



**SERVICES CONTRIBUTION TO VALUE CHAINS:
A CASE STUDY OF THE EGYPTIAN FOOD PROCESSING SECTOR**

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Abstract

The services sector has been increasingly dominant in most economies. According to the World Development Indicators, the share of services in world GDP was 69 percent in 2016 compared with 53 percent in 1970. This steady growth of the service sector over the years has led many countries to consider both manufacturing and services, as a double engine of growth and Egypt is no exception to that trend. Not only do services have the largest share of Egypt's GDP (2016 – 55 percent), employing a roughly equal share of its labour force, it is also a sector that is expected to grow further in the future. According to the sustainable development strategy (SDS), the service sector is to reach 57 percent of the GDP by 2030. The importance of the service sector in any economy cannot be overstated. It has an impact on the level of social welfare and quality of life, as well as on the competitiveness of the economy. Production services are an integral part of the value chain of any product, thus shortcomings in the provision of these services can have serious implications for the efficiency of production, leading to huge losses in competitiveness across the economy. This paper aims at highlighting the role of services in the Egyptian manufacturing sector, with a focus on the food-processing sector. By analysing services in the value chains of three case studies representing the following sub-sectors: agro-industries, dairy and juice, olives and olive oil, this paper shows that inefficiencies in service provision have negatively affected both the performance of the sector, and the ability of the economy to generate employment opportunities by increasing the cost of production and forcing firms to be increasingly vertically integrated. The paper concludes with specific policy recommendations to turn the service sector from a shackle to a booster of the sector and the economy at large.

ملخص

يشهد قطاع الخدمات أهمية متزايدة في معظم الاقتصادات. فوفقاً لمؤشرات التنمية العالمية، بلغت حصة الخدمات في الناتج المحلي الإجمالي العالمي 69% في عام 2016 مقابل 53% في عام 1970. وهذا النمو المطرد لقطاع الخدمات على مر السنين قاد العديد من البلدان للنظر إلى التصنيع والخدمات على أنهما محركا مزدوجا للنمو، ولا تُستثنى مصر من هذا الاتجاه. فقطاع الخدمات في مصر لا يمثل فحسب أكبر حصة من الناتج المحلي الإجمالي (2016 – 55%)، ويشغل حصة معادلة تقريبا من قوة العمل، ولكنه أيضا من المتوقع أن يزداد نموا في المستقبل. فوفقا لاستراتيجية التنمية المستدامة، من المستهدف أن يصل نصيب قطاع الخدمات من الناتج المحلي إلى 57% بحلول عام 2030. ولا يسعنا أن نبالغ في أهمية قطاع الخدمات في أي اقتصاد. فهذا القطاع له أثر على مستوى الرفاهة الاجتماعية وجودة الحياة، وكذلك على القدرة التنافسية للاقتصاد. حيث تشكل خدمات الإنتاج جزءا لا يتجزأ من سلسلة القيمة لأي منتج، وبالتالي فإن أوجه القصور في تقديم هذه الخدمات يمكن أن تترتب عليها آثار خطيرة بالنسبة لكفاءة الإنتاج، مما يؤدي إلى خسائر فادحة في القدرة التنافسية للاقتصاد. في هذا الإطار، تهدف هذه الورقة إلى تسليط الضوء على دور الخدمات في قطاع الصناعة التحويلية في مصر، مع التركيز على قطاع الصناعات الغذائية، وذلك من خلال تحليل الخدمات في سلاسل القيمة الخاصة بثلاث دراسات حالة تمثل القطاعات الفرعية التالية: الصناعات الزراعية، والألبان والعصائر، والزيتون وزيت الزيتون. وتبين الدراسة عدم الكفاءة في تقديم الخدمات أثر سلبا على أداء القطاع، وعلى قدرة الاقتصاد على توفير فرص عمل من خلال زيادة تكلفة الإنتاج ودفع الشركات نحو المزيد من الاندماج الرأسي. وتختتم الورقة بتوصيات محددة على مستوى السياسات لتحويل قطاع الخدمات من عبء إلى قوة من شأنها تعزيز القطاع والاقتصاد ككل.

1. IMPORTANCE OF SERVICES IN THE GLOBAL ECONOMY

The service sector has been increasingly dominant in most economies. According to the World Development Indicators, the share of services in world GDP was 69 percent in 2016, compared with 53 percent in 1970. The steady growth of the service sector over the years is attributable to several factors. New technologies, globalisation of financial markets and the move towards trade liberalization have played a pivotal role. Furthermore, and in certain ways more significantly, the gradual paradigm shift in the service economy transformed services from being primarily government functions, performed by monopoly public utility entities, into commercial products exchanged in competitive markets. This has also led to structural changes in service industries, leading to further segmentation of the production process and product differentiation, resulting in more arms-length service transactions, many of which are inputs into the production of goods and other services.

In terms of the share of services in GDP of individual countries around the world, in most cases, it is greater than manufacturing, agriculture and mining combined. The rise of global supply chains (GVCs) and new business models has given services even more prominence and strategic importance. Services are rightly perceived as the "glue" that holds the chain together.

This reality is not only true for advanced industries such as ICT equipment or sophisticated cars, but it also holds for the most basic of production operations such as producing a loaf of bread. A recent case study by the Fung Global Institute in Hong Kong on the value-chain for the production and consumption of bread revealed that services account for 72 percent of the final cost of a loaf of bread. The broad categories of services accounted for include importation, manufacturing, transportation, distribution, and retail and back-office support functions. The example of the 30 services entering the value chain in this case can probably be found, in one form or another, in almost all manufacturing operations to varying extents. It is, therefore, no wonder that the strength of the service sector is always a determinant of the overall level of competitiveness in any economy.

The service sector is also a determinant of the level of social welfare and quality of life in societies. The strength and efficiency of sectors like health care, education, communication, energy, public transport, retail, banking, insurance and others, will always be necessary to fulfil the daily needs of the population at large.

In today's world, national economies cannot function effectively without access to competitive global service markets, not only to strengthen the capacity of their own service sector, but also to ensure the availability of competitive, high-quality service inputs essential to all its productive sectors, whether in manufacturing, agriculture, or mining. On the other hand, shortcomings in the service sector, leading to more expensive and inefficient inputs lead to huge losses in competitiveness across the economy.

The role of competition, introduced through liberalisation of service industries (not deregulation), has been increasingly recognized as a critical component of any successful policy mix aiming at strengthening the service sector and the economy at large.

Over the past four decades, advanced economies, as well as emerging developing countries, have devoted major efforts and attention to the liberalization of the service sector and the development of pro-competitive regulatory frameworks. However, designing and implementing sound and coherent service policies and regulation have always been challenging, given the diversity and heterogeneity of service sectors as well as the multiplicity of governmental and non-governmental institutions involved in policy making and regulation. Service policies in various sectors also often overlap with many other crosscutting policies such as competition, labour, environment and others. However, one of the most important areas of overlap relates probably to investment policies and regulation. It is very difficult to have a sound investment policy that succeeds in attracting needed foreign direct investment (FDI) without a corresponding policy vision for the service sector, and vice-versa. After all, in today's world, services account for two thirds of global FDI stock.

A few decades ago, in response to the rising of the strategic importance of services in the global economy and, in particular, the importance of international trade in services (i.e., all cross-border transactions including investment and labour mobility for services), the international community started giving serious consideration to institutional arrangements for international cooperation in the field. The first such arrangement was the WTO's General Agreement on Trade in Services (GATS), which entered into force in 1995 and, for the first time, provided a definition of, and multilateral rules for service trade, as well as a forum for continuing negotiations for the progressive liberalization of services among WTO Members. The GATS provided subsequent guidance to many bilateral and regional preferential trade agreements covering trade in services.

2. THE ROLE OF SERVICES IN EGYPT'S ECONOMY

Egypt's economy has long been dominated by its service sector. According to 2016 figures (World Bank), it represents more than half of its GDP (2016 – 55 percent; 2000 – 50 percent) and employs roughly half of its labour force in 2015. At the same time, the share of agriculture, which is gradually diminishing, was no more than 12 percent of GDP and manufacturing industries no more than 17 percent in 2016. The remaining share lies with non-manufacturing industries. The service sector is also the biggest generator of foreign exchange revenue. Of course, as in other economies, it plays a strategic role in providing inputs for the production of all products, be they goods or services. The backward and forward linkages with other sectors of the economy make the service sector the real "glue" for value chains, be they global or domestic.

Furthermore, the service sector is directly related to the level of social welfare in Egypt and the quality of life of the Egyptian society. The availability of, and the access to services such as education, health care, energy, banking, insurance, transport and retail, will always represent priorities for any government policy. Ensuring the quality of such services is also necessary through sound policy and regulatory approaches.

Shortcomings in the service sector, on the other hand, could have serious adverse effects on economic performance. Egypt, for instance, has been rated number 6 worldwide in producing fresh vegetables in 2011 (Economist statistics 2014). However, this impressive production capacity is not commensurately reflected in Egypt's export performance, or in Egypt's own domestic market in terms of supply and price-levels. It is one thing to grow tomatoes in the field; it is another to get them to the shelves of a supermarket, at home or abroad. Between the two points lies a chain of services that include finance, professional services, packing, transport, storage, wholesale, etc.

The government of Egypt has always been interested in promoting a strong and a competitive service sector. The most recent expression of that vision was contained in the Sustainable Development Strategy (SDS), announced by the government during the "Egypt Economic Development Conference" in March 2015. In the part of the SDS that relates to the economy, one of the key performance indicators (KPI) is to "increase the contribution of services to GDP to 57 percent". This KPI comes in the broader context of the overall economic strategy of supporting "a market-competitive, diversified, knowledge-based and private-sector led economy."

Experiences of countries around the world at various levels of development have shown that the share of services in GDP always grows as the economy advances.

It is also noteworthy that the development of the Suez Canal area into an international industrial hub, which is one of Egypt's most strategic projects at this stage, will depend largely on efficient and competitive service industries. Sectors such as maritime transport, logistics, port services and other modes of transport will be the backbone of the waterway operations. Furthermore, industrial projects foreseen around the area, are expected to enhance Egypt's participation in industrial global value chains, will also be dependent on other infrastructure services such as energy, telecommunication, ICT, finance, insurance and many others. The quality and efficiency of such services will no doubt be a key determinant in the overall success of the project and the extent to which the area will develop.

It has been well established over the years that introducing competition in service markets through liberalization can bring about tremendous welfare gains for both the economy and society. However, it also poses serious challenges, in particular that of regulation. Designing policies for economic and social development, as complex as that might be, is never enough. Policies need to be given effect through laws and regulations that guarantee effective implementation. That normally involves the design of new rules in the form of laws and regulations as well as necessary accompanying institutional reforms that ensure the proper functioning of the regulatory process. Perhaps one of the most important features of the service paradigm shift over the past few decades has been the fundamental change in the role of governments in the service sector. Instead of being the providers of services, governments have now become the regulators of services. The regulatory responsibility is proving to be far more complicated and sophisticated compared to the old role of the provider. It is indeed a challenging task, the specifics of which vary from one sector to another, while the broad objectives remain common, namely, to introduce competition in the market through liberalization (not de-regulation) and to ensure that in each of the sectors policies and rules are set to effectively deal with market failures as well as negative externalities of reforms.

3. THE NEED FOR FURTHER ANALYSIS

Developing an efficient and competitive service sector in a market economy is far from a simple matter. Arriving at sound policy reform strategies requires thorough analysis and appraisal of current and future challenges and opportunities. It also requires careful consideration of various policy options as they relate to the broad range of policy objectives (economic development, social, environmental, etc.) that Egypt aspires to achieve. So often, such reform processes are also fraught with political hardships that involve difficult choices. However, by providing a sound information base, careful analysis and a thorough process of consultation and constructive interaction among different government agencies and stakeholders in Egypt, it should be possible to arrive at optimal reform strategies that could fulfil the potential of the service sector in Egypt.

With a view to contributing to the development of an information base with rich analysis, this analytical exercise aims at achieving a clearer appreciation of the importance of services in the value chains relating to specific products.

4. PURPOSE OF THE ANALYTICAL EXERCISE

Service inputs into production operations are often determinants of the competitiveness of final products be they manufactured, agriculture or other services.

The purpose of this exercise is to better understand the complex, multifaceted and often overlooked role of services in production, distribution and consumption in order to identify additional sources of improvements in competitiveness, and consequently, arrive at proposed policy and regulatory reforms.

5. METHODOLOGICAL APPROACH

To achieve the purpose of this analytical exercise, the following methodology has been adopted:

1. Identification of the value chain from beginning to end, from the sourcing of inputs to the delivery of the final product, focusing on one product or a homogeneous group of products.
2. Identification of all service inputs into the value chain while avoiding any double counting. A guiding questionnaire was designed, including a list of potential services, with the possibility of including additional services based on interviews with the

companies (Table 1 in the Annex). Government-provided services were also included in the questionnaire, the rationale behind this being twofold:

First: government services, including those related to customs, infrastructure and utilities, are part of the services utilized by the companies, and any inefficiency in the provision of these services burdens companies with extra costs, which could be reduced by such action.

Second: the ultimate goal of this exercise is to identify specific actions for policy intervention, and thus there is a need to identify gaps in service provision.

3. Enumeration of all services entering the value chain. Once all service inputs into the value chain had been identified, an analysis in terms of cost was conducted. Companies interviewed were asked to disclose an approximate cost of the services utilized within their value chain as a percentage of total cost of production. However, with different degrees of success, the data provided was not inclusive of all the services mentioned in the questionnaire, but rather represented the cost of key services. In some cases, the cost of specific services was not explicitly priced. In other cases, the companies indicated the cost of the service to be minimal; consequently, the contribution of services in many instances could have been under-represented. However, what was provided could be considered as indicative to approximate the value of services in the total cost of production.
4. Description of the manner in which services are supplied, indicating whether in-house or outsourced, and whether any regulatory requirements affect the choices of the producer of the final product.

To the greatest extent possible, if some services are not supplied separately but bundled with goods or with other services, individual service components were identified. In addition, an analysis was conducted of the reasons behind voluntary outsourcing: lack of in-house capacity, cost-cutting, or other efficiency gains.

5. Analysis was carried out of how government policies and regulations affect the market of each service entering the value chain. Positive and negative effects were identified including issues related to competition, and the quality of services provided, thus helping to determine the desirable policy interventions in the service sector concerned to improve efficiency.

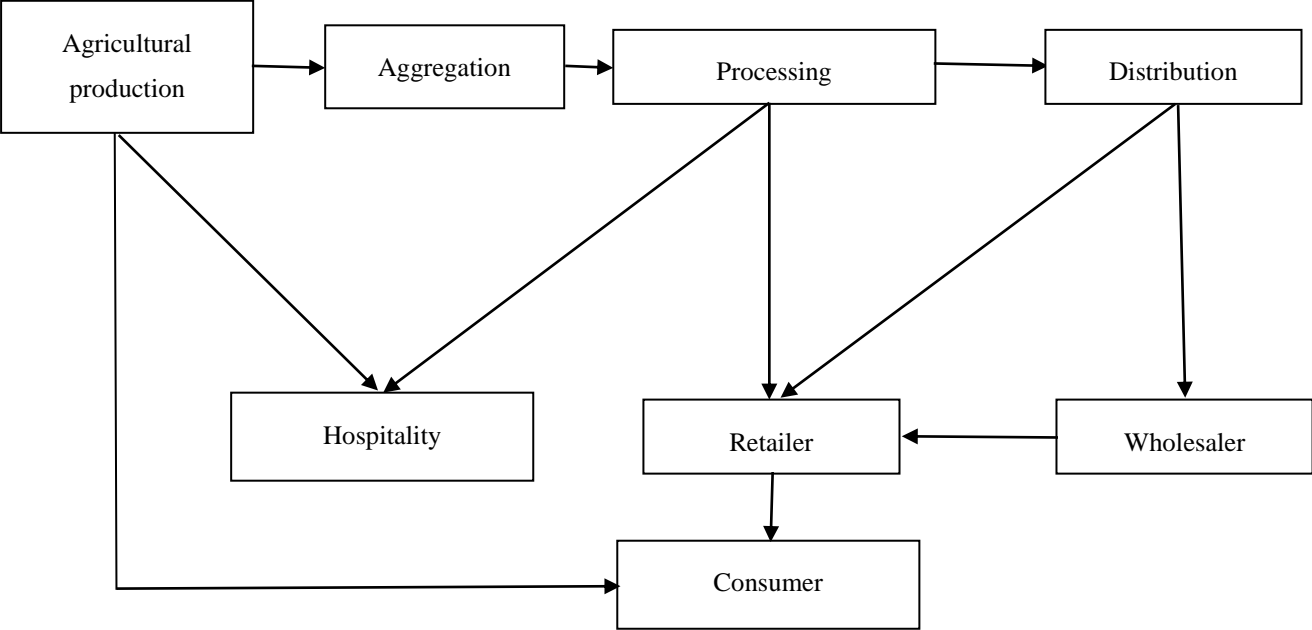
6. SERVICES IN THE FOOD PROCESSING SECTOR VALUE CHAIN

According to the FAO, the food value chain is “the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers.”

This range of farms and firms include both the direct value chain actors (farmers & food producers), as well as service providers whether be they financial services (banks, insurance, accounting, ect) or non-financial services (storage and warehousing, transport, laboratory testing, personnel training, etc.) (FAO 2014).

As highlighted in Figure (1), the starting point in the food processing sector value chain is **agricultural production**, supplying the food industry with different raw materials including crops, meat, poultry and milk. This is followed by the **aggregation function**, which involves the collection and storage of the produce from different small farmers. This function is especially relevant to countries characterized by fragmented land ownership among many small producers and limited contract farming practices, and it is performed by different actors including producer groups, intermediaries specialized in aggregation, food processors, or food distributors (FAO 2014). After supplying the required inputs, the **processing function** is performed by food processing companies with different levels of involvement in the processing stage. Some are only involved in the primary and secondary processing, which include activities like sorting, grading, cutting, squeezing, refining and freezing, pureeing, milling. Others are involved in the tertiary processing, which includes, for example, preparation of ready-made meals, confectionary, among others. **Finally, the food processing value chain ends with the distribution function**, which links the producers and processors with the markets. Food products (fresh and processed) are either distributed to wholesalers and retailers, including local corner shops, large supermarkets and hypermarkets, or alternatively it is directed to the hospitality sector, which is not a direct distributor or retailer. The hospitality sector including catering services, hotels, and restaurants and takeaway food establishments (Dani 2015).

Figure 1. Food Processing Sector Value Chain



Source: Adapted version from Dani (2015).

Zooming in on the role of services in the food processing sector value chain, we find that the industry is supported by a multitude of services, which have a direct impact on the competitiveness of the industry. However, there are five services of special importance to the food processing sector due to the nature of its products. The short life span of food products, especially the fresh products, and its impact on human health gives services related to logistics, quality control and compliance management, testing, and safety inspections an additional significance. Further, given the homogeneity of products in each product group, marketing services becomes essential to gain customer loyalty to a specific brand. In addition to these core five services, there are wide array of services utilized in each stage of the value chain, the most important of which are highlighted in Table (1).

Table 1. Services along the Food Processing Sector Value Chain

Stage in the value chain	Related services
Agriculture Production	<ul style="list-style-type: none"> ▪ R&D for new strands and seeds, fertilizers and pesticides ▪ Procurement of material inputs. ▪ Transportation of raw materials to farm ▪ Extension services ▪ Banking
Collection	<ul style="list-style-type: none"> ▪ Transportation of agricultural production ▪ Quality inspection ▪ Storage and warehousing
Food Processing	<ul style="list-style-type: none"> ▪ Research and development for creating new products, new packaging material and new production technologies ▪ Procurement of material inputs from either local source or an international source ▪ Customs clearance and inspection ▪ Transportation of raw material to warehouses ▪ Production management ▪ Engineering services ▪ Quality control and compliance management ▪ Cleaning and warehousing ▪ Safety inspection
Marketing & Distribution	<ul style="list-style-type: none"> ▪ Branding and advertising ▪ Catalogue design ▪ Web development ▪ Communication with a network of wholesalers and retailers, hospitality sector. ▪ Warehousing ▪ Transportation ▪ Customs inspection and clearance
Cross-cutting services:	banking services, insurance, accounting, internal & external auditing, security, human resource management, legal services, courier and postal services, utilities, repair and maintenance, telecommunication, general management, personnel training, business consultation services.

Sources: Nahuel and Padilla (2014); Selim (2009).

The following sections shall give a quick review over the services in the Egyptian food processing sector value chain, zooming in on a detailed study of the role of services in three case studies representing the following industries: dairy and juice, olive and olive oil, and agro-industries. Finally, on the basis of the analysis the study presents a number of policy recommendations in specific areas, which are considered the most binding constraints facing the services along the food sector value chain.

7. A BRIEF DESCRIPTION OF THE FOOD INDUSTRY IN EGYPT¹

The food processing sector is considered one of the oldest manufacturing sectors in Egypt. Despite its deterioration during the 70s and 80's due to nationalization, it regained its momentum during the 90s with the introduction of reform policies, which attracted many multi-national players to the Egyptian market like Nestle, Kraft and Cadbury, as well as boosted local private investments in the sector. Currently the sector comes at the top of the manufacturing value added structure with a share of 12 percent in 2013/2014 (CAPMAS, 2015).

The sector is dominated by micro enterprises which constitute around 94 percent of total enterprises in the food and beverage sector. According to the latest economic census published by CAPMAS in 2014,² there is a total of 77,289 companies in the food and beverage sector, out of which 200 are state-owned enterprises, 4586 in the private sector with more than 10 employees, leaving 72,503 in the private sector with under 10 employees.

The large presence of the informal sector puts the food processing sector at a great disadvantage. On one hand, there are major problems regarding the hygienity of the products. The entire value chain is subject to a high level of contamination starting with the quality and handling of the inputs used, through the processing of food manually in a non-hygienic manner, and finally the primitive packaging and shelving using materials that have serious implications on human health (Selim 2009). In addition to this, the low price of these products subjects the formal sector to unfair competition (ECORYS-NEI 2005).

The sector produces a wide variety of products that can be categorized into 10 product groups: milk and dairy products, oils and oil by-products, beverages and bottled water, fruits and vegetable products (fresh and processed), confectionary and chocolates, meats, poultries and fish (fresh and processed), specialty food and food additives, grinding and flour, rice polishing and pasta industry.

The food processing industry value chain suffers from a number of bottlenecks, especially in relation to the services provided along the chain, which will be discussed in more detail below.

¹ All data were the latest available during the time of conducting the study.

² The census was conducted for the year 2012/2013.

8. SERVICES ALONG THE CHAIN

Taking a closer look at the services along the Egyptian food processing sector value chain reveals that the industry is burdened with extra costs due to inefficiencies in service provision. These inefficiencies partially arise from the lack of competition with its implications on both the quality and price of services provided, and partially from the inadequacy of the services provided to the needs of the industry for reasons other than those related to competition. It is important to highlight that we are focusing here primarily on those services where bottlenecks have been identified.

Starting with agricultural production, we find that despite of the presence of an agricultural production base in Egypt,³ the extent to which agricultural production caters to the needs of the food-processing industry is undermined by five factors:

1-Fragmented landholding: land ownership in Egypt is dominated by smallholdings, with about 56.6 percent of holdings having an area of no more than 5 feddan in 2009/2010 (CAPMAS 2017), and thus limiting the possibility of setting quality control mechanism, and renders it very difficult to engage in contract farming. (ECORYS-NEI 2005). Further, agriculture land fragmentation is considered one of the problems that hinder the establishment of cold storage facilities as will be elaborated later.

Although cooperatives have been initially set to mitigate the negative impact of land fragmentation, they have deviated from this role due to the lack of human and financial capabilities needed to offer services to farmers, and their activities are not aligned to farmers' needs(Booz & Co 2014).

2-Absence of transparent mechanism for the allocation and Pricing of reclaimed land

The ownership of desert land for agricultural reclamation is governed by law no 143 of 1981, which allowed for larger land ownership compared to the old arable land. However, there is a lack of transparent mechanism for the allocation and pricing of the reclaimed land.

³ In Egypt, planted agricultural land amounts to 8.92 million feddans, which represent about 3.6 percent of the total area in 2014. Due to the variation in the climate between different seasons, Egypt enjoys a diversified range of agricultural products, including exotic fruits, variety of vegetables, with a total value of LE 170,952 million in 2013/2014. As for milk production, according to CAPMAS data, there was a total of 8.6 million cattle (cows and buffalo), in addition to 9.7 million sheep and goat in 2013. Total crude milk production is estimated at 5.55 million tons in 2013, 97.7 percent of which comes from cows and buffalo.

Adverse possession⁴ is considered a common practice with regard to reclaimed land ownership. Trying to solve this problem, law no 144 of 2017 has allowed relevant state administrative body to dispose state owned land by direct agreement with the possessors who have already reclaimed the land before the issuance of the law, either by sale or by the lease that ends with the sale or by giving license to use. By 2018 adverse possession will be prohibited.

Further large reclaimed land plots are at risk of fragmentation due to weak monitoring on the sale of these large plots (Booz & Co 2014)

3-Weak Extension services: extension services in Egypt are dominated by government/ official extension services. The majority of the staff employed in the government extension services are poorly informed, inefficiently organized, underpaid and sometimes corrupt, resulting in the poor quality of services provided to the farmers via this channel. Out of all the extension advisory services providers, farmers rated the government extension services to be the least useful. Despite their inefficiency, government extension services have the advantage of being spread all over Egypt, an aspect that cannot be fulfilled by other extension service providers.

Other agriculture extension services providers include associations, and private sector extension services. With respect to associations, although they play a role in providing technical assistance for agriculture and rural development at large, the services provided are variable, fragmented and inconsistent depending on the strength and degree of human capital in each association, as well as the extent to which the association has succeeded in building networks and linkages with educators, researchers, extension agents, and agribusinesses. As for private sector extension services, these services are conducted by either private companies or individual consultants. Although being more efficient thanks to the availability of resources to train the staff and implement programs, their services are limited to corporate farms, and they are narrowly focused on specific products or purchasing needs (MEAS 2011). Small farmers demand for agricultural services are of small scale, and hence are not profitable for the private sector (Eid 2014). In addition to this, given the high poverty rate in rural Egypt, especially in Upper Egypt, financial burdens limit the

⁴ Adverse possession is the seizure of a piece of land without any affirmative legal document.

capability of small farmers to utilize the service of more efficient private sector extension services.

These deficiencies have resulted in inadequate pre and post-harvest practices, affecting negatively the quality and consistency of the agricultural products supplied to the food processing industry, and increase the waste rate of agricultural products. It is estimated that up to 60 percent of total tomato production is wasted due to deficiencies in post-harvest practices, transportation, handling and cold storage. Tomato is harvested after ripping, which increases the waste even if it is transported in cold vehicles. Added to this is inappropriate packaging and transportation from farms to factory, which heightens the waste rate drastically (ECORYS-NEI 2005).

- 4- Rules and regulations limiting the backward linkages with the agriculture sector, forcing the food processing companies to import their needs from raw material. A clear example of that is the pasta production, which is totally dependent on imported wheat due to laws prohibiting the usage of locally produced wheat. Another example is oil production and obstacles related to seed importation, in addition to the pricing policy that renders it cheaper to import, and thus raise the imported content in this industry to around 98 percent

Generally speaking, the percentage of locally supplied raw materials varies greatly from one industry to another, ranging from a very high level in the case of processed fruits and vegetables (around 95 percent), to almost zero percent in other industries like pasta and processed fish industries. For those companies that are heavily dependent on imports, problems related to customs clearance have a negative impact on their operations.

- 5-**Limited R&D agricultural spending:** Agricultural R&D spending amounted to 463 million pounds in 2012, constituting only 0.44 percent of agricultural GDP, which is a very limited amount specially when compared to the 1 percent minimum target recommended by the United Nations. Although agricultural research institutes have a large number of agricultural researchers, with a pool of more than 8400 agricultural researchers employed, these human resources are considered a burden rather than an asset, given that 87 percent of the R&D budget are salary-related expenses, leaving limited resources to conduct research and upgrade the equipment. Although many of those researchers are Ph.D. holders, this is not necessarily reflected in a higher quality

of the research conducted, given the fact that a Ph.D. qualification is the basis of promotional opportunities within the country, and many question the quality of a local Ph.D. compared to international standards. Looking at the sources of R&D funding, we find that government allocations are the main source of agricultural R&D funding with a share of 62 percent⁵ of total R&D funding. Although donor contributions to total R&D funding has dropped drastically from 13 percent in 2009/2010 to about 4 percent in 2011/2012, we can notice an increase in the share of funding from the sales of seeds and vaccinations and other services such as laboratory tests and technical assistance to reach about 35 percent in 2011/2012, a trend that should be encouraged to achieve a greater link between R&D institutes and the needs of the sector.

Looking at the agriculture R&D institutional structure, we find that there are 50 agencies the largest of which is the Agriculture Research Center (ARC), which is affiliated to the Ministry of Agriculture. The ARC structure is complex as it includes 16 research institute, 8 central laboratories and 56 research stations and 23 research administrations located across the country. Other research institutions include: National Research Center (NRC), National Water Research Center (NWRC), Desert Research Center (DRC), in addition to research done in the universities . As it can be noticed, the private sector plays a very limited role in conducting agriculture R&D (Stads, Moussa and Badwan 2015), and there is generally a weak linkage between the research institutes and the private sector and thus R&D in agriculture is not sufficiently related to the requirements of the food processing industry, especially in areas related to high yield seed varieties.

On another front the use advanced technologies in agriculture is limited, due to the fact that some of these technologies requires security clearance.

6-Access to Finance: Access to finance is especially problematic to the agriculture sector, which acquires a very small share of total bank credit, reaching only 1 percent in December 2016. Access to finance is also hampered by informality in land ownership, this is in addition to the distortions present in the rural finance market, which prompt the banking sector to be reluctant to finance agriculture activities. Basically, the low interest rate provided by the Principal Bank for Development and Agricultural Credit (PBDAC) (now the Agriculture Bank of Egypt (ABE)) created an

⁵ Shares are based on data for ARC only

uncompetitive market. Further, the frequent debt waivers have undermined the credit culture in rural areas. Consequently, the PBDAC became the main financial institution providing credit to the agricultural sector, especially that non-bank financial institutions are underdeveloped and their presence in rural Egypt is almost non-existent. These market distortions had negative implications for the bank's ability to service the agricultural sector as well. Untargeted low interest rate and continuous government debt forgiveness had an unfavorable impact on the Bank's financial indicators. The Bank was making huge losses, with poor asset quality and substantive provisioning needs, as evident in the high ratio of non-performing loans. Given the importance of the PBDAC in providing finance to the agricultural sector, strengthening and restructuring the Bank was a must. Towards that end, Law No. 84/2016 was issued transforming the PBDAC to a public bank under the name "Agricultural Bank of Egypt" and subjecting it to the Central Bank of Egypt's (CBE) regulations and supervision similar to other commercial banks operating in Egypt. There is currently ongoing efforts to restructure the Bank financially and administratively. Nevertheless, there is still a need to increase the level of competition in the agricultural financial market by encouraging commercial banks to finance agricultural activity, as well as introducing other non-banking financial tools to serve the sector (World Bank 2014).

As we move along the chain to the food processing stage, there is a wide variety of services directly related to the processing activity in the value chain; the most important include transportation and logistics, research and development, conformity assessment and marketing. In what follows, we will discuss these services in an attempt to highlight the source of inefficiency in their provision.

1-Transportation and Logistics⁶

Road transportation is considered to be the main mode of transportation in Egypt, with a share of around 95 percent. With poor infrastructure and ageing truck fleet, road transportation is one source of inefficiencies that raises the cost of transportation in Egypt.

⁶ Estimation of the reported average cost is based on a workshop conducted at the ECES, and on in-depth interviews with companies.

Road construction and maintenance services are dominated by four public entities⁷ due to their ability to offer lower cost for construction and rehabilitation of paved roads in their bidding offers. The lack of competition in road construction and maintenance, coupled with the low budget allocated by the General Authority for Roads, Bridges and Land Transport (GARBLT) for road maintenance, and the weak enforcement of law on heavy trucks have resulted in poor road quality in Egypt (Ragab and Fouad 2011).

As for road freight transportation, there are a large number of truck operators, the majority of which are privately owned, with the exception of five specialized truck operators belonging to the Ministry of Investment. The remainder largely belong to freight transport cooperatives located in most governorates (24 cooperatives), in addition to individual operators, and own account trucks belonging either to the public and private sectors carrying their own products. Both public sector companies and the cooperatives suffer from ageing fleets, with an average fleet age of 15 years in the main five public companies, thus affecting negatively the efficiency of road freight transportation in Egypt, in addition to the weak enforcement of service standards regulations (Ragab and Fouad 2011). More recently, the cost of road transportation has increased as a result of the heightened price of diesel, in addition to the high toll rate on highways.

Maritime transportation also suffers from a number of inefficiencies related to port infrastructure and logistics. The Egyptian ports—with varying degrees—suffer from congestion, and the need for regular maintenance and dredging and some suffer from a relatively shallow draft. In addition, there is a need to enhance port logistics functions, which are impaired by a multitude of problems including, for example, the need to develop intermodal logistic services, improve train/seaport transportation linking main ports with industrial zones, and simplify customs procedures and reduce the clearance time (Transport Planning Authority 2012). This is in addition to the lack of public transportation linking industrial zones with city centers.

Egypt is ranked 49 out of 160 countries in the Logistics Performance Index in 2016, outranked by the United Arab Emirates, Turkey, Israel, Qatar and Greece. Zooming in on the different dimensions covered by the Index, we find that both the inefficiency of

⁷ The General Nile Company with its four affiliates Arab Contractors, Ministry of Housing, Utilities and Urban Development with four large public sector companies under its jurisdiction; the National Services Company under the armed forces; and the public road paving unit in each governorate.

customs and border management, as well as bad trade and transport infrastructure stand as being most problematic.

More recently, the competitiveness of Egyptian exports has been negatively affected by the Ministerial Decrees No. 488 /2015 & 800 /2016, increasing the fees on maritime transport activities (towing, guiding, port services and transit fees), which have resulted in the withdrawal of international shipping lines from Egyptian ports to other ports, thus increasing shipping costs, in addition to its effect on the ability of exporters to honour agreed deadlines with importers due to the decrease in the number of shipping vessels and lack of balanced maritime transport lines to different countries in all Egyptian ports.

Inefficiencies related to transportation increase the cost incurred by food producers whose share ranges between 2 and 4 percent of total production cost depending on the location of the factory. Exporters considered transportation especially problematic. According to one of the fresh produce exporters, air transportation cost is very high (30 percent of total production cost). Exporters depend mainly on Egypt Air for air transportation offering space in both passenger plans and cargo plans. Limited competition in the area of air transportation increases the cost of air freight.

As for sea transportation, the cost is estimated to be around 10 percent of the total production cost. Due to the irregularity of exported volumes, exporters to Europe suffer from the limited number of regular lines operating for fresh produce.

In addition to high transportation costs, the Egyptian food processing sector is affected negatively by the lack of logistics centers, especially in Upper Egypt. This is partly attributed to vague rules and regulations related to land use in proximity of agricultural areas for industrial and logistics purpose. Despite the fact that the Internal Trade Development Authority has recently announced that it is offering 82 feddans for investment for the purpose of establishing commercial and logistics areas distributed throughout Egypt, neither the percentage of land designated for logistics versus the commercial use, nor the distribution of the allocated land among governorates have been announced.

Further, land fragmentation and weak harvest practices are challenges that curb investment in pack houses/cold chain facilities in Egypt. As we find that smooth operations of cold chain facilities require the availability of compatible produce with sufficient quantity and quality throughout the year (Eid 2014). According to food

industry producers, the cost of refrigerated warehouse is estimated at 10-15 percent of total production cost on average.

2-Conformity assessment (Testing of Products & Systems and Inspection)

a. Testing:

To support compliance with standards, food producers and traders are required to test their products. There are a number of food related laboratories affiliated to different entities responsible for food safety and control. Specifically, the Ministry of Health and Population, the Ministry of Agriculture and Land Reclamation, the Ministry of Trade and Industry and the Ministry of Supply and Internal Trade. In addition, there are a number of food related laboratories in different universities as well as private laboratories belonging to food producing companies.

Generally speaking, the majority of laboratories in Egypt are governmental, some of which are accredited by the Egyptian Accreditation Council (EGAC). The budget of most of the governmental laboratories is part of the State's budget, which puts a limit on the number of tests which can be performed, as well as their ability to upgrade the equipment and expand the scope of accreditation. (ITC 2017).

According to the Egyptian Accreditation Council (EGAC), there are 40 accredited laboratories specialized in the food industry and there is only one Egyptian accredited body (the Center of Organic Agriculture in Egypt (COAE)) providing the Global Gap certificate, in addition to 14 branches of certification bodies.⁸

As for management system standards, the companies working as certification bodies of management system standards are all private companies accredited by EGAC and by law they should be registered at the Egyptian Organization for Standards and Quality Control (EOS). Table (2) in the Annex provides a sample of the laboratories that are accredited by EGAC.

Regarding the quality of services provided by those laboratories, food-processing companies have cited the high costs of analysis; long waiting periods to receive results; inaccuracy of results; and weak government supervision on private sector service providers (ECORYS-NEI 2005).

⁸ A complete list of all accredited laboratories in Egypt are available at EGAC website <www.egac.gov.eg>.

b. Inspection:

According to Law No. 1/2017, the **National Food Safety Authority** (NFSA) is to be the sole authority to “undertake the functions of food control and regulation of its handling prescribed by food safety related laws to ministries, public organizations, governmental authorities, and local administration units wherever these functions are mentioned in relevant food safety laws, regulations and decrees, and shall prepare proposals for the amendment thereof.”

The establishment of the National Food Safety Authority came as a very important step to unify the food inspection and monitoring functions currently dispersed among 17 entities affiliated to four different ministries as follows:

The Ministry of Health and Population: Its main role in the area of food safety and control is carried out through three responsible bodies: food safety and control administration, nutrition institute and the public health laboratories. The Ministry has around 500 health inspectors responsible for inspection of food and food handlers, collecting samples for testing. There is at least one food inspector in each health office or health unit, as well as a food control office in each port.

The Ministry of Trade and Industry: responsible for the verification of import conformity via GOEIC. The importer has the option to conduct the required tests either through GOIEC taking several weeks, or via a private body recognized by GOEIC taking 2-3 days. Private inspection companies are accredited by EGAC, and there are currently 13 inspection accredited companies, 10 of which are recognized by GOEIC for inspection purpose.

The Ministry of Supply and Interior Trade: Responsible for inspecting food at the local market for prevention of adulteration and fraud.

The Ministry of Agriculture and Land Reclamation: Both the Central Administration of Plant Quarantine and the General Organization for Veterinary Services are responsible for inspection activities in relation to plants and animal health. All imported plants and plant products are subjected to inspection at the arrival points in Egypt. There are around 700 inspectors and supportive units affiliated to the Central Administration of Plant Quarantine, they are working on five general regional administrations; distributed in 37 check points (seaports, airports and land borders) and numerous packing stations. The Administration also established the Phytosanitary

Unit in 2005 to be its connection with the world. As for animal health, the General Organization for Veterinary Services follows up on inspection committees at meat places displaying and selling products and meat, as well as following up on the work of slaughtering massacres, and the detection of meat to ensure its suitability for human consumption (ITC 2017)

The National Food Safety Authority (NFSA) is still under establishment. Despite the appointment of the Board of Trustees by Prime Ministerial Decree No. 683/2017 and the Board of Directors by Prime Ministerial Decree No. 1433/2017, the executive regulations of the Food Safety Law has not been issued yet. According to the law, the NFSA shall be able to perform its functions within a period not exceeding one year from the date of entry into force of this law. However, such period may be extended to another year based on a decree issued by the Prime Minister. Until the NFSA is fully operational, the bodies responsible for food safety shall continue to perform their assigned tasks. Also, the decrees and regulations issued to enforce the provisions of the laws related to food safety will continue to be enforced until the issuance of the regulations and decrees necessary for the enforcement of the Food Safety Law.

There is no doubt that the issuance of the Food Safety Law came as a very important step towards improving the inspection service in relation to the food sector. However, it is crucial for the newly established NFSA to review the currently complicated legal structure governing food safety in Egypt (more than 40 relevant laws), as well as designing a new system for inspection based on risk, and putting clear procedures with respect to non-compliance and their corresponding sanction to increase the transparency of the system and avoid corruption.

3- Other Government related services

Generally speaking, all government related services are costly and time-consuming due to the high level of bureaucracy and multiplicity of responsible entities and corruption. Efforts have been made to simplify some of the government regulations like the issuance of Law No.15 of 2017 concerning industrial licensing. However, to what extent this law would help in solving problems related to industrial license is yet to be tested.

4-Marketing

The Egyptian food processing market is a competitive market. Companies produce and market multiple brands, which are close substitutes from a consumer perspective. Thus, capturing brand loyalty is crucial for the food industry, which enable competing companies to raise the prices with a degree of market power.

Trying to capture the consumers from different income levels, food-processing companies offer a variety of brands with different prices and quality to cater to the needs of different kinds of consumers.

The outreach of the food processing companies to rural areas is hindered by the unfair competition from the informal sector in these areas offering cheaper products yet of much lower quality. Trying to overcome this obstacle, the food processing companies has adopted a marketing technique aiming at increasing the hygiene awareness of the society regarding what food they consume and attaching this to a certain brand name (Selim 2009). Such marketing campaigns have been very effective in milk, increasing the market share of UHD milk to 43 percent. However, the continuity of these campaigns is subject to the availability of financing.

9. DISTRIBUTION, WHOLESALE AND RETAIL

Food distribution is highly fragmented among a large number of distributors, wholesalers and retailers. Distributors are generally specialized and work within a limited geographical zone. Usually there are around 10-15 distributors in each governorate. In an effort to enhance the quality of distribution services, large food processors may assign employees to supervise the distributor and ensure that they adhere to the company's rules and standards (Booz & Co 2014).

Wholesale and retail sectors are fragmented as well, and they are dominated by private sector companies with only 7 public sector companies specialized in food and beverage wholesale and retail trade, with a total number of 3,164 branches located only in Cairo and Alexandria. On the other hand, there are 519,326 private sector establishments working in the food and beverage wholesale and retail trade⁹ distributed all over Egypt. Food and beverage

⁹ include: non-specialized stores in which food and beverages are the most dominant items, in addition specialized stores in food and beverage.

companies comprise 40 percent of the total private sector companies working in wholesale and retail (CAPMAS 2016).

Wholesalers have a special importance in the Egyptian food processing value chain given that neither the processors nor the distributors have access to remote rural areas in Delta and Upper Egypt. On the retail side, the Egyptian retail market is dominated by traditional stores. According to some estimates, 90-95 percent of the food outlets in Egypt are small grocery stores. This is in addition to the widespread open markets (like El Obour Market) for the fresh produce, which reduces the shelf life of these products. Modern retailers (hypermarkets and supermarkets) are still limited compared to the size of the market and they mainly exist in Cairo, Giza and Alexandria.

Some modern retailers require food processing companies to deliver their products directly to their outlets (e.g., Carrefour), while others (e.g., Metro and Alfa market) have centralized collection centers where food processors deliver their products (Booz & Co 2014).

Although hypermarkets and supermarkets are still limited, there is no doubt that the presence of these retail stores have increased the level of competition in Egypt. While the concept of hypermarket was mainly introduced through foreign companies, it was soon adopted by local companies as well like Ragab sons, Abu Zikri and El Hawary. Further, the development of the supermarket/hypermarket sector in Egypt has affected small scale traditional grocery stores, especially in wealthy residential areas. Consumers in these areas resort to hypermarkets for their large household purchase, while small grocery shops increasingly transformed into convenience stores catering on an ad-hoc basis to consumers. On the other hand, small grocery stores are still dominant as the main purchasing venue for low to middle income shoppers (Dihel and El Shinnawy 2006).

Land availability is considered one of the most important binding constraints that limit the expansion of modern retail stores in Egypt, especially in governorates, as it is forbidden by law to build on agricultural land.¹ As mentioned previously, the extent to which the announced plan of the Internal Trade Development Authority to offer 82 feddans distributed all over Egypt for the establishment of commercial and logistics areas will help in solving this problem will depend on distribution of the offered land among the governorates, as well as to the extent such commercial areas can be used for the benefit of small and medium enterprises.

¹ Hypermarkets require an area of at least 2500 square meters.

Other sources of inefficiency in the distribution sector come from poor infrastructure and logistics. As mentioned previously the lack of quality roads, transportation, storage and warehousing all affect negatively the distribution sector. Further, the supply chain management is very poor and the existence of a large number of intermediaries prevent distributors from reaping the benefits of economies of scale and raises the price of the final product (El Megharbel 2011).

Based on the above review of services in Egyptian food processing sector value chain, we can conclude that there is a great deficiency in service provision in support of the food processing sector in Egypt. These deficiencies increase production cost and force large food processing companies to be vertically integrated, have their own production land, and conduct the transportation and logistics services in-house, including cold storage areas, a conclusion that will be further supported in the case studies presented below.

10. CASE STUDIES

10-1 Case study – Company (A)

Company Background

This Company is a joint stock company, started in 1994 by cultivating a citrus farm. Today, it is an integrated food industry company, operating several activities including agriculture production, food packaging, production of concentrates and juice and the production of fertilizers.

The Company serves both the local market and the export market. It uses first grade agricultural products for exporting and local sales in large supermarket chains, and the 2nd grade is used in concentrates and juice production.

Services along the value chain

The Company is heavily vertically integrated both in the backward and forward processes in the value chain.

Part of its agricultural products¹ are from the Company's farm, in addition to outsourcing from external farms, after subjecting the outsourced raw material to quality testing.

¹ Agricultural products include: orange, mango, strawberry, peach, apple, guava, tomato and pepper

As for other raw materials (mainly packaging material), they are entirely outsourced from local companies except for the sterile bags, which are imported.

After securing the raw material, the Company starts its manufacturing processes, which include sorting, grading, fresh orange packaging for exporting, concentrate manufacture, pulp manufacture, juice manufacture, and manufacture of tomato paste.

As for customer service, the Company is keen to conduct surveys, in addition to field visits to ensure the satisfaction of its customers

Analysis of Table (3) in the Annex shows that out of the 35 main services identified along the Company's value chain (not including customer services), 54.3 percent are conducted fully in-house, and 20 percent are partially outsourced, thus leaving only 25.7 percent, which are entirely outsourced.

Being an export-oriented Company, it is keen to ensure quality and safety along its value chain, which explains the high percentage of the services that are conducted in-house or partially outsourced. As for the services outsourced to the government, all of these services are partially outsourced with the exception of insurance and telecommunications, which are totally outsourced to both the government and private entities. One of the main governmental services that is partially outsourced is utilities, as the Company has its own water facility to ensure the suitability of water used for the needs of the food industry. Other utilities, like gas and electricity, are provided by the government. Other governmental services that are partially outsourced include customs and Company registration and licensing services. Despite the fact that these services are by default provided by the government, the Company has hired specialized staff to follow up on the procedures, which are complex and time-consuming.

The Company resorts to outsourcing for two reasons:

- 1- The lack of internal capabilities to conduct the service in-house like personnel training, product development / R&D for new technology.
- 2-The service is by default outsourced like banking and insurance services, external auditing and business consulting.

Most of the logistics are conducted in-house, as we find that the Company has its own storage space including refrigerated areas, which it rents to others occasionally, and it has its truck fleet as well. However, transportation is partially outsourced especially if the product is exported or being transferred to a distant destination.

Services related to quality assurance, are partially outsourced. To meet international standards, the Company has its own quality assurance unit, in addition to holding 11 international certifications, including Global GAP and ISO 22000.

Services outsourced to private global entities include those related to R&D activities, specifically new product development/ R&D for new technology, in addition to services associated with exportation and maintaining quality requirements, namely, transportation, quality assurance, safety standards and inspections, insurance, courier and postal services, and telecommunications. Other services outsourced to private global entities include business consultations and personnel training.

Support services like cleaning, waste treatment, security and all back-office services are all done in-house. The Company also has the advantage of running a zero-waste system with waste treatment being conducted in-house. Liquid waste is treated and reused in cleaning the factory and solid waste is sent to the affiliated compost factory.

The main services along the company's value **chain cost around 36 percent, on average, of total production cost.** Utilities and logistics (including transportation, storage and warehousing) have the highest shares in total production cost with an estimated cost of 13.6 percent and 11.5 percent, respectively, followed by repair and maintenance of machines and fleets, and marketing and communications with shares of 3.2 percent and 2.4 percent, respectively. Table 4 in the Annex includes more details on the cost of main services in Company (A) as a percentage of total cost of production.

10-2 Case study – Company (B)

Company Background

This Company is a large company¹ established in the early 80s, and it is considered to be one of the leading firms in both the dairy and juice products, producing a wide variety of products including plain and flavoured milk, yogurt, and cream.

The firm serves mainly the local market, with a small share of its production directed to export markets, especially Arab countries.

¹ interviewed companies decided on the appropriate size of their enterprise based on sales criteria, utilizing the definition applied by the Central Bank of Egypt

Services along the chain

The Company is heavily vertically integrated both in backward and forward processes of the value chain, and thus most of its service inputs are provided either in-house or partially outsourced.

The Company depends on its dairy and fruit farms for supplying a sizeable portion of its raw material. The rest is outsourced based on annual contracts with the producers. To guarantee the quality of the products received, the Company has established a specialized department to follow up with the contracted farms in all aspects of the production process, including training of the labour force, supporting them in the provision of the raw material, the quality of the feed etc. Some of the raw materials are imported, specifically dry milk and packaging materials.

Analysis Table (5) in the Annex reveals that around 68.6 percent of the relevant services are either conducted in-house or partially outsourced, leaving only 31.4 percent, which is totally outsourced. The logistics are partially outsourced. Despite having its own truck fleet (owning around 65 percent of the transportation trucks) and refrigerated storage warehouse, the Company depends on the raw material producers to transport their production to the Company, in addition to renting trucks during high seasons like the holy month of Ramadan.

As for R&D and quality assurance, the Company has an R&D department that works on developing innovative product solutions. Further, the Company has developed a “corporate quality management system” to guarantee food safety, compliance with quality standards and all environmental regulations (international and local).

There are nine services outsourced to the government. Five of these are services outsourced to the government in conjunction with local private entities. These include safety standards and inspections, insurance, waste treatment, banking, and telecommunications. Four are partially outsourced and these include security, customs service, licencing, company registration, and personnel referral services. Due to long and complex procedures related to customs and company registration and licensing, the Company hires specialized personnel to follow up on these issues.

The Company resorts to outsourcing from international private entities totally or partially when the service is not available locally or for reaching out to external markets and these include the following services: testing and trailing, product development/R&D for new

technology, personnel training, banking services, communication and marketing and finally, courier, postal and local delivery services.

Marketing and distribution activities are also partially outsourced. Targeting mainly the local market, the Company has set up its own marketing department. However, it uses the services of advertising companies to support the firm in its marketing campaigns. In its marketing efforts, the Company tries to capture brand awareness, as well as increase consumer awareness about health considerations.

As for marketing activities for exporting, the Company has raised concerns about the availability of market information regarding the regulations in non-EU countries like China, and Latin American countries.

The Company also has a vast network of distribution centers serving more retail outlets nation-wide through its own fleet, in addition to subcontracting sub-distributors in remote areas. Finally, all back-office services are done in-house.

The decision to outsource or conduct the service in-house depends on one or more of the following considerations

- The quality and standards of its products
- Cost reduction
- Internal investment capacity
- Performance efficiency and ease of monitoring
- The desire to capture most of the value added

As for the cost estimate, according to the Company, **services constitute around 61.9 percent** on average of total production cost. As highlighted in Table (6) in the Annex, marketing, logistics including transportation have the highest shares in cost of production with estimated shares of 39.7 percent and 17.6 percent, respectively.

10-3 Case study – Company (C)

Company Background

This Company is a small limited partnership company, employing around 40-60 employees, specialized in the production of olive oil, table olives and pickles.

It is located in one of Egypt's large industrial zones, in proximity to Greater Cairo. It targets mainly high to middle income consumers, in addition to the catering sector and pharmaceutical companies.

The Company directs its sales to both the local and export markets, with almost equal shares of total sales.

Services along the value chain

The Company sources its agricultural raw materials mainly from the local market, importing occasionally when the supply is limited. It imports around 5-10 percent of the utilized raw materials and other production inputs, mainly oil and some high quality packaging materials.

Determined by both price and quality, the Company directly imports its needs mainly from Italy, Syria, Turkey and Spain.

The Company cited complicated customs procedures as being the most important obstacle it faces while securing its imported inputs; it takes around three weeks to get the final customs clearance.

As for locally sourced inputs (olives, vegetables, bottles, jars, and barrels), being a small company, it suffers from the unavailability of the required liquidity to finance contract farming or even to buy its needs from agricultural products when the price is low. Further, the Company alluded to the problem related to resorting to informal middlemen in purchasing the required raw materials, and thus paying a higher price.

After securing raw materials, the Company starts its manufacturing processes: for table olives and other pickles, the manufacturing process includes sorting, grading, preservation, processing (according to customer requirements), packaging and labelling, pasteurization and sealing. As for the olive oil, the process involves grading olives, washing and milling, forming olive paste and cold pressing the olive paste to extract oil. The Company outsources the pressing stage to a fully automated pressing firm under the Company's supervision. After pressing, oil is stored in large stainless containers for about a week to separate the oil from water and other impurities, and then it is injected with nitrogen, and finally the packaging and labelling.

The entire production process is subject to quality control, the Company is ISO certified and it is compliant with International Olive Oil Council specifications.

As for R&D activities, the Company conducts R&D for product development including new packaging designs for its products.

With respect to marketing and sales, as mentioned previously, the Company markets its products locally and internationally, exporting around 50 percent of its total production to USA, Spain, Brazil and some Gulf countries. The Company markets its products through direct contact with its customers, in addition to participating in international fairs and exhibitions. The ability of the Company to expand its exports is hampered by limitations in production capacity due to the unavailability of finance. Other problems related to exportation include the lack of locally accredited laboratories specialized in olive oil, mismanagement of the system supporting company participation in international fairs and exhibition. Concerning its ability to benefit from free-trade agreements, the Company has pointed to the fact that the volume of Egyptian exports from olives and olive oil is rather small, and hence it is not subject to any customs duties from its trading partners.

When selling to the local market, the Company faces different types of problems related to the long credit period and high default risk.

Finally, regarding customer service, the Company conducts surveys to ensure the satisfaction of its customers, in addition to following up with its customers from the retail sector until its products are sold.

Unlike Companies (A) & (B), this Company does not have a preference for vertical integration. Rather, company management believes that outsourcing is critical to help the Company focus on its core business. According to the Company, the decision to outsource or conduct the service in-house depends on the quality and the efficiency in the provision of services, in addition to the costs involved, including costs related to management and supervision.

Analysis of Table (7) in the Annex shows that out of the 35 main services identified along the Company's value chain (not including customer services), 54.3 percent is either totally or partially outsourced, out of which 40 percent completely outsourced and 14.3 percent partially outsourced, leaving 45.7 percent to be conducted in-house.

Services conducted in-house are directly related to either the production process like production management and production engineering, quality assurance and compliance management or back office services, in addition to R&D activities.

Logistics are partially outsourced, as the Company does not have a truck fleet (owning only one van). Further, it has to resort to international companies in case of exportation.

There are four services which are outsourced to global entities either totally or partially, namely:

- 1- Testing and trailing: due to the unavailability of a locally accredited lab specialized in olive oil, as the only lab available is not operational because of disputes between the Ministry of Trade and Industry and the Ministry of Agriculture.
- 2- Business consultation services: The Company cooperates with different donor agencies, and acquires business consultations in that respect, providing technical support for the Company to develop its operations.
- 3- Communications and marketing: As the company directs part of its production to the international market, it has to cooperate with global entities to market its products and participate in international fairs and exhibitions.
- 4- Safety inspections: the Company is subject to safety inspections from various entities including government, customers (local and international), as well as entities, which grant international certifications
- 5- Personnel training: like business consultations, the Company cooperates with international entities for training its personnel in the context of programs applied and financed by donor agencies.

There are six services outsourced to the Government, three of which are outsourced to the Government in conjunction with local private entities. These include customs-related services, safety inspections and telecommunications. One of these services is partially outsourced, specifically licencing and company registration. The Company has noted the hurdles faced in land allocation and licencing, as it took the Company 6 years to acquire the operation license.

The main services along the Company's value **chain cost around 15 percent, on average, of total production cost.**¹ Transportation has the highest shares in total production cost with an estimated cost of 4 percent, followed by R&D with a share of 3 percent.

10-4 Case studies conclusion

The case studies revealed that the share of services in total cost of production varies considerably among different food industries, with an average of 49 percent for both Companies (A) & (B). Company (C) has not been factored in the calculation of this average due to lack of data on certain important services input items (e.g. utilities, transport, insurance and others). However, there are obvious deficiencies in service provision that were indicated by the three companies surveyed. Those deficiencies drove the companies (especially large ones) to be increasingly vertically integrated, instead of outsourcing services to focus on their core business.

Out of the list of services included in the survey, the following was indicated as being the most problematic:

- 1- **Logistics (transportation, storage and warehousing):** In all cases studies, logistics was amongst the top 3 services in terms of its share in total cost of production. Large companies invested at least partially in having their own cold truck fleet, and established their cold storage warehouse, especially in the case of perishable products (company cases A & B). High cost of transportation could be also attributed to high toll rate on the high roads, coupled with limited use of transportation methods other than road transportation. Company C indicated the high cost of transportation from and to distant governorates.
- 2- **Testing and laboratory services:** All companies cited problems related to testing, specifically, lack of accredited labs for specific products, and high cost of testing. To guarantee quality two companies established their own laboratories (companies A & B). Further, both Companies (B) & (C) resort to an international laboratory for testing, especially in case of exporting.
- 3- **R&D services:** R&D was also indicated as one of the services with a high share in cost of production compared to other services. All companies surveyed engage in R&D activity for the purpose of product development, but none of them conduct R&D for

the design of new machinery. They buy the machines either from an international or local company, depending on the sophistication of the machine. This high cost of R&D is problematic for small companies with limited access to finance.

4- **Financial services:** Company (C) has identified access to finance as a major obstacle facing its ability to expand and engage in cost saving practices and contract farming.

5- **Government-related services:** Inadequacy of all government related services have been referred to by all companies, and these include: customs, utilities, licensing, land allocation and services related to export promotion. Inefficiencies in the provision of these services inflate the cost of production as follows:

The long customs clearance period forces companies to import larger quantities to secure their future needs, in addition to paying high costs for warehousing at ports.

As for utilities, companies located outside industrial zones and in governorates other than Cairo suffer from adequacy of utilities, forcing some companies like Company (A) to invest in utilities to ensure the availability of utilities that is suitable for the food industry needs.

Further, companies suffer from long licensing procedures and multiplicity of the entities involved, each with different requirements and expiry dates for its approval with the impact of Law No. 15 of 2017 concerning industrial licensing is yet to tested.

As far as land allocation is concerned, companies have cited distortions in land allocation caused by brokers' illegal access to industrial land.

Finally, with reference to government services related to export promotion, all companies have indicated limited benefits from free trade agreements, as well as lack of support for participation in international fairs and exhibitions, and the absence of a local traceability system in the case of agro-industries.

In light of the above, we present in the following section policy recommendations to key problematic areas facing the food-processing sector.

11. POLICIES AFFECTING FOOD INDUSTRIES

It is clear from the above analysis that there is room for increasing the competitiveness of the Egyptian food processing sector through enhancing the efficiency of the services provided

along the value chain. The study has identified the following service related policies as being the most important drivers of change in the Egyptian food processing sector:

1-Agricultural Services: The Egyptian food processing sector suffers from inconsistent supply of raw materials in terms of quality and quantity due to land fragmentation in old land and weak government extension services. These deficiencies have resulted in inadequate pre and post-harvest practices, limited contract farming, as well difficulties in setting quality control mechanism.

Larger New reclaimed land suffers from the absence of a transparent mechanism for land allocation and pricing, which has resulted into curtailing of investment in land reclamation and inability of the current investors to borrow from banks.

Further, agricultural R&D is not sufficiently related to the requirement of the Egyptian food processing sector, especially in areas related to high-yield seed varieties. This could be attributed to limited agricultural R&D spending financed mainly by the government, as well as weak linkages with the private sector. On another front the use of advanced technologies in agriculture is limited, due to the fact that some of these technologies requires security clearance.

Finally, some of the food processing companies are obliged to import their needs from agricultural products due to rules and regulations constraining the ability of some food sub-sectors to utilize locally produced agricultural products (e.g., pasta and oil production).

2-Transportation and logistics services: Egypt suffers from extremely weak transportation services with poor road infrastructure, inefficient port infrastructure and logistics, and limited competition in air freight transportation. Further, the Egyptian food processing sector is negatively affected by lack of logistics centres, especially in Upper Egypt and limited investments in pack house/cold chain facilities.

The inefficiency of these services inflates the cost of production, affecting negatively the price competitiveness of the Egyptian firms whether in the local or international markets.

3- Conformity assessment: The majority of laboratories serving the food processing sector in Egypt are governmental, which puts a limit on the number of tests that can be performed, and the ability to upgrade the equipment and expand the scope of accreditation. As for private sector laboratories, although being more efficient, they are more expensive, in addition to weak government supervision on those laboratories.

Further, there is a lack of accredited laboratories in some food sub-sectors like the olive oil.

Regarding inspection services, despite the establishment of the National Food Safety Authority, there is a need to speed up the issuance of the executive regulations, as well as reviewing the complicated legal structure governing the food safety system in Egypt and designing a new system for inspection based on risk.

4-Government related services: Bureaucracy in all government related services and the multiplicity of entities involved increase the costs incurred by firms, as well as negatively impact the business environment in Egypt and thus its ability to attract international players in all segments of the value chain

5-Access to Finance: Although the high interest rate is considered to be a challenge facing all food processing companies, access to finance is especially problematic to the agricultural sector, which acquires a very small share of total bank credit due to informality in land ownership and distortions in the rural financial market, which prompt the banking sector to be reluctant to finance agricultural activities. Further, the ABE (previously the PBDAC), which is considered the main financial institution providing credit to the agricultural sector, is burdened with huge losses and poor asset quality hampering its ability to provide finance to the agricultural sector.

6- Distribution services

The food processing value chain suffers from highly fragmented distribution, wholesale and retail sector, with limited presence of modern retailers compared to the size of the market. Land availability is considered one of the most binding constraints limiting the expansion of modern type retailers. Other sources of inefficiency in the distribution, wholesale and retail sector come from poor infrastructure and logistics. Further, supply chain management is very poor and the existence of a large number of intermediaries prevents distributors from reaping the benefits of economies of scale and raises the price of the final product

In light of the above deficiencies in service provision along the food processing sector value chain, we present below a number of measures that could be implemented to help address the inefficiencies in these services.

Area	Problem	Responsible entity	Proposed solution
Agricultural Services	<ul style="list-style-type: none"> ▪ Weak extension services ▪ Land fragmentation ▪ Agricultural R&D is not sufficiently related to the requirement of the Egyptian food processing sector, especially in areas related to high-yield seed varieties ▪ Limited agricultural R&D spending. ▪ The presence of laws that constrain the ability of some food sub-sectors to utilize locally produced agricultural products ▪ Limited practices of contract farming. ▪ Limited use of modern technologies in agriculture ▪ Lack of transparent mechanism for land allocation and pricing 	<ul style="list-style-type: none"> ▪ Ministry of Trade and Industry ▪ Governorates ▪ Chamber of Food Industries ▪ Ministry of Agriculture ▪ Ministry of Higher Education and Scientific Research ▪ Agriculture research institutes ▪ Private Sector 	<ul style="list-style-type: none"> ▪ Design training programs for farmers on post-harvest handling of crops ▪ Design a supplier development program to improve farming practices. ▪ Launch new extension program and revamp extension centres ▪ Create land consolidation fund to provide subsidized credit to facilitate the purchase of adjacent land ▪ Create land exchange program to facilitate the exchange/ swap of nonadjacent land ▪ Replicate the Egyptian country side development “elreef el masry” model¹⁴ ▪ Put incentives to encourage large land cultivation (these incentive could include for example: facilitation of procedures). ▪ Revise the cooperatives law to allow it assume its role in mitigating the effect of land fragmentation ▪ Start the implementation of the UPOV agreement to benefit from the availability of best plant varieties that suits the needs of the food processing industry as well as protect

¹ The Egyptian Countryside Development Company (ECDC) was founded in 2015 for the purpose of “reclaiming & development project of 1.5 million feddans of desert land”. The Company’s approach to land reclamation is based on an overarching master-plan. The company offers two different bidding mechanisms one for Big Investors and the other for Youth & Small Farmers. Big investors can bid to reclaim 2000+ feddans. They are responsible for infrastructural work based on ECDC guidelines, and they should create employment opportunities for the youth in agriculture as well as along the value chains of agricultural production. further they are encouraged to engage with the youth and small farmers in contract farming. As for youth and small farmers , the land allocated to them is in proximity to inhabited areas and it is equipped with water wells, and they are eligible for training and technical support.

Area	Problem	Responsible entity	Proposed solution
			<p>the Egyptian varieties and encourage R&D.</p> <ul style="list-style-type: none"> ▪ Revision of laws and regulations constraining the ability of some food sub-sectors to use locally sourced materials. ▪ Cooperation between the Chamber of Food Industries and agriculture research institutes to develop varieties suitable for the needs of the food industries and reduce agricultural waste ▪ provide tax incentives and regulatory reform to encourage the private sector to undertake a larger role in agricultural R&D. ▪ Encourage and support contract research activities between the industry and research centers and universities ▪ Enhance awareness among researchers about the funding opportunities available through international agencies, and provide researchers with training in the development and presentation of project proposals. ▪ Enforcement of intellectual property right law. ▪ Design an incentive scheme to encourage contract farming ▪ Allow for the establishment of private companies that provide the services of modern technologies in agriculture provided that they acquire a prior security clearance.

Area	Problem	Responsible entity	Proposed solution
Transportation and Logistics services	<ul style="list-style-type: none"> ▪ Lack of competition in road construction and maintenance. ▪ Low budget allocated to road maintenance ▪ Weak enforcement of law on heavy trucks have resulted in poor road quality in Egypt ▪ Aging truck fleet ▪ High toll rate on highroad. ▪ Lack of public transportation linking industrial zones with city centres. ▪ Absence of fast transportation from industrial zones to ports. ▪ Weak intermodal transportation. ▪ High cost of port-related services ▪ Limited number of shipping lines due to the withdrawal of major shipping companies from Egypt ▪ Underinvestment in pack houses / cold chains 	<ul style="list-style-type: none"> ▪ Governorates ▪ Ministry of Transportation ▪ Ministry of Finance ▪ Ministry of Trade and Industry ▪ Ministry of Investment ▪ Internal Trade Development Authority 	<ul style="list-style-type: none"> ▪ Encourage PPPs in road infrastructure ▪ Revise enforcement arrangement of road transportation service standard regulations, including those related to overloading. ▪ Design a program to encourage private truck operators to modernize their truck fleet along the lines of the previously applied white taxi program ▪ Extending railroad line between the ports and industrial zones and operate the already established ones. ▪ Extend public transportation to industrial zones. ▪ Collective sea and air cargo space utilization for export products through export consortia. ▪ Revise the prices announced as per Ministerial Decrees No. 488 /2015 & 800 /2016, in light of port fees paid in neighbouring countries. ▪ Revise the laws and regulations governing cargo air transportation to allow for more competition. ▪ Study the feasibility of river transportation. ▪ Designate logistics areas in strategic locations that include refrigerated storage area, pack houses, collection points, vegetables and fruits preparation.

Area	Problem	Responsible entity	Proposed solution
			<ul style="list-style-type: none"> ▪ Establishment of agro industrial parks in proximity of agricultural land
Conformity assessment	<ul style="list-style-type: none"> ▪ Lack of accredited labs in some food sub-sectors ▪ The lack of a proper assessment of the quality of services provided by government laboratories. ▪ Complicated legal structure of food safety system ▪ Food safety inspections are not based on risk analysis 	<ul style="list-style-type: none"> ▪ Egyptian Organization for Standardization and Quality ▪ Egyptian Accreditation Council. ▪ Ministry of Trade and Industry ▪ Food Safety Authority 	<ul style="list-style-type: none"> ▪ Apply the rules and regulations stipulated in law no 1/2017 concerning accredited laboratories. ▪ Issue the Executive Regulations of Law No. 1/2017 (waiting for parliament approval) ▪ Revise the legal structure governing food safety, including procedures applied in case of noncompliance. ▪ Designing a new system for inspection based on risk
Access to finance	<ul style="list-style-type: none"> ▪ Lack of capital finance and credit for working capital, especially for farmers 	<ul style="list-style-type: none"> ▪ The Agriculture Bank of Egypt. ▪ Ministry of Agriculture. ▪ The Central Bank of Egypt 	<ul style="list-style-type: none"> ▪ Establishment of an agricultural products insurance fund. ▪ Application of an initiative by the Central Bank of Egypt to finance agricultural investments along the lines of its SME financing initiative. ▪ Design a simplified system for agricultural land registration. ▪ Allow for the use of leased land as a collateral ▪ Establish a system for insurance on agricultural products
Distribution	<ul style="list-style-type: none"> ▪ Highly fragmented distribution, wholesale and retail sector. 	<ul style="list-style-type: none"> ▪ Ministry of Supply and Internal Trade ▪ Ministry of Investment 	<ul style="list-style-type: none"> ▪ Identify and register all food distribution and market channels, including groceries.

Area	Problem	Responsible entity	Proposed solution
	<ul style="list-style-type: none"> ▪ limited presence of modern retailers ▪ Limited land availability for commercial use ▪ Poor infrastructure and logistics 	<ul style="list-style-type: none"> ▪ Internal Trade Development Authority 	<ul style="list-style-type: none"> ▪ Organize awareness campaigns in post-production handling and marketing of processed food to all shop owners. ▪ Conduct awareness campaigns on public health issues and encourage the public to buy from licensed shops. ▪ Formulate a detailed plan for the initiative announced by the Internal Trade Development Authority, aiming at establishing commercial and logistics areas in all governorates.
Government-related services	<ul style="list-style-type: none"> ▪ Absence of clear specifications for the importation of agricultural seeds. ▪ Lengthy procedures related to customs clearance ▪ Bureaucracy and multiplicity of responsible entities. ▪ Inadequate water quality in some governorates 	<ul style="list-style-type: none"> ▪ Customs Authority. ▪ The General Organization for Export and Import Control (GOEIC) ▪ Ministry of Agriculture ▪ All government agencies 	<ul style="list-style-type: none"> ▪ Revision and simplification of export and import procedures. ▪ Monitoring the implementation of Law No. 15 of 2017 to ensure the simplification of procedures concerning industrial operational licences is implemented. ▪ Revise and simplify all government-related procedures ▪ Revise and set clear specifications for the importation of agricultural seeds ▪ Study the possibility of introducing public private partnership in utilities provision

Source: ECORYS-NEI (2005); Booz and Co. (2014) and in-depth interviews with food processing companies.

ANNEX

Table 1. Guiding Questionnaire

Service	In-House	Outsourced	Cost as % of Total Production Cost	Relevant Policies/measures
Government liaison services				
Company registration and licensing services				
Business consultant services				
Staff training				
Safety standards and inspection				
Personnel search and referral services				
Procurement agent				
Customs-related services				
Quality assurance				
Freight transportation				
Repair and maintenance of fleets				
Storage and warehousing				
Design of manufacturing machinery				
Product development / R&D for new technology				
Manufacturing templates				
Conception and design of products				
Production administration				
Engineering services				
Government inspections of fire prevention, health hazards, environmental protection and other aspects				
Compliance management				
Testing and trailing including laboratory testing				
Cleaning services (factory and warehouse)				
Security services				
Waste treatment				
Repair and maintenance services of machines and equipment				
Logistics				
Truck renting				
Utilities				
Auditing services				
Internal auditing				
Insurance services				
Accounting services				
Banking services*				
Legal services				
General management				
Communications and				

Service	In-House	Outsourced	Cost as % of Total Production Cost	Relevant Policies/measures
marketing				
Estate management				
Human resource management				
Courier, postal and local delivery services				
Telecommunications services				
IT and information system management				
Other services				

*Include only bank fees and charges (i.e., interest payments are not included).

Table 2. A Sample of Laboratories Accredited by EGAC

Laboratory	Affiliated Entity
General Department of Food Stuff Test Laboratories	GOEIC, Ministry of Trade and Industry
Chemical Laboratory for Quality of Food Products (Alex, Port said, Damietta, Suez, and Aswan)	GOEIC, Ministry of Trade and Industry
Food Microbiology Department	Central Health Laboratories, Ministry of Health
Food Testing Laboratories	Chemistry Administration, Ministry of Trade and Industry
Central Laboratory of Residue Analysis of Pesticides and Heavy Metals in Food	Ministry of Agriculture
Central Pesticides Laboratory	Ministry of Agriculture
Central Laboratory for Evaluation of Veterinary Biologics	Ministry of Agriculture

Source: Retrieved from EGAC website www.egac.gov.eg on 18/12/2017.

Table 3. Company (A) List of Services

	Service	In-house	Outsourced to the government	Outsourced to private local entity	Outsourced to private global entity
1	Transportation (including truck renting)				
2	Logistics other than transportation (including warehouse and storage)				
3	Procurement				
4	Customs-related services				
5	Quality assurance				
6	Repair and maintenance of fleets				
7	Design of manufacturing machinery				
8	Product Development/ R&D for new technology				
9	Conception and design of the product				
10	Production management				
11	Engineering services				
12	Compliance management				
13	Testing and trailing, including laboratory testing				
14	Cleaning services of factory and warehouses				
15	Government liaison services				
16	Company registration and Licensing services				
17	Business consultant services				
18	Personnel training				
19	Safety standards inspection (including Government inspections on fire prevention, health hazards, environmental protection and other aspects)				
20	Personnel search and referral services				
21	Security services				
22	Waste treatment				
23	Repair and maintenance services for machines and equipment				
24	Utilities				
25	Auditing services				
26	Internal auditing				
27	Insurance services				
28	Banking services				
29	Accounting services				
30	Legal services				
31	General Management				
32	Human resources management				
33	Communications and marketing				
34	Courier, postal and local delivery services				
35	Telecommunications services				
36	IT & information system management				
37	Real estate management				

Source: Company (A).

	Outsource
	Partially

	In-house
	Not applicable

Table 4. Cost of Main Services–Company (A)



Service item	Percentage of total production cost
Transportation cost	1.00
Logistics	3.50
Repair and maintenance of fleet	1.18
storage and warehousing	7.00
cleaning	0.76
government liaison	0.15
business consultant services	0.25
staff training	0.50
safety and inspection	0.24
security services	0.81
waste treatment	0.67
Repair and maintenance of machines	2.00
utilities	13.63
internal auditing	0.17
insurance services	0.41
banking services	0.52
legal services	0.12
marketing and communication	2.37
Courier and postal and local delivery services	0.34
telecommunications services	0.29
other services	0.04
Total	35.95

Source: Company (A) financial department.

Table 5. Company (B) List of Services

	Service	In-house	Outsourced to the government	Out-sourced to private local entity	Outsourced to private global entity
1	Transportation (including truck renting)				
2	Logistics other than transportation (including warehouse and storage)				
3	Procurement				
4	Customs-related services				
5	Quality assurance				
6	Repair and maintenance of fleet				
7	Design of manufacturing machinery				
8	Product Development/ R&D for new technology				
9	Conception and design of the product				
10	Production management				

11	Engineering services	In-house			
12	Compliance management	In-house			
13	Testing and trailing, including laboratory testing	Partially			Partially
14	Cleaning services of factory and warehouses			Outsource	
15	Government liaison services	In-house			
16	Company registration and Licensing Services	Partially	Partially		
17	Business consultant services			Outsource	
18	Personnel training			Outsource	Outsource
19	Safety standards inspection (including, Government inspections on fire prevention, health hazards, environmental protection and other aspects)	Partially	Partially	Partially	
20	Personnel search and referral services	Partially	Partially		
21	Security services	Partially	Partially		
22	Waste treatment		Outsource	Outsource	
23	Repair and maintenance services for machines and equipment	Partially		Partially	
24	Utilities		Outsource		
25	Auditing services			Outsource	
26	Internal auditing	In-house			
27	Insurance services		Outsource	Outsource	
28	Banking services		Outsource	Outsource	Outsource
29	Accounting services	In-house			
30	Legal services	Partially		Partially	
31	General management	In-house			
32	Human resource management	In-house			
33	Communications and marketing			Outsource	Outsource
34	Courier, postal and local delivery services			Outsource	Outsource
35	Telecommunications services		Outsource	Outsource	
36	IT & information system management	Partially		Partially	
37	Real estate management				

	Outsource
	Partially

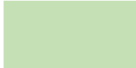
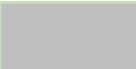
	In-house
	Not applicable

Table 6. Cost of Main Services–Company (B)

Service item	Percentage of total production cost
transportation and distribution in markets	9.9%
customs clearance	0.3%
quality Assurance	2.3%
cost Storage	7.7%
R&D	0.7%
Government inspection	0.0%
Compliance	0.0%
consultancy Services	0.0%
External auditing	0.1%
Marketing	31.8%
*Commercial marketing	7.9%
Security and cleaning services	1.1%
average Contribution of services in total cost	61.9%
*Commercial marketing is the cost of marketing to the wholesaler	

Source: Company (B) financial department.

Table 7. Company (C) list of Services

	Service	In-house	Outsourced to the government	Outsourced to private local entity	Outsourced to a private global entity
1	Transportation (including truck renting)				
2	Logistics				
3	Procurement				
4	Customs-related services				
5	Quality assurance				
6	Repair and maintenance of fleet				
7	Design of manufacturing machinery				
8	Product development/ R&D for new technology				
9	Conception and design of the product				
10	Production management				
11	Engineering services				
12	Compliance management				
13	Testing and trailing, including laboratory testing				
14	Cleaning services of factory and warehouses				
15	Government liaison services				
16	Company registration and licensing services				
17	Business consultant services				
18	Personnel training				
19	Safety standards inspection (including, Government inspections on fire prevention, health hazards, environmental protection and other aspects)				
20	Personnel search and referral services				
21	Security services				
22	Waste treatment				
23	Repair and maintenance services for machines and equipment				
24	Utilities				
25	Auditing services				
26	Internal auditing				
27	Insurance services				
28	Banking services				
29	Accounting services				
30	Legal services				
31	General management				
32	Human resource management				
33	Communications and marketing				
34	Courier, postal and local delivery services				
35	Telecommunications services				
36	IT & information system management				
37	Real estate management				

	Outsource
	Partially

	In-house
	Not applicable

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