



ANALYSIS OF KEY VALUE CHAINS (WHEAT AND WOOL), WITH A SPECIAL FOCUS

ON THE LIGHT MANUFACTURING SECTOR IN MOSUL

Prepared by Altai Consulting for DRC Iraq | March 2020

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1. INTRODUCTION

Mosul has seen a slow economic recovery since its liberation in 2017. After the fall of Mosul to ISIS, a sizable percentage of businesses closed while others saw their machines and shops looted. Other than that, a significant portion of investors and skilled labor left the city to other economic hubs in Iraq (Erbil, and Dohuk for example) or migrated from Iraq altogether (a high number in Turkey, for example). MSMEs have been particularly hit given the increased cost of doing business, and capital flight.

As part of its economic recovery programming, DRC has commissioned this study with the end objective of providing access to market opportunities for privately-owned small and medium enterprises and job opportunities for conflict-affected men, women and youth. For that purpose, DRC has taken a market-system and value-chain approach to development and identified two value chains in Mosul: wheat and wool value chains. The choice of the value chains is based on two factors. First, in both value chains, raw products are produced or cultivated in the districts surrounding Mosul in Ninawa and are processed or used to be processed in Mosul. Second, there is a significant participation of women in the processing and light manufacturing stages of both value chains.

As such, Altai has based this report on a detailed assessment of the value chains in Mosul. The report begins with identifying the main characteristics of the major actors in each value chain and then goes to analyzing the critical issues disrupting each value chain. After that, the capacity and revenue-cost structures of light manufacturing firms in each value chain are analyzed to identify the main challenges facing these firms. The report concludes with advocacy and program implementation recommendations specific to each value chain.

2. METHODOLOGY

Altai conducted in-depth Key-Informant Interviews (KIIs) with major actors along the value chain in both the wool and wheat industries. For the wool value chain, up-stream actors such as fleece traders and wool transformers and down-stream actors such as wholesale and retail clothes traders were interviewed. As for the wheat value chain, Altai held in-depth interviews with up-stream actors such as mill and flour traders and down-stream actors such as bakeries and pastry shops.

Altai also interviewed government institutions overseeing wheat storage (General Company for Grains Production) and flour production (General Company for Grains Processing in both Salah Al-Din and Ninawa to corroborate data).

In addition, in order to get a better understanding of the labor market in the light manufacturing section of the wheat value chain, Altai conducted a focus group discussion with pastry shop workers.

Table 1 Number of Conducted Interviews and Discussions

		Stakeholders	Number
Wool Value Chain	Key Informant Interviews	Fleece Traders	3
		Laborer for Fleece Traders	1
		Wool Transformers	9
		Wholesale Traders of Wool Transformed products	3
		Retailers of wool transformed products	4
		Former Employee at Mosul Textile Factory	1
		Total for Wool	21
Wheat Value Chain	Key Informant Interviews	Public Institutions	3
		Wheat Traders	1
		Wheat mills	4
		Flour Traders	5
		Pastry Shops	3
		Bakeries	3
	Focus Group Discussion	Laborers in Wheat Transformation	1
		Total for Wheat	20
Total			41

The research questionnaires were composed of both structured and semi-structured questions. The structured questions included two categories of questions; one category looked into actors' satisfaction with the volume, price of inputs, quality of inputs, sales, etc. and the other was aimed at estimating the volumes of production, price of goods, costs, revenues, etc. As for the semi-structured questions, they were designed to unravel the different processes of input transformation in a value chain and the challenges facing the main actors.

To make sure that the report grasps the local dynamics in both value chains, Altai relied on two local consultants to aid in the fieldwork.

Figure 1 Altai Team



Both consultants are based in Mosul and have experience in conducting and facilitating development research. The consultants relied on their networks to identify the interviewees and referrals by interviewees to reach additional research subjects.

3. WHEAT VALUE CHAIN

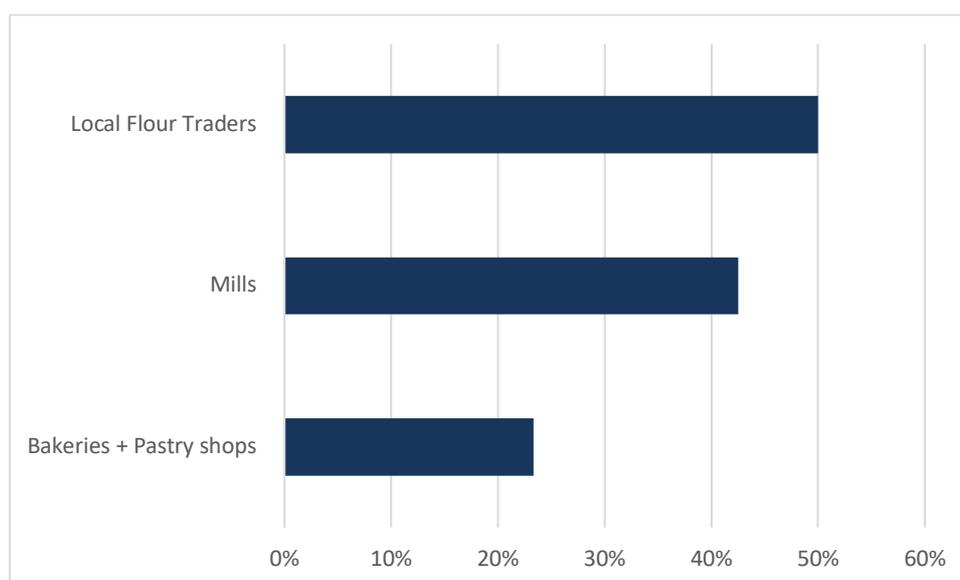
KEY TAKEAWAYS

- The state limits mills' ability to satisfy the local demand for flour
- The quality of local flour is subpar and must be repeatedly filtered along different stages of the value chain
- Bakeries market is oversaturated with small, informal firms that manufacture undifferentiated products.

3.1. COMPARING CURRENT ACTIVITY TO PRE-2014

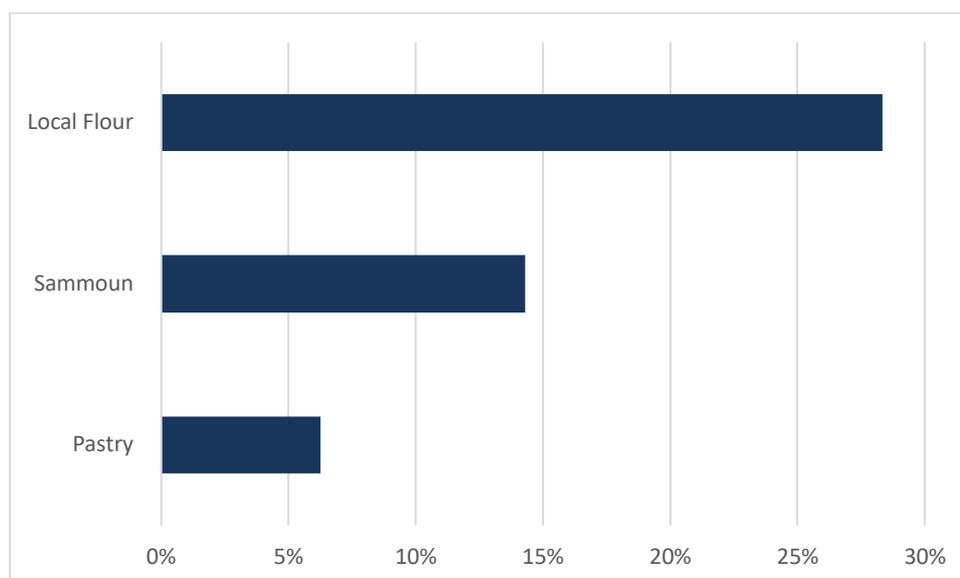
Actors across the wheat value chain in Mosul have not been equally impacted by the ISIS insurgency. Up-stream actors such as local flour traders and mills appear to have been more negatively impacted compared to down-stream actors such as bakeries and pastry shops. On average, local flour traders and wheat mills have reported a 50% and 43% decrease in business activity respectively whereas bakeries and pastry shops have reported a decrease of around 23%.

Graph 1 Decrease in business activity in 2019 compared to pre-2014 (%)



Another indicator that **up-stream actors seem to have been more impacted** by the crisis is the change in the price of local flour between 2019 and pre-2014. Local flour prices have reportedly dropped by 28% whereas the price of *Sammoun*, a variant of local Iraqi bread, has decreased by 14% and as for the price of pastry, it has more or less stayed the same and decreased only by 6%. To conclude, up-stream actors that used to serve customers outside of Mosul and Ninawa saw their demand diminished due to the loss of customers beyond Mosul whereas down-stream actors whose customer base is mostly confined to Mosul did not see their demand drop in the same manner.

Graph 2 Reported Decrease in prices in 2019 compared to pre-2014 (%)



3.2. GENERAL DESCRIPTION OF THE WHEAT VALUE CHAIN

In general, the **most diverse group** among the wheat value chain actors in terms of size and variety of products is that of the **pastry shops**. Mills, on the other hand, produce similar products since mills are subcontracted by the state to produce flour and have to abide by the same processing procedures.

Table 2 Main Characteristics of Actors in the Wheat Value Chain

	Business Age	Number of Workers	Workers' Gender	Estimated number in Mosul
Mills	Mostly > 25 years	20 – 40	Male	40 – 45
Flour Traders	Mostly 5 - 25 years	2 - 5	Male	35 – 50
Bakeries	< 5 years and 5 - 25 years	2 – 10	Male	>1000
Pastry Shops	Mostly 5 – 25 years	4 – 40	Mixed	Up to 50

There are no small mills in Mosul as most of them employ more than 20 full-time employees. As for pastry shops, there are around 5-10 dominant firms in Mosul which employ more than 20 workers while the rest are smaller in size and employ less than 10 workers. With regards to **gender of labor**, pastry shops are the only actor in the value chain that employ female workers in their sales and processing teams. Female laborers are active in most processing stages (mostly in decorating pastry) other than those that require intensive physical labor (such as moving heavy bags around) or those which are relatively hazardous such as operating the bakery oven. Employers usually refrain from assigning tasks to female laborers that would require long working hours into the evening for security reasons. In addition, female workers can in some cases make up half of the total number of workers at a pastry shop.

The wheat value chain begins with wheat farmers from surrounding districts such as Baaj, Hadar, Qayyara, Tel Afar, and Sinjar. selling their crops through auction to wheat traders in Mosul or directly to Silos or *Sahat*, which are state-administered storage facilities. In order to sell to the state, wheat farmers have to be registered with the Ministry of Agriculture. The major wheat cultivators that produce 300 tons/year or more usually have contracts with the government whereas those that produce less than 50 tons/ year often sell to auction traders who then in turn sell to the silos or *Sahat* with a 25% commission. **It's more profitable for farmers to sell directly to the government than selling to traders.** In 2019, the silos bought the wheat at 550,000/ton whereas traders bought it at around 300,000/ton. Other than that, despite the lower compensation for farmers, they prefer doing business with traders rather than the state since there is a high chance of delayed payments with the latter.

Wheat farmers receive seeds from the state or buy them from wheat traders. The state determines the volume of seeds to be distributed to each farmer in proportion to the size of their land.

Silos or *Sahat*:

Image 1 Silo in Mosul (Source: MosulEye)



Silos consist of concrete cylindrical structure whereas *Sahat* are open-air spaces which are slightly (around 20 cm) above ground level. Both are administered by the government through the Ministry of Trade. The Ministry then classifies the wheat into three classes according to its quality after testing the wheat in its labs, and it pays for the wheat according to specified brackets for each category. After that, the Ministry distributes a mix of the three classes (ex: 70% of 1st class, 20% of 2nd, and 10% of 3rd) to wheat mills.

Wheat Mills:

Image 2 Mill Processing Wheat Grains in Mosul



Wheat mills are assigned a production quota depending on their capacity. **Each mill that is contracted by the Ministry of Trade must commit to producing 80% flour and 20% bran per ton of wheat processed.** As per the contract with the Ministry, wheat mills sell 87% of the bran they produce to farmers (and to a lesser extent grain traders) and must hand in the remaining 13% and the flour to the Ministry of Trade. As per the Ministry's conditions, the mills are only allowed to produce one type of flour known as *Taheen Daraja Oula* ("first degree flour" or bread flour), for which they are paid USD 10/ton. The flour is then distributed to citizens by designated distributors as part of the government's food ration.

Focus box 1: The Public Distribution System (PDS)

Since the sanctions in the 90s, Iraq has implemented a system of food distribution aimed at ensuring that all citizens had access to a minimum survival basket of essential goods. The distribution is based on ration cards ("bitaqa tamwiniyah"). As last updated, the basket included 9kg / person / month of wheat flour. The program has been reformed, but still a majority of Iraqi citizens are eligible.

Flour Traders:

Flour Traders buy local flour either from the *Dawwara*, intermediaries who go around and collect local flour from either the state-designated distributors or from citizens who prefer to resell their rations than consuming them (a very common phenomenon). The flour traders then go on to sell the flour to bakeries, sweet shops, restaurants, and consumers. Traders also sell imported flour from Turkey, known as *Taheen Daraja Sefer* ("first degree flour" or pastry flour); imported flour is sometimes mixed

with local flour to create mixes which are also sold alongside flour bags which are either purely local flour or imported flour.

Bakeries:

Bakeries mainly produce two types of breads, *Tannour* and *Sammoun*. **Both are often made with a mix of local and imported flour**, with the higher percentage for the latter in making *Sammoun*. Bakeries then sell the bread to consumers, stores, or restaurants. Bakeries buy the flour either from traders or from end-consumers (in the case of local flour) directly who exchange their flour for loafs of bread. The variety of bread is limited in Mosul; however, there are some bakeries who sell Lebanese bread and diabetes-friendly bread.

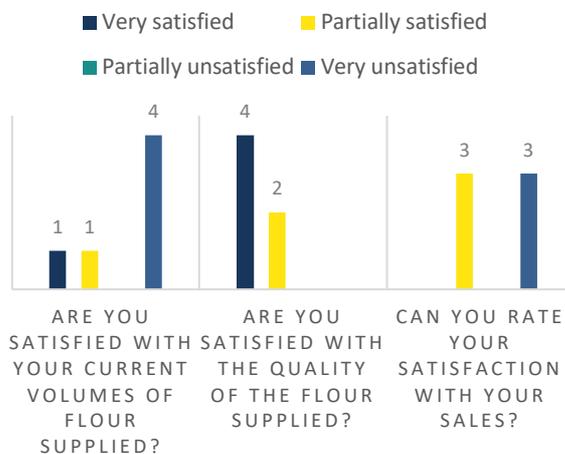
Pastry Shops:

Pastry shops only **rely on imported flour to make pastry**. Local flour is not appropriate for baking pastries since it neither produces a solid structure that doesn't easily crumble nor the white color desired in pastries. Unlike bakeries, they mostly sell directly to consumers.

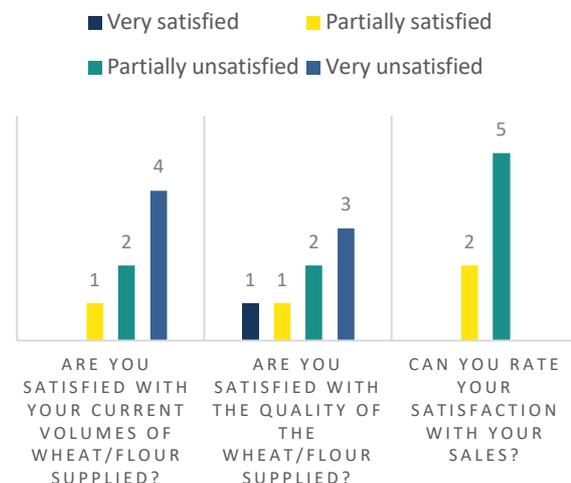
3.3. SATISFACTION LEVELS WITH INPUTS AND SALES

The common point across all actors in the wheat value chain is that most of them are not satisfied with the volume of flour that they are consuming. This indicates that all of **the actors believe that they are operating below their capacity and are not content with their current levels of production**.

Graph 3 Satisfaction levels of Bakeries and Pastry Shops



Graph 4 Satisfaction Levels of Flour Traders and Mills



The similarities between up-stream and down-stream actors end there however. Down-stream actors are satisfied with the quality of their flour given their access to imported flour and are mixed when it comes to satisfaction with the level of sales. **Upstream actors, on the other hand, are not satisfied with the quality of wheat and flour inputs** and are not satisfied with their level of sales. The dissatisfaction of local flour traders with the quality of local flour is echoed by **bakers who regularly have to filter the local flour and remove the bran in order to bake quality bread**. Some bakers do not rely on local flour altogether and only use imported flour.

“Some brands of local flour cannot be used at all for baking and are sold as animal feed.”

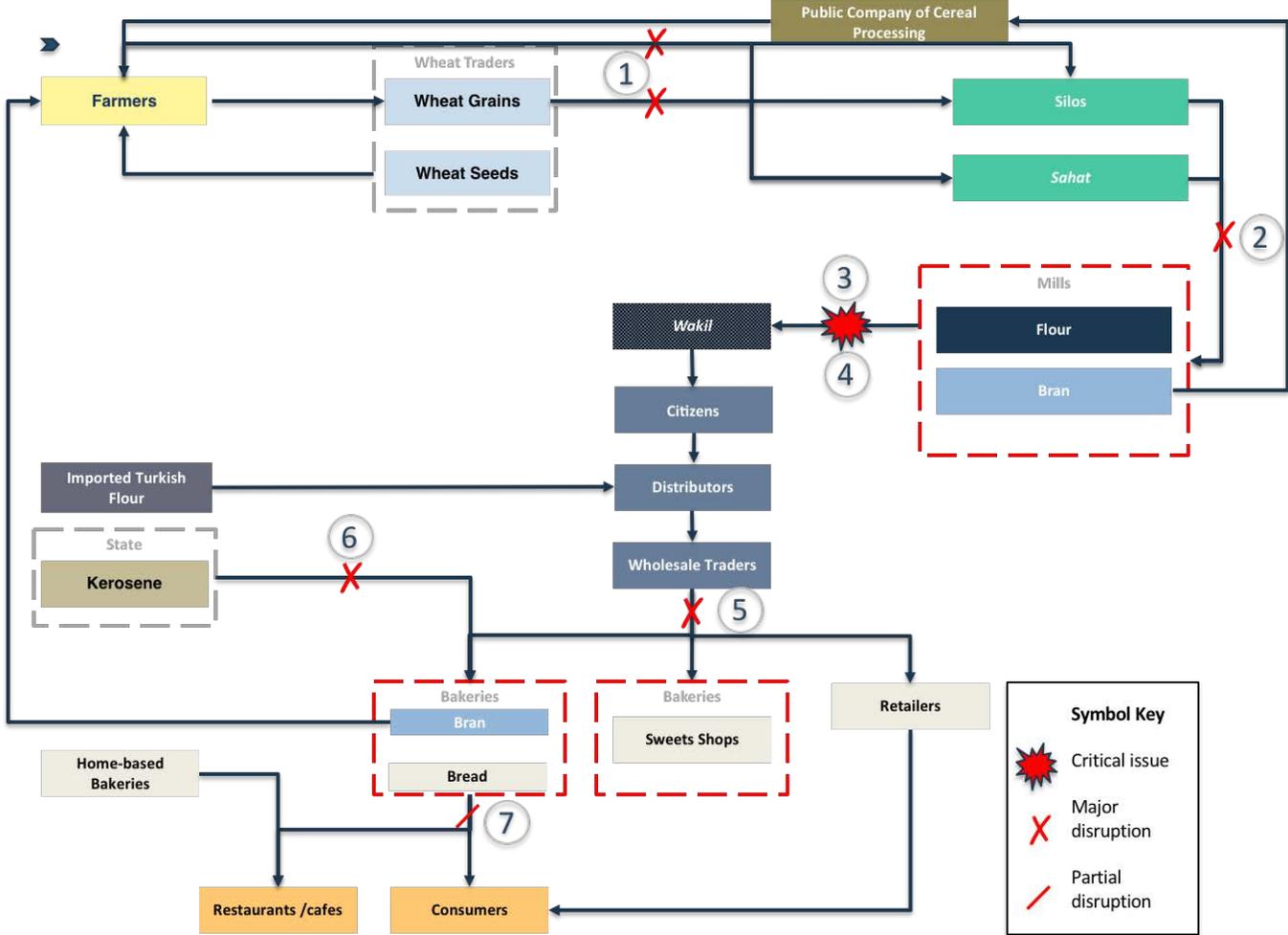
– Mohamad, Bakery owner, Mosul

For mills, their lack of satisfaction with their sales is an additional indicator of their discontent with producing below capacity. As for local flour traders, their dissatisfaction with their sales is rooted in their inability to attract customers from surrounding districts and governorates.

3.4. VALUE CHAIN INTEGRATION

The major disruptions to the wheat value chain occur up-stream where there is heavy state intervention.

Figure 2 Disruptions in the Wheat Value Chain in Mosul



The major disruptions to the wheat value chain occur up-stream where there is heavy state intervention.

At the level of the state's storage facilities, there are some reported issues of **lack of transparency** and governance issues which prevent an equal access to this state-subsidized buying mechanism (1). At the level of the state's storage facilities, **the labs that test the quality of the wheat** need to be rehabilitated as their ability to differentiate the wheat by quality is **mediocre** which also impacts the quality of flour produced by mills (2).

At the level of the **mills**, there is a consensus that they are **producing below capacity** due to the **production caps** set by the state (3). Other than that, mills are **restricted by the state from producing other types of flour, such as Taheen Daraja Sefer** ("Zero-degree flour") (4). The reason behind that is that producing *Daraja Sefer* leads to a higher percentage of bran per wheat processed; so, rather than 20% of bran per ton of wheat, the ratio would be 25-30%. This means that there is **less quantity of flour distributed by the state and more profit for mills**, which explains why the state restricts mills from producing *Daraja Sefer*, except during high demand seasons such as during Ramadan and Eid, when a lot of this *Daraja Sefer* is used for sweets. In addition, after the ISIS insurgency, two factors contributed to the further decrease in mills' production . First, mills in Mosul used to provide flour to the Kurdistan region before the insurgency; however, due to Mosul's occupation under ISIS for 3 years, the Kurdistan region built its own mills and no longer became dependent on Mosul for its flour consumption. Second, the central government decreased the amount of flour provided as part of the food ration and therefore decreased the amount of wheat supplied to mills.

This, along with the diminished demand on local flour due to its subpar quality, means that their production will most likely continue to decrease in the future. **Flour traders** have also seen their volumes of trade decreasing due to their inability to sell to customers **outside of the governorate due to increased transportation and time costs** (5).

“The quantity of wheat assigned to us is very low. We operate the mill for only a couple of days in a given month”

– Khaled, Mill manager, Mosul

With regards to downstream flour processors, there are two major issues in terms of value chain integration. Due to **the costly and time-consuming bureaucratic procedures** for obtaining state permits, a relatively high portion of bakeries (especially recently-opened ones) are informal and thus do not receive a **kerosene subsidy** which puts them at a disadvantage compared to formal bakeries (6). In addition, some bakeries, especially those **in low-income neighborhoods**, have seen demand on their goods decrease since 2014 due to households **baking bread in their homes** (7).

3.5. FOCUSING ON LIGHT-MANUFACTURING

Pastry shops process more complex products compared to bakeries since there are more ingredients in pastry compared to bread.

Table 3 Characteristics of Wheat Transformers

	Processing Steps	Customers	Product Complexity (1: basic – 5: complex)
Bakeries	Yeast is mixed with flour and made into dough. Dough is then left for around 10 minutes and then cut into pieces and baked.	Mainly at the neighborhood level	2
Traditional Pastry Shops	Flour, sugar, and starch are made into dough. After that almond or pistachio are inserted in the dough and then it's baked. Sugar Syrup is then added to the pastry.	City level and to a lesser extent from surrounding districts and governorates.	3

Partially due to the difference in product complexity, pastry shops attract customers from outside Mosul whereas the customer base of bakeries is often limited to the neighborhood level.

Expectedly, the volumes produced by bakeries are estimated to be 15 to 25 times more than those produced by pastry shops.

Table 4 Estimated Volume of Production by Bakeries and Pastry Shops

	Lower Estimate	Upper Estimate
Bakeries (tons)	50,260.50	70,364.70
Pastry Shops (tons)	2,000	4,500

3.5.1. EXAMPLE OF COST-REVENUE STRUCTURE OF A WHEAT TRANSFORMER

For a small-sized bakery, cost of labor is considered to be the major cost where workers earn per bag of flour. In addition, the price of *Sammoun* (12 loafs/ 1000 IQD) is less than the price of *Tannour* (7 loafs/ 1000 IQD) and the production of *Sammoun* requires a higher amount of imported flour compared to *Tannour*, so the lesser profitability of *Sammoun* partially explains why there are fewer bakeries making *Sammoun* compared to *Tannour*.

Table 5 Revenue-Cost Structure of a Small-sized Bakery

	With subsidized Kerosene	With unsubsidized Kerosene	With local flour only
Price of Flour per year (IQD)	13,050,000	13,050,000	10,800,000
Salt Cost per year (IQD)	120,000	120,000	120,000
Yeast Cost per year (IQD)	450,000	450,000	450,000
Labor Cost/year (IQD)	24,050,000	24,050,000	24,050,000
Gasoline Cost/year (IQD)	57,600	57,600	57,600
Electricity Cost/year (IQD)	252,000	252,000	252,000
Transportation Cost/year (IQD)	365,000	365,000	365,000

Packaging Cost/ Year (IQD)	1,095,000	1,095,000	1,095,000
Machine Maintenance/ year (IQD)	1,264,000	1,264,000	1,264,000
Rent/year (IQD)	3,600,000	3,600,000	3,600,000
Kerosene cost/ year (IQD)	4,800,000	5,280,000	4,800,000
Total Cost/year	49,103,600	49,583,600	46,853,600
Bread revenue/ year (IQD)	66,916,667	66,916,667	66,916,667
Bran revenue/year (IQD)	2,025,000	2,025,000	0
Kerosene sold/ year	4,320,000	0	4,320,000
Total Revenue/year	73,261,667	68,941,667	71,236,667
Annual Profit (IQD)	24,158,067	19,358,067	24,383,067
Annual Profit (USD)	20,132	16,132	20,319
Profit/month	1,678	1,344	1,693

Formal bakeries can make USD 330 per month more than informal bakeries in before-tax profits.

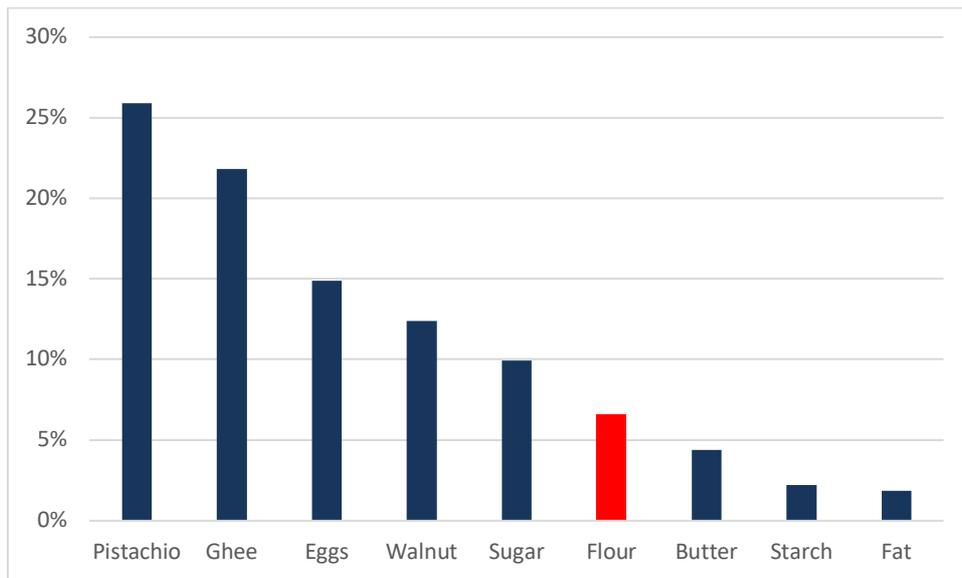
The reason behind that is that formal bakeries are entitled for buying 2,000 liters of kerosene from the government at a subsidized price (200 IQD/L); bakeries often do not use the entirety of the subsidized kerosene and then sell the kerosene at market price (400 IQD/L).

When bakeries use local flour, they must first filter it and separate the flour from the bran, which is then sold to farmers. Because of that, **bakeries buy a bag of local flour (50 kg) at 15,000 IQD where in fact the bag is worth for less than that price.** To illustrate, if 30% of a bag of local flour is considered bran and sold as such, this means that the real value of the bag of local flour is 14,250 IQD assuming that a bag of bran (50 kg) is sold at 12,500 IQD. Because local flour bags are not properly filtered, bakeries make a loss of 750 IQD per bag of local flour

Assuming that bakeries rely only on local flour (instead of mixing with imported flour) which is completely usable for baking (0% bran), then bakeries could be saving less than USD 20 per month at the given prices. However, this change in profit is much lower compared to the change in profit due to a kerosene subsidy; this indicates that **altering the state's subsidy policies would have a bigger impact than introducing protectionist measures on imported flour** for example.

Pastry shops, on the other hand, have a significantly higher number of ingredients compared to bakeries.

Graph 5 Share of Flour in Ingredients' Cost for a Pastry Shop



Flour represents a minor cost as a share of total ingredient costs for a pastry shop. The cost of eggs and the cost of pistachio are twice and three times the cost of flour respectively. **This indicates that a change in the cost of flour would have a minor impact on the profitability of a pastry shop.**

3.5.2. CAPACITY OF WHEAT TRANSFORMERS

Both bakeries and pastry shops rely on machines in their processing, and the machines used do not suffer from frequent malfunctions. Each bakery usually has two machines:

1. 'ajjanna (dough mixer)
2. hazzaz (literally "shaker": flour filter machine).

Image 3 Dough Mixer



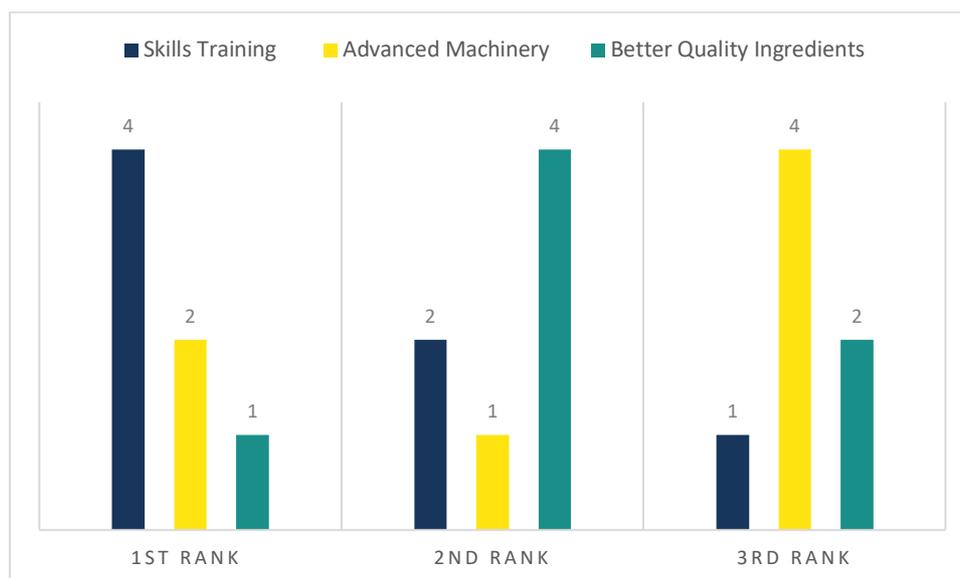
Image 4 Flour Filter Machine



Pastry shops on the other hand also rely on 'ajjana, and numerous other machines depending on the type of pastry produced; for instance, in the manufacturing of baklava, a machine known as *shawtra* is used to extend and spread the baklava dough.

Although bakeries and pastry shops heavily rely on machines, **labor skills are more essential in developing a firm's competitive advantage.**

Graph 6 Workers' Preferences Between Better Machinery, Higher-Quality Ingredients, and Skills Training



Despite the fact that workers are general dissatisfied with the quality of machines at their disposal since they are outdated and primitive, they prefer receiving training and working with better ingredients over having advanced machinery. More specifically, workers mentioned that they want to acquire new skills that would allow them to innovate and produce new products. **This indicates that the added-value of enhanced skills is higher than the added value of better machines.**

There is a strict division of labor in both bakeries and pastry shops with workers specialized by each stage of the production process. At bakeries, for example, the tasks of preparing the dough, making the bread, and operating the oven are divided among three different workers who are specialized in of one specific task. The same applies to pastries where labor is divided by task (dough pouring, slicing, decorating, etc.) and by the type of pastry. Even though their occupation requires a certain degree of specialization, **most workers do not receive any formal training and instead learn on the job.**

“I learnt how to bake from the internet and specifically from Youtube.”

– Maryam, Pastry Shop Worker, Mosul

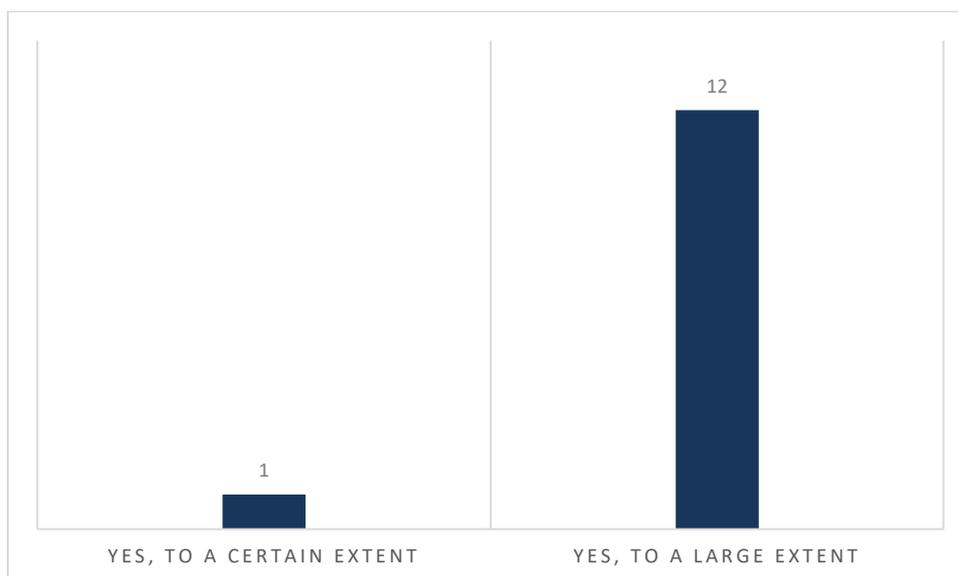
3.5.3. INTER-FIRM COOPERATION

Bakery and pastry firms often cooperate among each other on different issues. For example, experienced pastry shops consult smaller pastry shops on management issues and expanding their business whereas other pastry shops often buy from competitors and sell in their own stores when there is high demand. Bakeries also cooperate among each other where for instance a bakery would share its workers with another bakery when there is high demand or share its expertise with regards to repairing machines for example.

3.5.4. ENABLING ENVIRONMENT

There is a consensus across **all actors in the value chain that state policies and regulations impact their business activity to a large extent.**

Graph 7 Wheat VC Actors' Assessment of the Impact of State Policies/Regulations on their Business



For wheat mills, they mostly see the state in a negative light since it sets a cap on their production and thus limits their profits. As for flour traders, the state impacts their business activity through security checkpoints and the introduction or lifting of tax imports. With respect to bakeries, they require multiple costly permits to become formal and eligible for energy subsidies. This leads to a relatively high rate of informality among bakeries and creates distortions where formal bakeries gain energy subsidies and informal ones avoid paying certain fees.

“Obtaining government permits can cost up to USD 3000 in bribes.”

– Saad, Baker, Mosul

3.5.5. MAIN CHALLENGES FACING LIGHT MANUFACTURING FIRMS

There are several challenges facing the light manufacturing sector in the wheat value chain related to the value chain.

Figure 3 Main Challenges Facing Light Manufacturing Firms in Wheat Value Chain

1. Input Sourcing	2. Processing	3. Marketing
<ul style="list-style-type: none"> • Low-quality of local flour • Relatively high disparities in cost structures between formal and informal bakeries due to subsidies 	<ul style="list-style-type: none"> • Wasted time on filtering local flour • Outdated machinery • Lack of formal training 	<ul style="list-style-type: none"> • Limited ability to attract customers beyond Mosul. • Customers restricted to end-consumers

Up-stream, the quality of flour incurs losses on bakeries while down-stream, pastry shops have a limited customer base which is restricted to end-consumers. Other identified challenges relate to the capacity

of bakeries and pastry shops such as the lack of formal training and outdated machinery and to the enabling environment such as barriers to formality for bakeries and the poorly-designed energy subsidy.

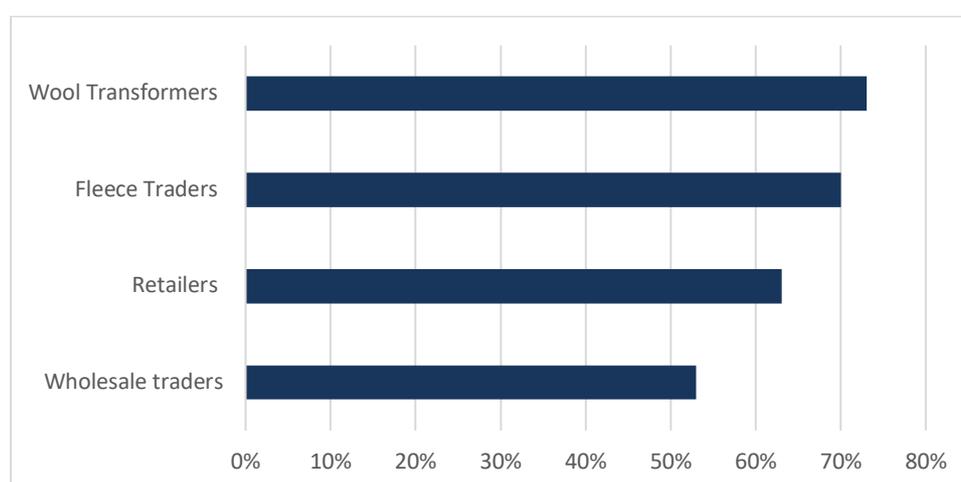
4. WOOL VALUE CHAIN

KEY TAKEAWAYS

- Wool transformers suffer from a lack of end-market opportunities
- The majority of wool transformers are micro-enterprises that are labor-intensive and lack machines
- Wholesale and retail traders trade in imported goods and currently do not do business with local wool transformers.

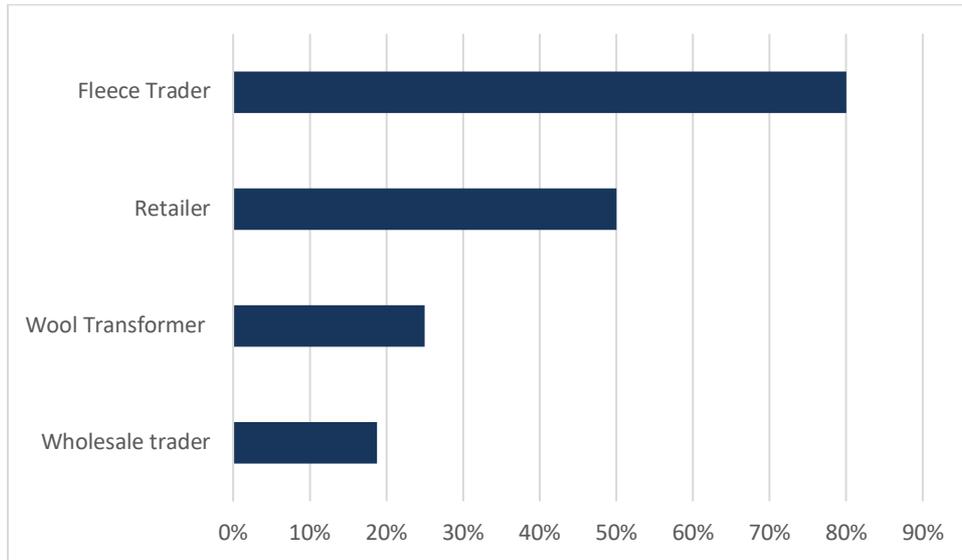
4.1. COMPARING CURRENT ACTIVITY TO PRE-2014

Graph 8 Reported Average Decrease (%) in business activity in 2019 compared to pre-2014 (2012)



Business activity across the wool value chain is reportedly still considerably way below its pre-2014 levels. The majority of actors have reported a considerable drop (at least 50%) in their volumes of trade and production compared to pre-2014. There is a clear discrepancy between up-stream (fleece traders and wool transformers such as tailors) and down-stream actors (wholesale and retailer traders of wool-based products such as clothes) in their reported decline in business activity where up-stream actors have been more negatively impacted by the ISIS insurgency compared to down-stream actors. Retailers and wholesale traders, who trade in imported goods, were not as impacted by wool transformers and fleece traders, who have a more limited customer base.

Graph 9 Reported Decrease in Price of Goods Sold by Individual Businesses in 2019 compared to pre-2014



Another indicator of persisting depressed demand is the price of goods produced or traded. Among all actors across the value chain, fleece traders appear the group that has been dealt with the biggest blow to its business activity and income. This is not surprising given that fleece traders sell to exporters and exporting from Mosul has become costlier and more complicated compared to pre-2014.

4.2. GENERAL DESCRIPTION OF THE WOOL VALUE CHAIN

The three main categories of actors in the wool value chain are the fleece traders, wool transformers, and (wholesale and retail) traders of wool-based products. In Mosul, traders of wool-based products currently do little to no business with the first two categories.

Table 6 Characteristics of Main Actors in the Value Chain

	Business Age	Number of Workers	Workers' Gender	Estimated number in Mosul
Fleece Traders	> 25 years	2-10	Male	< 20
Wool Transformers	Mixed between < 5 and > 25 years	Family-based	Mixed, but predominantly female	< 50
Wholesale Traders	Between 5 and 25 years	< 3	Male	< 20
Retailers	Variable	< 3	Male	100-200

Call Auction Wool Traders

They buy from farmers in the *Jazira* area, which encompasses the entirety of Salah-al-Din and Ninawa governorates and parts of the governorates of Kirkuk and Anbar. Farmers contact auction traders before making the trip to Mosul to inquire about market prices and to see if it is worth shearing the sheep. The

auction traders then sell to individual wool traders and take a **commission of about 2% on sales**. Given that the sales season lasts for two months in Spring (from March until May), auction traders often rely on selling other agricultural goods related to sheep breeding, such as barley.

Fleece Traders

Image 5 Packaged Fleece

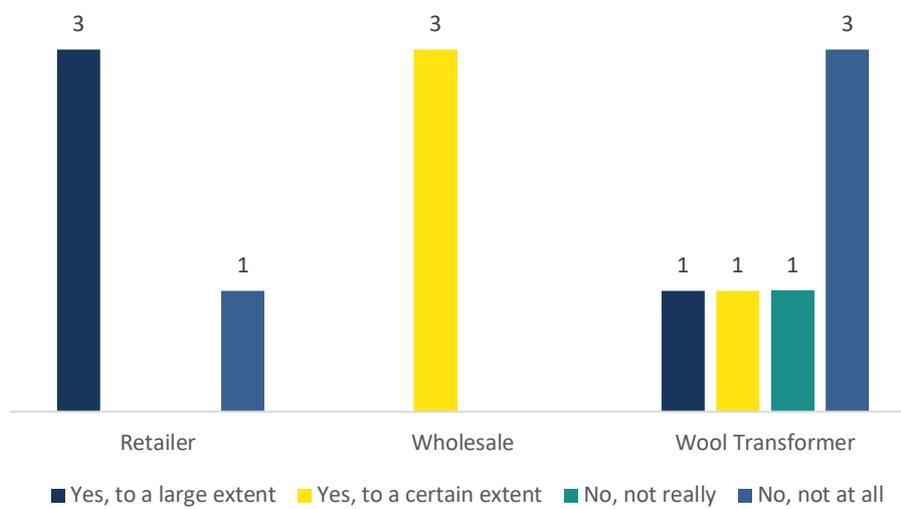


Fleece traders' main customers are exporters or families who buy the fleece from them and then take it to tailors to sew bedding products such as pillows, mattresses, and duvets. Wool Traders package the fleece that they buy from the auction wool traders by quality (low, mid, and high-quality). It is also common for wool traders to trade in other agricultural goods or agricultural-derived products such as ghee. As for wool exporters, there are less than five in Mosul and the major export destination is Turkey.

Wool Transformers

The number of wool transformers in Mosul is limited. One indicator of the limited number of wool transformers is their perception of the level of competition in their trade which they do not consider as high.

Graph 10 Firms' Perception of Intensity of Competition and Threat of New Entrants in their Respective Trades



Wool processing activities in Mosul can be categorized into **two groups: those who manufacture raw fleece** and those **who manufacture imported, processed wool fabric**. The first group includes **wool washing and tailoring of bedding products, traditional clothes, tents, and rugs**. **Wool scourers** receive the fleece from either households or traders and wash the wool inside their homes. After that, households take the washed fleece over to **bedding-product tailors**, who could be either home-based (workers are mostly women but could be mixed) or workshop-based (workers are exclusively men). Women are usually reserved to sewing and manufacturing the bedding products whereas men exclusively deal with clients. whereas Bedding-product tailors only produce on demand meaning that they do not buy fleece and manufacture and then look for buyers.

“Very few practice our trade; it is almost extinct.”
 – Jassem, Traditional Clothes Tailor, Qonzeya village

Image 6 Hand-made Duvets and Pillows



Besides bedding products, there are two other processing activities in this group:

1. Tailoring of traditional clothes
2. Tents and rugs (mostly for nomads)

While traditional clothes tailors build up inventories, those tailoring tents and rugs face low demand.

The **second group of wool transformers includes tailors who manufacture garments such as baby clothes and scarves. This group is distinct from the first in that it sells to retailers** in addition to selling directly to end-users. 10-15 workshops make up this group and wool-based products constitute only a minority of their total products.

Wholesale and Retail Wool Clothes Traders

For most of the retailers and wholesale traders, **wool-based products constitute only a minority of their total products.** With regards to wool clothes, they mostly sell products such as sweaters and scarves that are imported from Turkey or China. Only one of the retailers interviewed was fully specialized in selling wool-based products, which are imported, while the remaining retailers are generalists who sell products made from different types of fabric such as cotton, polyester, nylon, etc.. Before 2003, some traders reported that they used to trade in locally-manufactured goods. For instance, a wholesale trader from Mosul mentioned that in the 90s he used to work with about 100 tailors who used to manufacture wool textile and clothes.

Asides from wool-based products just being sold during winter, they also have a drawback compared to products from other material since it's hard to innovate in design with wool.

Focus box 2: Textile Factory in Mosul

Prior to 2003, the state-owned Spinning and Textile Factory based in the industrial area in Mosul used to process the wool and manufacture clothes and wool textile. However, even then, the factory used to process cotton, polyester, and viscose much more than wool. After 2003, the factory stopped processing wool altogether and after 2014, due to the destruction and looting of the factory's machineries, textile production effectively stopped altogether.

4.3. SATISFACTION LEVELS WITH INPUTS AND SALES

Up-stream and down-stream actors face different challenges, as indicated by the discrepancy in their satisfaction levels.

Graph 11 Satisfaction levels with quality and quantity of wool input and with sales for Wool Transformers and Fleece Traders



Graph 12 Satisfaction levels with quality and quantity of wool-based input and with sales for Wholesale Traders and Wool Transformers



In analyzing the problems facing the wool value chain in Mosul, it is important to differentiate between up-stream and down-stream challenges:

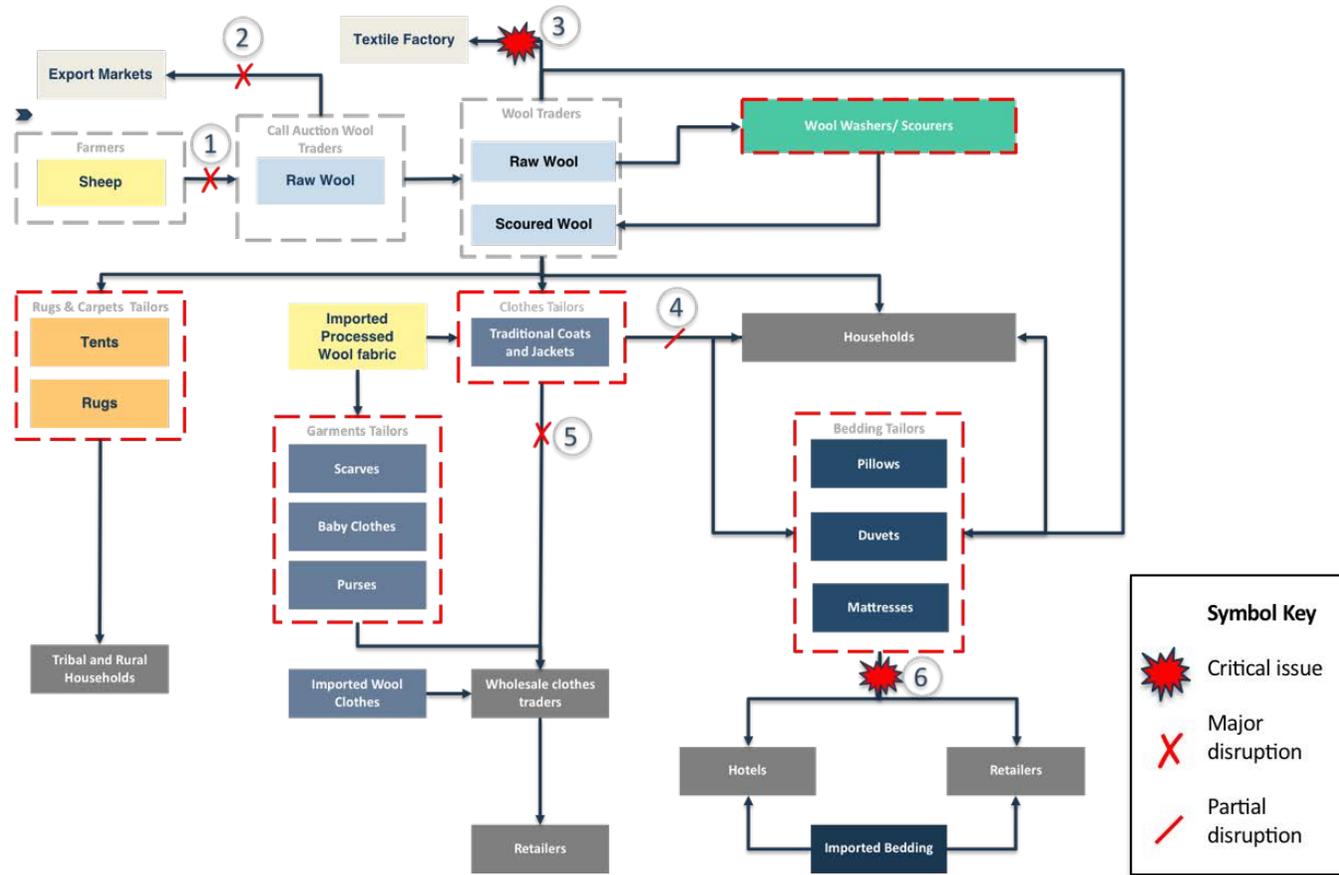
- **up-stream challenges:** fleece traders and wool transformers are more satisfied with their sales and the quality of wool and more **dissatisfied with the volumes of wool supplied**.
- **down-stream challenges:** As for **wholesale and retail traders**, they are satisfied with the current volume of wool-based goods but they are more **dissatisfied with the quality of the wool-based products**.

The results indicate that the up-stream actors are dissatisfied with the limited end-market opportunities whereas the down-stream actors are dissatisfied with the production quality of imported goods.

4.4. VALUE CHAIN INTEGRATION

There are several up-stream and down-stream challenges disrupting the integration of the wool value chain in Mosul.

Figure 4: Description of the wool value-chain in Mosul



To begin with, the **multiple checkpoints and the resulting bribery charges and time costs (1)** discourage sheep farmers from making the travel to Mosul to sell their fleece which means a **good portion of fleece is thrown away**. Another major issue is **the limited end-market opportunities**. The textile factory is effectively out of operation since a majority of the machines were either looted or destroyed **(2)** and exporting is considered difficult due to high transportation costs within Iraq and to the costly bureaucratic challenges related to obtaining export permits **(3)**.

As for tailors, their main challenges relate to design, marketing, and their limited customer base. For instance, most bedding product tailors only serve customers who live in their neighborhood or the same family clients which they've been dealing with for several years. As for traditional clothes tailors, Kurdish customers used to constitute most of their buyers prior to the ISIS insurgency but now they much less frequently visit Mosul and its surrounding areas. All in all, this means that **tailors have a very limited customer base**.

This is partially the result of their **inability to market their products in local stores (5&6)**. Wholesale traders are unwilling to buy from local tailors since their designs are outdated and less diverse compared to imported goods and because of their inability to mass produce. This along with the relative cheap price of imports and customer's limited purchasing power means that wholesale traders and retailers have little incentive to do business with local tailors

“We cannot produce a large number of pillows and mattresses since there are only few shops who are willing to buy from us.”

– Samira, Bedding Products Tailor, Mosul

Image 7 Hand-made Baby Wool Clothe



It is worth noting that some wool transformers have integrated supply chains by the merit of being a tailor and a call auction trader or a tailor and a sheep farmer at the same time. However, in such cases tailoring is not considered the major source of revenue and thus the business owners do not have a strong drive to expand their tailoring business.

As for wholesale traders and retailers, the major issue they face is that their wool-based goods are manufactured in China and Turkey. This means **it is harder for them to communicate to manufacturers** the local needs and market trends and customers' satisfaction with the products. On the other hand, retailers and wholesale traders do not do business with local processors, even though most of them would prefer dealing with locals, rather than imported wool-based products, because they believe Iraqi products are of higher quality.

“Local products last for five seasons while imported ones only last for one since they either lose their color or their form”

– Salwan, Wholesale Clothes Trader, Mosul

4.5. FOCUSING ON LIGHT-MANUFACTURING

Mosul hosts wool processors and is also a market for those who manufacture wool outside of Mosul in surrounding districts and come to Mosul to market it. For instance, tents and rugs tailors can process their goods in their villages and then sell them at the marketplace in Mosul.

Table 7 Characteristics of Wool Transformers

	Processing Steps	Customers	Product Complexity (1: basic – 5: complex)
Wool Washers	Wool is categorized according to its quality (humidity, dirtiness, etc.). Then it is washed with water as laborers step on it to remove the soil and dirt. After that a washing detergent is added before it is soaked in the open-air.	Mosul	1
Bedding Product Tailors	Wool is made silky using primitive hand-carding tools and then stuffed and sewed in white cloth,	Mosul	1
Traditional Clothes Tailor	When made from local wool, multiple fleeces of young sheep are stitched together to make the inside of a coat or a jacket. Then an outer layer of cloth is stitched to the wool.	Mosul and surrounding districts (especially tribesmen)	3
Tents and rug Tailors	Wool is spun using large wooden drop spindles before it is sewed into basic rugs and tents.	Predominantly surrounding districts (ex: Bedouin tribes)	2
Garment Tailors	Processed wool yarns are weaved using knitting needles or less frequently sewing machines into scarves, baby clothes, purses, etc.	Mosul	3

In terms of volumes produced, bedding product tailors by far produce the most compared to wool transformers while tents & rug tailors and traditional clothes tailors produce the least.

Table 8 Estimated Volume of Production by Wool Transformers

	Estimated Number in Mosul	Lower Estimate	Upper Estimate
Wool Scourers (tons)	30	120	3000
Bedding Products (pieces)	30	10500	27000
Traditional Clothes (pieces)	10	450	750
Rugs and Tents (pieces)	5	75	125
Garment Tailors (pieces)	15	4500	19500

4.5.1. EXAMPLE OF COST-REVENUE STRUCTURE OF A WOOL TRANSFORMER

The **revenue** of wool-transformers is often **limited** due to the **seasonality of wool consumption**. For instance, wool-based clothes are only worn during winters and the demand on hand-made bedding products occurs during the wedding season, which takes place during late Spring and early Summer. As part of Mosul's traditions, newly-weds buy hand-made bedding products as part of their *Jihaz*, or the process of furnishing their new home.

On the other hand, **costs are also limited** due to the **lack of labor employment** and the fact that the **customer is the one that bares the costs of raw material**.

Table 9 Revenue-Cost Structure of Bedding Products Tailor

Shop-based Case				Home-based Case			
Type of Product	Volume/year	Price/piece	Income/year (IQD)	Type of Product	Volume/year	Price/piece	Income/year (IQD)
Pillows	300	5,000	1,500,000	Pillows	200	5,000	1,000,000
duvets	400	15,000	6,000,000	Duvets	150	12,000	1,800,000
small mattress	100	15,000	1,500,000				
Total Revenue/year			9,000,000				2,800,000
Rent			2,400,000				0
Energy			250,000				300,000
Transportation			200,000				0
Equipment maintenance			70,000				0
Other			50,000				80,000
Total Cost/year			2,970,000				380,000
Yearly Profit			6,030,000				2,420,000
Profit Margin (which includes labor of the "business" owner)			67%				86%

With regards to bedding-product tailors in Mosul, they can be either home-based or workshop-based. The latter is able to produce a larger volume and produce higher absolute profits compared to the former yet with a lower profit margin. Both cases do not rely on labor since they are either micro-enterprises or because they rely on family labor, which explain their high profit margins, integrating hidden own-

labor cost. In addition, both are labor intensive as indicated by the low cost of both energy and equipment maintenance.

4.5.2. CAPACITY OF WOOL TRANSFORMERS

The majority of **wool transformers do not rely on machines in wool processing but rather rely on labor and hand equipment**. Those who tailor clothes and bedding products rely on hand carders and knitting needles. Those who manufacture tents and rugs use drop spindles and a minority use machines in tailoring. Techniques and skills are also outdated as they have been inherited from their parents and grandparents. However, even among the few who do use machines, a significant proportion had their machines stolen or destroyed during the ISIS insurgency.

Other than that, in terms of capacity, bedding product tailors mentioned that they **do not have space to store inventory** which was part of the reason why they only produce on demand. However, transformers who are based in rural areas can afford to run storage spaces. Rural wool transformers store the wool in a specific designated space known as *Doum*, which are mud-made spaces with a ceiling of canes and wood and covered with nylon.

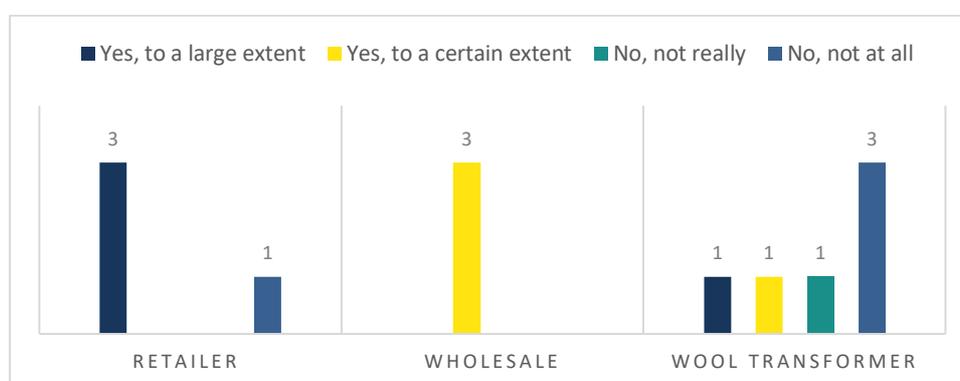
“I inherited the machine from my grandmother, as she was the one who taught us how to wool spin.”

– Jassem, Traditional Clothes Tailor, Qonzeya village

4.5.3. ENABLING ENVIRONMENT

There is also a clear discrepancy between up-stream and down-stream actors when it comes to challenges related to state regulations and policies.

Graph 13 Actors' Perception of the Impact of State Regulations on their Business Activity

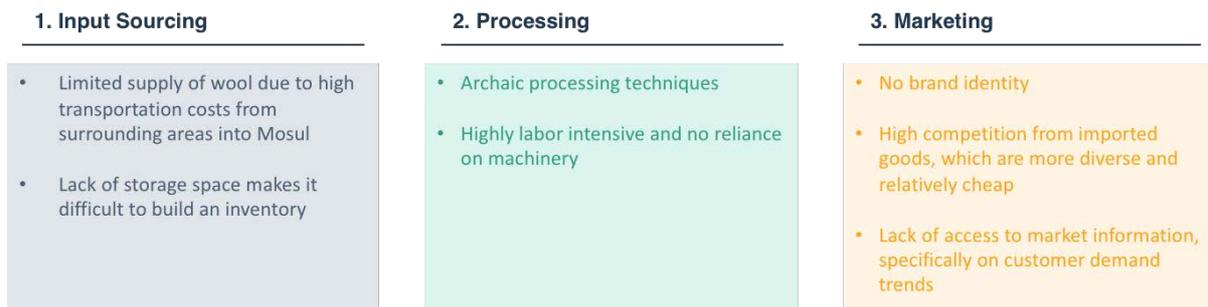


Wool transformers do not consider that state regulations and policies represent a major challenge to their businesses. **Retailers and wholesale traders, on the other hand, viewed that the state’s policies and regulations negatively impact their business**. Among the issues raised are import tariffs, safety of transporting goods, militia checkpoints, and the crackdown on shops that do not have all the required permits. Given the fact that **wool transformers** are mostly micro-enterprises and home-based, this means that they are **not spotted by the state** and thus do not have to abide to its regulations.

4.5.4. MAIN CHALLENGES FACING LIGHT-MANUFACTURING FIRMS

The light-manufacturing firms face critical challenges that severely limit their growth and sustainability prospects

Image 8 Main Challenges Facing Light Manufacturing Firms in the Wool Value Chain



From a value chain perspective, light-manufacturing component of the wool value chain faces challenges both up-stream and down-stream. With regards to the former, the supply of fleece to Mosul is severely constrained which limits the exports of fleece through Mosul. This means that Mosul misses out on several processing industries such as packaging that could compliment wool exporting. Down-stream, wool transformers fail to attract retailers and wholesale traders given their limited production capacity, outdated designs, and lack of competitive pricing compared to relatively cheap imported goods. On top of that, the absence of a brand identity also contributes to the unattractiveness of local goods to customers.

5. OPPORTUNITIES AND RECOMMENDATIONS

5.1. WHEAT VALUE CHAIN

Figure 5 Summary of Opportunities for the Wheat Value Chain

Value Chain	Areas	Opportunities
Wheat	Advocacy	<ul style="list-style-type: none"> Amend mill contracts so that they can produce Taheen Daraja Sefer. A possible arrangement could entail the mills paying a subsidized price for the wheat bought to be produced into Taheen Daraja Sefer. Simplify registration procedures for bakeries to become formal. Make a one-stop shop for bakeries and reduce bureaucratic red tape. Redesign the energy subsidy to bakeries.
	Program Implementation	<ul style="list-style-type: none"> Provide training to pastry shop workers so that they can produce more varieties and save on production time. Connect pastry shops with local supermarkets so that they can sell packaged sweets and increase their customer base. Promote clustering between medium-sized and micro- or small-sized pastry shops. Support bran traders and processors which market innovative uses of bran. Organize a competition between bakeries to test their entrepreneurial skills and the quality of their products. Based on their grades, provide them with more advanced machines.

5.1.1. ADVOCACY LEVEL

The contracts between mills and the state could be amended to **allow mills to produce Taheen Daraja Sefer** (pastry flour). The arrangement would be different than the one currently in place to produce the bread flour. **Mills would buy the wheat from the state at a subsidized price** and would be required to have at least 50% of the production dedicated to the bread flour. **The wheat subsidized price would be divided in brackets depending on how much the mills is producing Daraja Sefer** where the subsidy would decrease as the mill produces more pastry flour as a percentage of its total production.

Further down-stream in the value chain, **permit procedures need to be simplified to decrease the number of informal bakeries**. This could be done by promoting a **one-stop shop where bakeries can apply for permits** as that would reduce the bureaucratic red-tape. Other than that, **the kerosene subsidy could also be re-designed** to avoid bakeries receiving more subsidized kerosene than their actual production needs. Bakeries should be eligible to a ration of subsidized kerosene in proportion to their production capacity, with the subsidy decreased for the larger bakeries as energy costs become less relative to their total cost.

5.1.2. PROGRAM IMPLEMENTATION LEVEL

The use of wheat bran is currently restricted to animal feed. However, wheat bran, which is rich in fiber, is known to have several positive health effects, such as improving an individual's digestive health. As such, **wheat bran is sometimes used in making some types of bread, pasta, and biscuit**. Given that bran is currently mostly traded directly between bakeries/mills and farmers, **there is an opportunity for businesses that would buy the bran and then categorize and package it by quality and end-use**. Such businesses can be supported by providing them with both management and marketing training.

As for bakeries, given the proliferation of small informal bakeries especially after the ISIS insurgency, the support provided needs to be selective. One possible way would be to have bakeries participate in competitions that grades the quality of their bread and their innovation skills. **The bakeries with the**

highest grades would be selected for **financial support to allow them to buy more advanced machines that would allow them to scale up their production.**

With regards to pastry shops, given that most workers are not formally trained, one entry point to improve the quality and efficiency of pastry shops would be to have **specialist chefs or food scientists provide training courses to workers.** The training could revolve around how to more efficiently use certain machines or how to come up with more creative recipes. In addition, promoting inter-firm cooperation among pastry shops would allow for specialization and transfer of knowledge from the dominant, established firms to the smaller and newer ones. One way to **encourage inter-firm cooperation would be to provide marketing support to established firms by aiding them in marketing packaged goods** to supermarkets for example, on the condition that these **firms outsource some of their processing activities to smaller pastry shops.**

5.2. WOOL VALUE CHAIN

Figure 6 Summary of Opportunities for the Wool Value Chain

Value Chain	Areas	Opportunities
Wool	Advocacy	<ul style="list-style-type: none"> • Provide support to farmers so that they can produce wool that meets the standards of export markets • Support the creation of an export industry with complimenting industries such as packaging to export to neighboring countries where there are high wool-processing activities (Turkey for textile and carpet industry and Iran for carpet industry). • Encourage trade deals between Iraqi traders and factories in nearby countries.
	Program Implementation	<ul style="list-style-type: none"> • Provide design training to tailors of wool-based accessories such as scarves so that their products can better compete with imported goods. • Empower bedding product tailors by supporting them with textile material and machines. • Organize exhibitions for traditional clothes tailors in Kurdistan region. • Connect designers for selected rugs tailors to create a brand identity for rugs as local artisan crafts.

5.2.1. ADVOCACY LEVEL

Given Iraq's proximity to two countries where there are ample wool processing activities (rug manufacturing in Turkey and Iran and textile industry in Turkey), **Mosul** should reclaim the role of an **export center of fleece arriving from breeders in Northern Iraq.** For that to happen, the quality of fleece needs to be increased to a level that allows it to compete in the export markets. This means that the **state needs to provide veterinary support to farmers and improve the quality of animal feed.**

In addition, a **wool exporting hub** could be built in Mosul where low-technology operations such as fleece washing, packaging, and storage could be performed by firms in close proximity. In order to **support SMEs** working in wool-related industries, a **business incubation center** can be opened to **provide management and business planning support for SMEs.** The hub would also host an export promotion facility which would act as a **one-stop shop for all export-related authorizations.**

From the demand side, textile and carpet factories in neighboring countries should be approached to connect them to fleece traders. The **Ministry of Trade**, through the export promotion facility, can play this role by negotiating agreements whereby **fleece traders export fleece to factories at lower prices in exchange for better deals on imports of wool-derived products** such as wool cloth, carpets, and wool clothes.

5.2.2. PROGRAM IMPLEMENTATION LEVEL

Existing wool-transformers need to be supported to increase their ability to compete with imported products. With regards to **bedding products tailors**, those with the **highest quality in terms of craftsmanship can be financially supported** to buy additional types of fabric and machines so that they can add design value to their products and **standardize production** respectively. After that, **supported bedding tailors could be connected to large home and bed products stores in Mosul** where they can be sold to increase their market access.

As for **garments and accessories tailors**, the **focus of support should be on design to target the upper segments in the market** since it's difficult to compete with cheaper imported products targeting lower segments. This could be done by **providing design training to improve their embroidery skills** for example. With respect to **tailors of traditional clothes**, one potential method of increasing their market access is by **organizing fairs or exhibitions twice a year for example where they can showcase their products in Erbil and Baghdad** and connect with traders. This could allow interested traders to subcontract the production of coats and jackets each season and they would incur the cost of transporting the products in bulk. As for **rug tailors**, their products can be **marketed as artisanal craft** and they could be **connected with designers** who would develop the products' identity, possibly through rediscovering disappeared rug-weaving traditions in Mosul.