I accept and I wish to proceed with the questionnaire
- ☐ I do not wish to proceed with the questionnaire

**What is your Current Status? \***

- ☐ Student
- ☐ Academic/ researcher
- ☐ Designer
- ☐ Working in Furniture industry
- ☐ Others



## Status and Ethnic Group

3

What is your Ethnic Group? \*

- ☐ Asian or Asian British (Indian/ Pakistani/ Bangladeshi/ Chinese/ Any other Asian background)
- ☐ Black, Black British, Caribbean or African (Caribbean/ African/ Any other Black, Black British, or Caribbean background)
- ☐ Mixed or multiple ethnic groups (White and Black Caribbean/ White and Black African/ White and Asian/ Any other Mixed or multiple ethnic background)backgrounds
- ☐ White (English, Welsh, Scottish, Northern Irish or British/ Irish/ Gypsy or Irish Traveller/ Roma/ Any other White background)
- ☐ Other ethnic groups (Arab/ Any other ethnic group)

4

If your answer to the previous question is "Other ethnic group: Any other ethnic group", please specify it in the text below

Please, express your preference level to the following pieces of furniture (Stools)

Using a scale of 0=Not preferred to 5= highly preferred

5



Stool (02)

Designed by:

- Amalie Leth Hornemann
- Jon Lynge Stubsgaard

Photo by Rawan El Shimi, Courtesy of DED

\*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐



6



**Stool (01)**

**Designed by:**

- Mathilde Juul Ipsen
- Maria Larsdotter Abrahamsson

Photo by Rawan El Shimi, Courtesy of DEDi \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

7



**Stool (03)**

**Designed by:**

- Sara Saur
- Christian Hansen

Photo by Rawan El Shimi, Courtesy of DEDi \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

8



**Stool (04)**

**Designed by:**

- Zhraa Alshafeei

Photo by Rawan El Shimi, Courtesy of DEDi \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

9



**Stool (05)**

**Designed by:**

- Ahmed Hussien

**Photo by Rawan El Shimi, Courtesy of DEDI \***



10



**Stool (06)**

**Designed by:**

- FannynJosephine Jonasdatter Bourghardt
- Alvar Sakari Silvennoinen

**Photo by Rawan El Shimi, Courtesy of DEDI \***



11



**Stool (07)**

**Designed by:**

- Hani Sarwatt

**Photo by Rawan El Shimi, Courtesy of DEDI \***



12



**Stool (08)**

**Designed by:**

- Halfdan Wegge
- Clara Skovlund Friis Jakobsen
- Louise Agth Lindstrøm

Photo by Rawan El Shimi, Courtesy of DEDI \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

13



**Stool (09)**

**Designed by:**

- Karl Christian Tranberg Knudsen
- Emma Khan Forbæk Doolan

Photo by Rawan El Shimi, Courtesy of DEDI \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

14

**Stool (10)**

**Designed by:**

- Mohamed El Haddad

Photo by Rawan El Shimi, Courtesy of DEDI \*



1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

15



#### Stool (11)

**Designed by:**

- Linda Anna Katrine Nyvang Pedersen
- Mathias Madsen

Photo by Rawan El Shimi, Courtesy of DEDI \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

16



#### Stool (12)

**Designed by:**

- Camilla Bols
- Lorentz Jeffrey Houser

Photo by Rawan El Shimi, Courtesy of DEDI \*

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

17

#### Stool (13)

**Designed by:**

- Nadeen Khairy

Photo by Nour ElRefaei, Courtesy of Pinocchio \*



1 2 3 4 5  
☐ ☐ ☐ ☐ ☐



18

**Stool (14)**

**Designed by:**

- Amr Orensa

**Photo by Nour ElRefaei, Courtesy of Pinocchio \***



1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

19

**Stool (15)**

**Designed by:**

- Amr Orensa

**Photo by Nour ElRefaei, Courtesy of Pinocchio \***



1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

20



**Stool (16)**

**Designed by:**

- Zhraa Alshafeei

**Photo by Nour ElRefaei, Courtesy of Pinocchio \***

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐





21



**Stool (17)**

**Designed by:**

- Morph Studioi

**Photo by Nour ElRefaei, Courtesy of Pinocchio \***

1 2 3 4 5  
☐ ☐ ☐ ☐ ☐

22

If you want to add any comments or suggest any ideas about the previously displayed items, please feel free to introduce them in the following answer box

### 1.1.40. Appendix 2: Breakdown of Stool Preferences Ratings

The following section represents the results of the survey regarding participants' preferences for the displayed stools. Each stool will be represented in terms of the designer/s, and their average rate is calculated out of 5. The preferences consider the participant's working profession and their ethnicity. These statistics are assumed to determine the preferences for the displayed pieces in the UK and the global market.

#### 1.1.40.1. Stool 01

The stool was designed by Danish students affiliated with the Royal Danish Academy of Fine Arts in Copenhagen, Mathilde Juul Ipsen, and Maria Larsdotter Abrahamsson. The stool received an average rating of 3.17 as shown in **Error! Reference source not found. a)**. The stool received a 3.35 preference rating from the students, 3.33 from workers in the furniture industry, and 2.82 from academic and researchers, and designers who gave the same rating ratio. Other participants with different careers gave the stool a 3.12 rating (**Error! Reference source not found.5 b)**. From the ethnicity classification, Asian or British Asian gave the stool a 3.10 rating, while Black, Black British, Caribbean or African gave it rating of 3.50. Moreover, Mixed or Multiple Ethnic Groups rated it at 3, White British rated it at 3, while the other ethnic groups rated it at 3.06 (**Error! Reference source not found. c)**.

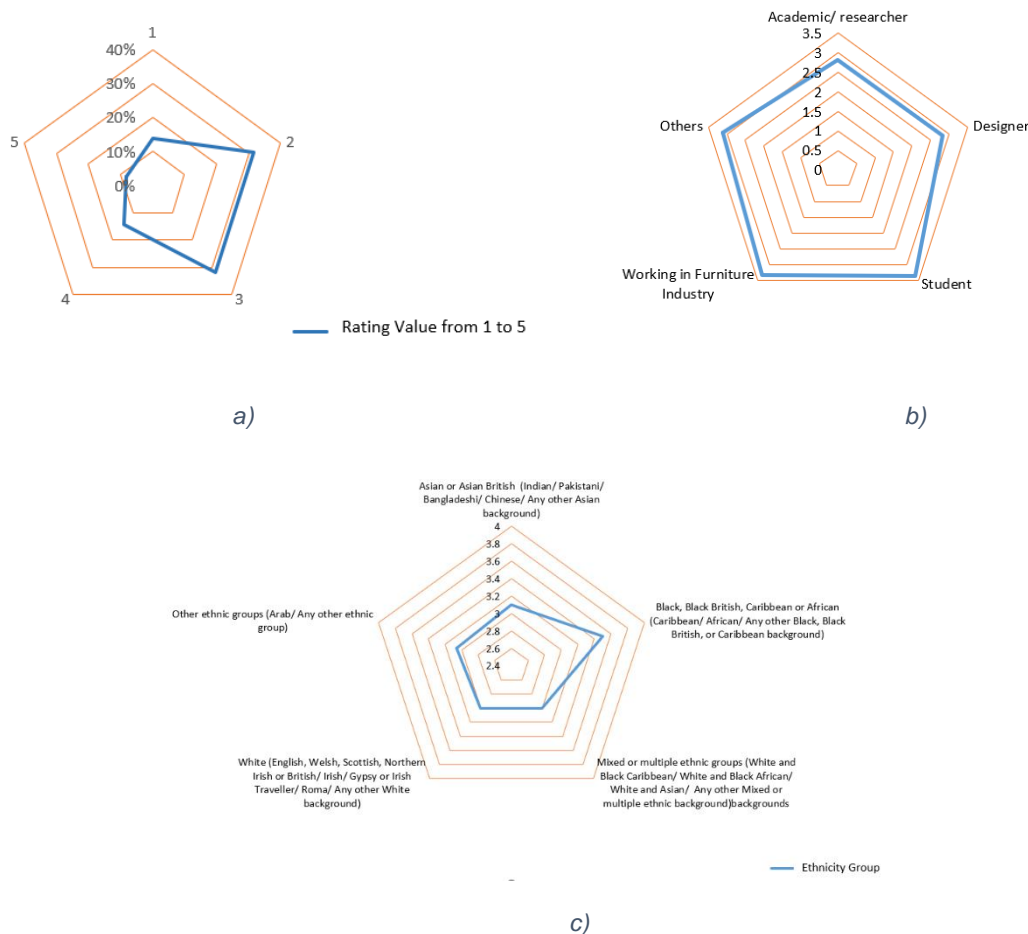


Figure 65: (a) Stool 01 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

### Stool 02

Stool 2 was designed by Danish students affiliated with the Royal Danish Academy of Fine Arts in Copenhagen, namely Amalie Leth Hornemann, and Jon Lynge Stubsgaard. The survey's respondents gave the stool a 2.91 preference rating out of 5 (**Error! Reference source not found. a**). Amongst the participants' professions, academics and researchers gave the stool a 3.25 rating, designers gave it 2.80, students gave it 2.67, people working in the furniture industry gave it 2.99, and the other professions gave it 2.79 (**Error! Reference source not found. b**). The preference rating according to ethnicity were as follows: Asian or Asian British at 3.07, Black, Black British, Caribbean or African at 3, Mixed or multiple ethnic groups at 3, White people at 3.04, and Other ethnic groups at 2.41 (**Error! Reference source not found. c**).

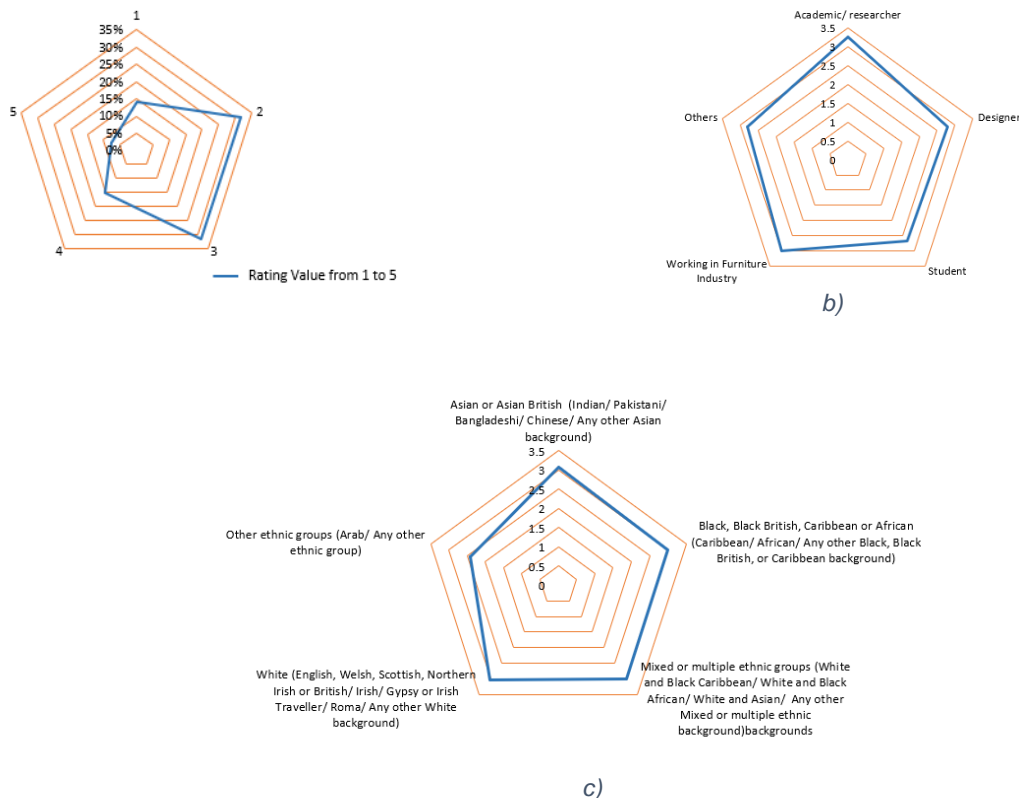


Figure 29: (a) Stool 02 preferences rating, (b) preferences according to profession, (c) preferences according to ethnicity

### 1.1.40.2. Stool 03

The stool was designed by Mathilde Juul Ipsen, and Maria Larsdotter Abrahamsson who are Danish students affiliated with the Royal Danish Academy of Fine Arts in Copenhagen. The stool was made of wood and covered by cloth.

The stool had a 2.92 preference rate from respondents (

a). Academics and researchers rated the stool at 3, designers' at 2.95, students at 2.94, workers in the furniture industry's at 2.68, and other professions rated it at 3 (**Error! Reference source not found. b**). According to ethnicity, Asian or Asian British's rated it at 3, Black, Black British, Caribbean or African's at 3.02, Mixed or multiple ethnic groups' rate at 3.35, White people at 3.02, and Other ethnicities at 2.2 (

c).

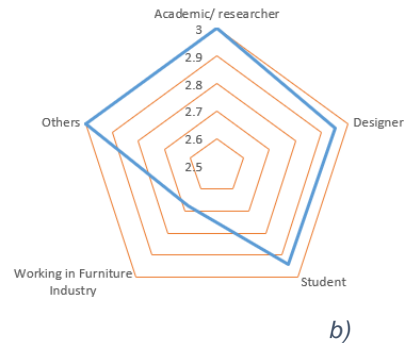
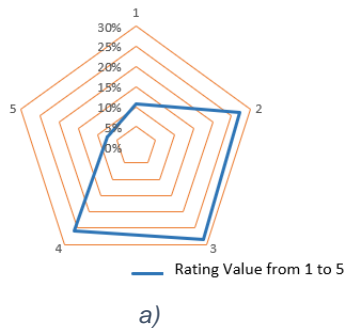


Figure 67: (a) Stool 03 preference ratings, (b) preferences according to profession, (c) preferences according to ethnicity

### 1.1.40.3. Stool 04

This stool had an oval shape and no legs, but stands on a wooden base. It was designed by an Egyptian designer, Zhraa Alshafeei. The chair received a 3.4 preference rate (

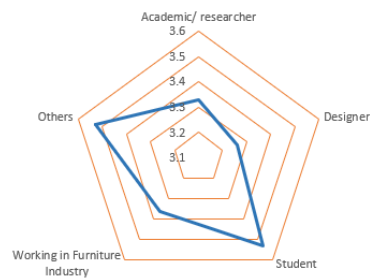
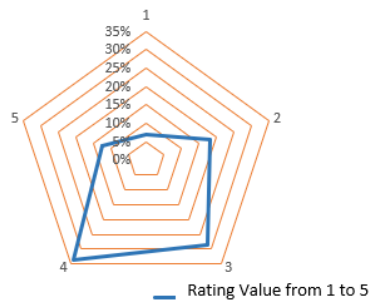
a).

Academics/researchers rated it at 3.33, designers at 3.26, students at 3.53, while workers in furniture industry and others rated it at 3.36, and 3.53 respectively (**Error! Reference source not found.** b). In terms of ethnicity, the participants who selected Asian or Asian British gave the stool a 3.49 rating, Black, Black British, Caribbean or African rated it at 2.94, Mixed or Multiple Ethnic groups rated it at 3.42, White British gave it 3.38, and other ethnic groups 3.78 (

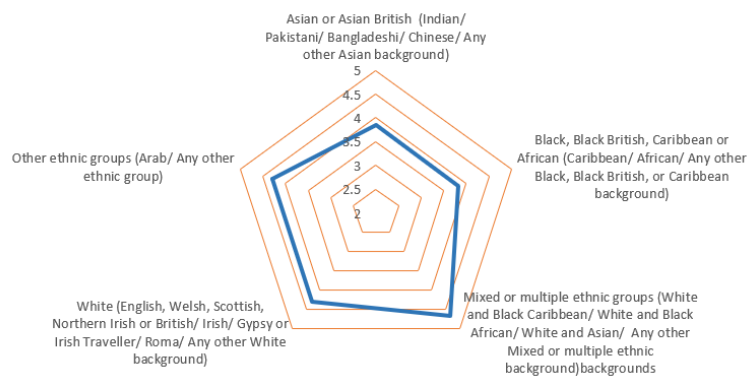
c)

Figure 68: (a) Stool 04 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

).



b)



c)

Figure 68: (a) Stool 04 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.4. Stool 05

The stool was distinguished in its design, with four concentric legs directed to the seat, which is square with a leather cover. The stool was designed by an Egyptian designer, Ahmed Hussien. It was rated 4.12 as the most preferred stool in the survey (

1

). The rates varied according to profession; where academics and researchers rated it at 4.33, designers at 4.03, students and workers in the furniture industry at 4.16 and 4 respectively, and the other professions rated it at 4.11 (**Error! Reference source not found.**). The stool (Figure 69: (a) Stool 05 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

c) was rated from differing ethnic points of view as follows: Asian or Asian British 3.85, Black, Black British, Caribbean or African 3.82, Mixed or multiple ethnic groups 4.67, White British 4.3, and Other 4.3.



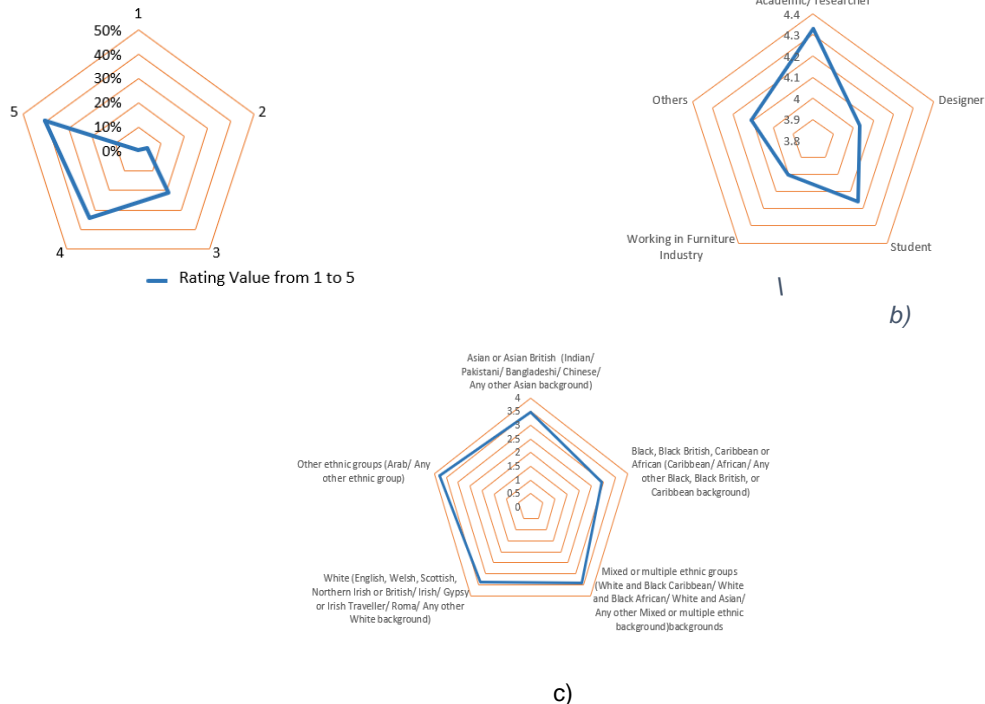


Figure 69: (a) Stool 05 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.5. Stool 06

This stool was different in its style compared to the other stools, Fannyn Josephine Jonasdotter Bourghardt, and Alvar Sakari Silvennoinen designed the chair with a circular seat that was based on a three-edge column. The chair had a 3.2 preference rating (Figure 30 a). The preference rate according to profession were as follows: academic/researchers at 3.55,



the public's at 3.35 and designers at 3.22. The lowest rates were among students (2.98) and workers in the furniture industry (2.95) (Figure 30 b). According to ethnicity, Black, Black British, Caribbean or African gave the stool the highest rate at 3.57, compared to 2.95 by the White British group. Asian or Asian British, Mixed or multiple ethnic groups, and Other ethnic groups rated the stool at 3.35, 3.22, and 2.97 respectively (Figure 30 c).

*Figure 30: (a) Stool 06 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity*

#### **1.1.40.6.**

##### **1.1.40.7. Stool 07**

*The stool was designed by an Egyptian designer; Hani Sarwat, and received an average rating of 3.01, as shown in Figure 31: (a) Stool 07 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity a). According to the professions, the stool was rated 2.95 overall among students, 3.01 by workers in the furniture industry, and 3.39 and 3.11 by academics and researchers, and designers respectively. Other participants with different careers rated the stool at 3.21 (Figure 31: (a) Stool 07 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity b). In terms of ethnicity, the participants who selected Asian or Asian British gave the stool a 3.30 rating, Black, Black British, Caribbean or African 3.33, Mixed or multiple ethnic groups 3.22, White British 2.87 ratings, and other ethnic groups rated it at 3.95 (Figure 31: (a) Stool 07 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity c).*

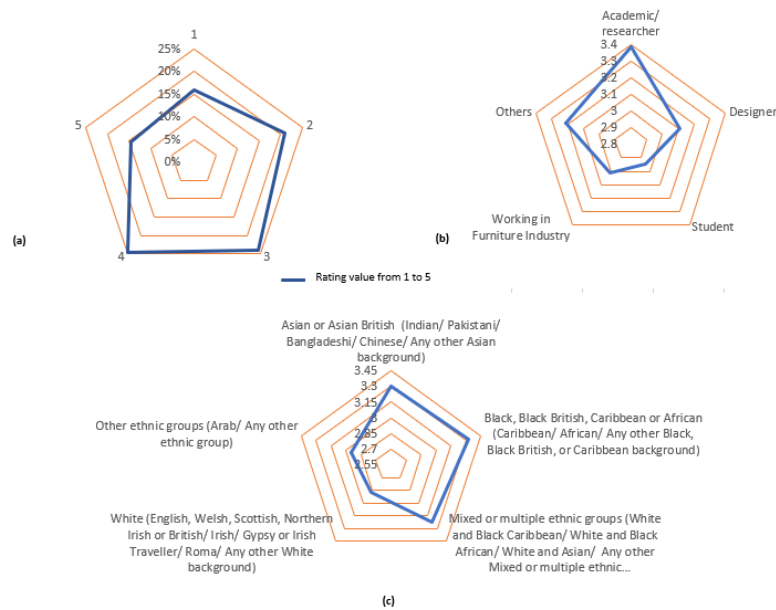


Figure 31: (a) Stool 07 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.8. Stool 08

Stool 08 was designed by the Danish students, Halfdan Wegge, Clara Jakobsen, and Louise Lindstrøm. The survey's respondents gave the stool a 3.25 preference rating (Figure 32 a). Among the participants' professional groupings, academics and researchers rated it at 3.51, designers at 3.21, students and people working in the furniture industry at the same rate (3.11), and other professions at 3.31 (Figure 32 b). Moreover, the ratings according to ethnicity were as follows: Asian or Asian British at 3.09, Black, Black British, Caribbean or African at 3.55, Mixed or multiple ethnic groups 3.25, White British 3.32, and Other ethnic groups 3.05 as shown in (Figure 32 c).



Figure 32: (a) Stool 08 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.9. Stool 09

The stool was designed by Karl Christian Tranberg Knudsen, and Emma Khan Forbæk Doolan, who are Danish students affiliated with the Royal Danish Academy of Fine Arts in Copenhagen. The stool was made of wood and the seat took a concave shape. The stool had a 3.91 preference rate amongst all respondents (

Figure 33 a). Academic and researchers rated the stool at 3.89, designers' at 3.82, students at 4.1, those working in the furniture industry at 4.07, and other professions rated it 3.68 (

Figure 33 b). According to ethnicity, the Asian or Asian British rate was 3.65, Black, Black British, Caribbean or African was 3.75, Mixed or multiple ethnic groups was 3.35, White British was 4.05, and the Other ethnicities was 3.75 (

Figure 33 c).

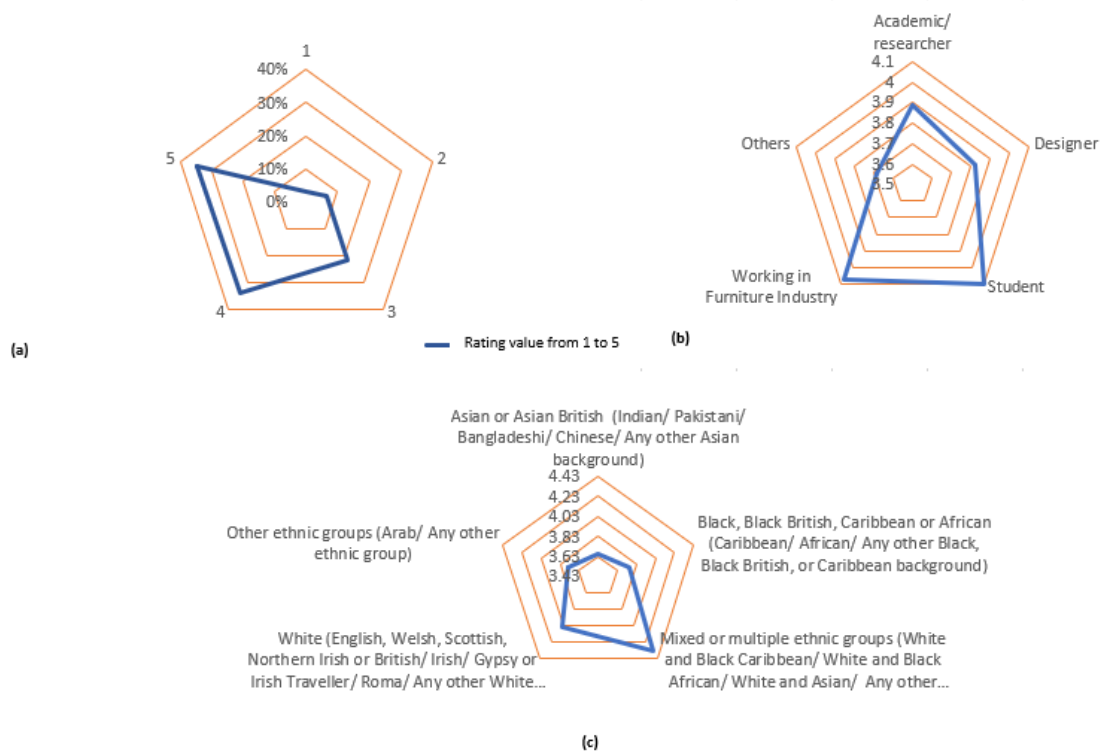


Figure 33: (a) Stool 09 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.10. Stool 10

This wooden stool had a squared shape seat with four legs tied diagonally with each other, and was designed by an Egyptian designer, Mohamed El Haddad. The chair got a 3.91 preference rate (Figure 34 a). Academic/researchers rated it at 3.8, designers at 3.65, students at 3.55, while workers in the furniture industry and others rated it at 3.41, and 3.88 respectively (Figure 34 b). Regarding the ethnicity preferences, participants who selected Asian or Asian British gave the stool a 3.40 rating, Black, Black British, Caribbean or African 3.70, Mixed or multiple ethnic groups 4.10, White British 3.75, and the other ethnic groups rated it at 3.35 (Figure 34 c).



Figure 34: (a) Stool 10 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.11. Stool 11

The stool has a very tight linear seat with a vertical plane base. It was designed by Danish students, Linda Pedersen, and Mathias Madsen. It was rated 2.53 as the lowest preferred stool in the survey (Figure 75 a). According to profession, academics and researchers rated it at 2.75 and designers 2.66, students and workers in the furniture industry 2.53 and 2.4 respectively, and other professions at 2.47 (Figure 75 b). The ethnic group ratings were as follows: Asian or Asian British 3, Black, Black British, Caribbean or African 3.63, Mixed or multiple ethnic groups 4.6, White British 4.42, and other ethnic groups 2 (Figure Figure 35 c).



Figure Figure 35: (a) Stool 11 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

### 1.1.40.12. Stool 12

This stool was different in style compared to the other designs. Comilla Bols and Lorentz Houser designed the chair with a 2-bar seat connected by leather strings. The chair was given a 2.7 preference rating (Figure 36 a). The preference rates according to profession were as follows: academic and researchers at 2.87, designer at 2.75, students at 2.69, and workers in the furniture industry rated it at 2.79. The lowest rating was from the other professions (2.4) (Figure 36 b). According to the ethnic group ratings, Black, Black British, Caribbean or African gave the stool the highest rate at 3.89, while White British rated it at 2.55, Asian or Asian British, Mixed or Multiple ethnic groups, and Other ethnic groups rated it at 2.89, 3.10, and 3.31 respectively (Figure 36 c).



Figure 36: (a) Stool 12 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

### 1.1.40.13. Stool 13

The stool was designed by an Egyptian designer, Nadeen Khairy, and had an average rating of 4, making it the second high-rated design. The main characteristics were cited as the comfort it provided, and the functionality (Figure 37 a). According to the ratings by profession, students rated it at 4.10, workers in the furniture industry at 4.35, while academic and researchers, and designers at 3.85 and 4.20 respectively. Other participants with different careers gave the stool 3.66 (Figure 37 b). From the ethnicity classifications, the participants who selected Asian or Asian British gave the stool 4, Black, Black British, Caribbean or African 4.35, Mixed or multiple ethnic groups 3.49, White British 4.27 ratings, and other ethnic groups at 3.95 (Figure 37 c).



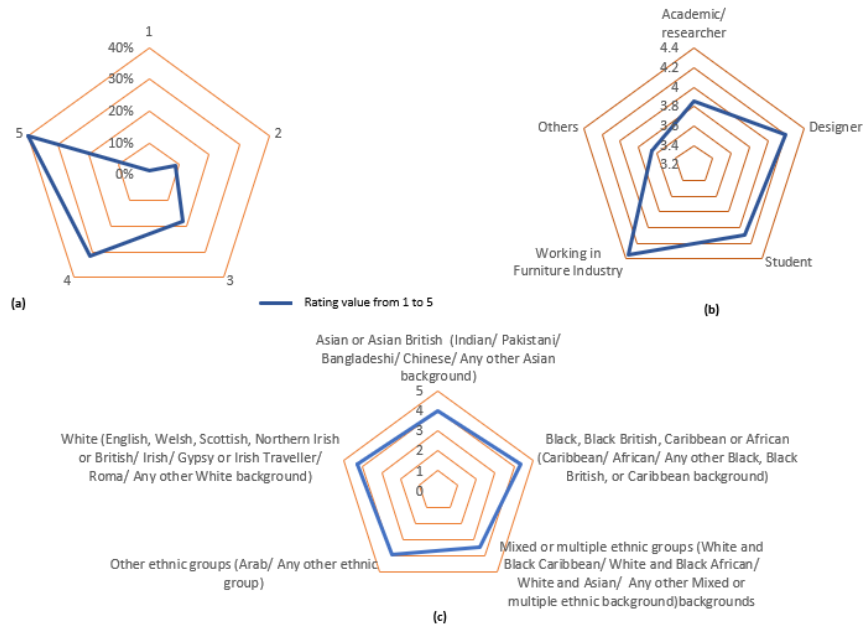


Figure 37: (a) Stool 13 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.14. Stool 14

This was designed by the Egyptian designer, Amr Orensa. The survey's respondents gave the stool a 3.83 preference rating (Figure 38 a). Among participants' professions, academics and researchers gave a 3.88 rating, designers 3.98, students 4.15, and people working in the furniture industry 3.6. Other professions gave a 3.53 rating (Figure 38 b). The preference ratings according to ethnicity were as follows: Asian or Asian British 3.75, Black, Black British, Caribbean or African 4.15, Mixed or multiple ethnic groups 3.72, White people 3.85, Other ethnic groups 3.66, as shown in Figure 38 c.

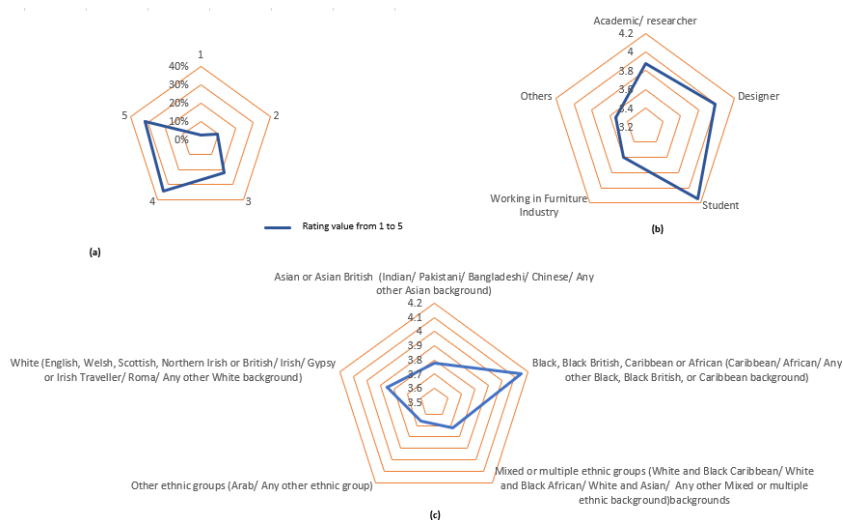


Figure 38: (a) Stool 14 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

### 1.1.40.15. Stool 15

This was designed by the Egyptian designer, Amr Orensa. The stool was made of wood and the seat took a square shape, while the base applied some Arabesque workings. The stool had a 3.8 preference rate from respondents (Figure 39 a). Academic and researchers rated the stool 3.78, designers at 3.85, students at 4.25, those working in the furniture industry at 3.38, and other professions at 3.68 (Figure 39 b). According to ethnicity, Asian or Asian British's rated the stool at 3.95, Black, Black British, Caribbean or African at 4.29, Mixed or multiple ethnic groups at 3.27, White British at 3.37, and Other ethnic groups at 3.98 (Figure 39 c).

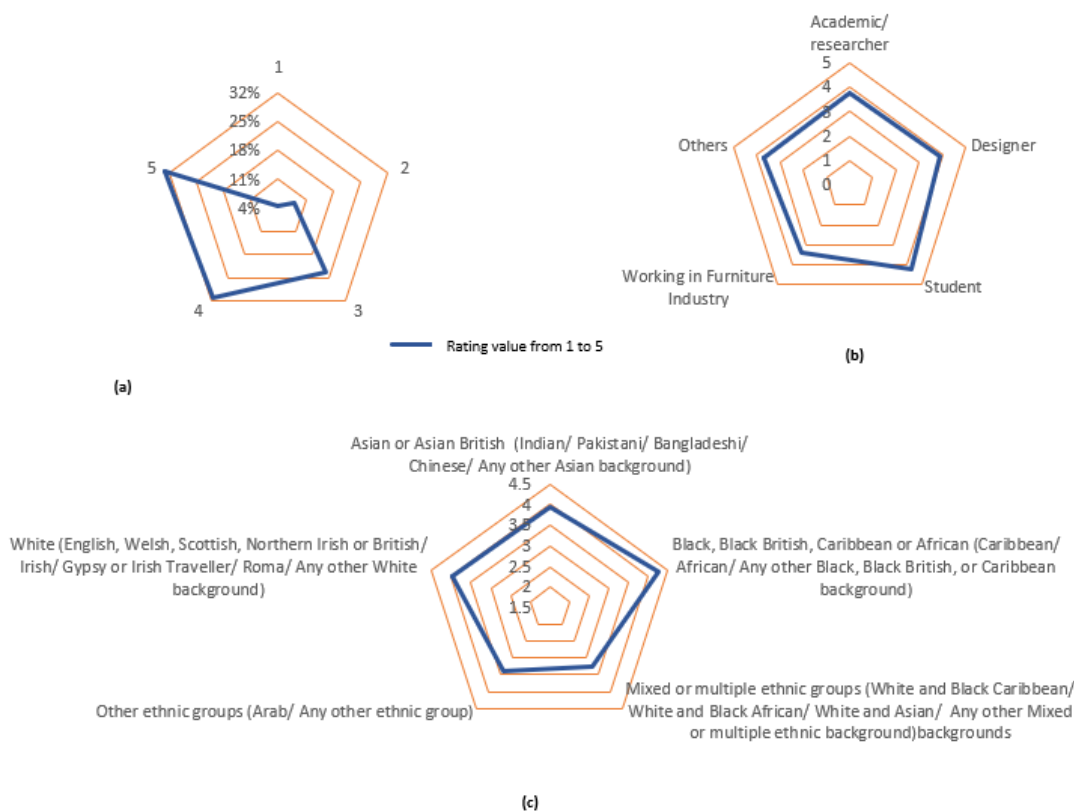


Figure 39: (a) Stool 15 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

### 1.1.40.16. Stool 16

This was a one-piece stool that was fully covered with fabric; it had a rounded-edge on a square shape, and was designed by the Egyptian designer, Zhraa Alshafeei. It was rated 3.54 on average overall (Figure 40 a). According to profession, academics and researchers rated it 3.35, designers 3.65, students and workers in the furniture industry 3.4 and 4.09 respectively, and other professions at 3.2 (Figure 40 b). The ratings from ethnic groups were as follows: Asian or Asian British 4, Black, Black British, Caribbean or African 3.55, Mixed or multiple ethnic groups 3.05, White British 3.8, and other ethnic groups 3.3 (Figure 40 c).



Figure 40: (a) Stool 16 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

#### 1.1.40.17. Stool 17

This modern stool is like stool 16 but with a firm-leather short back connecting the base and the seat. It was designed by a Danish student, Morph Studioi. The chair received a 3.93 preference rate (**Error! Reference source not found. a**). Academic/researchers rated it at 3.72, designers at 3.9, students at 4.3, while workers in the furniture industry and Oothers rated it at 3.85, and 3.88 respectively (**Error! Reference source not found. b**). Regarding the preference according to ethnicity, Asian or Asian British gave the stool a 4.11 rating, Black, Black British, Caribbean or African 3.15, Mixed or multiple ethnic groups 3.7, White British 3.62, and the Other Ethnic Groups rated it at 4.09 (**Error! Reference source not found. c**).

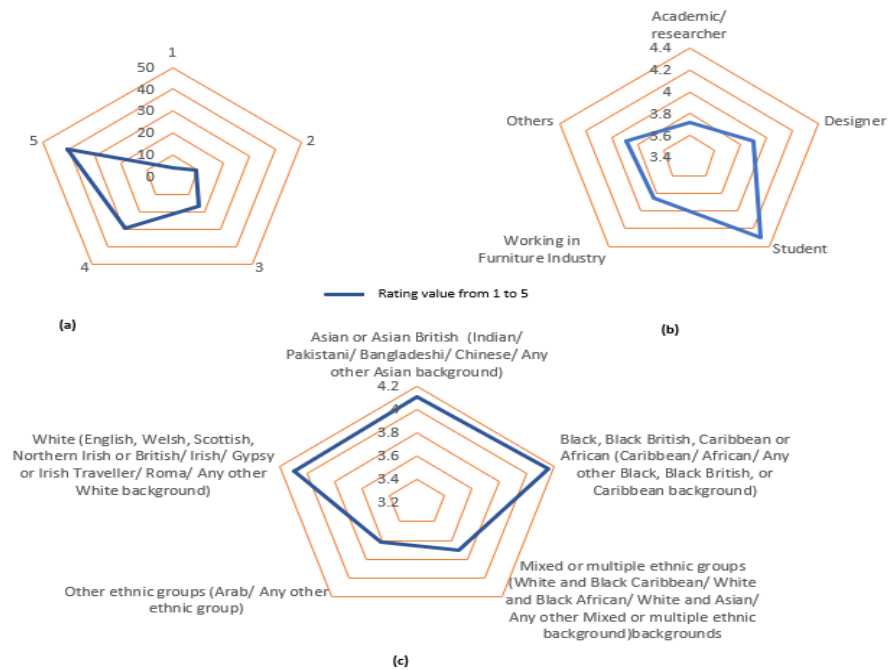


Figure 1: (a) Stool 17 preference rating, (b) preferences according to profession, (c) preferences according to ethnicity

## References