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Clusters as drivers of local industrial development in Egypt

Which are the promising sectors and locations?

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ABSTRACT

Clusters – the geographic concentration of specialized firms that are working in similar or related activities and are interdependent – have played an important role in the industrial development of many countries, including in Europe, the Americas, and Asia. A large part of these successes can be explained by the ability of clusters to build on existing strengths of local communities, such as social capital and abundant labor, to overcome common constraints to economic expansion, such as weak financial markets and institutions. Realizing the potential for cluster-based development and the long history of clusters in the country, the Egyptian Government has made cluster-based industrialization a key pillar of Egypt's sustainable development strategy to 2030. The timing for a cluster-based industrial development model for Egypt seems favorable as macroeconomic reforms in recent years have made Egypt's economy more competitive and the country's young labor force provides a comparative advantage for labor-intensive sectors. The objectives of this paper are to take stock of existing clusters in Egypt; to identify a set of promising "organic" clusters; and to make high-level recommendations for the further expansion of agribusiness and handicrafts clusters based on an innovative analysis of economic census data, a review of previous cluster studies in Egypt, and information obtained from expert interviews and a stakeholder workshop.

Our findings suggest focusing cluster development efforts on Upper Egypt, which has a comparative advantage in several sectors, especially in labor-intensive sectors. However, the current cluster density in Upper Egypt is low, particularly in rural areas. Expanding the number and density of clusters there will likely require improvements in infrastructure, institutions, and services.

The most promising clusters identified through the analysis include medical and aromatic plants, sugarcane, and tomatoes in the agribusiness sector; ready-made garments and carpets in the handicrafts sector, and furniture. These are all promising organic clusters based on their high market demand, export potential, labor intensity, and historical roots. We develop several recommendations for the agribusiness and the handicrafts sectors, especially highlighting the important facilitating role that local governments should play in cluster-based development by providing necessary basic public goods and services. In-depth case studies for specific, promising clusters should follow to help local governments and entrepreneurs to fully harness the unique opportunities that clusters can provide for local industrial development and job creation in Egypt.

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1. INTRODUCTION

The conventional development thinking is to provide countries with what they lack, such as financial resources and sound institutions. While addressing these issues is crucial for the development of a developing country's productive capacities, it is rather ambitious to fill in the key missing ingredients of development over a short period of time.

An often more viable and sustainable approach is to build on and enhance existing strengths. Cluster-based industrialization – the agglomeration of interconnected businesses that are geographically-concentrated – has been a recurring industrial and economic development model for many countries. Cluster-based models make use of the strong social capital that widely exists within communities in developing countries. The social capital between households of the same community can be used to overcome financial constraints for the individual firms in local industrial clusters.

Two key defining features of developing countries are abundant labor and limited capital resources. Within clusters, an integrated production process is divided into incremental steps, greatly lowering the capital entry barriers for local firms and enabling otherwise financially-constrained entrepreneurs to set up their businesses. The new businesses in turn generate employment opportunities. Within a cluster, producers rely heavily on trade credits from suppliers, for which they do not need to pay the full amount upfront. Trade credits are largely supported by social trust (Ruan and Zhang 2009; Long and Zhang 2011). Thus, a cluster development approach fits well with these endowments. In the absence of sound institutions, the functioning of the fine division of labor across firms within an industrial cluster hinges upon the strong social trust embedded in the cluster.

However, cluster development is not an automatic process. Because of lower entry barriers, clusters often grow quickly in their initial stages before running into new operational bottlenecks. Local government can play a role to facilitate cluster growth by providing the basic public goods and services needed to remove those bottlenecks. Challenges facing cluster development will keep emerging as clusters grow, which makes it crucial to empower local governments and induce collective action among firms participating in a cluster (Zhang and Hu 2014). Placing local governments in the driver's seat in promoting a cluster-based model of industrial development and embedding incentives for them to operate efficiently is often the best option for identifying context-specific solutions to the different challenges facing each local cluster. Given their local informational advantage, local governments are more likely to solve local constraints on cluster operations than is the central government (Hausmann and Rodrik 2003).

While cluster-based development played an important role in the industrialization of Europe (Molina, Boix, and Oliver 2012; Ciccone 2002) and the Americas (Baily and Montalbano 2017), the rapid economic transformation in China offers a more recent example of cluster-based industrialization. Most agricultural and industrial production in China is cluster-based (Long and Zhang 2009). There are more than 2,000 clusters in China with each specializing in one major product. Despite the lack of a well-developed financial market and institutions, within three decades China has become a world factory. The cluster-based model played an important part in this rapid industrial growth.

Although clusters are ubiquitous in most developing countries (Sonobe and Otsuka 2006), they are largely off the official radar screen, since governments often pay more attention to large firms. However, cluster-based industrialization is noted as a key pillar of Egypt's sustainable development strategy to 2030. As Egypt embarks on efforts to foster job-creating industrialization, it is a good time to revisit the cluster-based development model as a driver of economic transformation.

Two types of clusters can be differentiated in Egypt: industrial zones and organic clusters, both of which allow for agglomeration. Industrial zones are created by government directly through the provision of infrastructure and services to attract and spatially concentrate firms in a planned location, such as the Smart Village, an important technology cluster and business park in Cairo. In contrast, organic industrial clusters are traditionally, or organically, developed with no direct government intervention (El Baradei 2010). In this paper, we focus mainly on organic clusters. Egypt has a long tradition of industrial production through organic clusters and they remain common today. Examples of important organic clusters in Egypt include El-Mahalla El-Kubra textile cluster, Damietta furniture cluster, and Fayoum and Beni Suef medicinal and aromatic plant cluster. There are also many clusters that are less well-known, many of which are stagnant economically.

The economic growth of existing organic clusters in Egypt was largely inhibited over the past several decades for several reasons. First, during the planned economy era, the government paid greater attention to large enterprises, neglecting the small and medium enterprises (SMEs) which are the dominant firms in clusters. In addition, the overvaluation of the Egyptian pound led to unfavorable international competition. Many Egyptian products faced shrinking external demand, directly restricting the growth of many organic clusters, such as those for handicrafts and leather goods. The revolution in 2011 and the period of instability that followed for several years was also not conducive for cluster-based industrial development, as both domestic and foreign investment levels declined, and fewer tourists came to Egypt, reducing demand for many handicrafts.

The tide now has reversed in favor of cluster development. Starting in 2014, a series of macroeconomic reforms, which culminated in the devaluation of the Egyptian pound in late 2016, have brought back economic stability. As a consequence, the investment climate has improved and tourists are coming back. The currency devaluation has made Egypt's labor-intensive products, many of which are produced in clusters, more competitive in the international market, as Egypt's labor have also become cheaper compared to other developing countries. Internationally speaking, Egypt has a rather young and large labor force. The high population density along the narrow strip of Nile river and the abundance of labor provide Egypt with a comparative advantage in labor-intensive production. Egypt's fast-growing population is also another point of advantage, since market size is one of the driving forces behind the division of labor within clusters (Stigler 1951).

In light of the increasingly favorable economic environment, it is necessary to seize the opportunity to revitalize clusters in Egypt and expand employment in them. The Egyptian government has placed cluster-based development as a top economic and industrial development strategy in order to generate more employment. Yet, to promote cluster-based development, it is crucial to know where the clusters are located in the first place. Although there have been several efforts to map clusters in Egypt, the available maps do not capture the extent to which the different firms within a cluster are interlinked, and thus the economic potential of those clusters.

To fill this knowledge gap, we developed a clustering measure for Egypt using the Economic Census for 2013/14 in order to identify industrial clusters across the country. Our research makes several contributions. First, to the best of our knowledge, it is the first and only study to use the Egyptian economic census in such analysis. Second, it implements a rigorous approach to measuring and mapping clusters in Egypt, one which complements qualitative approaches previously used. It turns out that the results of our approach to identifying clusters matches very well with those of other sources. Our method for mapping clusters provides a tool for policy makers to use to identify and facilitate the growth of organic clusters across Egypt.

Following our cluster mapping exercise, we then conducted structural expert interviews to select three industries with promising clusters for further in-depth analysis. The aim of these studies was to better understand the bottlenecks and other challenges facing clusters in these industries which would need to be overcome in order to unleash their economic potential.

The remainder of the paper is organized as follows. Section II describes the methodology for both the quantitative and qualitative components of the study. Section III presents the results of the cluster mapping exercise, while section IV presents the results of the qualitative component of the study in which we conduct a deeper analysis on three promising industries in which organic clusters might flourish.

2. METHODOLOGY

The paper uses a combination of quantitative and qualitative methods to study the spatial distribution of clusters in Egypt and to understand the major clusters in each region.

Quantitative approach

We use the Egyptian Establishment Census for 2013/14[1] to compute a new cluster measure at the governorate level[2] following the methodology of Ruan and Zhang (2015). Commonly-used clustering indices focus more on firm concentration and specialization, ignoring the relatedness among firms, which is an essential aspect in identifying a cluster (Porter 1990). Ruan and Zhang (2015) developed a clustering index that measures both the concentration of firms and their relatedness. By implementing their methodology with the Egyptian data, we were able to construct a proximity matrix for Egyptian firms based on the industrial classification of the goods that each firm produces. The measure shows the interconnectedness of firms and industries that are in close proximity to one another across Egypt. Firms and industries that produce similar products in the same geographical location accordingly are more likely to interact with one another in various ways, including in their dependence on similar inputs, whether raw materials, labor, or machinery, their reliance on similar technologies and the research and development of those technologies, and even their dependence on the same supply or marketing facilities. Thus, this proximity measure can be used to determine how closely interconnected industries are within a specific region.

To calculate industry proximity, a local quotient is computed for all industries in a location; in this case, a governorate. The local quotient is calculated for four different factors – the number of establishments/firms; the number of employed individuals; the amount of invested capital; and the value of output. The local quotient is calculated as follows:

$$LQ_{gj} = \frac{X_{gj}/X_r}{X_{ej}/X_e}$$

where *g* stands for region or governorate; *j* indicates the industry; X_{gj} is the production factor in industry *j* in governorate g, e.g., employment in textile weaving in Cairo; X_g is the total of that factor in governorate *g*, e.g., total employment in Cairo; X_{ej} is a measure of this factor at the national level

[1] IFPRI gained access to the Establishment Census from the Central Agency for Public Mobilization and Statistics (CAPMAS). We are thankful for the support of CAPMAS and for their sharing this data with us.

[2] Due to the absence of data on industrial firms at district level or on their specific locations (GPS coordinates), we were not able to identify the exact locations of the industrial clusters within the governorates. Nonetheless, the mapping activity provides an overall picture of the density of clusters across the country and permits comparison of cluster densities between governorates.

in the industry, e.g., total employment in textile weaving in Egypt; and X_e is the total of that factor at the national level, e.g., total employment in Egypt.

If an industry has a quotient in a location for a specific factor that is greater than one, then this industry has a comparative advantage in that location. If an industry demonstrates a comparative advantage in a specific area, then we calculate the conditional probability that another industry *i* also has a comparative advantage in that area. This is calculated as follows:

$$Pr\left(LQ_{gi} > 1 \middle| LQ_{gj} > 1\right) = \frac{Pr(\,LQ_{gi} > 1 \cap LQ_{gj} > 1)}{\Pr(LQ_{gj} > 1)}$$

We also calculate the conditional probability that industry *j* has a comparative advantage if industry *i* demonstrates a comparative advantage. The smaller value of the two conditional probabilities is defined as the industry's proximity measure, following Hidalgo et al. (2017) and Ruan and Zhang (2015).

$$\theta_{ij} = \min\left\{P\left(LQ_{gi} > 1 \middle| LQ_{gj} > 1\right), P\left(LQ_{gj} > 1 \middle| LQ_{gi} > 1\right)\right\}$$

Next, we derive a comprehensive industry proximity measure, θ_{ij}, by computing a simple average of all four factors considered in the study; namely, employment, capital, output, and number of firms. This allows us to form a matrix of industrial proximity.

Finally, we compute the industry's proximity with all other industries in a specific region by weighting the industry based on the factor under study.

$$\theta_{gj} = \Sigma_{j\neq i}^{n}\left(\theta_{ij}\frac{X_{gj}}{\Sigma_{j\neq i}^{n}X_{gj}}\right)$$

where *n* is the total number of industries in the governorate *g*; and θ_{ij} is the proximity coefficient between *i* and *j* industries obtained from the matrix of industrial proximity.

A cluster in a certain region is then defined as the sum of the weighted industry proximity measures in the region. The clustering index for governorate *g* is thus:

$$Cluster\ Index_g = \Sigma_{i=1}^{n}\left(\theta_{gi}\frac{X_{gj}}{X_{ej}}\right)$$

where *X* is one of the four factors under consideration – employment, capital, output, or number of establishments. The clustering index above can represent, for example, the proximity of the furniture manufacturing industry (θ_{gi}) with all other industries in Damietta, weighted by the total capital of furniture manufacturing in Damietta (X_{gj}) relative to the total capital of furniture manufacturing in the country (X_{ej}).

Qualitative approach

Structured expert interviews

To further inform the cluster mapping activity, structured interviews were conducted with key actors who had knowledge about industrial clusters in Egypt. In order not to rule out different perspectives and to increase the representativeness of the sample within an adequate time frame, the informants were chosen carefully. Among others, we conducted interviews with representatives from government, academia, the EnTrust Consulting Group, the Industrial Modernization Centre, the Social Fund for Development (SFD), the United Nations Development Program, the Food and Agriculture Organization Of The United Nations (FAO), the World Bank, and the Egypt Network for Integrated Development.

The interview questions were formulated to explore four areas of interest to both inform our research design and narrow down our sectoral focus:

- What defines an industrial cluster? The academic definition may not match that of the Egyptian context.
- What criteria should be used to narrow down our choice of sectors?
- Which regions in Egypt have potential for cluster development?
- What are the most promising sectors for cluster development in Egypt?

At the start of each interview, brief academic definitions and examples of industrial clusters were given prior to ensure that a common understanding was established. Respondents were asked to report on their years of experience with and their professional role in activities related to cluster-based development in Egypt. The interviews were done in person, recorded, and then transcribed for analysis. (See Appendix II.A for the interview guide.)

A total of ten interviews were conducted. The results were then interpreted collectively with reference to the four interest areas. Based on the information collected through the interviews, we were able to identify the top industries in each governorate and narrow our selection for further study to three promising industries in which there is room for cluster-development.

Stakeholder workshop

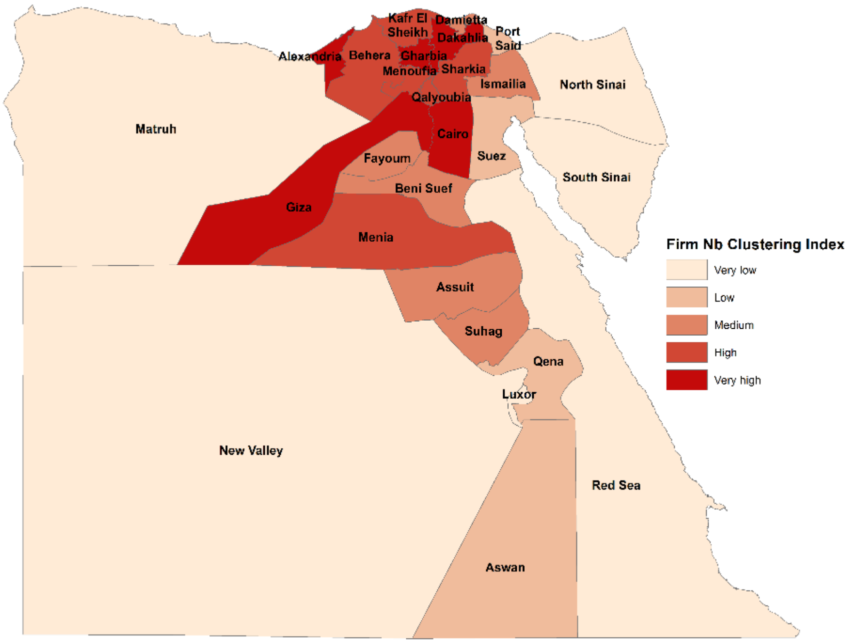
Following the interviews, we organized a one-day workshop in December 2018 to further explore the three selected industries and to identify a few representative clusters in these industries across Egypt. Questions for the workshop participants were formulated and divided according to thematic areas in order to capture detailed information on the most promising clusters in each of the three industries. (See Appendix II.B for the workshop questions.)

Key stakeholders from each of the three selected industries were invited to the workshop. Participants were divided into three focus groups for roundtable discussions at which they shared their insights and expertise. The same set of questions were asked at each roundtable. During the roundtable discussions, participants were asked to engage in an exercise of pinning different cluster locations on maps in order to identify clusters within the three industries. This exercise helped in identifying promising clusters in each of the three shortlisted industries – further informing and narrowing the research focus.

3. WHERE ARE THE CLUSTERS? A NEW CLUSTERING INDEX FOR EGYPT

In this section we present the results of the clustering index for Egypt based on four different factors within each industry – the number of establishments/firms; the number of employed individuals; the amount of capital invested; and the value of output. The maps in Figures 3.1 to 3.4 present the degree of clustering within each governorate by factor. The darker the color, the higher the clustering index, and thus the higher clustering level. With each map, we also list the top five industries across the country based on the four factors.

Figure 3.1. Governorate map of clustering measure based on number of establishments

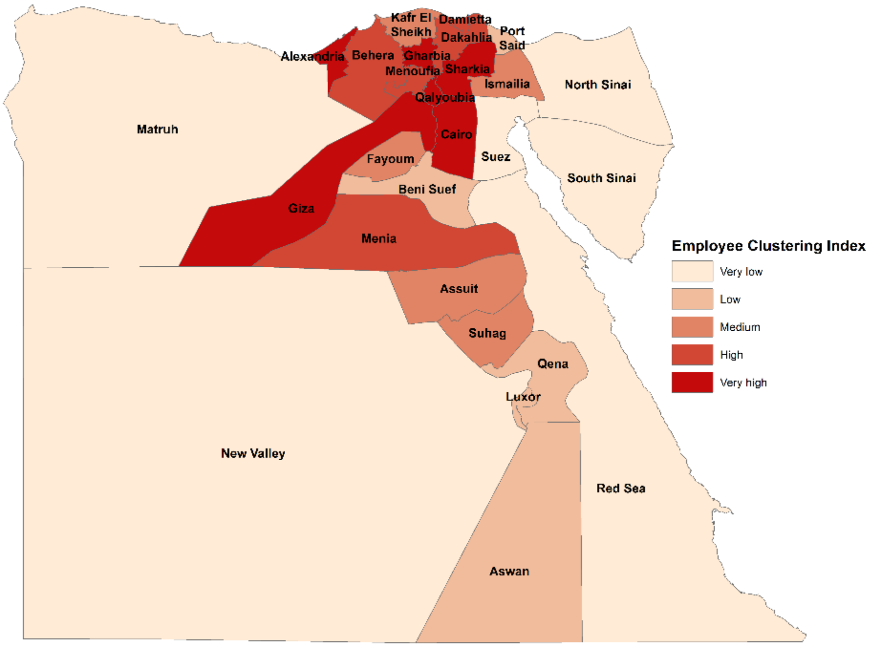


Top five manufacturing industries by number of establishments:

1. Furniture
2. Bakery products
3. Wearing apparel, except fur apparel
4. Structural metal products
5. Other fabricated metal products n.e.c. (not elsewhere classified)

Source: Authors' analysis.

Figure 3.2. Governorate map of clustering measure based on employment

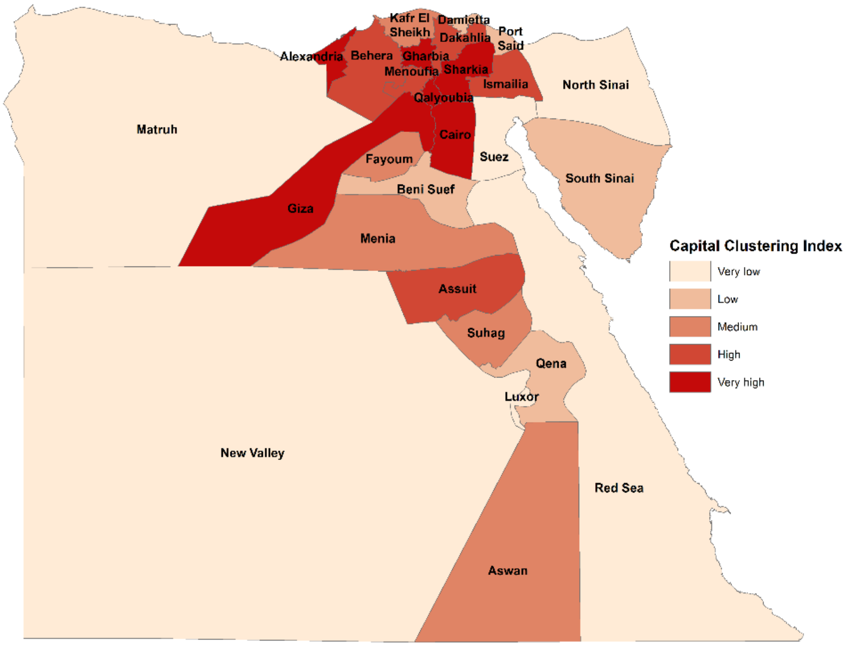


Top five manufacturing industries by number of employees:

1. Bakery products
2. Furniture
3. Wearing apparel, except fur apparel
4. Basic iron and steel
5. Structural metal products

Source: Authors' analysis.

Figure 3.3. Governorate map of clustering measure based on capital

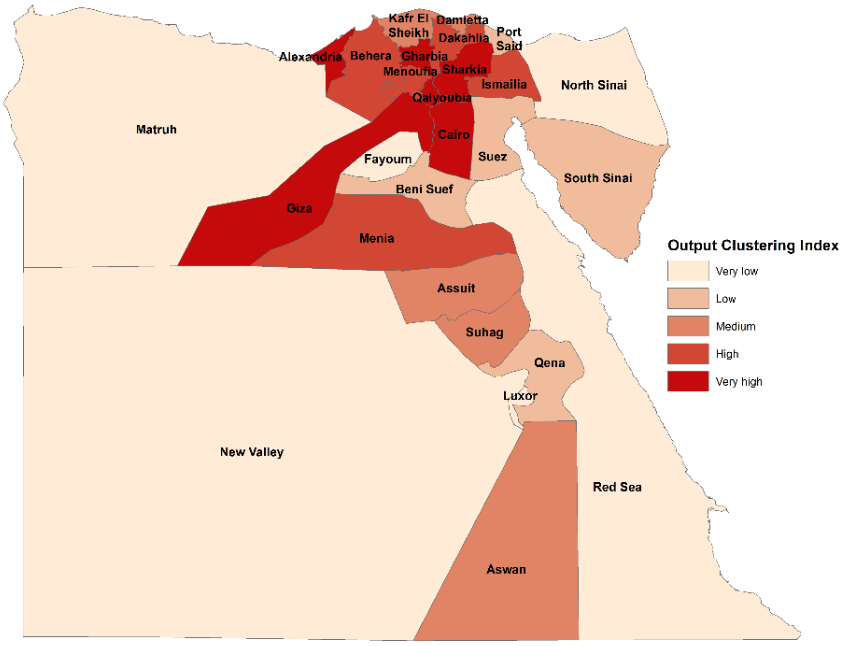


Top five manufacturing industries by capital:

1. Basic iron and steel
2. Glass and glass products
3. Fertilizers and nitrogen compounds
4. Refined petroleum products
5. Furniture

Source: Authors' analysis.

Figure 3.4. Governorate map of clustering measure based on output



Top five manufacturing industries by output:

1. Refined petroleum products
2. Basic iron and steel
3. Bakery products
4. Cement, lime, and plaster
5. Glass and glass products

Source: Authors' analysis.

By comparing the four maps to one another, only minor variances are seen between the cluster measures based the four factors. Nonetheless, there is a clear spatial pattern. Lower Egypt governorates exhibit a darker color reflecting a greater density of clusters. Upper Egypt displays a lower clustering density, although Assuit and Menia governorates in Upper Egypt stand as exceptions. This pattern holds across all four cluster measures.

As the qualitative study later showed, the lower cluster density in Upper Egypt can be explained by low investor interest there, which likely reflects the rather poor infrastructure, institutions, and services available, particularly in rural areas of Upper Egypt. Egypt's poorest governorates are located in Upper Egypt. Nonetheless, there are many unpublicized clusters that have a long tradition in this region. In addition, the government has renewed its interest to develop the industrial capacity of in Upper Egypt. Several international organizations are increasingly focus on Upper Egypt, including the World Bank, which has provided a USD 500 million loan focused on development in Upper Egypt. Given this interest, a cluster-based development model may prove to be an important driver of industrial development and job creation and a direct policy solution to combat poverty in Upper Egypt.

Does our clustering measure match other studies?

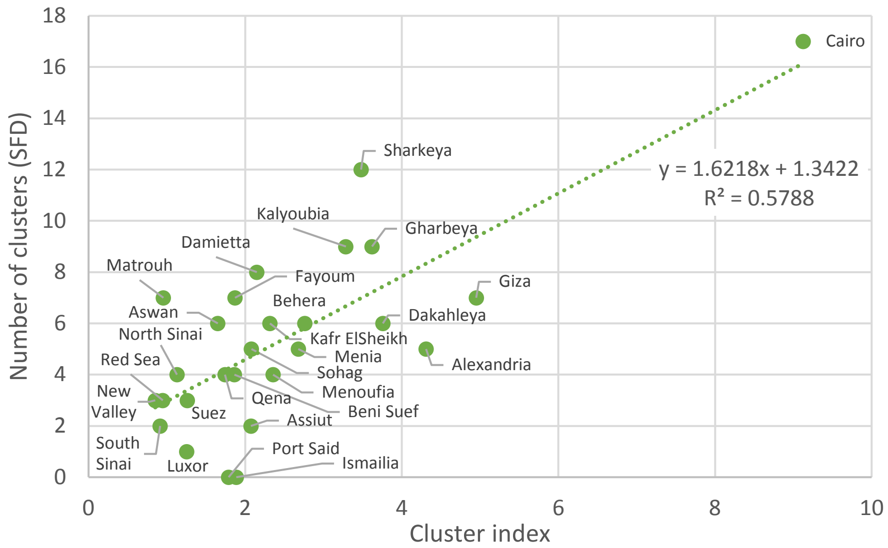
Given that cluster mapping exercises have previously been conducted in Egypt by different stakeholders, here we summarize these previous activities and explain the contribution of this paper to this body of work.

In 2015, the Social Fund for Development (SFD), through HLB Egypt-Makary Consulting, conducted a mapping exercise of clusters in Egypt. The study identified 145 organic clusters, which are defined as "industrial interdependent concentrations with a minimum of 30 enterprises/employees, located in geographical proximity, developed and expanded without government planning, and producing similar or complementary products with distinct characteristics with experience or capacity to sell to other consumers beyond their boundaries (i.e. district level)" (Social Fund for Development 2015). The information used for the study included both quantitative and qualitative data. The quantitative analysis was based on available statistics, reports, and information from NGOs and local institutions. In addition, relevant stakeholders were interviewed.

The study utilized employment data to conduct a location quotient analysis. An industrial concentration matrix for probable clusters by governorate was then constructed based on employment. By identifying the industries/sectors with competitive advantage in the different governorates, the study deepened its focus on identifying which of these concentrations can be classified as clusters – in particular, organic clusters. Out of the 145 identified clusters, only 49 clusters are in Upper Egypt (including Giza). The study then identified ten clusters with the highest growth potential based on a set of criteria and using an Analytic Hierarchy Process to weight the criteria. Those 10 clusters were then shortlisted to six clusters, three in Lower Egypt and three in Upper Egypt. The Social Fund for Development will target these areas under its Organic Clusters Project. (See Appendix Tables 3 and 4.)

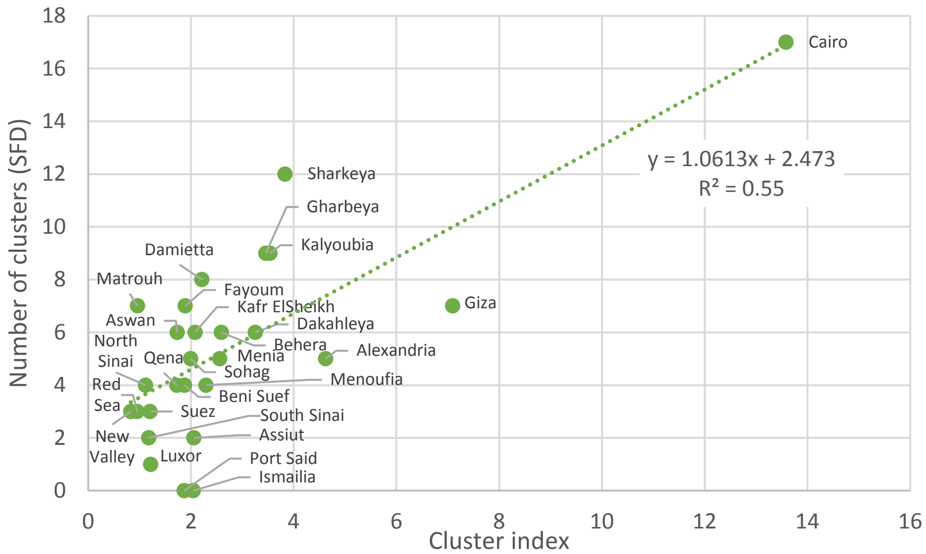
Based on our clustering index, we know the rankings of clusters at district level. Among the 145 top ranking clusters, we also know how many clusters each governorate has. Figure 3.5 presents the correlation between our clustering index for governorates of Egypt based on the number of establishments and the Social Fund for Development (SFD) cluster map, while Figure 3.6 examines the correlation between the clustering index on employment and the SFD cluster map. It is apparent from the figures that the series are highly correlated.

Figure 3.5 Correlation between clustering index for governorates of Egypt based on number of establishments and the Social Fund for Development (SFD) cluster map



Source: Authors' analysis using cluster index based on number of establishments and the 145 clusters identified by SFD see Appendix Table 3.

Figure 3.6. Correlation between clustering index for governorates of Egypt based on employment and the Social Fund for Development (SFD) cluster map



Source: Authors' analysis using cluster index based on employment and the 145 clusters identified by SFD see Appendix Table 3.

Another mapping exercise for clusters in Egypt was conducted by the United Nations Industrial Development Organization (UNIDO), as part of a mapping exercise for the southern Mediterranean countries. UNIDO's map included only cultural and creative industries.[3] The study identified 47 such clusters in Egypt scattered across the country. It also showed that the majority of the cultural and creative industry clusters are located in Lower Egypt.

[3] These comprise design-based industries, such as fashion-related, e.g., clothes, shoes, and jewelry, or housing-related industries, e.g., furniture, lighting, or home textile; cultural transmedia, including audiovisual production, publishing, music and videogames; live culture, such as performing arts, visual arts and heritage management; and professional creative services, including communication and advertising or interior design, architecture, and construction.

Cluster mapping activities were also conducted for specific sectors. UNIDO mapped horticultural crop production clusters across Egypt as part of the Green Trade Initiative. The European Union and the Italian development cooperation agency also have mapped clusters in the cultural and creative industries, while FAO has mapped aquaculture production sites in Egypt. While the cluster mapping studies listed have been published, many additional studies have been done but remain unpublished or inaccessible for interested investors or stakeholders.

4. WHAT ARE PROMISING SECTORS AND CLUSTERS?

As explained in previous sections, this study used a mixed methods approach to identify potential clusters for in-depth analysis. Following the mapping activity, we conducted structured interviews with ten industrial development and cluster experts in Egypt in order to identify three industries that exhibit strong potential for cluster development.

Key findings from structured interviews

Several insights emerged from the ten in-depth interviews.

Insight 1: The major defining aspect of a cluster in Egypt is collective efficiency – that is, to what extent is this cluster acting as one

Informants were asked "What defines an industrial cluster in Egypt?". They first highlighted that it is important to make a distinction between organic clusters and industrial zones, as both allow for agglomeration. However, organic clusters are endogenously developed with no direct government intervention. Such clusters are numerous and have played an important role historically in industrial development in Egypt. In contrast, industrial zones are created by government directly providing for infrastructure, utilities, and services to support the firms active in the zone.

Secondly, respondents highlighted that in Egypt it is necessary to differentiate clusters from value chains that just happen to be in one place. Indeed, as Ruan and Zhang (2015) put it, an industrial cluster by definition is a locality with a high concentration of firms in a geographical location in *related* businesses. One interviewee noted that "the defining feature of a cluster is not how many firms are in a local value chain, but on the degree of their *collective* efficiency." Another mentioned that the major defining aspect of a cluster is inter-firm cooperation – to what extent are the firms in a locality acting as one. He explained that "we should consider an industrial agglomeration a cluster only if its members act together, face common challenges, and have one common interest – namely, if they cooperate. But, this is where Egyptian clusters fail miserably." Other participants highlighted key characteristics of clusters as having "a common goal" and "a clear identity", whether or not cluster membership is formal or informal.

Four out of the ten respondents noted that a common characteristic of stagnating clusters in Egypt is that the firms in such clusters tend to compete rather than cooperate. One participant mentioned that, while interdependence is a key feature of clusters, long supply chains made up of different firms along each link in the chain are not common in Egypt. It is more common that a single firm will be responsible for all activities along a value chain. Cooperation among firms is rare.

Insight 2: The market should be the defining criteria to narrow down our choice of sectors and clusters

To make the case for prioritizing clusters in certain industries over others, one respondent recommended that we "pick the industry that has the highest market demand". Six out of ten interviewees mentioned export markets as a key criterion in choosing clusters for further study, as these clusters are exploiting opportunities that opened through Egypt's recently devalued currency. Another suggested that “before choosing an industry, ask what is Egypt’s competitive edge in that industry in the international market? And how fast is this market growing?” One participant cautioned against focusing only on employment within a cluster, as if there is product demand then by default there will be labor demand. Along the same lines another participant argued that “it’s value of labor and not the quantity of labor that matters,” explaining that it is important to focus on industries and clusters that are revenue generating due to their increased value in the market – “pick one that registers high demand and interest both in the international and local market.”

Adding a different perspective, as challenges present opportunities, one participant said, “choose the cluster that is facing the most bottlenecks”, since once market gaps are identified and corrected for, such clusters are likely to have the greatest potential to expand.

Insight 3: Upper Egypt is the region in Egypt that has the highest potential for cluster development.

Unprompted, almost all interviewees mentioned Upper Egypt as having the highest potential for cluster development and expansion. The flying geese model of industrialization has been used to explain recent industrial growth in Asia (Kojima 2000). The model argues for moving industries that are labor-intensive to poorer regions. Following the same narrative, informants argued that Upper Egypt, which has almost 55 percent of Egypt’s poor (El-Laithy, Lokshin, and Banerji 2003), should be targeted for industrial development. With abundant and cheap skilled labor and reportedly low turnover rates, scaling up existing clusters within Upper Egypt provides an opportunity to combat high unemployment. As one interviewee put it “raise the income level of an entire region that is below the poverty line.” Others mentioned the comparative advantages that Upper Egypt has in terms of its favorable agro-climatic conditions, physical proximity to important markets, and counter-seasonal production capabilities. These factors combined create value by default and provides an opportunity to increase Egyptian products market share in new and different export markets (Lowell 2009.

Insight 4: Agribusiness, furniture, and handicraft industries are three promising industries for cluster development

When participants were asked “What are promising sectors for generating employment in the wake of ongoing macro-economic reforms in Egypt?” and “Which industry is more well known for clustering?”, agribusiness, furniture, and handicrafts came up in almost all of the answers. While participants provided different justifications for each, there was an agreement that these three industries are historically well-established in Egypt, are labor intensive, can be scaled up, and have high export potential.

Agribusiness was particularly highlighted as an industry that has huge untapped potential – given Egypt’s arid climate, agricultural production is not subject to pest infestation. The access to the Nile for irrigation makes Egypt’s agricultural land the most fertile in the world. Despite the significant growth in exports that has already occurred, the small number of Egyptian horticultural exports still command only minor market shares in a relatively few export markets. There are a series of bottlenecks and collective action problems facing export agriculture in Egypt, including water contamination and lack of quality testing. These make it difficult for farmers producing for export to comply with the high food safety and quality regulations of various export destinations in developed countries. Solving these bottlenecks will open a window of opportunity for further increasing value-added production to supply current markets and to allow for entry into new markets.

Key findings from stakeholder workshop

Analysis of the information received through the expert interviews led us to choose furniture, handicrafts, and agribusiness as the three industries on which to focus our in-depth studies as to their potential for cluster development. The next step was to organize a workshop in which stakeholders in each of these industries were brought together for roundtable discussions. Here we present some of the insights gained on the potential role of clusters in industrial development in agribusinesses and handicrafts – particularly regarding participants' assessment of competitiveness, areas of improvements, recommendations, and selected promising clusters. As considerable research already has been done on furniture clusters in Egypt, especially Damietta, we do not discuss here our findings on the furniture industry (but, see Appendix II C).

Agribusiness

Egypt has a competitive edge in agricultural exports. The significant price advantage in the export market is mainly explained by the very competitive exchange rate, particularly after the devaluation of the Egyptian pound. There is also an abundance of (skilled) labor, and the country's climate allows for producing a large variety of different crops.

The areas of improvement for agribusiness clusters in Egypt mentioned by the workshop participants include:

- Improving the branding and reputation of Egyptian processed food exports.
- Strengthen the legal framework and contract enforcement mechanisms to improve the reliability of supply of agricultural commodities.
- Strengthen producer cooperatives and agricultural extension services.
- Monitor and improve water quality, especially related to residual pesticides on marketed commodities.
- Improve access of producers to financial services, especially for landless farmers. Credit is mainly available to land owners, whom are relatively few.
- Improve market access, especially for Upper Egypt as it is remote from markets. Inefficient transport systems often result in food loss and waste.
- Support post-harvest and storage facilities, such as warehouses, for perishable products.

The recommendations made by stakeholders at the workshop for improvements to Egypt's agri-business sector include:

- Enhance and tailor government extension services for the needs of each specific cluster.
- Enhance irrigation infrastructure and related public services to solve water contamination challenges.
- Enhance connectivity of producers to market places, including transportation links.
- Develop agri-food laboratories and quality assurance units in order to assist small farmers and businesses better meet consumer expectations concerning the quality and safety of food, feed, and other agricultural products.
- Raise the awareness of small-scale farmers of modern agricultural practices and food safety measures for improving production and enhancing the reputation for quality of processed food from Egypt.
- Introduce new crop varieties and promote organic or pesticide-free production.
- Invest in post-harvest treatment facilities for adding value to specific agricultural crops and to open new export markets. Particularly in Upper Egypt, there is a need to build drying facilities, warehouses, and storage facilities.

- Develop incentives for financial institutions to improve the access of informal firms and small farmers to finance and extension services.

The experts identified the following agribusiness clusters as promising for development and further in-depth research: sun-dried tomatoes in Qena and Sohag; artichokes and strawberries in Behera; onions in Suhag; hibiscus in Aswan; sugarcane in Qena; and medicinal and aromatic plants in Fayoum and Beni Suef.

Handicrafts

Despite substantial exports, worth around USD 400 million per year, participants agreed that Egypt is "not sufficiently on the picture of handicrafts in the world". Several stakeholders asserted that there is a niche market for Egyptian handicrafts, especially in Europe. Egypt's handicrafts clusters are competitive in terms of price, the uniqueness of the handmade products, and the significant potential for developing a cost-efficient labor base in Upper-Egypt, especially in the garments subsector. Egypt is considered a pioneer in the weaving of linen, wool, and silk. The industry depends heavily on locally-produced agricultural inputs. The spinning, weaving, and readymade garments industry comprises around 30 percent of all workers in Egypt at 1.2 million workers. Now that the tourism sector in Egypt is again expanding, there is room for greater value-addition and increased local sales of handicrafts to tourists. In addition, handicrafts is a labor-intensive and scalable industry.

The areas of improvement for handicrafts clusters in Egypt mentioned by the workshop participants include:

- Improve the institutional framework for quality control and marketing of handicrafts.
- Provide support for product innovation and development. The lack of new products in the sector often stems from isolation and lack of exposure to new tastes and trends.
- Support a market information system to address the lack of data and knowledge about handicraft market demand, design, specifications, costs, prices, packaging, and quality. Many actors in the handicrafts sector have limited experience with export procedures. Similarly, often the supply of raw material to craftsmen is controlled by monopolistic middlemen.
- Review capacity in the production of handicrafts, which is often limited and may not be able to address higher demand. Some of the clusters are facing declining supply due to fewer producers being involved, although the products are in high demand. This is a result of migration of labor out of handicraft production.
- Support handicraft firms to formalize their businesses as many have limited access to public services and finances.
- Support logistical improvements and improve the enabling environment for the sector. This includes:
    - Address land limitations for building common facilities to facilitate handicrafts cluster development.
    - Strengthen supporting organizations in the sector, especially those involved in data production and analysis. Better exploit the synergies between these organizations.
    - Adapt working conditions in handicrafts clusters to better consider culture and society factors, as, in particular, women may prefer to work at home rather than in workshops or factories.

The recommendations made by stakeholders at the workshop for improvements to Egypt's handicrafts sector include:

- Develop quality assurance mechanisms to determine the quality of both inputs and outputs, e.g., provide certifications and support branding for premium high-quality crafts.
- Provide an enabling environment that will encourage handicraft firms in the informal sector to regularize their status so that they can more readily access financing and insurance services.
    - Provide targeted incentive packages for smaller firms to formalize their operations. Develop one-stop shops to cut down on the red tape that they now face to do so.
- Enhance data collection across all firms in the sector to guide strategic planning.
- Improve the access that handicraft firms have to a wider set of markets.
    - Conduct marketing campaigns that support craftsmen attending international exhibitions.
    - Make available to artisans professional marketing services.
- Encourage complementary public and private investments that may not be directly related to handicraft production, but affect the performance of the industry. This includes investments in hotels and other tourist services and in technical schools to enhance skills and craftsmanship.
- Enhance the legal framework to address monopolies and unfair competition in the handicrafts industry.
- Support equitable representation in the Federation of Egyptian Industries from the handicrafts industry. Handicrafts cluster members, both large and small firms, should be adequately represented.

Stakeholders from the handicrafts industry at the workshop identified several promising handicrafts clusters. These include:

- Those for textiles and garments in Nagada, Qena governorate and in Akhmim, Sohag governorate. These are organic clusters, but recently have not been growing. Both villages historically have produced textiles since the times of ancient Egypt. Nagada currently has between 400 and 500 *noles* (hand looms) in operation within individual households. Akhmim has between 600 and 1,000 *noles*, and is about double the size of the cluster in Nagada.
- For *Kilim* carpets, Fowwa in Kafr el Sheikh governorate is a famous organic cluster. No survey has been done to determine the number of firms involved in this cluster. Carpet production is done in small workshops and in around 350 homes in Fowwa.

5. CONCLUSIONS AND NEXT STEPS

This paper presents an initial step in a comprehensive approach to investigation how cluster-based development might be supported in Egypt. The process started by accessing national-level data to present a comprehensive map for clusters in Egypt. Based on the latest economic census, we computed cluster density at the governorate level through developing four measures for a clustering index developed by Ruan and Zhang (2015).

Next, through information obtained from structured interviews and a stakeholder workshop, the paper provides examples of the top industries in each governorate – handicrafts, agribusiness and furniture – and identifies some of the most promising clusters in each industry based on their high market demand, export potential, labor intensity, and historical roots. This combination of quantitative and qualitative approaches allows us to understand the spatial distribution of cluster development in Egypt and understand what are the major clusters in each region. Both interviewees and workshop participants reemphasized the importance of focusing on Upper Egypt, as it is an area with huge potential, yet many bottlenecks. Consequently, the region presents significant untapped opportunities.

Revisiting the cluster based development model now is a favorable development, given the recent development focus in Egypt on fostering job-creating industrialization and the macroeconomic reforms that were recently undertaken to make Egypt's economy more competitive. In addition, the country's young labor force provides a clear comparative advantage for labor-intensive sectors. With improvements in political and macroeconomic stability and the devalued currency, the economic tide for Egypt's industries is turning around favorably. The key is to overcome the bottlenecks facing individual producers with clusters and to expand markets so that these clusters can grow and survive, generating much-needed employment for the poorest hamlets of Egypt.

Continuing in-depth study of labor-intensive clusters in the three promising industries will allow for a better understanding of the process of cluster formation in Egypt and the role of collective action. In this paper we argue that understanding and documenting the bottlenecks and binding constraints within existing clusters will provide the evidence needed to support specific policies and investments in public goods necessary to address these bottlenecks. The cluster-based development model provides an important opportunity for industrial development in Egypt and presents a promising avenue to help achieving the country's master development vision, Vision 2030.

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APPENDIX I

Appendix Table 1. Ranking of top manufacturing industries in Egypt

By employees	By number of establishments
1. Bakery products	1. Furniture
2. Furniture	2. Bakery products
3. Wearing apparel, except fur apparel	3. Wearing apparel, except fur apparel
4. Basic iron and steel	4. Structural metal products
5. Structural metal products	5. Other fabricated metal products n.e.c. (not elsewhere classified)
By capital	**By output**
1. Basic iron and steel	1. Refined petroleum products
2. Glass and glass products	2. Basic iron and steel
3. Fertilizers and nitrogen compounds	3. Bakery products
4. Refined petroleum products	4. Cement, lime and plaster
5. Furniture	5. Glass and glass products

Source: Authors' analysis.

Appendix Table 2. Ranking of top industries in Egypt, by governorate

No.	Governorate	Top 10 manufacturing industries (based on economic census)	Establish-ments	List of Identified Organic Clusters (SFD)
1	Cairo	Furniture	5,098	• Seashell makers cluster in El-Darb El-Ahmar, • Patchwork cluster, • Wax cluster in Bab El- Sheareya, • Copper touristic products cluster in Khan Al-Khalili, • Silver artifacts cluster in Khan Al-Khalili, • "Fer forgé" cluster, • Rosary production cluster in Mansheyet Nasser, • Pottery and earthenware production in Old Cairo, • Glass cluster in Al-Hussein, • Carpentry cluster in El-Darb El-Ahmar, • Footwear makers cluster in El-Darb El-Ahmar, • Tanneries cluster, • Glue production cluster in Old Cairo, • Leather cluster in Nasser, • Garbage recycling cluster in Mansheyet Nasser, • Metal-forming cluster in Mansheyet Nasser, • Marble industry cluster in Shaq El-Te'ban
2	Cairo	Wearing apparel, except fur apparel	3,402	
3	Cairo	Footwear	1,915	
4	Cairo	Structural metal products	1,711	
5	Cairo	Other fabricated metal products n.e.c.	1,694	
6	Cairo	Builders' carpentry and joinery	1,167	
7	Cairo	Printing	784	
8	Cairo	Cutlery, hand tools and general hardware	730	
9	Cairo	Luggage, handbags and the like, saddlery and harness	631	
10	Cairo	Sawmilling and planing of wood	494	
1	Alexandria	Furniture	2,462	• Wood production cluster, • Leather production cluster, • Handmade carpets cluster, • Chandeliers production cluster in Atareen, • Marble industry cluster in Al-drissa
2	Alexandria	Bakery products	2,168	
3	Alexandria	Structural metal products	1,728	
4	Alexandria	Wearing apparel, except fur apparel	1,151	
5	Alexandria	Builders' carpentry and joinery	684	
6	Alexandria	Other fabricated metal products n.e.c.	637	
7	Alexandria	Sawmilling and planing of wood	582	
8	Alexandria	Articles of concrete, cement and plaster	303	
9	Alexandria	Made-up textile articles, except apparel	285	
10	Alexandria	Cutting, shaping and finishing of stone	278	
1	Port Said	Furniture	378	None were reported by SFD
2	Port Said	Wearing apparel, except fur apparel	317	

No.	Governorate	Top 10 manufacturing industries (based on economic census)	Establish-ments	List of Identified Organic Clusters (SFD)
3	Port Said	Bakery products	146	
4	Port Said	Structural metal products	69	
5	Port Said	Cutlery, hand tools and general hardware	68	
6	Port Said	Builders' carpentry and joinery	30	
7	Port Said	Made-up textile articles, except apparel	29	
8	Port Said	Other fabricated metal products n.e.c.	29	
9	Port Said	Printing	14	
10	Port Said	Dairy products	10	
1	Suez	Furniture	234	• Milk production cluster, • Knitting cluster in Suez, • Tricot cluster in Suez
2	Suez	Wearing apparel, except fur apparel		
3	Suez	Bakery products	191	
4	Suez	Structural metal products	50	
5	Suez	Other fabricated metal products n.e.c.	30	
6	Suez	Sawmilling and planing of wood	18	
7	Suez	Processing and preserving of fruit and vegetables	14	
8	Suez	Printing	13	
9	Suez	Cement, lime and plaster	11	
10	Suez	Builders' carpentry and joinery	11	
1	Damietta	Furniture	10,826	• Palm leaf / fronds cluster in Kafr El-Bateekh, • Milk production cluster in Faraskour, • Sweets production cluster, • Milk production cluster in Kafr Saad, • Furniture cluster, • Needlework cluster, • Carpets cluster
2	Damietta	Builders' carpentry and joinery	2,916	
3	Damietta	Sawmilling and planing of wood	1,382	
4	Damietta	Wearing apparel, except fur apparel	964	
5	Damietta	Bakery products	259	
6	Damietta	Tanks, reservoirs and containers of metal	223	
7	Damietta	Grain mill products	219	
8	Damietta	Glass and glass products	213	
9	Damietta	Other fabricated metal products n.e.c.	155	
10	Damietta	Structural metal products	141	
1	Dakahleya	Furniture	3,657	• Dairy products cluster in Ras-El-Khaleeg, • Knitting cluster in Tanamel, • Knitting cluster in Salamon, • Needle embroidery cluster in Meet Ghamr, • Metal kitchen instruments cluster in Meet Ghamr, • Glass engraving and decoration cluster
2	Dakahleya	Wearing apparel, except fur apparel	1,592	
3	Dakahleya	Bakery products	1,422	
4	Dakahleya	Structural metal products	1,139	
5	Dakahleya	Other fabricated metal products n.e.c.	1,123	
6	Dakahleya	Builders' carpentry and joinery	950	
7	Dakahleya	Grain mill products	805	
8	Dakahleya	Cutlery, hand tools and general hardware	655	
9	Dakahleya	Knitted and crocheted apparel	366	
10	Dakahleya	Articles of concrete, cement and plaster	362	
1	Sharkeya	Furniture	3,091	• Mats cluster, • Palm frond cluster, • Peanuts roasting, peeling and packing cluster, • Legumes packaging cluster, • Vegetables cleaning and packing cluster, • Dairy products cluster in Abo-Kebir, • Dairy products cluster in Zagazig, • Smoked Herring cluster, • Carpentry cluster in Abu-Kabir, • Leather production cluster, • Ready-made clothing and knitting cluster, • Papyrus cluster
2	Sharkeya	Wearing apparel, except fur apparel	1,820	
3	Sharkeya	Bakery products	1,818	
4	Sharkeya	Grain mill products	902	
5	Sharkeya	Structural metal products	854	
6	Sharkeya	Other fabricated metal products n.e.c.	812	
7	Sharkeya	Sawmilling and planing of wood	754	
8	Sharkeya	Glass and glass products	431	
9	Sharkeya	Processing and preserving of fish, crustaceans and molluscs	293	
10	Sharkeya	Made-up textile articles, except apparel	290	
1	Kalyoubia	Furniture	2,112	• Mats cluster, • Food products cluster in Qalyoub,
2	Kalyoubia	Bakery products	1,745	
3	Kalyoubia	Wearing apparel, except fur apparel	1,281	

No.	Governorate	Top 10 manufacturing industries (based on economic census)	Establish-ments	List of Identified Organic Clusters (SFD)
4	Kalyoubia	Structural metal products	897	• Furniture cluster in Tenan, • Coal cluster in Makameer, • Textile industry cluster in Shubra Al Khaimah, • Handmade carpets cluster in Talha, • Plastic industries cluster, • Metal industries cluster, • Electrical wires cluster in Basoos
5	Kalyoubia	Other fabricated metal products n.e.c.	511	
6	Kalyoubia	Sawmilling and planing of wood	398	
7	Kalyoubia	Plastics products	363	
8	Kalyoubia	Builders' carpentry and joinery	264	
9	Kalyoubia	Footwear	239	
10	Kalyoubia	Plastics and synthetic rubber in primary forms	200	
1	Kafr ElSheikh	Furniture	1,210	• Fodder cluster, • Rice mills cluster in Fooh, • Fish salting cluster in Fooh, • Fish salting cluster in Sidi-Salem, • Handmade wool rugs cluster in Fooh, • Wool production in Fooh
2	Kafr ElSheikh	Wearing apparel, except fur apparel	805	
3	Kafr ElSheikh	Bakery products	552	
4	Kafr ElSheikh	Sawmilling and planing of wood	371	
5	Kafr ElSheikh	Structural metal products	331	
6	Kafr ElSheikh	Other fabricated metal products n.e.c.	237	
7	Kafr ElSheikh	Grain mill products	168	
8	Kafr ElSheikh	Ovens, furnaces and furnace burners	130	
9	Kafr ElSheikh	Builders' carpentry and joinery	116	
10	Kafr ElSheikh	Printing	63	
1	Gharbeya	Furniture	4,812	• Flax cluster in Shubra-Mals, • Honey cluster in Tanta, • Furniture cluster in Katama, • Carpentry cluster in Mahala, • Trimmings cluster in Tanta, • Handmade carpet-making cluster in Tanta, • Textiles cluster in Mahala Al-Kubra, • Earthenware and pottery cluster in Babsyoon, • Glass production cluster in Samanood
2	Gharbeya	Wearing apparel, except fur apparel	1,416	
3	Gharbeya	Bakery products	1,297	
4	Gharbeya	Made-up textile articles, except apparel	1,271	
5	Gharbeya	Grain mill products	955	
6	Gharbeya	Structural metal products	925	
7	Gharbeya	Other fabricated metal products n.e.c.	807	
8	Gharbeya	Vegetable and animal oils and fats	507	
9	Gharbeya	Builders' carpentry and joinery	506	
10	Gharbeya	Sawmilling and planing of wood	339	
1	Menoufia	Furniture	2,671	• Mats cluster, • Seashell works cluster, • Handmade carpets cluster in Saqiet Abo- shaara, • Pottery production cluster
2	Menoufia	Bakery products	812	
3	Menoufia	Wearing apparel, except fur apparel	802	
4	Menoufia	Structural metal products	676	
5	Menoufia	Other fabricated metal products n.e.c.	429	
6	Menoufia	Dairy products	201	
7	Menoufia	Grain mill products	190	
8	Menoufia	Builders' carpentry and joinery	182	
9	Menoufia	Cutting, shaping and finishing of stone	146	
10	Menoufia	Sawmilling and planing of wood	144	
1	Ismailia	Bakery products	1,205	None were reported by SFD
2	Ismailia	Sawmilling and planing of wood	743	
3	Ismailia	Furniture	713	
4	Ismailia	Made-up textile articles, except apparel	441	
5	Ismailia	Wearing apparel, except fur apparel	364	
6	Ismailia	Other fabricated metal products n.e.c.	171	
7	Ismailia	Articles of concrete, cement and plaster	86	
8	Ismailia	Grain mill products	75	
9	Ismailia	Structural metal products	69	
10	Ismailia	Builders' carpentry and joinery	39	
1	Giza	Furniture	3,869	• Palm leaves and podaxis cluster in Dahshour, • “Aubusson” rugs cluster in Haraneya, • Abaya cluster in Kerdassah, • Wool rugs, carpets and aubusson cluster in Kerdassah,
2	Giza	Bakery products	2,377	
3	Giza	Wearing apparel, except fur apparel	1,721	
4	Giza	Structural metal products	1,366	
5	Giza	Other fabricated metal products n.e.c.	1,135	
6	Giza	Builders' carpentry and joinery	684	
7	Giza	Glass and glass products	309	

No.	Governorate	Top 10 manufacturing industries (based on economic census)	Establish-ments	List of Identified Organic Clusters (SFD)
8	Giza	Sawmilling and planing of wood	282	• Wool rugs and carpets cluster in Dahshour, • Trimmings cluster in Oussim, • Clay bricks cluster in Arab Abu-Sa'ad
9	Giza	Other products of wood	280	
10	Giza	Cutlery, hand tools and general hardware	144	
1	Beni Suef	Furniture	782	• Medicinal oils production cluster, • Handmade carpet-making cluster, • Clay bricks production cluster, • Papyrus cluster
2	Beni Suef	Wearing apparel, except fur apparel	777	
3	Beni Suef	Bakery products	769	
4	Beni Suef	Grain mill products	503	
5	Beni Suef	Glass and glass products	125	
6	Beni Suef	Structural metal products	124	
7	Beni Suef	Cutlery, hand tools and general hardware	86	
8	Beni Suef	Other products of wood	81	
9	Beni Suef	Other fabricated metal products n.e.c.	66	
10	Beni Suef	Articles of concrete, cement and plaster	59	
1	Fayoum	Furniture	1,403	• Palm products cluster in El-Subehi, • Plants' fronds cluster, • Plants' fronds furniture cluster, • Wicker cluster, • Pottery cluster in Kom-Osheem, • Pottery cluster in El- Nazla, • Earthenware production in Tunis
2	Fayoum	Wearing apparel, except fur apparel	590	
3	Fayoum	Bakery products	554	
4	Fayoum	Other products of wood, straw and plaiting materials	383	
5	Fayoum	Grain mill products	282	
6	Fayoum	Other fabricated metal products n.e.c.	241	
7	Fayoum	Structural metal products	208	
8	Fayoum	Glass and glass products	132	
9	Fayoum	Sawmilling and planing of wood	130	
10	Fayoum	Builders' carpentry and joinery	123	
1	Menia	Furniture	1,699	• Milk production in Malwi, • Molasses (black honey) production cluster in Malwi, • Dates cluster, • Carpentry cluster, • Handmade carpets cluster in Maghagha
2	Menia	Bakery products	1,605	
3	Menia	Wearing apparel, except fur apparel	998	
4	Menia	Structural metal products	445	
5	Menia	Grain mill products	407	
6	Menia	Dairy products	305	
7	Menia	Builders' carpentry and joinery	297	
8	Menia	Articles of concrete, cement and plaster	254	
9	Menia	Other fabricated metal products n.e.c.	247	
10	Menia	Sawmilling and planing of wood	145	
1	Assiut	Bakery products	761	• Handmade wool rugs cluster in Beni El-Adeyat, • Tule industry cluster
2	Assiut	Wearing apparel, except fur apparel	563	
3	Assiut	Furniture	464	
4	Assiut	Grain mill products	385	
5	Assiut	Other fabricated metal products n.e.c.	241	
6	Assiut	Structural metal products	170	
7	Assiut	Builders' carpentry and joinery	169	
8	Assiut	Cutlery, hand tools and general hardware	80	
9	Assiut	Sawmilling and planing of wood	75	
10	Assiut	Articles of concrete, cement and plaster	44	
1	Sohag	Furniture	925	• Carpentry cluster in Tahta, • Carpentry cluster in Akhmim, • Tule cluster in Shandaweel, • Cotton, linen and handmade silk cluster, • Handmade loom products cluster in Kawthar
2	Sohag	Bakery products	711	
3	Sohag	Wearing apparel, except fur apparel	672	
4	Sohag	Structural metal products	509	
5	Sohag	Other fabricated metal products n.e.c.	432	
6	Sohag	Grain mill products	360	
7	Sohag	Sawmilling and planing of wood	201	
8	Sohag	Builders' carpentry and joinery	139	
9	Sohag	Other products of wood	137	
10	Sohag	Printing	98	

No.	Governorate	Top 10 manufacturing industries (based on economic census)	Establish-ments	List of Identified Organic Clusters (SFD)
1	Qena	Bakery products	1,207	• Wood products cluster in Hegaza, • Handmade carpets and wool rugs cluster in Naqada, • Silk products cluster in Naqada, • Handmade pottery production cluster in Gergas
2	Qena	Sawmilling and planing of wood	1,051	
3	Qena	Grain mill products	977	
4	Qena	Wearing apparel, except fur apparel	753	
5	Qena	Articles of concrete, cement and plaster	609	
6	Qena	Furniture	589	
7	Qena	Structural metal products	206	
8	Qena	Other fabricated metal products n.e.c.	163	
9	Qena	Builders' carpentry and joinery	147	
10	Qena	Other porcelain and ceramic products	85	
1	Aswan	Furniture	339	• Podaxis production cluster, • Wicker cluster, • Aromatic oils cluster, • Dates cluster, • Nubian products cluster, • Wool rugs cluster
2	Aswan	Wearing apparel, except fur apparel	332	
3	Aswan	Bakery products	329	
4	Aswan	Structural metal products	75	
5	Aswan	Builders' carpentry and joinery	51	
6	Aswan	Grain mill products	49	
7	Aswan	Articles of concrete, cement and plaster	33	
8	Aswan	Sawmilling and planing of wood	26	
9	Aswan	Other fabricated metal products n.e.c.	25	
10	Aswan	Prepared animal feeds	17	
1	Luxor	Furniture	336	• Alabaster artifacts cluster in Qorna
2	Luxor	Bakery products	266	
3	Luxor	Wearing apparel, except fur apparel	249	
4	Luxor	Grain mill products	130	
5	Luxor	Other fabricated metal products n.e.c.	97	
6	Luxor	Sawmilling and planing of wood	96	
7	Luxor	Builders' carpentry and joinery	75	
8	Luxor	Cutlery, hand tools and general hardware	52	
9	Luxor	Structural metal products	46	
10	Luxor	Printing	35	
1	Red Sea	Bakery products	68	• Basketry cluster in Shalateen, • Home textiles and crochet cluster in Koseir, • Wool rugs cluster in Marsa Allam
2	Red Sea	Furniture	65	
3	Red Sea	Structural metal products	55	
4	Red Sea	Builders' carpentry and joinery	37	
5	Red Sea	Wearing apparel, except fur apparel	34	
6	Red Sea	Sawmilling and planing of wood	14	
7	Red Sea	Other fabricated metal products n.e.c.	10	
8	Red Sea	Clay building materials	9	
9	Red Sea	Made-up textile articles, except apparel	7	
10	Red Sea	Printing	7	
1	New Valley	Bakery products	65	• Basketry cluster, • Wool rugs cluster, • Pottery and handmade ceramics cluster
2	New Valley	Furniture	58	
3	New Valley	Builders' carpentry and joinery	41	
4	New Valley	Wearing apparel, except fur apparel	25	
5	New Valley	Grain mill products	16	
6	New Valley	Other fabricated metal products n.e.c.	13	
7	New Valley	Glass and glass products	12	
8	New Valley	Structural metal products	10	
9	New Valley	Articles of concrete, cement and plaster	8	
10	New Valley	Processing and preserving of fruit and vegetables	4	
1	Matrouh	Bakery products	141	• Dates products cluster, • Olive cluster in Siwa, • Figs cluster, • Olive production cluster,
2	Matrouh	Structural metal products	101	
3	Matrouh	Builders' carpentry and joinery	64	
4	Matrouh	Furniture	63	
5	Matrouh	Wearing apparel, except fur apparel	61	

No.	Governorate	Top 10 manufacturing industries (based on economic census)	Establish-ments	List of Identified Organic Clusters (SFD)
6	Matrouh	Articles of concrete, cement and plaster	12	• Handmade wool rugs cluster in Siwa, • Needle-work and embroidery cluster in Siwa, • Salt-stone, palm leaves and silver products cluster in Siwa
7	Matrouh	Grain mill products	11	
8	Matrouh	Other fabricated metal products n.e.c.	10	
9	Matrouh	Sawmilling and planing of wood	9	
10	Matrouh	Vegetable and animal oils and fats	4	
1	North Sinai	Furniture	113	• Olives and olive oil cluster, • Handmade wool rugs cluster in Sheikh-Zwayed, • Handmade wool rugs cluster in Areesh, • Needle-work and embroidery cluster
2	North Sinai	Bakery products	112	
3	North Sinai	Structural metal products	49	
4	North Sinai	Wearing apparel, except fur apparel	45	
5	North Sinai	Articles of concrete, cement and plaster	38	
6	North Sinai	Builders' carpentry and joinery	19	
7	North Sinai	Other fabricated metal products n.e.c.	18	
8	North Sinai	Other rubber products	9	
9	North Sinai	Vegetable and animal oils and fats	7	
10	North Sinai	Cutlery, hand tools and general hardware	5	
1	South Sinai	Bakery products	37	• Carpentry cluster in Tahta, • Carpentry cluster in Akhmim, • Tule cluster in Shandaweel, • Cotton, linen and handmade silk cluster, • Handmade loom products cluster in Kawthar
2	South Sinai	Furniture	20	
3	South Sinai	Structural metal products	12	
4	South Sinai	Other fabricated metal products n.e.c.	8	
5	South Sinai	Builders' carpentry and joinery	6	
6	South Sinai	Glass and glass products	4	
7	South Sinai	Wearing apparel, except fur apparel	3	
8	South Sinai	Cutlery, hand tools and general hardware	3	
9	South Sinai	Printing	2	
10	South Sinai	Made-up textile articles, except apparel	2	

Source: Authors' analysis of the Egyptian Establishment Census for 2013/14.
Note: n.e.c. = not elsewhere classified

Appendix Table 3. List of 145 organic clusters in Egypt identified by the Social Fund for Development, by sector

No.	Cluster	Governorate	Main sector
	Agricultural production sector		
1	Fodder	Kafr El-Sheikh	Industrial sector
2	Mats	Monoufia	Handicrafts
3	Palm leaf / fronds in Kafr El-Bateekh	Damietta	Handicrafts
4	Mats	Sharqia	Handicrafts
5	Plants' fronds	Sharqia	Handicrafts
6	Mats	Qaliubiya	Handicrafts
7	Bamboo	El-Behera	Handicrafts
8	Palm products in El-Subehi	Fayoum	Handicrafts
9	Plants' fronds	Fayoum	Handicrafts
10	Plants' fronds furniture	Fayoum	Handicrafts
11	Wicker	Fayoum	Handicrafts
12	Flax in Shubra-Mals	Gharbia	Industrial sector
13	Palm leaves and podaxis in Dahshour	Giza	Handicrafts
14	Basketry in Shalateen	Red Sea	Handicrafts
15	Podaxis production	Aswan	Handicrafts
16	Wicker	Aswan	Handicrafts
17	Basketry	El-Wady El-Gedid	Handicrafts
	Food production sector		
1	Rice mills in Fooh	Kafr El-Sheikh	Industrial sector
2	Fish salting in Fooh	Kafr El-Sheikh	Industrial sector
3	Fish salting in Sidi-Salem	Kafr El-Sheikh	Industrial sector
4	Dairy products in Ras-El-Khaleeg	Dakahlia	Industrial sector
5	Milk production	Damietta	Industrial sector
6	Milk production in Faraskour	Damietta	Industrial sector
7	Sweets production	Damietta	Handicrafts
8	Milk production in Kafr Saad	Damietta	Industrial sector
9	Peanuts roasting, peeling and packing	Sharqia	Industrial sector
10	Legumes packaging	Sharqia	Industrial sector
11	Vegetables cleaning and packing	Sharqia	Industrial sector
12	Dairy products in Abo-Kebir	Sharqia	Handicrafts
13	Dairy products in Zagazig	Sharqia	Handicrafts
14	Smoked Herring	Sharqia	Industrial sector
15	Food products in Qalyoub	Qaliubiya	Industrial sector
16	Olives and olive oil	North Sinai	Industrial sector
17	Artichoke	El-Behera	Industrial sector
18	Strawberries packing	El-Behera	Industrial sector
19	Cheese production in Mahmudiya	El-Behera	Industrial sector
20	Dates products	Matrouh	Industrial sector
21	Olive in Siwa	Matrouh	Industrial sector
22	Figs	Matrouh	Handicrafts
23	Olive production	Matrouh	Industrial sector
24	Honey in Tanta	Gharbia	Handicrafts
25	Medicinal oils production	Bani Sweif	Industrial sector
26	Milk production in Malwi	Minya	Industrial sector
27	Molasses (black honey) production in Malwi	Minya	Industrial sector
28	Dates	Minya	Industrial sector
29	Milk production	Suez	Handicrafts
30	Aromatic oils	Aswan	Industrial sector

No.	Cluster	Governorate	Main sector
31	Dates	Aswan	Industrial sector
	Wood production sector		
1	Seashell works	Monoufia	Handicrafts
2	Wood products in Hegaza	Qena	Handicrafts
3	Carpentry in Tahta	Sohag	Handicrafts
4	Carpentry in Akhmim	Sohag	Handicrafts
5	Furniture	Damietta	Industrial sector
6	Carpentry in Abu-Kabir	Sharqia	Handicrafts
7	Furniture in Tenan	Qaliubiya	Handicrafts
8	Coal in Makameer	Qaliubiya	Industrial sector
9	Wood production	Alexandria	Handicrafts
10	Furniture in Katama	Gharbia	Handicrafts
11	Carpentry in Mahala	Gharbia	Handicrafts
12	Carpentry	Minya	Handicrafts
13	Carpentry in El-Darb El-Ahmar	Cairo	Industrial sector
14	Seashell makers in El-Darb El-Ahmar	Cairo	Handicrafts
	Leather production sector		
1	Leather production	Sharqia	Industrial sector
2	Leather production	Alexandria	Industrial sector
3	Footwear makers in El-Darb El-Ahmar	Cairo	Industrial sector
4	Tanneries	Cairo	Industrial sector
5	Glue production in Old Cairo	Cairo	Industrial sector
6	Leather in Nasser	Cairo	Industrial sector
	Textile production sector		
1	Handmade wool rugs in Fooh	Kafr El-Sheikh	Handicrafts
2	Wool production in Fooh	Kafr El-Sheikh	Handicrafts
3	Handmade carpets in Saqiet Abo-shaara	Monoufia	Handicrafts
4	Handmade carpets and wool rugs in Naqada	Qena	Handicrafts
5	Silk products in Naqada	Qena	Industrial sector
6	Tule in Shandaweel	Sohag	Handicrafts
7	Cotton, linen and handmade silk	Sohag	Handicrafts
8	Handmade loom products in Kawthar	Sohag	Handicrafts
9	Knitting in Tanamel	Dakahlia	Industrial sector
10	Knitting in Salamon	Dakahlia	Industrial sector
11	Needle embroidery in Meet Ghamr	Dakahlia	Handicrafts
12	Needle works	Damietta	Handicrafts
13	Carpets	Damietta	Handicrafts
14	Ready-made clothing and knitting	Sharqia	Handicrafts
15	Textile industry in Shubra Al Khaimah	Qaliubiya	Industrial sector
16	Handmade carpets in Talha	Qaliubiya	Handicrafts
17	Handmade wool rugs in Beni El-Adeyat	Asyut	Handicrafts
18	Tule industry	Asyut	Handicrafts
19	Handmade carpets	Alexandria	Handicrafts
20	Handmade embroidery	South Sinai	Handicrafts
21	Handmade wool rugs	South Sinai	Handicrafts
22	Handmade wool rugs in Sheikh-Zwayed	North Sinai	Handicrafts
23	Handmade wool rugs in Areesh	North Sinai	Handicrafts
24	Needle-work and embroidery	North Sinai	Handicrafts
25	Handmade carpet-making in Rashid	El-Behera	Handicrafts
26	Textile in Edko	El-Behera	Industrial sector
27	Handmade wool rugs in Siwa	Matrouh	Handicrafts

No.	Cluster	Governorate	Main sector
28	Needle-work and embroidery in Siwa	Matrouh	Handicrafts
29	Trimmings in Tanta	Gharbia	Handicrafts
30	Handmade carpet-making in Tanta	Gharbia	Handicrafts
31	Textiles in Mahala Al-Kubra	Gharbia	Industrial sector
32	Handmade carpet-making	Bani Sweif	Handicrafts
33	“Aubusson” rugs in Haraneya	Giza	Handicrafts
34	Abaya in Kerdassah	Giza	Handicrafts
35	Wool rugs, carpets and aubusson in Kerdassah	Giza	Handicrafts
36	Wool rugs and carpets in Dahshour	Giza	Handicrafts
37	Trimmings in Oussim	Giza	Handicrafts
38	Handmade carpets in Maghagha	Minya	Handicrafts
39	Knitting in Suez	Suez	Handicrafts
40	Tricot in Suez	Suez	Handicrafts
41	Home textiles and crochet in Koseir	Red Sea	Handicrafts
42	Wool rugs in Marsa Allam	Red Sea	Handicrafts
43	Patchwork	Cairo	Handicrafts
44	Nubian products	Aswan	Handicrafts
45	Wool rugs	Aswan	Handicrafts
46	Wool rugs	El-Wady El-Gedid	Handicrafts
	Chemicals production sector		
1	Plastic industries	Qaliubiya	Industrial sector
2	Garbage recycling in Mansheyet Nasser	Cairo	Industrial sector
3	Wax in Bab El-Sheareya	Cairo	Handicrafts
	Metals production sector		
1	Metal kitchen instruments in Meet Ghamr	Dakahlia	Industrial sector
2	Metal industries	Qaliubiya	Industrial sector
3	Electrical wires in Basoos	Qaliubiya	Industrial sector
4	Chandeliers production in Atareen	Alexandria	Industrial sector
5	Metal-forming in Mansheyet Nasser	Cairo	Industrial sector
6	Copper touristic products in Khan Al-Khalili	Cairo	Handicrafts
7	Silver artifacts in Khan Al-Khalili	Cairo	Handicrafts
8	“Fer forgé"	Cairo	Handicrafts
	Mining and construction sector		
1	Pottery production	Monoufia	Handicrafts
2	Handmade pottery production in Gergas	Qena	Handicrafts
3	Glass engraving and decoration	Dakahlia	Handicrafts
4	Marble industry in Al-drissa	Alexandria	Industrial sector
5	Pottery in Kom-Osheem	Fayoum	Handicrafts
6	Pottery in El-Nazla	Fayoum	Handicrafts
7	Earthenware production in Tunis	Fayoum	Handicrafts
8	Salt-stone, palm leaves and silver products in Siwa	Matrouh	Handicrafts
9	Earthenware and pottery in Babsyoon	Gharbia	Handicrafts
10	Glass production in Samanood	Gharbia	Industrial sector
11	Clay bricks production	Bani Sweif	Industrial sector
12	Clay bricks in Arab Abu-Sa'ad	Giza	Industrial sector
13	Alabaster artifacts in Qorna	Luxor	Handicrafts
14	Rosary production in Mansheyet Nasser	Cairo	Handicrafts
15	Pottery and earthenware production in Old Cairo	Cairo	Handicrafts
16	Marble industry in Shaq El-Te'ban	Cairo	Industrial sector
17	Glass in Al-Hussein	Cairo	Handicrafts
18	Pottery and handmade ceramics	El-Wady El-Gedid	Handicrafts

No.	Cluster	Governorate	Main sector
	Paper production and printing sector		
1	Papyrus	Sharqia	Handicrafts
2	Papyrus	Bani Sweif	Handicrafts

Source: Authors' analysis of the results of the 2015 Social Fund for Development mapping exercise of clusters in Egypt.

Appendix Table 4. Clusters with high growth potential in Lower and Upper Egypt – Ranking results of the Social Fund for Development

Rank	Governorate	Cluster
	Lower Egypt	
1	Damietta	Furniture
2	Cairo, including Helwan	Tanneries
3	Kafr El Sheikh	Handmade wool rugs in Fooh
4	Damietta	Sweets production
5	Menoufia	Handmade carpets in Saqiet Abo-shaara
6	Cairo, including Helwan	Marble industry in Shaq El-Te'ban
7	Cairo, including Helwan	Footwear makers in El-Darb El-Ahmar
8	Gharbia	Textiles in Mahala Al-Kubra
9	Behira	Artichoke
10	Gharbia	Furniture in Katama
11	Kalyoubia	Textile industry in Shubra Al Khaimah
12	Kalyoubia	Plastic industries
13	Cairo, including Helwan	Patchwork
14	Behira	Textile in Edko
15	Menoufia	Pottery production
16	Behira	Strawberries packing
17	North Sinai	Handmade wool rugs in Sheikh-Zwayed
18	Gharbia	Honey in Tanta
19	Alexandria	Leather production
20	Cairo, including Helwan	Glass in Al-Hussein
21	Kalyoubia	Handmade carpets in Talha
22	Gharbia	Trimmings in Tanta
23	Kalyoubia	Electrical wires in Basoos
24	Sharkia	Ready-made clothing and knitting
25	Gharbia	Handmade carpet-making in Tanta
26	Gharbia	Glass production in Samanood
27	North Sinai	Handmade wool rugs in Areesh
28	North Sinai	Needle-work and embroidery
29	Giza, including 6th of October	Abaya in Kerdassah
30	Cairo, including Helwan	Carpentry in El-Darb El-Ahmar
31	Kalyoubia	Metal industries
32	Dakahlia	Glass engraving and decoration
33	Cairo, including Helwan	Garbage recycling in Mansheyet Nasser
34	Damietta	Needle works
35	Alexandria	Handmade carpets
36	Cairo, including Helwan	Copper touristic products in Khan Al-Khalili
37	Alexandria	Wood production
38	Giza, including 6th of October	Clay bricks in Arab Abu-Sa'ad
39	Giza, including 6th of October	Handmade Wool Carpets and “Aubusson” rugs in Haraneya
40	Kalyoubia	Furniture in Tenan
41	Kalyoubia	Coal in Makameer
42	Giza, including 6th of October	Wool rugs and carpets in Dahshour
43	Sharkia	Papyrus
44	Giza, including 6th of October	Wool rugs, carpets and aubusson in Kerdassah
45	Matrouh	Needle-work and embroidery in Siwa
46	Kafr El Sheikh	Rice mills in Fooh
47	Alexandria	Chandeliers production in Atareen
48	Gharbia	Flax in Shubra-Mals

Rank	Governorate	Cluster
	Upper Egypt	
1	Luxor	Alabaster artifacts in Qorna
2	Fayoum	Earthenware production in Tunis
3	Qena	Silk products in Naqada
4	Sohag	Handmade loom products in Kawthar
5	Menia	Carpentry
6	Aswan	Nubian products
7	Sohag	Carpentry in Akhmim
8	Assiut	Handmade wool rugs in Beni El-Adeyat
9	Fayoum	Wicker
10	Aswan	Wool rugs
11	New Valley	Wool rugs
12	Red Sea	Wool rugs in Marsa Allam
13	Beni Suef	Clay bricks production
14	Sohag	Tule in Shandaweel

Source: Authors' analysis of the results of the 2015 Social Fund for Development mapping exercise of clusters in Egypt.

APPENDIX II

A) Structured interview questions

Cluster-Based Development Research Project– Structured Interviews

"This structured interview is conducted with key actors who either have the knowledge or are currently conducting similar research on industrial clusters in Egypt. Our research is a part of IFPRI's Egypt Research Project on Cluster Based Development that is funded by USAID. The aim is to obtain informed advice in order to pick a few representative case studies that would allow an in depth analysis to further analyse the drivers and constrains of cluster formation in Egypt and the role of different actors in the development if these clusters"

Name:

Title:

Organization:

1- How do you define an industrial cluster?

2- What is your organization's work or input towards cluster-based development in Egypt?

3- Does the map or table reflect your perception of industrial clustering at the governorate level?

4- In your opinion what should be our criteria to narrow down our choice of sectors (clusters) to make our case of choosing certain industries in certain locations?

5- What are promising sectors for generating employment in the wake of ongoing macro-economic reforms in Egypt?

With a focus on Agroindustry? In Upper Egypt?

6- Which industry is well known for clustering (or has a history of clustering)? Please spell out the exact location.

7- Regarding the identified cluster, how is the cluster doing so far? What are the bottlenecks it is facing for further development?

8- In your opinion what can the government do to overcome these bottlenecks? Any policy options you suggest?

9- Has your organization or other organizations done work on that specific cluster? Please share resources.

10- Who do you recommend we meet who has knowledge or is currently conducting similar research on industrial clusters in Egypt?

B) Workshop questions

December 20th, 2017 timeframe: 1 hour

Industries: Furniture; Handicrafts; Agroindustry

Introductory round:

1. Please share your name, title, and position.
2. Briefly tell us about your expertise in this industry.

History:

3. Tell us about this industry in Egypt.
    a. How and in which areas of Egypt did it start?
    b. Describe the general status of this industry today.
    c. How many people work in this sector?
    d. How many workshops/firms are there in this industry today? (If possible, please provide an exact number)
    e. Why and how has the industry expanded, stagnated, or declined?

Status:

4. Please identify and locate on the map the clusters in this industry, that you know of. (Name, location, boundaries, products, contact person and affiliation)
5. To your knowledge, please highlight the status of each cluster:
    a. Organic or Inorganic (created)
    b. Historic/old; Relatively new; or New
    c. Booming; Stagnant/idle; or declining
6. Describe the make-up of each cluster. Please highlight unique characteristics.
7. In your opinion(s), how does this cluster offer real "value added" to the industry?
8. How would you evaluate the performance of the industry's/cluster's products on the international market, i.e., exports?
    a. Do you see scope for higher demand; competitiveness; and access to markets?

Challenges vs. Avenues for growth

9. Describe any challenges or bottlenecks to growth that these clusters face, in relation to:
    a. Access to capital, markets, technology, labor, knowledge, or authority
    b. Legality/illegality
    c. Social identity and social relations
10. Describe any potential or actual opportunities for growth that these clusters face, in relation to:
    a. Access to capital, markets, technology, labor, knowledge, or authority

    b. Legality/illegality

    c. Social identity and social relations

Governance

11. Describe relations with the government.

12. How do the mentioned challenges get communicated?

    a. By whom are they presented?

13. How responsive has the government been? (Please give examples.)

14. Describe the tiers of governance for clusters in this industry.

15. Describe the regulations that clusters must follow.

    a. How do they match local needs and conditions?

    b. How is clusters' compliance to regulations monitored?

    c. How are clusters sanctioned if regulations are violated?

16. How are disputes within and/or across clusters settled?

17. How are disputes between clusters and authorities settled?

18. Can clusters or industry members participate in modification of rules or formulating and implementing solutions? If so, how?

General:

19. Describe the elements that you think make up a successful cluster, relevant to this industry.

20. Describe the elements that you think support a cluster in overcoming bottlenecks or challenges, relevant to this industry.

Going forward:

21. Which of these clusters do you suggest IFPRI and ECES should select as a case study for their research project? Why?

22. Please suggest a contact person for field visits to the suggested cluster(s).

C) Furniture workshop roundtable key highlights

Industry competitiveness

- The sector can focus on import substitution, given the high exchange rate with the devaluation of the Egyptian currency.
- Exports have increased by 600 percent in the last 15 years.
- There are 120,000 establishments working on furniture scattered all over Egypt. Thirty five percent of establishments are in Damietta and 19 percent in Cairo and Greater Cairo.
- Value-added is nearly 51 percent of the industry.
- Cost of creating one job is one-third of the national average cost.
- Furniture making is highly celebrated in Egyptian culture.
- The sector has strong potential for combating poverty.
- In terms of logistics, Safaga port is an opportunity for the sector's growth in Upper Egypt, since it leads to easier access to different markets.

Industry main challenges and bottlenecks

- The furniture sector is not a unified sector, as there are many sub-sectors. Using the HS-code, and even with 6 digits, you can only know that the manufactured commodity is a chair, for example.
- Large players depend on contracts for big projects, such as hotels, universities, etc. This may rule out the participation of many of the smaller clusters.
- The industry needs technological advancement and large investments in research and development.
- Lack of trust among firms in the furniture industry. There is a need to establish a local legal framework to guide the industry.

Expert advice

- Generally, there is a large potential to increase Egypt's furniture exports, but this requires upgrading to higher quality products with better designs. There are large opportunities for developing clusters in furniture based on waste, e.g., cottonwood, palm leaves, and rice straw.
- A wealth of research has already been done on furniture clusters, but with little impact. While Damietta is a famous furniture industrial zone, it cannot be treated as one cluster and has to be dissected. This makes Damietta a challenging site for field work. Alternatively, Tahta, Kotamaa, and Alexandria have been recommended as cluster study sites.

Promising furniture clusters:

- Damietta
    - If Damietta is to be studied, then it is important to divide the cluster into three separate units: Old Damietta City (the organic cluster), New Damietta (government planned furniture city), and the workshop villages (around the city of Damietta). Most studies treat Damietta as one industrial cluster, but the differentiation between the needs and situation of each of these regions in Damietta is crucial.
    - The city has near zero unemployment, so it should not be a focus cluster if one of our objectives is to examine the potential of clusters to generate employment.
- Tahta Village, Sohag, Upper Egypt
    - Many refer to Tahta as "the Damietta of Upper Egypt" It is an organic furniture cluster serving the local market.

    - Challenges:
        - No port.
        - No infrastructure or transportation, lack of logistics.
        - Not enough demand to serve as an incentive for improving the quality of the furniture produced.
    - The cluster needs specialization, which can come in the form of producing parts rather than full furniture pieces. Producing parts would serve in import substitution for local markets. They can produce components – such as table legs and chair legs – to be sold for large furniture manufacturers.
    - Linkages need to be created between the factories/workshops and the technical schools.
    - Collective action can lead to large efficiency gains.
        - The owners of workshops can benefit from collectively buying raw materials in order to bargain for lower prices.
        - Creating a business resources center could also be very useful.
        - Need for firms to cooperate has to be created.
- Kotamaa Village located in Gharbia governorate.
    - The cluster has a website: http://www.kotamaa.com/
    - Needs assessment for this cluster has been done by HLB Egypt-Makary Consulting.
    - It is similar to Sohag, but the cluster has a more competitive position and engages in more value addition than does Sohag.
- Alexandria
    - The city is famous for reproduction of antique furniture and multimedia products that mix, for example, glass with bronze, vitrines, etc.
    - It is export oriented, with large potential for exports to the Gulf countries.
    - The industry in Alexandria is also famous for bronze work.

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