MARKET AND CONSUMER EVALUATION OF THE MARKETPLACE FOR NUTRITIOUS FOODS PROGRAM: A CASE STUDY APPROACH

TARAKWO CASE STUDY – ELDORET, UASIN GISHU COUNTY, KENYA

FINAL REPORT

Prepared by Altai Consulting for GAIN – September 2017

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TABLE OF CONTENTS

ABBREVIATIONS

ATM	*Automated milk dispensary, often referred to as "Any Time Milk" machine by locals*
BoP	*Bottom of the Pyramid*
EADD	*East African Dairy Development*
FGD	*Focus Group Discussion*
GAIN	*Global Alliance for Improved Nutrition*
GIS	*Geographic Information System*
IRB	*Institutional Review Board*
KES	*Kenyan Shilling*
KII	*Key Informant Interview*
KCC	*new Kenya Cooperative Creameries*
km	*Kilometer*
L	*Liter*
MIC	*Marketplace Investment Committee*
mL	*Milliliter*
MNF	*Marketplace for Nutritious Foods*
MNFP	*Marketplace for Nutritious Foods Program*
POS	*Point of Sale*
PPT	*Percentage point*
SDP	*Smallholder Dairy Project*
TA	*Technical Assistance*
TOC	*Theory of Change*
USAID	*United States Agency for International Development*
USD	*United States Dollar*
vs	*Versus*

EXECUTIVE SUMMARY

Under GAIN's Agriculture for Nutrition Initiative and with support from the United States Agency for International Development, the Marketplace for Nutritious Foods (MNF) program was established to promote innovation and catalyze private sector engagement in producing and marketing more nutritious foods for lower income households in Sub-Saharan Africa. This is a case study assessment of the Tarakwo Dairies company, a milk collection and processing business based near Eldoret, in Uasin Gishu County, Kenya, and supported by the MNF Program since 2015. With GAIN's support, Tarakwo has started pasteurizing a part of its milk and selling it directly to consumers in two automated milk dispensaries (or ATMs) in Eldoret.

Objectives

The purpose of the project is to assess i. to what extent GAIN's inputs via the MNF program have helped improve availability, affordability, ease of access, convenience and desirability of nutritious food products on local food markets (primary objectives); and ii. to what extent the above-mentioned changes on local food markets have impacted consumers' food purchasing behaviors (secondary objectives).

Methods

The case study includes i. two quantitative surveys (consumer and vendor) that were conducted in intervention markets (markets where Tarakwo milk is being sold), in control markets (markets where Tarakwo milk has never been sold) and at the two current Tarakwo Points of Sale (POS); and ii. in-depth qualitative interviews of vendors, consumers, competitors and Tarakwo staff. A total of 784 consumers were interviewed in intervention markets (N=254), control markets (N=286) and POS (N=244) for the quantitative survey. This allowed for comparison of income levels, perceptions of affordability, availability, convenience and desirability as well as milk purchasing and consumption habits across groups. A vendor survey was also conducted: 59 vendors were interviewed, including 22 in intervention markets, 35 in control markets and 2 at Tarakwo Points of Sale. The vendor survey allowed to compare vendors from different markets in terms of prices, customer base and characteristics of their businesses and to make an overall assessment of the milk business. In-depth interviews were conducted with four members of Tarakwo staff, ten vendors, three farmers, three processors; ethnographic interviews with two vendors and eight consumers; and two Focus Group Discussions were held with a total of seventeen consumers. Observations in two markets were also undertaken. The field work happened between April and July 2017; the surveys and market observations took place between 22 June and 4 July 2017.

Findings

Tarakwo's switch towards pasteurized milk has generated a positive impact by giving consumers in Eldoret and Huruma access to cheaper and healthier milk, but challenges remain:

- Since Tarakwo's decision to sell pasteurized milk, their sales of pasteurized milk have increased steadily;
- Tarakwo's overall monthly and yearly sales, however, fluctuate significantly, as they are affected by weather conditions and their farmers' ability to produce milk during the dry season (which generally lasts from December to March), especially when the latter turns into a prolonged drought, as was the case this year;
- The company's key challenges remain stabilizing their milk sourcing and continuing to increase the share of pasteurized milk in their sales to lessen their reliance on raw milk and sales to processors, who, however, still represented 92% of Tarakwo's sales volume in 2016. The significant fluctuation in, and lack of control on, milk (buying and selling) prices is also an important issue.

Tarakwo's distribution is moving away from the processors and its reach is diversifying as it opens new ATMs:

- Tarakwo remains highly dependent on the milk processors (although this has decreased significantly in the first half of 2017);
- The Eldoret Centre ATM still represents the lion's share of Tarakwo's pasteurized milk revenues;
- The reach of Tarakwo's pasteurized milk varies greatly for each ATM: the Eldoret Centre ATM appeals to a more transient clientele while the Huruma ATM satisfies the needs of more local consumers in a residential area;
- Most (75%) of Huruma ATM's customers live within one km of the ATM while the same proportion (75%) of customers live within 5 km of the Eldoret Centre ATM;
- More than 4,700 households are estimated to have been reached since 2015 by the two Tarakwo ATMs.

Tarakwo's value chain shows that it is capable of offering better prices to both suppliers (farmers) and consumers of pasteurized milk while still making a higher margin than on raw milk:

- Tarakwo's pasteurized ATM milk is the cheapest ATM milk in Eldoret and, in areas where its ATM is surrounded by competitor ATMs, the latter feel the need to adapt their prices to it;
- These low prices are permitted by Tarakwo's high volumes (which drive its costs per liter down) and few intermediaries;
- Tarakwo is at the same time able to maintain some of the highest prices to farmers in the area;
- Tarakwo does not encourage intermediaries by not offering institutional clients – including other ATMs – any discounts;
- Given the relatively low processing, distribution and ATM costs (per liter) and the very low prices obtained from processors for raw milk, pasteurized milk is much more profitable for Tarakwo than raw milk.

Eldoret and Uasin Gishu (as well as the rest of the Rift Valley) are the historical centers of the dairy industry in Kenya and consumption of dairy products is high:

- Tarakwo consumers overall seem to be slightly more women;
- Tarakwo's two ATMs have different clients though: the Eldoret Centre ATM has many more men, more students and middle-level employees while the Huruma ATM has more housewives, laborers and unemployed people which shows that Tarakwo's ATMs appeal to a large array of consumers;
- Most customers get to the ATM on foot, although more so in the case of the Huruma ATM than of the Eldoret Centre ATM;
- Customers are loyal to their ATMs, having been going there for months, with a higher turnover at the Eldoret Centre ATM likely due to its central location;
- Most POS consumers switched from a variety of other types of shops – including other ATMs – and consider their consumption has increased since the switch.

Purchasing and consumption habits:

- Milk, whatever its type, holds an important place in all respondents' diets;
- While random consumers tend to buy more raw milk, POS consumers buy more pasteurized milk. However, there is a large share of consumers who buy both, as well as packed milk and other dairy products like yoghurt and the local fermented milk (mala);
- Milk is mostly used in tea (which is consumed by the whole family throughout the day), on its own or to cook food (for which cream is an added benefit of raw milk). Given that the average diet of respondents is high in carbohydrates, milk is an important source of nutrition for most consumers;
- Most consumers buy milk to take home: they often buy it more than once a day every day;

- ATMs are particularly useful for consumers who want to have milk on the spot, for instance during a break from work or at lunch;
- The main properties that are considered important when choosing milk are freshness, followed by price, then taste and nutritional value;
- POS consumers are loyal to their vendors while random consumers buy their milk at a variety of places based on their needs or available means;
- Consumers have different priorities based on where they prefer to buy their milk: those who buy from street hawkers are less interested in freshness and more in taste and price; ATM consumers value nutritional properties more than others; and supermarket shoppers seem to care mostly about freshness.

Desirability of pasteurized milk:

- Raw milk is the preferred milk of random consumers by far;
- Pasteurized milk is also desirable, although to a lesser extent, even among random consumers, especially in the intervention market;
- The converse is, however, not the case: POS consumers have no, or very little, desire for raw milk;
- There are different uses for pasteurized and raw milk: pasteurized milk is more likely to be had on its own whole raw milk is used for cooking, especially by taking advantage of its cream.

Affordability of pasteurized milk:

- Where a Tarakwo ATM is present, the price of pasteurized milk is affordable, as it is driven down by Tarakwo to be close or equal to the price of raw milk. In the absence of Tarakwo ATMs, however, it can vary greatly;
- Pasteurized ATM milk is also cheaper than packed milk (even than the cheaper “24-hour” milk);
- The overall perception is that the price of pasteurized milk has increased, although less so in Huruma;
- Regardless, a large majority of POS consumers and more than one third of random consumers in intervention market claim to have increased their consumption of pasteurized ATM milk.

Availability and ease of access of pasteurized milk:

- POS consumers are more satisfied with the availability of milk than their raw milk counterparts;
- Most of the POS consumers consider the milk they buy is available at all times;
- All consumers agree that there has been an increase in the availability of pasteurized milk over the last year.

Seasonality is an important factor as, during the dry season, production dries up, prices increase and many vendors and consumers have to use coping mechanisms such as decreasing their consumption or changing suppliers and/or vendors to get (cheaper) milk. At the same time, the dry season sees the higher volumes of sales by far as temperatures rise and consumers are attracted to the refreshing qualities of cold milk.

Quality, safety and convenience of pasteurized milk:

- POS consumers are familiar with the benefits of pasteurized milk; random consumers less so;
- POS consumers claim to prefer the taste of pasteurized milk. At the same time, close to half of random consumers also claim to prefer the taste of pasteurized milk.

Milk vendors:

- Overall milk vendors (when they are the owners of their establishment) earn a rather good living;

- Competition is increasing, with a large proportion of ATMs opening in the past two years (including the two Tarakwo ATMs);
- Vendors still predominantly sell raw milk. A small portion sell both raw and pasteurized milk to address different types of needs;
- Mala and especially yoghurt are sold as more exceptional, high margin products;
- Relationships with suppliers of pasteurized milk tend to be stable as long as supply is regular; raw milk supply is more fluid and driven by price and availability;
- Close to half the vendors have heard of Tarakwo and its image is generally positive. The main reasons they give for not selling Tarakwo's milk are that they already have a supplier they like and that Tarakwo does not deliver to their shops. In addition, the fact that Tarakwo has no special prices for larger clients also acts as a deterrent.

1. INTRODUCTION

The Marketplace for Nutritious Food Program (MNFP) was launched by the Global Alliance for Improved Nutrition (GAIN) in 2013 to promote innovation and catalyze private sector engagement in producing and marketing more nutritious foods for low income households in sub-Saharan Africa, adopting a two-pronged approach: i) a community of practice, with a network open to entrepreneurs, businesses, universities, regulatory bodies, NGOs, etc. interested in knowing more about running a business that helps transform agricultural potential into safe nutritious food and; ii) an innovation accelerator / grant making component, where the most promising proposals are selected to be eligible for Technical Assistance to support the development of feasible business plans, which, upon completion are reviewed by a Marketplace Investment Committee which selects the most investible and impactful concepts to receive grant funding as well as further technical assistance to support business plan implementation.

The program is operating in three countries: Mozambique, Kenya and Rwanda and as of today, 34 businesses have been supported. GAIN received funding from USAID to conduct a series of cross-sectional case study evaluations to assess how the MNF program and its business awardees have affected market-level availability and consumer-level access to nutritious foods.

Within the scope of this research, five case study evaluations were conducted across Kenya (two businesses), Mozambique (two businesses) and Rwanda (one business).

Table 1 – Table of five studied businesses

Country	**Mozambique**		**Kenya**		**Rwanda**
Location	Chimoio	Maputo	**Eldoret**	Kisumu	Kigali
Project	KoBen / Vegman fresh vegetables	Alves & Companhia meat products	**Tarakwo Dairies company**	Pioneer fish farm	Trabac egg production

At the time of writing, the ethical approval for the study had not yet been granted for Mozambique. The evaluation for those businesses thus solely concentrated on the parts of the studies that could be done without the approval, i.e. the value chain and the mapping of distribution and reach.

This report covers the case study on Tarakwo pasteurized milk in Eldoret, Uasin Gishu County, Kenya.

2. DESCRIPTION OF THE BUSINESS

KEY TAKEAWAYS

- Tarakwo's monthly and yearly sales fluctuate significantly, as they are affected by weather conditions and their farmers' ability to produce milk during the dry season. Although the dry season generally sees the company's highest sales volumes, when it turns into a prolonged drought (like this year), sales volumes are impacted;
- Since Tarakwo took the decision to sell pasteurized milk, their volumes of pasteurized milk have increased steadily;
- The company's key challenges remain stabilizing their milk sourcing, and continuing to increase the weight of pasteurized milk in their sales to lessen their reliance on processors while at the same time not losing these still important clients. The significant fluctuations in milk (buying and selling) prices are also an important issue.

2.1. OVERVIEW

Tarakwo Dairies is a farmer-owned milk cooperative set near the city of Eldoret in Uasin Gishu County, Kenya. It was founded in 2010 as part of the East African Dairy Development (EADD) initiative, funded by the Bill and Melinda Gates foundation. At inception, the EADD funded Tarakwo to aggregate and cold-store milk from smallholder farmers in the region for sale to large milk processing companies in Kenya. With GAIN support, it started pasteurizing milk and selling it in two automated milk dispensaries, also locally dubbed "Any Time Milk" machines, (milk ATMs) in the city of Eldoret, one in the Eldoret City Centre and the other in a suburb of Eldoret called Huruma.

Figure 1 – The Tarakwo Eldoret City Centre ATM (left: outside; right: inside at peak hours) (June 2017)

Tarakwo dairies counts 3,800 registered farmers, 1,200 of whom are currently active[1] and, as at 2015, 43 farmers had fully paid-up shares[2]. A board of directors consisting of nine farmer members governs the

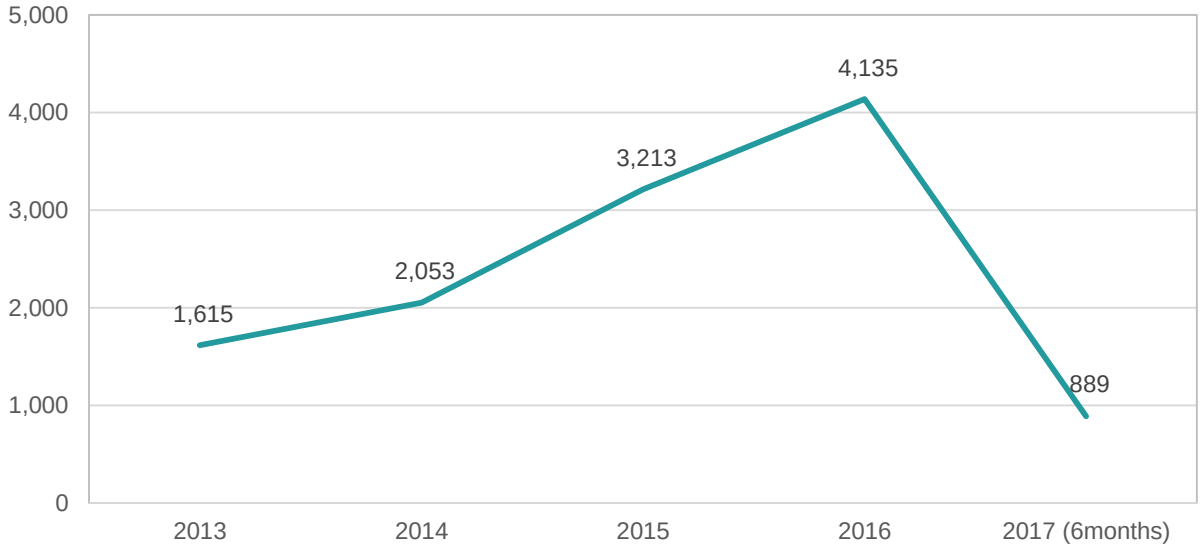
[1] Source: Interview with Tarakwo and Tarakwo-affiliated farmers, June 2017.

[2] Source: Tarakwo's 2015 Business Plan to Gain.

company. Of the active farmers, a large majority produces from 1 to 20 liters daily (with the 20 liters peaks occurring during the rainy season), five to ten produce from 20 to 50 liters daily and the three largest ones produce 50 to 800 liters[3]. In 2016, Tarakwo reached total volume peaks of more than 18,000 liters per day.

The business, however, is impacted by seasonality and, in 2016-2017, by a prolonged and particularly severe drought which predominantly affected the smaller farmers who are unable to supplement their cows' feed during the dry season (which generally lasts from December to March). Volumes plummeted going from over 4 million liters produced in 2016 to close to 890,000 liters during the first six months of 2017.

Figure 2 – Total yearly volumes of milk sold by Tarakwo (in 000's liters)[4] (July 2017)



At the same time, the price of milk – in July 2017 raw milk and Tarakwo ATM milk both retailed at an average of 60 KES/L – rose to as high as 75-80 KES/L (although Tarakwo capped its price to consumers at 70 KES/L during the draught)[5].

Tarakwo's move into pasteurization came in part from the desire to address the issue of seasonality. It started in 2014, when, faced with the rising bargaining power of the large milk processing companies, fluctuating milk prices, delayed payments, and supply concerns due to prolonged dry seasons, it decided to move its operations along the value chain with the end goal of selling their milk directly to consumers. They took out a loan to buy processing equipment and started pasteurization in August 2015. They also leased their first milk dispensing outlet in Eldoret City Centre in August 2015.

Then, between end of 2015 and mid-2016, Tarakwo received financial support from GAIN to buy further pasteurization and laboratory equipment and for two milk dispensing machines to be set up in low-income areas of Eldoret: Huruma and Kapsoya. The Huruma ATM opened in January 2017 and the Kapsoya ATM is still pending as Tarakwo searches for adequate commercial space in the neighborhood. The aim is to be able to sell quality pasteurized milk to consumers at a fraction of the price at which they can get it when buying packaged pasteurized milk. The use of ATMs also offers flexibility in terms of the quantities that consumers can purchase since they can buy as little as 5 KES worth of milk in one time.

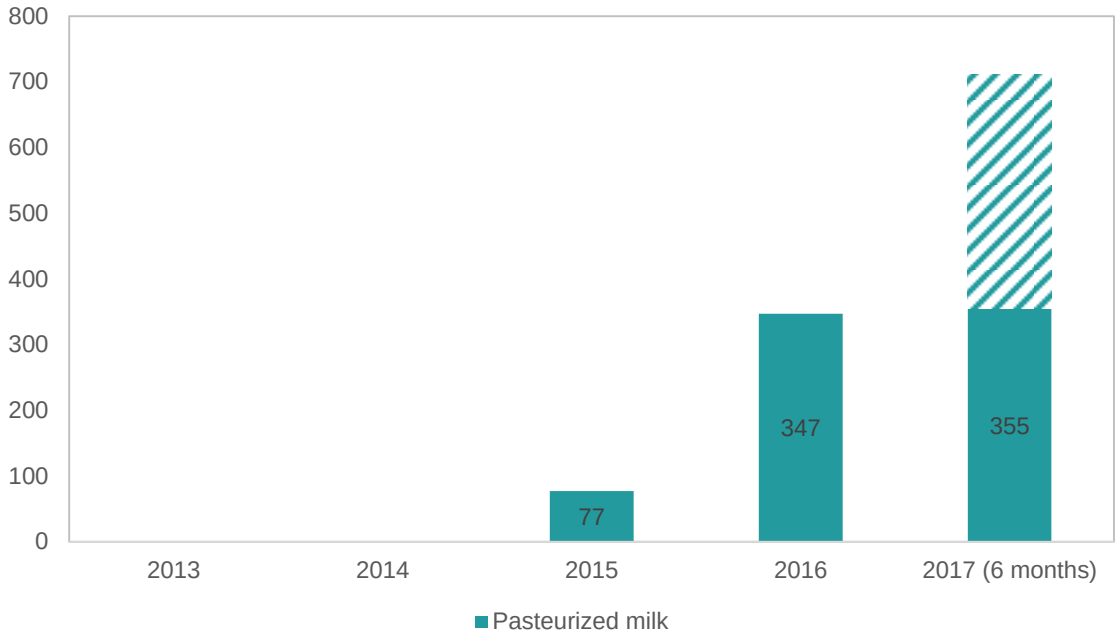
[3] Source: Interview with Isaac Rutto, Manager, Tarakwo Dairies, June 2017.

[4] Source: Tarakwo financial information.

[5] Source: Interview with Tarakwo management.

In just two years, Tarakwo's sales of pasteurized milk have risen to almost 355,000 liters, despite the drought, representing 40% of Tarakwo's milk sales in the first six months of 2017.

Figure 3 – Evolution of Tarakwo pasteurized milk sales (in 000's liters) with extrapolation until end of year at similar production levels[6] (July 2017)



In addition, Tarakwo has started producing mala (a traditional Kenyan type of fermented milk) in November 2016 and yoghurt in February 2017. They recently[7] got the Government's certification and are developing the packaging to start selling both products in earnest at their ATMs.

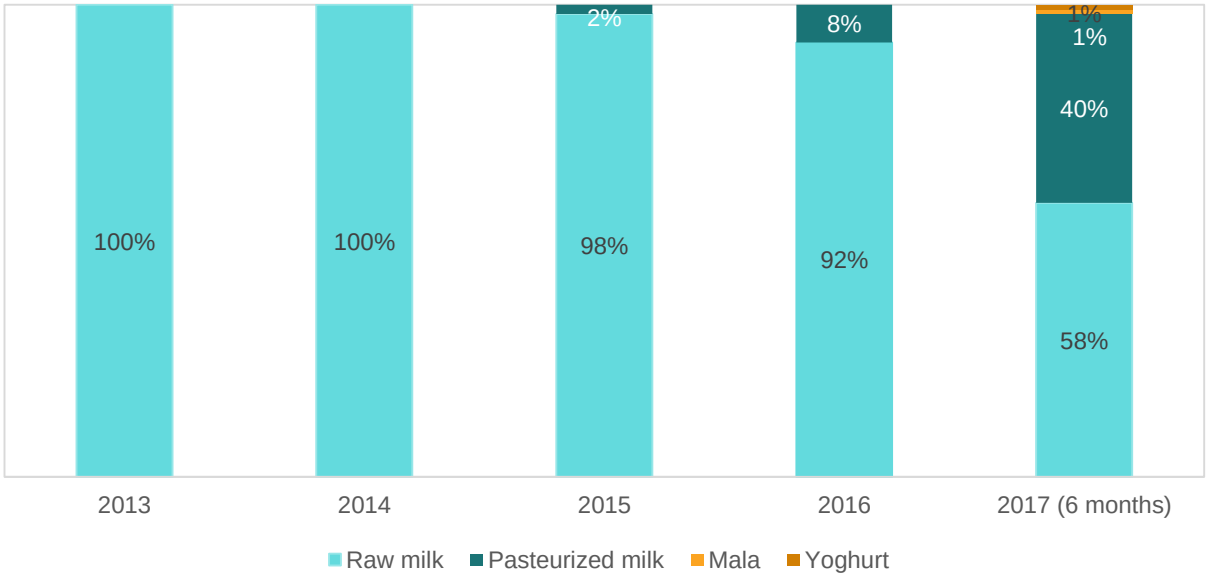
While Tarakwo increases its capacity to add value to milk first through pasteurization and then through the diversification towards other products like mala and yoghurt, sourcing milk regularly remains one of its greater concerns, especially given an increase in the number of cooling plants in the area and a strong competition among collectors for the recruitment of farmers. To resolve this issue and ensure the loyalty of its farmers, it supports them by offering them a range of services, including an agro-vet shop on the Tarakwo premises where farmers can buy products on credit deductible from the monthly payment for their milk. In addition, Tarakwo helps them with artificial insemination.

[6] Source: Volumes come from Tarakwo. Extrapolation simply doubles volume of the first 6 months of the year to give an order of magnitude for the whole year.

[7] As at June 2017.

Figure 4 – Tarakwo dairy products in the Eldoret Centre ATM (left) and mala packaging (right) (June 2017)

Figure 5 – Tarakwo pasteurized milk's share of volume sold (in volume) (July 2017)[8]



[8] Source: Tarakwo financial information.

3. METHODOLOGY

3.1. OBJECTIVES

This cross-sectional case study evaluation concerns GAIN's MNF support to the Tarakwo milk collecting and processing company. It is based on a combination of qualitative and quantitative research and overall took place between April and July 2017.

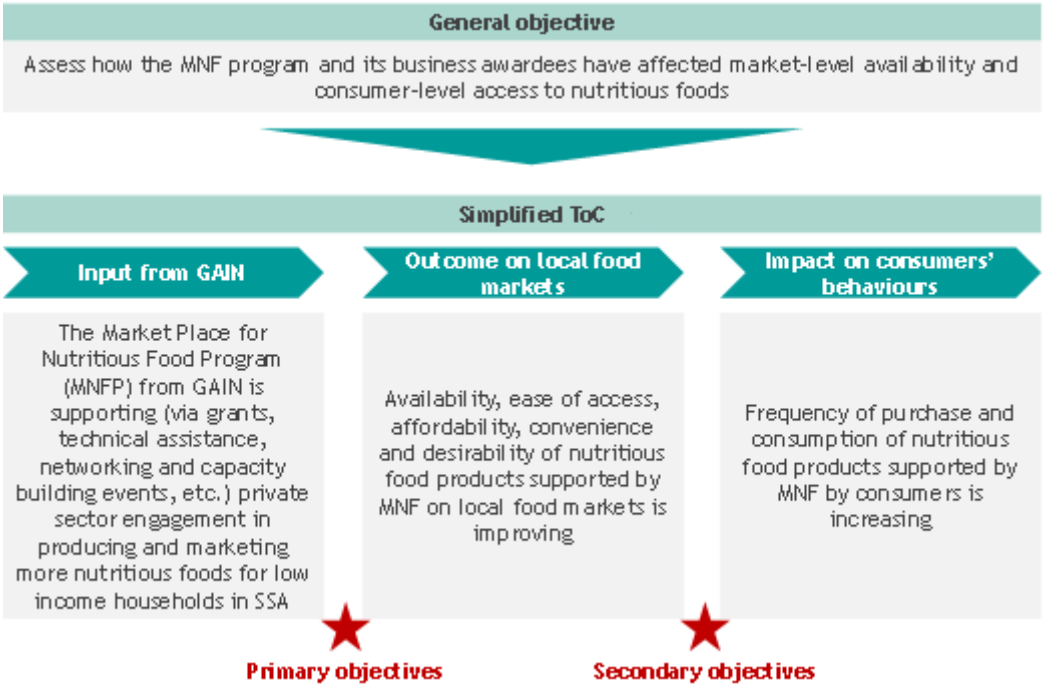
3.2. OBJECTIVES

The evaluation aimed at assessing:

i. To what extent GAIN's inputs via the MNF program helped improve availability, affordability, ease of access, convenience and desirability of nutritious food products on local food markets (**Primary objectives**). This was done mainly through comparisons between intervention and control markets;

ii. To what extent the above-mentioned changes on local food markets have impacted consumers' food purchasing behaviors (**Secondary objectives**). A comparison was made between before and after the introduction of MNF food products on local markets.

Figure 6 – Simplified Theory of Change for GAIN's MNF program



3.3. ANALYTICAL FRAMEWORK

The research was organized through a cross-sectional case study design, using a combination of methods and tools, both quantitative and qualitative, to capture behaviors and preferences and gather additional insights to explain them as fully as possible.

The main tools used included quantitative surveys of both consumers and vendors; various forms of key informant interviews (KII) depending on the interviewed audience, the needed information and the module in the project; focus group discussions; ethnographic interviews of both consumers and vendors; different types of observations and price checks.

The project was organized around seven key modules:

i. An **inception module**, the aim of which was to collect all the necessary background information for the project; start drafting a detailed methodology and tools; finalize partnerships with local data collection firms and IRB facilitators and launch the ethical clearance processes in the three countries;

ii. A **road to market** module aimed at mapping the routes from production to end-consumers, looking at intermediaries, identifying key actors in the value chain and the value added by each of them, mainly through key informant interviews among actors of the value chain;

iii. A module of **formative key informant interviews** was designed to try to understand if and how the availability and affordability of foods changed the market; determine factors that influence purchase; identify qualities in MNF foods valued by consumers; and collect insights to refine project methodology and further develop the research tools;

iv. The **consumer quantitative surveys** focused primarily on determining MNF's impact on availability, affordability, convenience and desirability of nutritious foods and to a lesser extent on understanding the relationship between the availability, affordability, convenience and desirability of the MNF foods on purchasing and consumption habits of their consumers;

v. **Vendor surveys and market observations** to measure availability and affordability of MNF-supported and status quo foods, as well as competition generated because of the successful establishment of MNF businesses;

vi. Additional **qualitative insights from consumers and vendors** on MNF market dynamics aimed at understanding how the food (and drink) environment had changed over time and deep dive into findings from the other modules; collect insights on the barriers and levers to boost MNF presence and traction;

vii. Finally, a **synthesis and report-writing** phase served to cross-analyze findings from the different project modules and draft the final reports, substantiated by photos, tables, graphs and any other relevant information, including the SPSS databases.

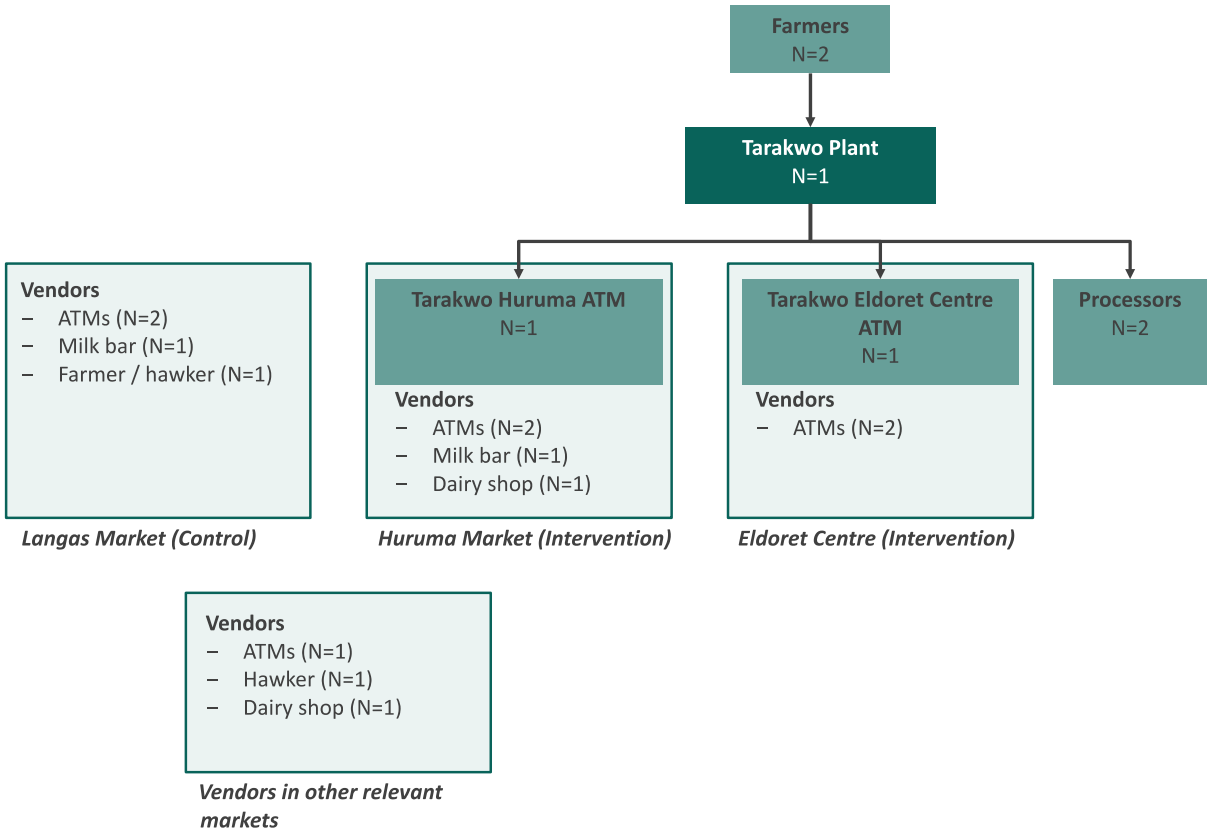
3.4. ROAD TO MARKET AND VALUE CHAIN RESEARCH

The aim of the Road to Market module was to get a holistic view of the presence of MNF-supported products (in this case pasteurized milk) from a market standpoint, i.e. to access where the product goes and what value addition (or loss) is made along the way.

After a secondary research effort to get a better understanding of the relevant market (in this instance, the dairy market in Kenya, and more specifically Uasin Gishu), this module's work was largely based on in-depth or key informant interviews with different actors of the value chain. The aim was to arrive at a description of the overall value chain of the business type (including key components, production and/or transformation processes), its distribution map and its geographical reach as well as a breakdown of the value among key players and a focus on bottlenecks, weaknesses and opportunities.

For this module, approximately twenty interviews were conducted in Eldoret and surrounding areas, including with Tarakwo management and employees working at both its ATMs, farmers working with Tarakwo or others, competing ATMs, milk processors, milk hawkers, and managers/owners of dairy shops, milk bars, and minimarkets in Eldoret.

Figure 7 – Diagram of value chain interviews[9]



[9] Does not include consumers although information from ethnographic interviews and Focus Group was also sometimes used. In addition, does not include "spot" interviews conducted with both vendor and consumers.

3.4.1. REACH

A calculation of reach of the MNF products was made based on a combination of information gathered in this module and from the consumer survey, taking into consideration sales at each ATM, average number of clients, frequency of purchase and average consumption per client.

The main extractions used for the calculations can be found in the table below:

Table 2 – Main extractions used for calculations of reach (consumer survey, Tarakwo income statement)

Extractions from Survey Data	Eldoret Centre ATM	Huruma ATM
Average purchase for consumption on the spot (liters)	0.5	0.6
Average purchase for later consumption (liters)	1.7	1.2
Number of purchases per day for consumption on the spot	1	1
Number of purchases per day for later consumption	0.9	1.2
Percentage of respondents always buying at same vendor	78%	95%
Percentage of respondents buying for both later consumption and on the spot	37%	13%
Percentage of respondents buying for later consumption only	37%	75%
Percentage of respondents buying for on the spot consumption only	26%	12%

Extractions from Tarakwo Income Statement	Eldoret Centre ATM	Huruma ATM
Volume sold to end customers	63%	100%

The calculations of reach were done for each of the two Tarakwo ATMs since their respective inceptions. The example below, however, shows solely the calculations for the Eldoret Centre ATM for 2017. Calculations going backwards for this ATM and for the Huruma ATM are similar.

The results from the consumer survey indicate that 37% of the Tarakwo Eldoret Centre ATM customers buy milk for later consumption only, an equal percentage buys for both types of consumption and 26% only buy milk to consume on the spot. The consumers buying for both occasions were equally split between the two consumption groups and half of them were excluded to avoid double-counting.

Results from the survey also show that the average Eldoret Centre customer buys around 0.5 liters around 1.1 times a day, when consuming on the spot. When buying for later, the average purchase equals to 1.7 liters at a frequency of 0.9 times a day.

22% of consumers at the Eldoret Centre ATM say they do not always buy milk from the same vendor. This gives an indicative figure of the percentage of occasional visitors of the ATM, for this reason it is taken as the value for monthly customer turnover.

In the table below, the first calculation consists in computing the volume of milk sold to end customers (i.e. taking out volume sold to institutional clients, who represent 37% of sales for the Eldoret Centre ATM). In the second step, the quantities sold for specific occasions of consumption (on the spot and later) are identified. The percentages used for this calculation are, as explained above, 46% for later consumption (obtained by summing 37%, representing people buying only for later consumption, and ¼ of 37%, which is the percentage

of people buying for both occasions, where ¼ of this percentage is attributed to each of the two occasions of consumption and ½ is not considered, to avoid double counting), and 35% for consumption on the spot.

The following calculation consists in dividing the volumes of consumption identified by i) the average purchase and ii) the number of purchases per day for each of the two occasions of consumption. At this point, the number of households reached in each month has been computed. Among all households, the new ones reached every month are identified as the increase from previous month (in case of no increase or decrease the growth will equal 0) and the monthly customer turnover (previously identified as 22% for the Eldoret Centre ATM).

Any discrepancies that might appear when double-checking the calculations would be owed to approximation of the decimals in the figures reported in the text.

Table 3 – Example of calculations for estimated reach in number of households for Tarakwo Eldoret Centre ATM (volume sold comes from Tarakwo, other data from consumer survey)

Eldoret Centre ATM	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17
Total volume sold per day (in liters) (*from Tarakwo Income Statement*)	701	1,040	1,324	1,943	1,346	1,011
Total volume sold per day to end customers	439	652	830	1,218	844	634
Volume consumed on the spot per day	155	230	292	429	297	223
Volume bought for later consumption per day	203	302	384	563	390	293
Number of customers on the spot per day	283	420	534	784	544	408
Number customers for later consumption per day	131	194	247	362	251	189
Total households reached in month	414	614	781	1,147	795	597
Growth from previous month[10]	60	200	167	365	0	0
Monthly customer turnover	78	91	135	172	252	175
Total households reached in 2017	1,696					

A similar method was used to calculate the households reached by the Huruma ATM.

Using the above numbers, it is estimated that a total of approximately 4,764 households were reached by the two ATMs from August 2015 until June 2017: some 2,883 households were reached in 2015 - 2016 by the Eldoret Centre ATM; a further 1,696 were reached in 2017 by the same ATM and about 185 were reached by the Huruma ATM in 2017.From the number of households reached, using average household values from the consumer survey, it was also estimated how many single consumers have been reached in total, among consumers under 19, under 6, women over 18 and women between 15 and 49.

[10] The growth for January refers to December 2016 (354 households).

Table 4 – Number of people reached

	Source	Results
Average number of people per household	Consumer survey, Q57	3.8
Average number of household members under 19	Consumer survey, Q58	1.4
Average number of household members under 6	Consumer survey, Q59	0.6
Percentage of low-income respondents	Consumer survey	73%
Percentage of female population of overall population	World Bank, 2016	50%
Percentage of female population between 15 and 49 of overall population	CIA World Factbook, 2016	24%
Number of people reached by Tarakwo Eldoret and Huruma ATMs	Calculation	18,103
Number of youth aged 18 or less reached by Tarakwo Eldoret and Huruma ATMs	Calculation	6,670
Number of children aged 5 or less reached by Tarakwo Eldoret and Huruma ATMs	Calculation	2,858
Number of women over 18 reached by Tarakwo Eldoret and Huruma ATMs	Calculation	5,717
Number of low income consumers reached by Tarakwo Eldoret and Huruma ATMs	Calculation	13,215
Number of low income households reached by Tarakwo Eldoret and Huruma ATMs	Calculation	3,478
Number of females between 15 and 49 reached by Tarakwo Eldoret and Huruma ATMs	Calculation	4,345

3.5. QUANTITATIVE RESEARCH

3.5.1. CONSUMER SURVEY – PRIMARY SAMPLING FRAME

The primary sampling frame objective was to determine the MNF impact on availability, affordability, convenience and desirability of nutritious foods and, in this case pasteurized ATM milk. To do so, **intervention markets,** where MNF supported foods – in this case Tarakwo's pasteurized milk ATMs – have been introduced, were compared with **control markets** where no MNF-supported foods are available – i.e. markets with no Tarakwo ATM –, and which could hence be considered similar to the intervention markets prior to the introduction of Tarakwo's ATMs.

This random customer survey as per the table below:

Table 5 – Summary table for milk random consumer survey

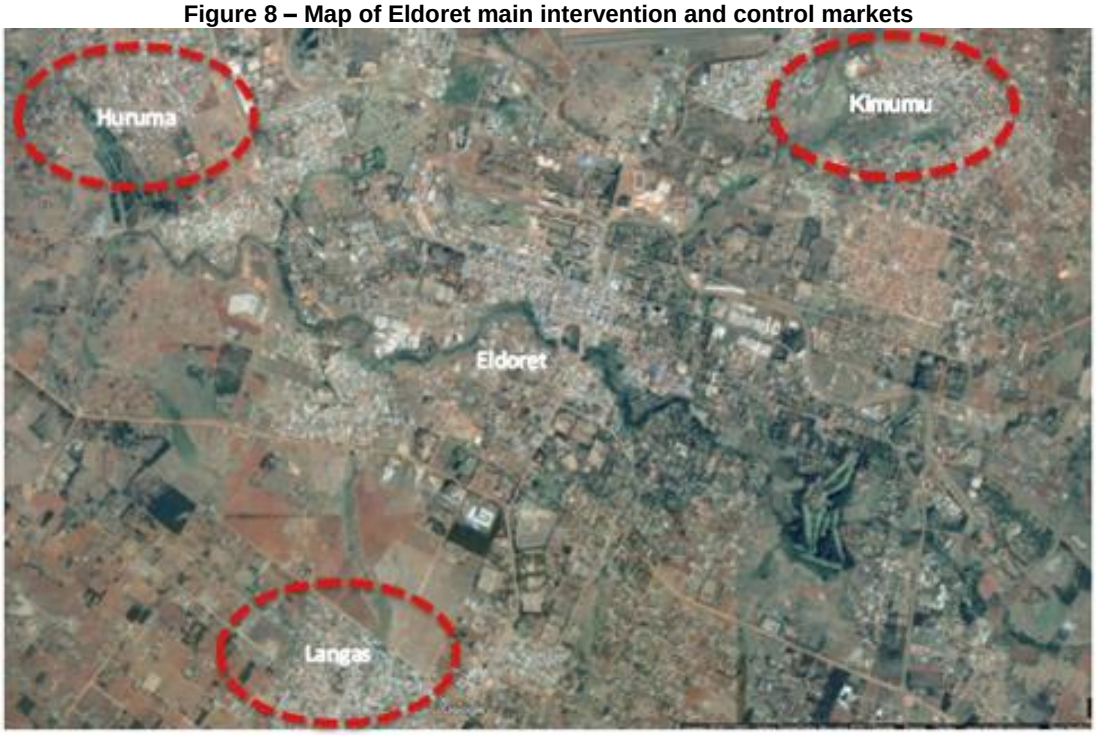
Type of Interview	Location	Quota (goal)	Quota (reached)	Recruitment method	Inclusion criteria
Survey 1: Random consumer intervention market	Huruma	200	254	Random selection at the defined	Above 18 years old, buying milk for personal or

Survey 1: Random consumer control market	Langas	200	286	local food markets using the street intercept methodology	household consumption (excluding business)

Consumers were randomly selected among shoppers making purchases in the local food market using the street intercept methodology, i.e. a quantitative research survey whereby respondents are intercepted in public spaces, most often markets or malls. The process involves stopping shoppers and administering a survey on the spot (or alternatively inviting them to a research facility nearby to complete the interview).

Approximately 30 minutes long face-to-face interviews in the relevant local languages (English or Swahili, depending on the interlocutor's preference) were conducted with shoppers at the intervention and control markets.

Figure 8 – Map of Eldoret main intervention and control markets

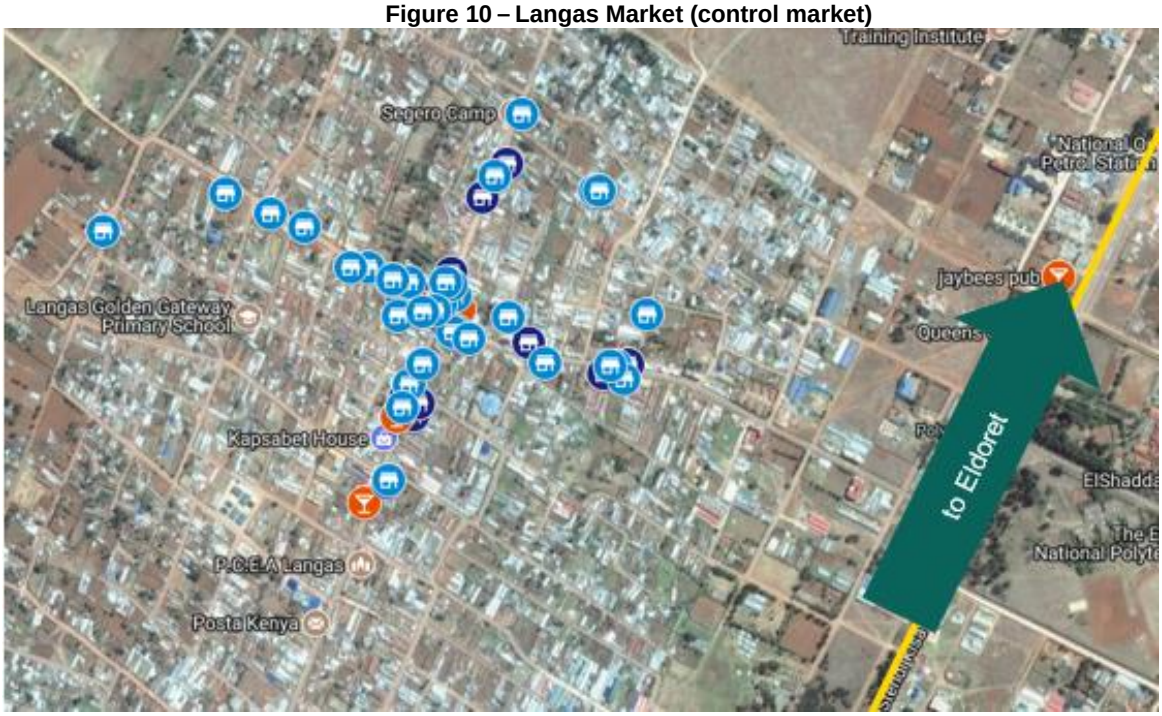


- **Huruma Market** was picked as the main intervention market because of the presence of the Tarakwo ATM and because the area is more residential than the Eldoret City Centre, where the other (initial) Tarakwo ATM is situated. In addition, Huruma, which is a neighborhood in the outskirts of the city, is considered more likely to be inhabited by "bottom of the pyramid" (BoP) consumers.

Figure 9 – Huruma Market (intervention market)

- **Langas market** was picked as a <u>control</u> market for similar reasons. Given that the control market needed to be as similar as possible to the intervention market, it had to be in the outskirts of the city, in an area where BoP population groups represent most of the inhabitants and where there was at least one non-Tarawko milk ATM. Another area called Kapsoya had initially been selected but had to be discarded as the one ATM present there had closed.

Figure 10 – Langas Market (control market)



Sample sizes were determined by GAIN, based on a previous research conducted in 2015 in Kenya on an MNF supported agri-business estimated to reach a population of 1,200 households. Considering similar outreach for the five projects covered in the current study, conducting n=200 interviews per consumer

category allows for robust statistical significance with margins of errors never reaching more than +/- 6.33ppt by consumer category at 95% confidence interval.

The interviews were done using structured questionnaires which were uploaded onto electronic Tablets using the SurveyToGo software. The data was collected daily by synching the tablets with the online software. Key Performance Indicators (KPIs) were collected and reviewed daily allowing to make necessary changes to ensure a representative sample but also to add interview locations when necessary. The main KPIs were number of people approached, interviewed, refusing to answer, under age and who did not consume or buy milk as well as gender, average age, household income, education level and type of milk bought.

Data collection took place from 22 June to 4 July 2017.

Altai Consulting provided tools (questionnaire and detailed sampling and methodology) and training materials and Altai's local partner Sagaci Research implemented the research on the ground (with Altai's presence and supervision). The field survey was preceded by a two-day training and a one-day pilot by Sagaci and Altai with the presence of a GAIN staff member. The training and pilot allowed to further refine the methodology as well as certain aspects of the questionnaire.

All participants were informed of the study's purpose and of the voluntary and confidential nature of the interview. Informed consent was affirmed by a written signature, and a copy of the consent form including contact information for study coordinators was provided to each participant.

Quality control was ensured through a combination of GPS monitoring (all interviews' GPS coordinates were recorded and verified), consistency monitoring (questionnaires lasting less than fifteen minutes or failing to meet most of consistency checks were cancelled) and call-back monitoring (a percentage of all interviewees were called by phone and asked a few questions to ensure that they had indeed been interviewed).

Results of the quantitative survey will be presented throughout the report presenting, when possible, the p-values from association test, calculated using the Pearson Chi-Squared on SPSS.

3.5.2. CONSUMER SURVEY – SECONDARY SAMPLING FRAME

The secondary sampling frame objective meant to understand the relationship between availability, affordability, convenience and desirability of the MNF food (Tarakwo's pasteurized ATM milk) and the purchasing and consumption habits of the consumers. To do so, consumers of Tarakwo pasteurized milk were interviewed, with a questionnaire designed to understand the changes in their purchasing and consumption habits since Tarakwo's pasteurized ATM milk was made available on their local food market.

Table 6 – Summary table for milk point of sale consumer survey

Type of Interview	Location	Quota (goal)	Quota (reached)	Recruitment method	Inclusion criteria
Survey 2: Consumers at the Tarakwo ATM	Tarakwo ATM in Huruma	200	203	Buyers at the POS	Above 18 y.o, buying Tarakwo pasteurized milk from the designed POS for personal or household consumption (excluding business)
Survey 2: Consumers at the Tarakwo ATM	Tarakwo ATM in Eldoret Centre (Back-up)	0	41		

The **Huruma Tarakwo ATM** (as opposed to the Eldoret City Centre ATM) was selected for the POS consumer survey for similar reasons to Huruma as an intervention market (residential area, neighborhood which is considered likely to be inhabited by BoP consumers). During the survey, however, it was feared that there would not be enough customers at the Huruma ATM to fulfill the 200-quota. Therefore, it was decided to also conduct interviews at the Eldoret Centre ATM. Although the quota was eventually reached at the Huruma ATM, the interviews at the Eldoret Centre ATM add an additional layer to the study.

The sample size for this survey was also determined by GAIN based on previous research (cf. above). Consumers were randomly-selected among shoppers having just completed a purchase at the Tarakwo milk ATM. As with the random survey described above, approximately 30 minutes long, face-to-face interviews in the local languages (English or Swahili depending on the customer's preference) were conducted. The same procedures as for the primary sampling were implemented regarding interviewer training, field supervision and monitoring (see details above) as well as regarding consent.

An SPSS database containing both the 540 random interviews and the 244 POS interviews was delivered.

3.5.3. VENDOR SURVEY AND MARKET OBSERVATIONS

Two detailed **market observations** were conducted: one in the main intervention market (Huruma) and one in a control market (Langas), to get a detailed description of the markets (i.e. actual offering at time of visit, ease of access to the products, prices, customer presence, quality of the products, etc.).

The market observations were done based on a specifically designed detailed questionnaire on which they were trained in advance. They also included price checks for relevant products (i.e. the main types of milk and milk products identified in prior modules) at a variety of stores also identified in the prior modules. The price checks were done in 40 stores in each of the markets, a number which was considered – given the size of the markets – to offer a representative image of each market.

The vendor surveys were designed based on a series of assumptions / hypotheses derived from the research done in the initial modules as well as the distribution models and total number of vendors distributing the studied products. In the case of Tarakwo, and to cover the different types of relevant vendors in both markets, it was decided to conduct a total of at least 40 interviews. In this survey, the intervention market was expanded to cover additional points of sales carrying, or having recently carried, Tarakwo milk. The breakdown of interviews was the following:

- Intervention market/POS vendors:
    - POS vendors: two interviews with Tarakwo ATM vendors (in Huruma and Eldoret Centre);
    - 19 interviews with non Tarakwo milk vendors in Huruma (i.e. competitor ATM vendors, dairy shops, milk bars, street vendors, grocery shops, supermarkets etc.);
    - three interviews with the vendors of ATMs who used to sell Tarakwo milk in Huruma (My Choice ATM) and elsewhere in Eldoret: Eldobliss ATM in Marel Street and PNQWM ATM in West Indies;
- Control market vendors:
    - 28 interviews in Langas and 7 interviews in Kimumu (a back-up control market) with milk vendors (i.e. competitor ATM vendors, dairy shops, milk bars, street vendors, grocery shops, supermarkets, etc.)

All interviewers were provided with a detailed list of food products to track, prices to collect, and types of vendors to interview. The questionnaire and list of data to collect were scripted into STG (SurveyToGo software) as per the consumer survey. All interviews took place in the relevant local languages (English or Swahili as needed).

As with the consumer surveys, consent forms were also read with, distributed to and signed by every interviewee at the beginning of each interview.

One SPSS database for the market survey and two market observation reports (with over 40 price checks each) were delivered.

3.5.1. POVERTY ANALYSIS

To assess the level of poverty of the survey respondents, two different methods were used. The first one is the Progress out of Poverty Index, a measurement tool used by organizations and businesses to assess the level poverty in a community. It is based on ten standard questions (that were included in the consumer survey) regarding the characteristics and living standards of the household. However, a strong bias was found in the results, which can be explained by the fact that some of the indicators which were created in 2005 are now outdated (for example the possession of a TV or a smartphone in 2017 is not as a strong indicator of wealth as it was in 2005).

Since the results of this calculation appeared to be too optimistic regarding the level of poverty of respondents, a second methodology was elaborated. This is based on the calculation, for each respondent, of the total household monthly income divided by the number of members of the household. When this value is under the Global Poverty Line of 1.90 USD a day[11] per person (197 KES as of July 2017), the individual is considered poor. Since the income level was recorded as belonging to a certain income bracket, an intermediate value was taken for each interval[12]. It was possible to carry out this calculation exhaustively only for the consumers survey, where all the necessary information was available.

3.6. QUALITATIVE RESEARCH

Specific interview guidelines, based on the Most Significant Change (MSC) Methodology[13] developed by Davies, were developed, tested during the beginning of the project and refined continuously by Altai conjointly with GAIN. Respondents were asked to tell about the most significant changes they had observed or experienced since the introduction of MNF-supported foods in different domains such as sales, customer profiles, emergence of competitors, etc. for vendors, and food purchasing behavior and consumption for consumers.

The qualitative research was distributed as follows:

- **Six individual interviews with vendors** were conducted:

These individual interviews aimed to enable vendors to express themselves freely, without fearing to have to disclose confidential data to competitors. The sampling was designed to cover a variety of types of relevant vendors. Both MNF product vendors and non-MNF product vendors but also different types of points of sale were interviewed:

  - Two Tarakwo ATM vendors;
  - Two competitor ATMs' vendors;
  - One dairy shop vendor;
  - One milk hawker.

These interviews took one hour on average.

- **Two Focus Group Discussions with consumers:**

[11] World Bank, October 2015.

[12] "Do not know" and "do not want to answer" were not computed. For the number of household inhabitants, answer "1 to 2 people" is computed as 1.5, "7 to 8 people" as 7.5, and "9 people or more" as 10.

[13] Technique used to evaluate complex interventions that emphasizes the participation of the stakeholders involved to identify the most significant effects on their lives.

The Focus Group Discussion (FGD) format was picked to encourage debates between respondents and elicit the most significant qualities of the MNF-supported foods and the factors that affect their purchase as opposed to the purchase of competing or substitute products.

The FGDs gathered eight to twelve interviewees each, to discuss their purchase and consumption habits regarding milk, and specifically Tarakwo milk, and to learn what attributes they particularly valued in milk.

The participants were recruited on the intervention and control markets, preferably shopping for milk. Efforts were made to ensure the participants were as homogeneous as possible, especially with regards to gender, age and socio-economic profile, to ensure they would feel comfortable sharing their experience. The discussions took place in enclosed, private spaces (in both cases a conference room in a central hotel in Eldoret) where the participants were fully capable of expressing themselves without concern of being overheard. Before the beginning of the discussion, the moderator explained in detail how the focus group discussion would take place and what would be expected of the participants. They were given the possibility of opting out of the discussion at any point. The participants were compensated with small amounts (so as not to bias the process) to refund their transportation costs.

The two FGDs were divided as follows:

- One FGD with eight participants, mostly from Huruma Market (intervention), who were selected for their consumption of different types of relevant milk: six consumed packed milk, four consumed ATM milk (and had at least tried Tarakwo), three consumed mala and three consumed raw milk;
- The other FGD had nine participants, four of whom consumed Tarakwo milk, directly (at Tarakwo ATMs) or indirectly (at non-Tarakwo ATMs supplied with Tarakwo milk) and seven who consumed raw milk (considered the main alternative to pasteurized ATM milk). In addition, two consumed packed milk.

Table 7 – Example of guidelines for recruitment of Focus Group Discussion participants[14]

			Market	Products sold/bought	Consumption occasion	Gender	Other comments
Focus Group Discussion	MNF-product	1	Huruma	Tarakwo milk	On the spot	Man	From Tarakwo ATM
		2	Huruma	Tarakwo milk	On the spot	Woman	From Tarakwo ATM
		3	Huruma	Tarakwo milk	At home	Woman	From My Choice ATM
		4	Huruma	Tarakwo milk	At home	Woman	From My Choice ATM
		5	Huruma	Tarakwo milk	At home	Man	From Tarakwo ATM
		6	Huruma	Tarakwo milk	At home	Woman	From Tarakwo ATM
	non-MNF product	7	Huruma	Raw milk		Woman	From street hawker
		8	Huruma	Raw milk		Woman	From street hawker
		9	Huruma	Pasteurized milk		Man	From ATM/dairy shop
		10	Huruma	Pasteurized milk		Woman	From ATM/dairy shop
		11	Huruma	Packed milk		Woman	From supermarket
		12	Huruma	Packed milk		Man	From supermarket

Both FGD took approximately two to three hours.

- **Ten one-day ethnographic interviews with:**
  - Four consumers of Tarakwo milk;
  - Four consumers not buying Tarakwo milk: one consuming raw milk, packed milk, ATM milk and mala; one consuming raw milk, packed milk and ATM milk; one consuming raw milk and mala; one consuming raw milk and packed milk;
  - One vendor selling Tarakwo milk;
  - One vendor not selling Tarakwo milk but raw milk and mala.

The objective of the ethnographic research was threefold:

[14] Numbers in table may vary from numbers in paragraph as the table gives indicative figures / guidelines, whereas the paragraph shows the final result (discounting people who had signed up but did not participate in the FGD in the end).

- Capturing the context and vendor/consumer perspective: this approach took the vendor/consumer point of view as a starting point, exploring the wider contextual elements of people's lives before narrowing the focus to food in general and then gradually to Tarakwo pasteurized ATM milk. Developing this broad contextual picture aimed at exploring the factors that influenced and shaped people's choices;
- Explaining the data: qualitative insights helped provide a greater depth of understanding to the quantitative research and helped us get to the "whys" behind the data;
- Leaving room for the unexpected: capturing unexpected insights, hence more nuanced learnings around people's experience with MNF food products.

The ethnographic interviews took on average one full day per participant. Given the time commitment required, participants in ethnographic interviews were offered a small (so as not to bias the study) sum to compensate for their time.

For the qualitative interviews (including the FGDs and the ethnographic interviews), the recruitment of participants was done through random selection in intervention and control markets (and other relevant markets when required), and by ensuring that the selected individuals fulfilled a number of pre-defined criteria: age, gender, type of product bought (or sold in the case of vendors), preferred point of sale, consumption occasion and income level / socio-economic profile. As with the quantitative surveys, consent forms were read through, distributed to and signed by every interviewee at the beginning of each interview, ethnography or FGD.

All qualitative interviews, FGD and ethnographic interviews were conducted in local languages by experienced moderators, specifically trained on the guidelines written by Altai Consulting with GAIN. All interviews were audio-recorded and English transcripts are available.

For all efforts involving individuals (quantitative and qualitative), it was clearly explained to them that data collection was fully confidential and that all the participants had the right to stop any interview if they wished to do so for any reason.

3.7. DATA ANALYSIS

The main methods of data collection included structured questionnaires, guidelines for Key Informant Interviews, FGDs and ethnographic interviews and templates for market observations and price checks. Qualitative data was recorded with audio-recorders and transcribed then typed into MS Word and analyzed based on emerging and predetermined themes and sub-themes. Quantitative data was entered directly into the SurveyToGo software on portable tablets which were synched every day. Data cleaning and validation as well as consistency checks (including call-backs of interviewees when necessary) were performed to ensure as clean a dataset as possible that was then exported into a Statistical Package format (SPSS version 17.0) for analysis. Back-up files were kept to avoid any loss or tampering. All the questionnaires and interview forms were stored in a lockable drawer for confidentiality.

Data analysis was conducted using the SPSS statistical software and the QGIS mapping software. Exploratory data techniques were used at the initial stage of analysis to uncover the structure of data and identify outliers or unusual values.

3.8. CHALLENGES AND LIMITATIONS

By far the greatest challenge to the study was the time it took to receive the ethical approval. While the study officially started on 1 April 2017, the approval was only received on 9 June. Thus, the field took place – as soon as the enumerators could be trained and deployed – from 22 June to 4 July.

In addition, it is important to note that the dairy industry in Kenya is severely affected by the weather, with two very distinct dry (generally October to April) and rainy (May to August) seasons which, traditionally, have a significant impact on milk production, consumption and prices. This year (2016-2017), there was a consensus amongst the interviewees that the dry season or drought had been particularly severe. The study took place at the end of the drought and beginning of the rainy season, with the impact that can be imagined on the results. Prices quoted by participants were therefore intermediary prices, down from peak dry season prices but not always having quite reached rainy season lows, especially for farm-gate prices.

In order to compensate for seasonality, the questionnaires and guidelines included a number of questions on the issue (including prices, volumes produced and consumed and perceptions of availability and affordability in the dry and rainy seasons, distribution channels and change in business partners or suppliers according to the seasons), but the limitations of individuals' ability to recall and the preciseness of recalled information must be taken into consideration. This issue was compounded by a spike in inflation in Kenya during the first half of 2017.

The impact of seasonality is also felt and must be considered when attempting to measure change, and specifically change since the business (Tarakwo) received and used the MNF funding. In this case, for instance, it was decided that January 2017, when Tarakwo installed its subsidized Huruma ATM was the relevant comparison date. It was, however, changed in agreement with GAIN to "this time last year" in order to avoid a strong possible bias due to January being the peak of the dry season.

Another limitation is due to the nature of the studied product itself: unpackaged milk as is the case of the milk sold in ATMs is, by definition, unbranded and hard to differentiate unless the ATM itself is branded (as is the case for the Tarakwo ATMs but not the case for most other ATMs who source their milk from a variety of suppliers, including Tarakwo). In this context, it is therefore harder to gather accurate perceptions on a variety of attributes.

The fluidity of the market and business itself also presented a few limitations: a competing ATM in Kapsoya closed suddenly (apparently due to the school holidays), thus the control market had to be moved on a day's notice from Kapsoya and another market had to be identified (Langas), interviewed milk vendors changed suppliers from one day to the next in their search for milk supply at the lowest price, thus necessitating the field team to ensure on a daily basis that specific points of sale were indeed MNF (or non-MNF) points of sale and requiring some last minute changes in interviewees.

Finally, although most interlocutors were remarkably forthcoming, the inherent difficulty in obtaining delicate information is always a concern, be it cost and margin data from businesses or income and status-related information from individuals. Thus, it was not always possible to procure all the necessary information and some extrapolations and inferences had to be made during the analysis, all of which are clearly noted, along with their underlying assumptions.

4. BUSINESS BASED STUDY

4.1. ROAD TO MARKET

4.1.1. DISTRIBUTION CHANNELS FOR TARAKWO'S MILK

KEY TAKEAWAYS

- Tarakwo remains highly dependent on the milk processors as its main clients (although this has decreased significantly in 2017);
- The Eldoret Centre ATM still represents the lion's share of Tarakwo's pasteurized milk revenues;
- The reach of Tarakwo's pasteurized milk varies greatly for each ATM: the Eldoret Centre ATM appeals to a more transient clientele while the Huruma ATM satisfies the needs of more local consumers in a residential area;
- Most (75%) of the Huruma ATM's customers live within 1 km of the ATM while the same proportion of people live within 5 km of the Eldoret Centre ATM.

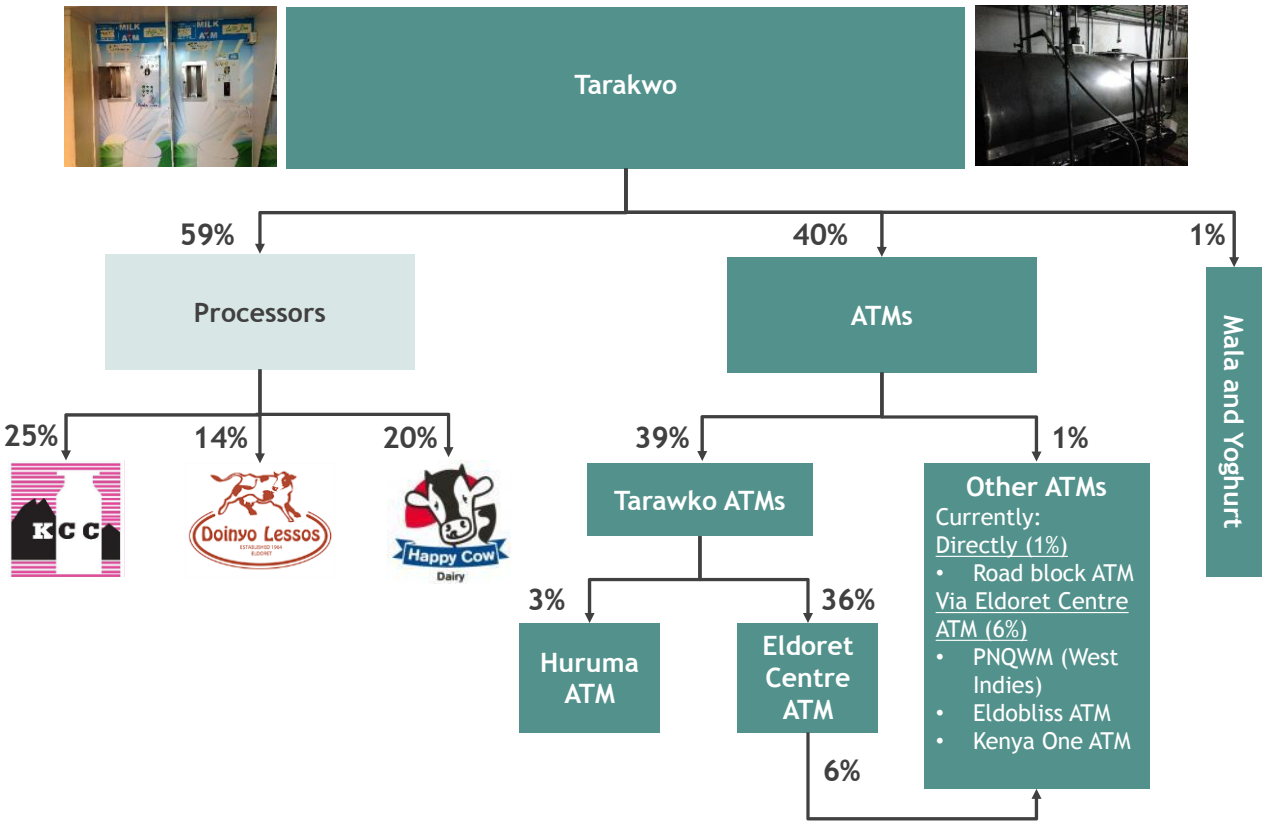
Tarakwo has traditionally relied on distributing its milk to large milk processors, including KCC (the new Kenya Cooperative Creameries), Doinyo Lessos and Happy Cow. As Tarakwo moves towards increased pasteurization of its milk, as per its 2015 Business Plan, it has made the decision to "ensure a seamless transition with minimal risk exposure by maintaining the supply volume […] to the processors[15]".

In the first six months of 2017, the three above-mentioned processors still represented 59% of its sales, down from 92% in 2016 and 98% in 2015, when Tarakwo started pasteurizing milk.

Distribution channels have also evolved: although the ATM milk initially went solely to the Tarakwo Eldoret City Centre ATM – which still represents 30% of its sold volume when excluding the ATMs that get their milk there – it is now distributed by several other "competitor" ATMs (7%, 1% directly and 6% through the Eldoret Centre ATM) and to the newly opened Tarakwo Huruma ATM (3% of total volume).

[15] Source: Tarakwo 2015 Business Plan to GAIN.

Figure 11 – Tarakwo's distribution (share of milk volume, first six months of 2017) [16]



The distribution is done twice a day by a truck which makes three stops: one at each Tarakwo ATM and one at a third non-Tarakwo ATM (called Roadblock) which is close to the Huruma ATM. As many as twenty main institutional clients, including schools, universities, hotels, banks and ATMs, go to the Eldoret City Centre ATM daily to get their milk. The institutional clients get no discounts from Tarakwo and buy the milk at the same price as consumers. It is calculated that, of the 36% of pasteurized milk that go to the Tarakwo Eldoret Centre ATM, 6% goes to other ATMs (who pick it up themselves), 7% go to other institutional clients and approximately 23% is consumed by individual clients (both on the spot or to take home).

Tarakwo is supplied by local farmers and acts as a processor (when pasteurizing milk) and as a wholesaler/retailer by selling directly to consumers in its ATMs and through its supply to non-Tarakwo ATMs. This allows it to better control end prices to consumers.

Figure 1 – Tarakwo's position within the overall milk value chain, September 2017

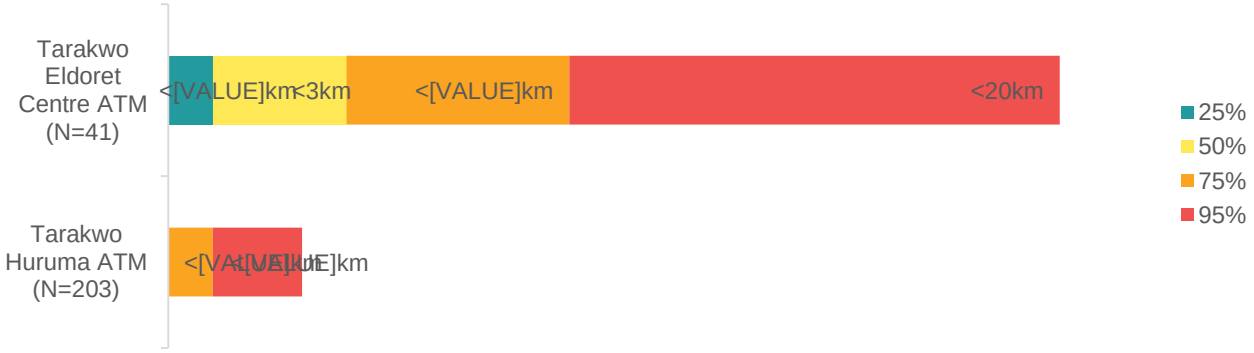
[16] Source: Tarakwo, Percentages of volume, average of 6 first months of 2017. Light green refers to raw milk. "Other" ATMs currently buying Tarakwo milk as of interviews in June/July 2017.

4.1.2. REACH OF TARAKWO'S PASTEURIZED MILK

Unsurprisingly, since the Eldoret Centre ATM is in the center of town in a prominent spot, its consumers live further away than those of the Huruma ATM. Indeed, 25% of POS respondents at the Tarakwo Eldoret Centre ATM live less than 1 km away, 50% live less than 3 km away, 75% less than 5 km and finally 95% less than 20 km.

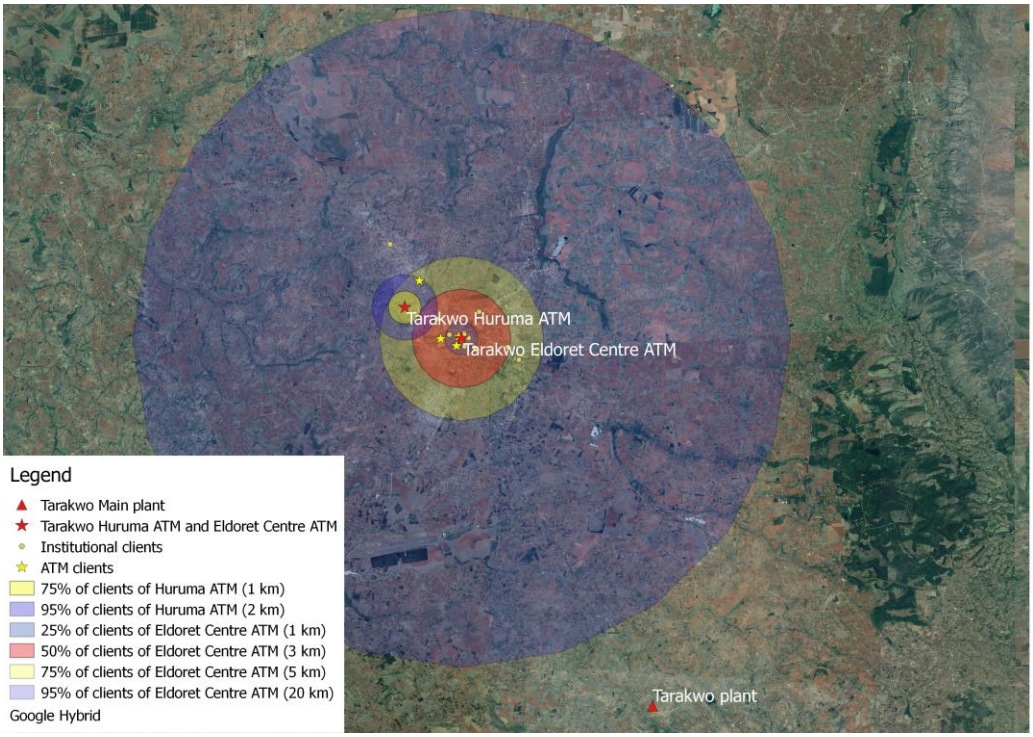
For Huruma, the trend is very different with 75% of customers living less than 1 km away and 95% within a 2km radius.

Figure 12 – How far do you live from here? (consumer survey, percentage of respondents) [17]



The above information on distance allows us to draw the maps below: the first one which includes the 95% radius for the Eldoret Centre ATM (20 km) and the second one which only goes as far as 5 km or 75% of the Eldoret Centre ATM consumers.

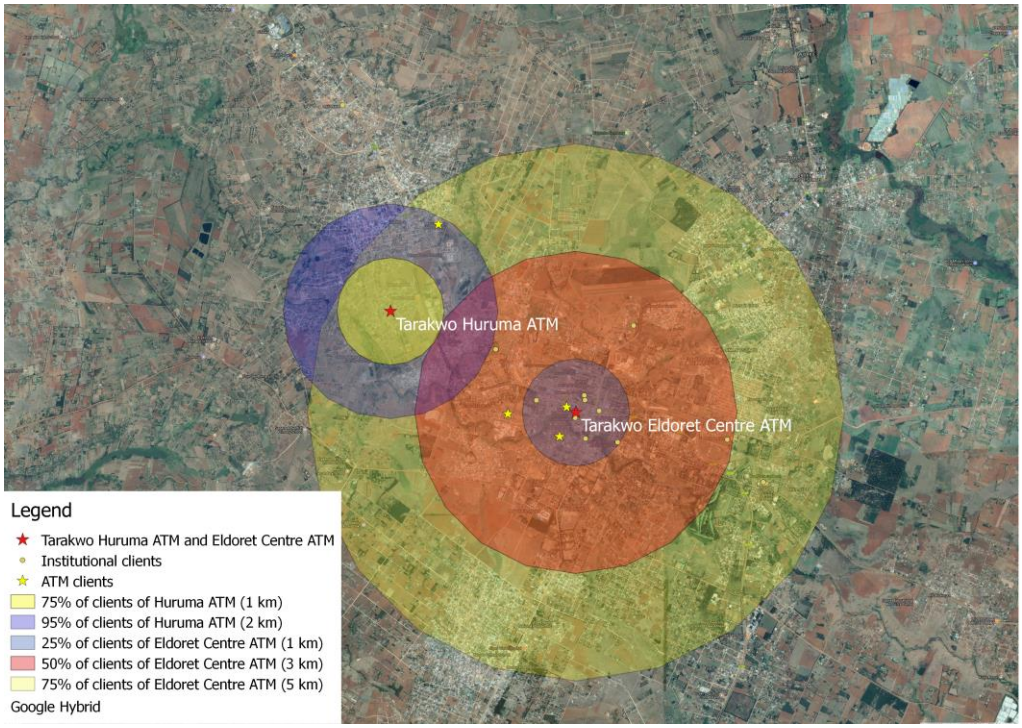
Figure 13 – Reach of Tarakwo's pasteurized milk – overall (data from consumer survey)



[17] Source: Price paid to farmers and transportation cost from farm to plant comes from interviews with Moi's Bridge; cost of processing and cost of transport from plant to city estimates from Moi's Bridge management; cost of ATM management based on detailed costs obtained in interviews with Twin Farm ATM attendant; price to end consumers observed.

The maps also display institutional clients (in yellow dots) and the ATM clients (in yellow stars). As of July 2017, Tarakwo was providing pasteurized milk to four ATMs: Roadblock (close to the Huruma ATM), Kenya One, PNQWM in West Indies and Eldobliss in Maret Street.

Figure 14 – Reach of Tarakwo's pasteurized milk – close-up (data from consumer survey)



It is estimated that a total of approximately 4,764 households were reached by the two ATMs from August 2015 until June 2017[18]: some 2,883 households were reached in 2015 - 2016 by the Eldoret Centre ATM, a further 1,696 were reached in 2017 by the same ATM and about 185 were reached by the Huruma ATM in 2017.

Table 8 – Summary estimation of households reached by the two Tarakwo ATMs since 2015 (July 2017)

Households reached by Eldoret Centre ATM in 2015-2016	Households reached by Eldoret Centre ATM in 2017	Households reached by Huruma ATM in 2017	**Total households reached 2015-1207**
2,883	1,696	185	**4,764**

[18] For detailed calculations, see Methodology Section.

The overall number of consumers reached is estimated at 18,103, of which 6,670 are consumers under 19 years old, 2,858 are under 6 and 5,717 are women over 18.

Table 9 – Approximate number of people reached by Tarakwo Eldoret and Huruma ATMs

	Results
Number of consumers reached by Tarakwo Eldoret and Huruma ATMs	18,103
Number of youth aged 18 or less reached by Tarakwo Eldoret and Huruma ATMs	6,670
Number of children aged 5 or less reached by Tarakwo Eldoret and Huruma ATMs	2,858
Number of women over 18 reached by Tarakwo Eldoret and Huruma ATMs	5,717
Number of low income consumers reached by Tarakwo Eldoret and Huruma ATMs	13,215
Number of low income households reached by Tarakwo Eldoret and Huruma ATMs	3,478
Number of females between 15 and 49 reached by Tarakwo Eldoret and Huruma ATMs	4,345

4.2. VALUE CHAIN

KEY TAKEAWAYS

- Tarakwo's pasteurized ATM milk is the cheapest ATM milk in Eldoret and, in areas where its ATM is surrounded by competitor ATMs, the latter feel the need to adapt their prices to it;
- These low prices are permitted by Tarakwo's high volumes (which probably drive its costs per liter down) and few intermediaries;
- Tarakwo still maintains some of the highest prices to farmers in the area;
- Tarakwo does not encourage intermediaries by not giving institutional clients – including other ATMs – any discounts;
- Given the relatively low processing, distribution and ATM costs (per liter) and the very low prices obtained from processors for raw milk, pasteurized milk is much more profitable for Tarakwo than raw milk.

Like other cooperatives, Tarakwo has several collection points for the milk: the farmers can choose to either take their milk there themselves or ask Tarakwo to organize the transport for them, in which case Tarakwo charges 2 to 3 KES/L, depending on the distance of the farm. All of the farms Tarakwo works with are within a 16-km radius, thus decreasing the possibility of losses on transport costs.

In the area, there are several other milk cooperatives competing for farmers' milk, especially during the dry season when quotas are hard to reach. Tarakwo prides itself on paying the farmers a higher price per liter than most, on average 2 KES/L more. The price paid to the farmers varies greatly by season. Interviews with farmers revealed that they can receive as little as 30 KES/L at the peak of the rainy season[19] and even though Tarakwo follows the overall market trend, its price to farmers stays consistently higher.

[19] Source: Interviews with milk farmers.

Figure 15 – Tarakwo's value chain (June-July 2017, KES/L)[20]

With a price to consumer of 60 KES/L, Tarakwo offers the cheapest pasteurized ATM milk observed in Eldoret. Yet, even with this low price, their margin with pasteurized milk is much higher than when selling raw milk to processors: KCC for instance currently claims to buy milk from Tarakwo at a maximum of 43 KES/L and Doinyo Lessos at 45KES/L.[21] Tarakwo's costs per liter are driven down by its high volumes.

In comparison, the competitor value chain below highlights lower prices paid to farmers and value-added and margins which are split along players of the value chain: the farmers, the processor (Moi's Bridge) and the ATM, which is independent from Moi's Bridge.

ATM milk prices vary greatly, from Tarakwo's 60 KES/L up to as much as 75 KES/L in June-July 2017 (i.e. at the beginning of the rainy season, therefore likely to be even higher in the dry season). For instance, PNQWM, which buys its milk at 60 KES/L from Tarakwo, passes on this comparatively high supply cost to its consumers by charging them 75 KES/L.

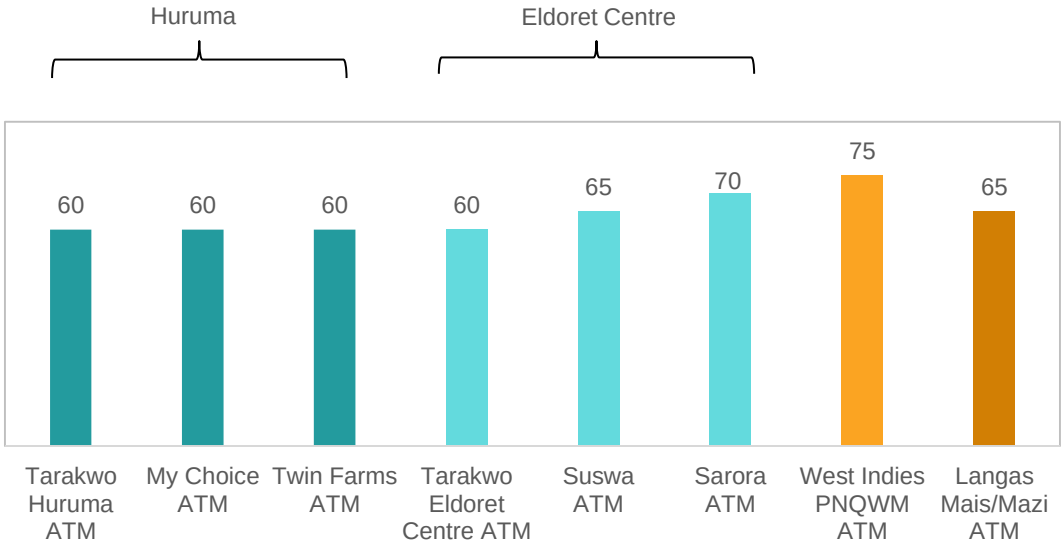
Interestingly, Twin Farms and My Choice, which are very close to Tarakwo's Huruma ATM, have to follow Tarakwo's lead in terms of price in order to be competitive but ATMs that are either on their own (PNQWM is the only ATM in West Indies for instance) or in very busy parts of town (Eldoret Centre) can hike their prices. In addition, Suswa and Sarora benefit from their notoriety since they were the first two ATMs in town.

Figure 16 – Prices at milk ATMs by area of Eldoret (June-July 2017, KES/L)[22]

[20] Source: Price paid to farmers comes from interviews with Tarakwo and farmers; cost of transport from interviews with Tarakwo; processing costs based on yearly Tarakwo electricity, labor, diesel and detergent costs divided by total production (including both raw and pasteurized milk); cost of transport from plant to city based on Tarakwo ATMs Income Statements; cost of ATM management based on costs obtained during interviews with Tarakwo ATM attendants; price to end consumers observed. Margin was estimated based on above calculations and, at approximately 14% differs from the gross margin communicated by Tarakwo (between 23% and 38% at the ATMs over the first six months of 2017) which solely includes milk purchasing costs and transportation.

[21] Source: Interviews with KCC and Doinyo Lessos management.

[22] Source: observations.



"During the dry season, we sell up to 280 liters at 70-80 KES per liter and during the rainy season our sales drop to around 100 liter per day at 60 KES per liter. We didn't go up to 80 KES/L because we sell our own milk."

Henry, Key Informant Interview, Tarakwo salesman in Huruma

"Our initial suppliers were Sarora. We switched to Tarakwo because Sarora were running out of milk. The problem is they sell to us at the same price as regular customers. It would be nice if they sold us a bit cheaper, like 55 KES per liter."

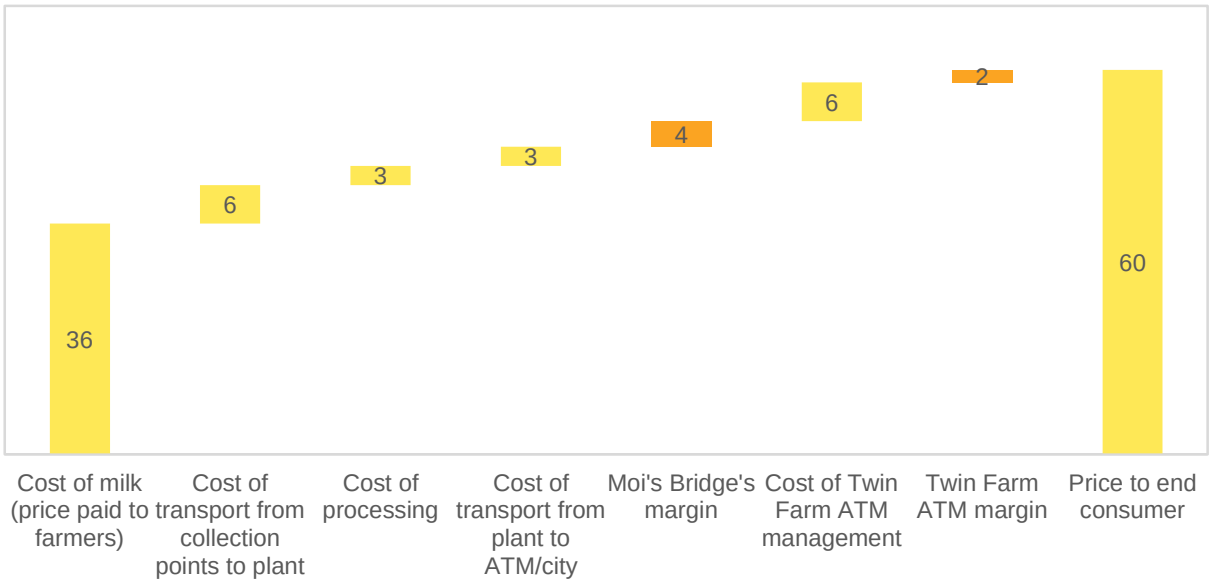
Vigody, Ethnographic interview, Vendor PNQWM ATM

Moi's Bridge dairies is a milk processing company which collects, processes and distributes pasteurized milk. They sell their milk to milk bars, ATMs and retailers in Eldoret and a number of towns in the area, reaching as far as Kakamega (200 km from Eldoret). One of their ATM clients is Twin Farms ATM, which is a neighbor of the Tarakwo ATM in Huruma. Twin Farms has been open for over a year and has a turnover of approximately 100 liters per day. It also sells yoghurt and mala, which also come from Moi's Bridge[23].

Figure 17 – A competitor's value chain, Moi's Bridge and Twin Farm ATM (June-July 2017, KES/L)[24]

[23] Source: Interviews with Moi's Bridge management and Twin Farms ATM.

[24] Source: Price paid to farmers and transportation cost from farm to plant comes from interviews with Moi's Bridge; cost of processing and cost of transport from plant to city estimates from Moi's Bridge management; cost of ATM management based on detailed costs obtained in interviews with Twin Farm ATM attendant; price to end consumers observed.



Focus box 1 – Milk ATMs in Eldoret (June 2017)

According to our interlocutors, there are between fifteen and twenty ATM shops selling "pasteurized" milk in Eldoret, three main ones in the center of town, the others spread out across the different neighborhoods and in the main supermarkets in town.

The first one, and arguably the most famous among inhabitants of Eldoret, is Suswa, which was started in 2014 as an outlet for a large farmer's excess milk. It is in central Eldoret, within walking distance of Tarakwo's ATM. From a total production that fluctuates between 1,500 and 1,800 liters per day, it sells 1,000 liters per day, currently at 65 KES/L, through the ATM. It also sells yoghurt and mala. Suswa pasteurize all their milk behind the ATM and sell it through the ATM and to a range of larger clients (and other ATMs).

Figure 18 – Suswa milk ATM outlet in Eldoret

Figure 19 – Sarora milk ATM outlet in Eldoret

Sarora was the second to open an ATM in 2015. Their first attempt failed, according to the manager, due to lack of foot traffic in front of the location they had chosen. The second – and current – location is close to Suswa and the Tarakwo ATM. They also supply three other ATMs, including one supermarket. Sarora sell pasteurized milk but also mala, yoghurt and products such as bread and cake which consumers may wish to eat along with their milk. They also tried warm milk in winter but it was not as successful as they expected and they stopped. In total (counting the four ATMs), they sell about 2,000 liters per day, at 70 KES/L to consumers and 60 KES/L to other ATMs. During the dry season, Sarora worked with several milk cooperatives but they struggled to get enough milk. They even had to buy from Tarakwo next door on several occasions. They have therefore decided to open their own collection center for next season to be able to control the quantity and quality of milk better.

These two businesses highlight the fact that there are different value chains and levels of sophistication among the city's ATM businesses: some have their own "pasteurizing" equipment in the back (mainly large boiling vats) but lack cooling equipment, some buy the milk already pasteurized. Milk dispensing machines (of differing qualities) can be bought for 1,300 to 3,000 USD. The initial cost can be offset with the high margins made on pasteurized milk in summer as well as by the selling of home-made mala and yoghurt. As several vendors and consumers noted, it is a growing business with increasing competition in Eldoret.

5. CONSUMER AND VENDOR BASED STUDY

5.1. CHARACTERISTICS OF CONSUMERS

KEY TAKEAWAYS

- Almost half of the respondents are under 30 and have some level of education;
- A considerable percentage of respondents might be living below the poverty line;
- The average household is small, around four people.

Almost half of the consumers who accepted to give their age are under 30-years-old (49.8%). 80% are under 40 years old and 93% are under 50 years old (in line with the average distribution of the Kenyan population (94% of which is under 54).[25] Random consumers are an average of 32-years-old and POS consumers are an average of 31-years-old.

Overall, 52%[26] of the consumers are male. This ratio is stable in each age group but there are slightly more men in the Huruma intervention market sample (61%) and slightly less in the POS survey (46%).

Approximately half (50% of the intervention market respondents, 47% of the control market and 51% of the POS

The most common occupation is “business owner and self-employed” (37% of the total but a higher share of women at 41%), followed by casual labor (23% of the total and 30% of men), both occupations likely to be part of the informal sector[27]. 16% of all women are housewives.

45% of men answered they were the head of households compared to 25% of women.

None of the characteristics of the sample was properly controlled, i.e. interviewees were selected randomly. Only for what concerns gender, interviewers were given the instruction to be as much balanced as possible.

The average household size for the sample is composed of 3.8 people[28]. Almost 70% of the interviewees live in a household with at least one person under 18.

[25] Source: CIA World Factbook, 2016.

[26] Average of the whole sample (combining Random and POS consumers).

[27] The informal sector is said to represent 77.9% of total Kenyan employment, UNECA, 2015.

[28] Calculation assumes that 50% of the answer “Eight or more” as corresponds to 8 and the other 50% corresponds to 9.

Table 10 – Key characteristics of respondents (consumer survey, percentage of respondents)[29]

		Intervention market (Huruma)	Standard deviation	Control market (Langas)	Standard deviation	POS consumers	Standard deviation	Chi square P-value
Number of respondents		254		286		244		
Age, years		32	10	33	11	31	10	0.254
Gender, % men		61%		49%		46%		0.002
Education		N=253		N=286		N=243		0.263
	None	1%		2%		1%		
	Primary	24%		25%		18%		
	Secondary	50%		47%		51%		
	Higher education	25%		26%		30%		
	Non-standard curriculum (madrassa, home schooling…)	0%		0%		0%		
Occupation		N=254		N=286		N=244		<0.001
	Housewife	6%		5%		12%		
	Retired	1%		0%		0%		
	Unemployed	4%		7%		6%		
	Student	8%		7%		15%		
	Farmer	3%		3%		4%		
	Casual worker	31%		18%		25%		
	Qualified worker	5%		9%		5%		
	Business owner	38%		47%		25%		
	Middle level position	4%		3%		7%		
	Highly qualified position	0%		1%		1%		
Household income		N=225		N=216		N=180		0.083
	<5,000 KES	15%		14%		10%		
	5,001 - 10,000 KES	29%		32%		24%		
	10,001 - 15,000 KES	18%		16%		20%		
	15,001 - 20,000 KES	12%		14%		16%		
	20,001 - 25,000 KES	16%		9%		15%		
	25,001 - 50,000 KES	8%		9%		12%		
	>50,000 KES	2%		6%		3%		
Household size[30]		4		4.1		3.2		
	#HH members under 18[31]	1.5		1.6		1.1		
	#HH members under 5[32]	0.6		0.6		0.4		

[29] Excludes answers "Does not know" or "Does not want to answer".

[30] Answer "Eight or more" was computed as follows: 50% are counted as 8 and 50% are counted as 9.

[31] Answer "Five or more" was computed as 6.

[32] Answer "Five or more" was computed as 6.

Poverty analysis

According to the Progress out of Poverty Index (PPI)[33], the average likelihood for one of the respondents to be living below the World Bank poverty line of 1.25 USD is low, specifically 3%.

The PPI measurement is based on ten standard questions that were asked in the survey regarding the characteristics and living standards of the household.

A second analysis based on their income level and number of household members indicates that 73% of the respondents who provided details about their income live under the Global Poverty Line of 1.90 USD a day (197 KES as at July 2017).[34] Among POS consumers, 67% of the respondents who provided their income level live below this Poverty Line.

5.2. TARAKWO CONSUMERS

KEY TAKEAWAYS

- Tarakwo consumers have a slightly higher share of women;
- Tarakwo's two ATMs have different clients: the Eldoret Centre ATM has many more men, more students and middle-level employees while the Huruma ATM has more housewives, laborers and unemployed people;
- Most customers get to the ATM on foot, although more in the case of the Huruma ATM than the Eldoret Centre ATM;
- Customers are loyal to their ATMs, having been going there for months, with a slightly higher turnover at the Eldoret Centre ATM;
- Most POS consumers switched from a variety of other types of shops – including other ATMs – and consider their consumption has increased since the switch.

A total of 540 consumers were interviewed randomly in control and intervention markets, 244 consumers were interviewed at Tarakwo points of sale, of which 203 at the Tarakwo Huruma POS and 41 at the Tarakwo Eldoret Centre POS.

Tarakwo consumers are similar in age groups to the random consumers. There is a lower proportion of men among them, they are 46% of Tarakwo interviewees compared to an average of 55% men for random consumers. They include more housewives (12% vs 5%), but also more students (15% vs 8%), more middle level positions (7% vs 3%) and less business owners (25% vs 43%) than the random sample.

Within Tarakwo itself, there are some differences between the consumers of the two ATMs. The Eldoret Centre ATM has many more men (59% of the interviewees vs 44% for the Huruma ATM). The occupations of respondents are also different, with more students (27% vs 12%) going to the Eldoret Centre ATM, more middle-level employees (20% vs 4%) and less housewives (7% vs 13%), casual labor workers (12% vs 26%) and unemployed consumers (0% vs 7%). In line with these results, the higher income brackets tend to shop at the Eldoret Centre ATM (23% of its consumers have a household income of 25,000 KES or more vs 9% at the Huruma ATM).

[33] Poverty measurement tool used by organizations and businesses to assess level poverty in a community and set objectives.

[34] This method was based on calculating for each household the monthly income divided by the number of people living in the household. Since the income level was recorded per income bracket, an intermediate value was taken for each bracket. The answers of respondents who did not want to answer of did not know were excluded. The answer "Eight or more" is computed as 8.5.

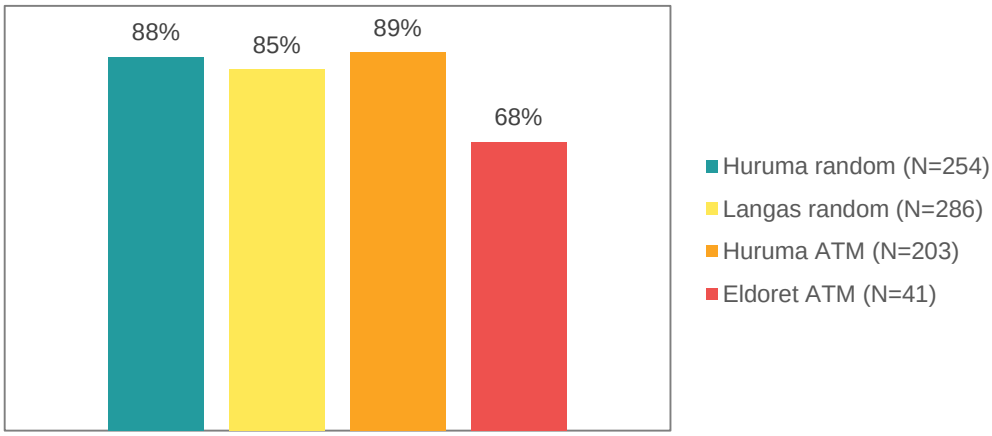
These results correspond to the fact that most of the offices and bus lines going to and from businesses and universities go through Eldoret Centre – where the ATM is situated in a particularly busy street – whereas Huruma is a more residential area.

As mentioned above (see part 4.1.2 Reach of Tarakwo's pasteurized milk), whereas most of the Huruma ATM's consumers live within a one (75%) to two km radius (95%), only 25% of the Eldoret Centre ATM live within 1 km and 75% live within a 5 km radius.

Accordingly, more respondents walk to the Huruma ATM (89%) than to the Eldoret POS (68%). Interestingly, in this regard, the behavior of respondents at the Huruma ATM is closer to that of random consumers, 86% of whom claim to walk to their milk shop/vendor.

The Eldoret Centre POS consumers who do not walk to the ATM mostly take the bus to get there (20%).

Figure 20 – Percentage of customers getting to the POS on foot (consumer survey, percentage of respondents)[35]



Time buying at the POS

When asked how long they have been buying their milk at the Tarakwo POS, 87% of POS consumers say "a few months", with an average of 4.7 months[36]. Interestingly, although the Eldoret Centre POS is older, there are comparatively less respondents who have been going there for months than in Huruma (83% vs 88% at the Huruma POS). Those who have been going to the Eldoret ATM for months, however, have a higher average, at around 8.4 months than Huruma, at 4 months.

This indicates both a high level of loyalty with consumers returning for several months in a row and a slightly higher turnover in the Eldoret Centre POS, logical with its central placement.

[35] Source: Price paid to farmers and transportation cost from farm to plant comes from interviews with Moi's Bridge; cost of processing and cost of transport from plant to city estimates from Moi's Bridge management; cost of ATM management based on detailed costs obtained in interviews with Twin Farm ATM attendant; price to end consumers observed. Detailed results in table 37 in the appendix.

[36] Detailed results in table 37 in the appendix.

"I choose Tarakwo milk because of its quality and the service by the attendants. I switched completely to purchasing from Tarakwo. The milk is nice and it is not milk in which water has been added. I buy my milk at the Tarakwo ATM at 5pm daily. I used to buy from another ATM [author's note: My Choice, which is Tarakwo's neighbor]."

Benedicta, Ethnographic interview, Huruma

Benedicta is 42 years old and lives with her husband, her four children and her granddaughter. The household income of the family is approximatively 50,000 KES per month and they have completely switched from raw milk consumption to ATM milk and packed milk consumption since the launch of the ATMs. Benedicta particularly values the professional behaviour of the Tarakwo ATM's attendants and is thus faithful to the ATM.

Change in milk shopping behaviors of POS consumers

Before they switched to the Tarakwo POS, 54% of POS consumers bought raw milk, 36% already bought pasteurized ATM milk and 19% bought packed milk.

37% of Tarakwo POS consumers used to buy milk at dairy shops, 34% at ATMs, 22% from street hawkers, 17% in supermarkets (either packed milk or from ATMs), 8% directly from farmers and 5% from milk bars.

When asked about how their milk purchasing frequency has changed since they started buying milk at a Tarakwo POS, most of them say they buy more often, with 14% claiming that their milk purchase frequency has dramatically increased and 54% saying that it has increased. Most of the remainder (30%) consider it has stayed the same.

Table 11 – Perceived increase in frequency of consumption of milk since switch to current POS (consumer survey, percentage of respondents)

	Dramatically increased	Increased a bit	Stayed the same	Decreased a bit	Dramatically decreased
POS consumers (N=244)	14%	54%	30%	2%	0%
Huruma POS Consumers (N=203)	14%	56%	29%	1%	0%
Eldoret POS Consumers (N=41)	12%	44%	34%	10%	0%

Focus box 2 – A day with Mildred, a consumer of Tarakwo milk (June 2017)

Mildred is 26 years old. She lives with her family – her husband, their four-year old daughter Vivian and two-year old Shiko, whom she has decided to take care of – in a small unit in a 30-unit compound located in Huruma, about 100 meters from the new Tarakwo ATM.

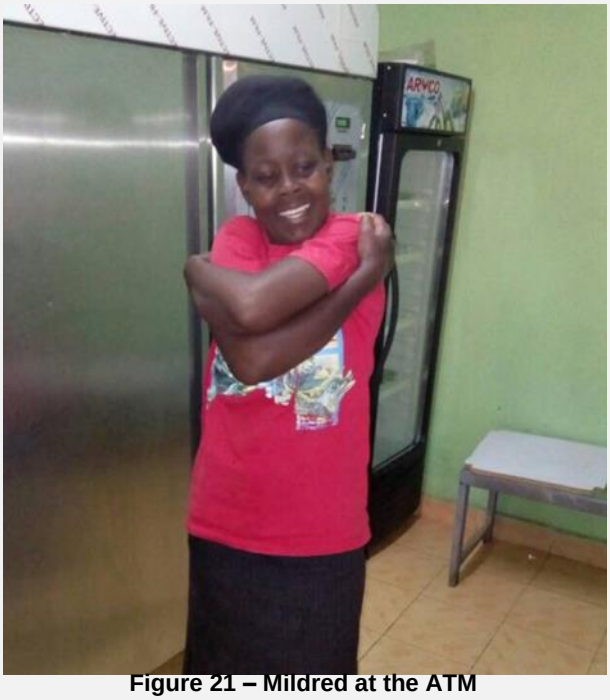


Figure 21 – Mildred at the ATM

She is a stay-at-home mom and spends her day taking care of the children and the house, which she does with great care. Her husband James is a cook at a local hospital.

She mostly uses milk to drink with tea. The family generally have tea with milk at breakfast along with bread or githeri[37]. The whole family also has very sweet tea and milk at around 4 PM when the husband and Vivian comes home.

Mildred goes shopping for food at least twice a day, before the main meals – lunch and dinner. She buys milk on average twice a day, one liter in the morning and another liter in the evening for the next day. She buys fresh milk from the dairy shop in the morning and at the Tarakwo ATM in the evening because the quality is better and it stays fresh when she keeps it in a bucket of water through the night (they do not own a refrigerator). That way, she does not need to go out in the early morning to buy milk for breakfast.

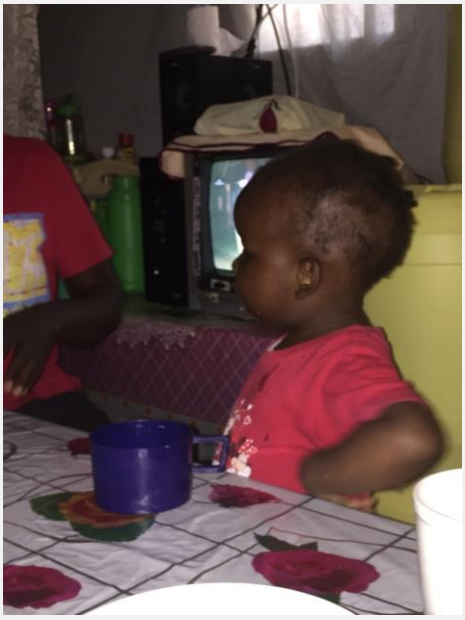


Figure 22 – Shiko and her cup of tea with milk

Sometimes, at the dairy shop, the milk is diluted, especially during the dry season, but Mildred continues to go there because the vendor gives her credit. At the ATM, she knows that they do not add water and she also prefers the fact that the milk is very cold.

Mildred likes the Tarakwo ATM. She first went there on the day it opened: the whole neighborhood was talking about the fact that there was a new ATM and that it had good milk for a good price. There was a line outside. She also likes the fact that when the price of milk drops, Tarakwo instantly lowers its price while the others drag their feet before doing so.

She does not go to the other ATMs though [author's note: there are two other ATMs within 30 meters of the Tarakwo ATM]: she says the ladies at the other ATMs are not nice and they do not answer when you ask them a question. She tried one of these ATMs once and did not like the service. Also, the problem with all the ATMs – including Tarakwo – is that they do not give her credit and sometimes she does not have money so she goes back to the dairy shop. Other dairy shops do not give her

[37] Traditional Kenyan dish made of maize and beans.

credit. It is just this one. When he sells her diluted milk, she brings it back and she waits until the new milk arrives and gets it first to make sure he does not have time to dilute it.

During the dry season, Mildred and her family often have to turn to black tea or coffee for the parents and chocolate powder with water for the children due to the unavailability of milk, high prices and vendors diluting the milk with water.

They buy yoghurt sometimes on Sundays. Vivian had tonsillitis a few months ago and the doctor told her to stop eating sweets but to have yoghurt instead. Now she does not want to eat sweet food, except for yoghurt. Her parents, especially her father, cannot refuse her anything and therefore try to buy her yoghurt when she wants some.

5.3. PURCHASING AND CONSUMPTION HABITS

KEY TAKEAWAYS

- Milk – whatever its type – holds an important place for all respondents;
- While random consumers tend to buy more raw milk, POS consumers buy more pasteurized milk. However, there is a large share of consumers who buys both, as well as packed milk and other dairy products like yoghurt and mala;
- Milk is mostly used in tea, which is consumed by the whole family throughout the day, on its own or to cook food. Given an average diet that is high in all sorts of carbohydrates, milk is an important source of nutrition for most consumers;
- Most consumers buy milk to take home: they often buy it more than once a day every day;
- ATMs are particularly useful for consumers who want to have milk on the spot, for instance during a break from work or at lunch;
- The main properties that are considered important when choosing milk are freshness, followed by price, then taste and nutritional value;
- Consumers have different priorities based on where they prefer to buy their milk: those who buy from street hawkers are less interested in freshness and more in taste and price; ATM consumers properties nutritional value more than others; and supermarket shoppers care mostly about freshness.

Kenyans are avid consumers of milk: according to the Smallholder Dairy Project (SDP), Kenya is third, after Mauritania and Mongolia, among developing countries globally in terms of milk consumption per unit average income[38]. In addition, there are indications that districts with high per capita milk production also have high per capita home milk consumption[39]. The Rift Valley has by far the largest share of the country's dairy cattle population and, according to the same report, Uasin Gishu is the country's third district in per capita milk production and consumption.

[38] Smallholder Dairy Project (SDP) Policy Brief – The Demand for Dairy Products in Kenya (2004).

[39] FAO, Dairy Development in Kenya (2011).

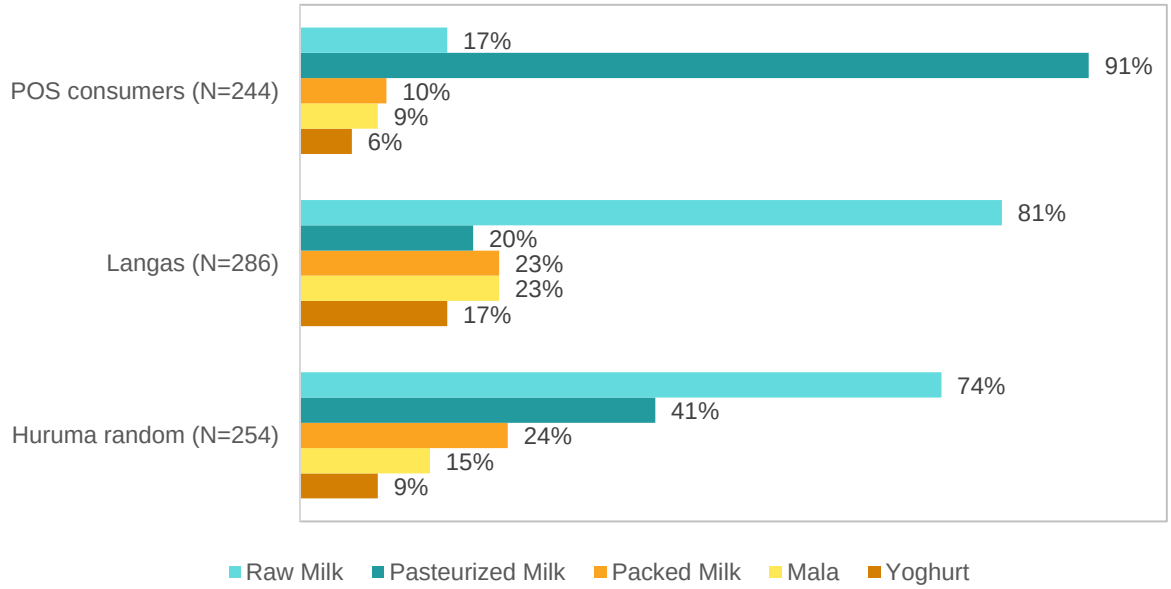
The same SDP report notes that dairy products are important food budget items for many families in Kenya, adding that households spent an average of 18% of their income on dairy products, second only to their expenditure on cereals such as maize (27%)[40].

5.3.1. TYPES OF DAIRY PRODUCTS BOUGHT

While our research focused on milk, questions regarding purchase and consumption included references to other key milk products such as mala and yoghurt.

Differences in products bought were particularly striking between raw milk and pasteurized milk: while 78% of random consumers had bought raw milk in the past 30 days, only 17% of POS consumers had done so. Inversely, 91% of POS consumers had bought pasteurized milk in the last 30 days while only 30% of random consumers bought pasteurized milk.

Figure 23 – Types of milk (and milk products) bought by consumers in the last 30 days (consumer survey, percentage of respondents)[41]



At the same time, consumption of packed milk (24% of random consumers vs 10% of POS consumers), mala (19% vs 9%) and yoghurt (13% vs 6%) is significantly higher among random consumers.

The higher consumption of packed milk among random consumers may be explained in part by the fact that, in the dry season especially but also at other times when their raw milk of choice runs out, consumers of raw milk need to supplement their preferred, cheaper choice with the more readily available packed milk.

There are two types of packed milk:

[40] Smallholder Dairy Project (SDP) Policy Brief – The Demand for Dairy Products in Kenya (2004). The survey used by SDP goes back to 1999 but our research indicates similar patterns (dairy products as a key part of our respondents' diet).

[41] Detailed results in table 40 in the appendix.

- 200 mL and 500 mL plastic pouches with fresh milk nick-named “24-hour packed milk” which must be consumed within 2 days and should be refrigerated (image below on the left);
- More robust cardboard pouches (usually 500 mL) like the Tetrafino Aseptic Pouch by Tetrapak, which contain UHT milk and have a shelf-life of six to twelve months and do not need to be refrigerated (image below on the right).

Figure 24 – Pictures of the different types of packed milk (June 2017)

Mala is very much appreciated and it is a traditional product in the area. It is also quite useful for vendors who make mala when their milk starts to sour. Yoghurt is considered more of an exceptional product given its higher price, to be consumed mostly by children on special occasions or on the week-ends.

Different dairy products tend to have slightly different distribution channels: indeed, dairy shops often sell only raw milk (and occasionally mala when the attendant knows how to make it); milk bars generally focus on raw milk and sometimes mala; ATMs generally have pasteurized milk and sometimes try to diversify into mala and yoghurt; larger grocery stores and supermarkets have packed milk, yoghurt (which is generally not kept in a refrigerated area since there are often no fridges), packed mala, sometimes they will also have raw milk and large supermarkets sell all types of dairy products (even pasteurized ATM milk) except raw milk.

"*Yoghurts are the only sweets she [their daughter] likes. We sometimes buy some on Sunday.*"

James (Mildred's husband), Ethnographic interview, Huruma

James Baraza (39 years old) and Mildred Makokha (26 years old) live in Huruma with their daughter and a little girl whose mother does not have time to take care of her. They say they cannot refuse anything to their daughter. Since she was diagnosed with tonsillitis a few months ago, the doctor advised her to stop eating sugar and to replace sweets with yoghurt, which is not only perceived as a healthy and safe food by the adults but also as a substitute for candies by the little girl, who is very fond of them.

"We sometimes buy yoghurt for the children on Wednesday or Sunday"

Dorine, Ethnographic interview, Kapsoya

Dorine Omyo (29 years old) lives with her husband and their two children, with a monthly household income of 19,500 KES. She buys yoghurts twice a week for their children, even if it is on average the most expensive milk product on the market, and even though the family does not consume any pasteurized ATM milk or packed milk.

5.3.2. MILK USES

Most consumers use milk to make a heavily sweetened tea with milk (97% of random consumers and 94% of POS consumers) that they drink on all kinds of occasions, including mostly breakfast but also lunch and when returning home at the end of the day.

The other main uses for milk include: drinking it on its own, which is slightly higher for POS consumers (68%) than for average random consumers (63%); drinking it with food; using the cream for cooking and using the milk itself for cooking.

Consumption patterns are also affected by the season in the sense that in the dry, hot season, consumers will be more likely to want cold milk while in winter, milk will more likely be used in warm milk tea.

Table 12 – Ways in which people consume milk (consumer survey, percentage of respondents)

	Huruma random (N=254)	Langas random (N=286)	POS consumers (N=244)	P-value
We make tea with it	97%	97%	94%	0.188
We drink it on its own	57%	67%	68%	0.14
We drink it with food	24%	15%	14%	0.009
We use the cream for cooking	17%	16%	9%	0.017
We use milk for cooking	15%	11%	11%	0.306

In many cases, milk represents an important part of the daily nutritional intake as most interviewees rely heavily on filling carbohydrates (chapatti, ugali, porridge, potatoes, bread) in their everyday food consumption.

"*On a typical day, I take tea with milk in the morning, porridge at 10 am and in the evening I eat chapatti or ugali."*

Wilfred, Focus Group Discussion, Chepkoilel

Wilfred Kosgey (22 years old) is a student living by himself, and he does not make any money in addition to what his parents give him. He grew up drinking raw milk and still consumes it from time to time when he comes back to his "native land", but he now usually consumes UHT packed milk as it is easily available on his University campus.

"I take milk daily in the morning in tea and at lunch time to quench my thirst. My child also consumes milk at 3 or 4pm."

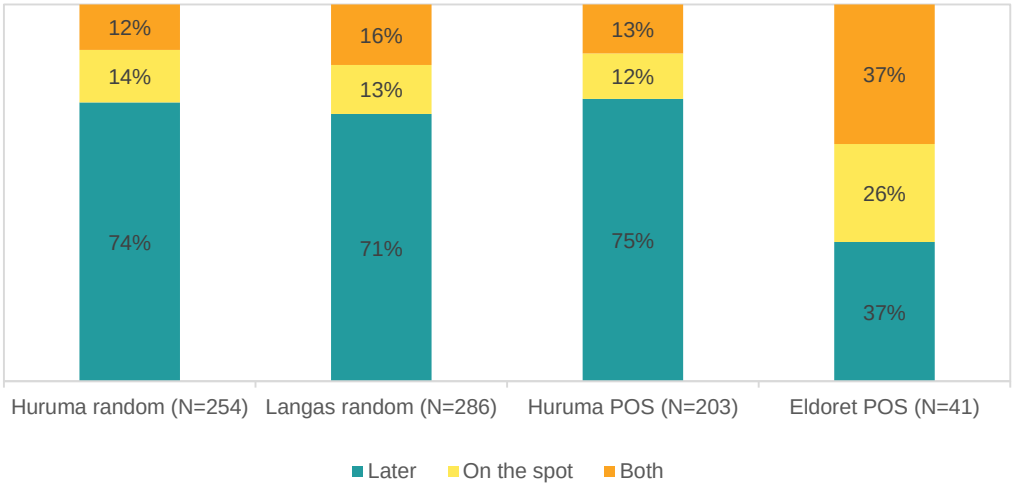
Geoffrey, Ethnographic interview, Kapsoya

Geoffrey Wanjala is 27 years old and lives with his wife and their only son. Geoffrey is the only one working, as a motorbike driver. Milk is at the core of the family's food habits, being consumed both by the parents and the child at various occasions during the day. They consume alternatively packed milk, raw milk and ATM milk (not from Tarakwo), mainly depending on the prices and the cash available.

5.3.3. QUANTITIES BOUGHT AND CONSUMPTION OCCASION

The interviewed consumers like milk, they buy it and consume it often. Most of them, especially among random consumers (72%), buy milk to consume later (and a further 15% buy milk both to consume on the spot and for later). This percentage is similar among Huruma POS consumers whereas in the Eldoret ATM, POS consumers who tend to drink much more on the spot: this may largely be due to the location of the latter point of sale: in the center of town, near businesses and where people are likely to go for lunch or snacks whereas the Huruma POS is in a more residential area.

Figure 25 – Type of consumption: on the spot or later (consumer survey, percentage of respondents)[42]



[42] Detailed results in table 43 in the appendix.

Home consumption

As mentioned above, most consumers buy milk to take home, regardless of the type of milk. Trends tend to be similar (but reversed) for random and POS consumers with regards to raw and pasteurized milk: while 84% of random consumers who claim to buy raw milk do so every day more than once a day (1.2 times a day), 86% of POS consumers who buy pasteurized milk do so every day, an average of 1.3 times a day.

Random consumers who buy raw milk every day to take home also buy pasteurized milk (52% claim to also have bought pasteurized milk at least every day in the past two weeks to take home) and POS customers who buy pasteurized milk also buy raw milk (57% say they bought raw milk at least every day during the past two weeks).

Table 13 – In the past two weeks, how often did you buy milk to consume later? (consumer survey, percentage of respondents who buy raw milk)

Raw milk	Huruma random (N=168)		Langas random (N=207)		POS consumers (N=37)	
	%	Times per	%	Times per	%	Times per
At least every day	82%	1.1 (day)	85%	1.2 (day)	57%	1.2 (day)
At least once per week	11%	3 (week)	14%	3.1 (week)	32%	2.5 (week)
Less than once a week/per two weeks	6%	1 (fortnight)	0.5%	1 (fortnight)	11%	1 (fortnight)
Special occasions/per year	1%	1.5 (year)	0.5%	2 (year)	0%	0 (year)
Average		**0.9 times per day**		**1.1 times per day**		**0.8 times per day**

This seems to indicate that some consumers, while they have preferences, buy both pasteurized and raw milk (as well as packed milk, and to a lesser extent mala and yoghurt). Packed milk consumption seems to be lower among POS consumers (only 16% of POS consumers buying packed milk claim they bought some at least every day).

"I buy milk from ATMs at the supermarket. I also buy raw milk: it is what I have had since I was born. I also buy mala once in a while and I buy packed milk, especially when I travel."

Maurine, Ethnographic interview, Kapsoya

Maurine Adhiambo (29 years old), is married with five children, all living with her and her husband. Their monthly household income is 28,000 KES. Maurine regularly consumes pasteurized ATM milk, from the supermarket and at milk bars, however she had never heard of Tarakwo before the interview.

Table 14 – In the past two weeks, how often did you buy milk to consume later? (consumer survey, percentage of respondents who buy pasteurized milk)

Pasteurized milk	Huruma random (N=85)		Langas random (N=47)		POS consumers (N=192)	
	%	Times per	%	Times per	%	Times per
At least every day	52%	1.4 (day)	51%	1.3 (day)	86%	1.3 (day)
At least once per week	26%	2.9 (week)	15%	2.9 (week)	13%	2.9 (week)
Less than once a week /per two weeks	11%	1 (fortnight)	19%	1 (fortnight)	1%	1 (fortnight)
Special occasions /per year	11%	1.8 (year)	15%	1.3 (year)	1%	3 (year)
Average		**0.8 times per day**		**0.7 times per day**		**1.2 times per day**

Those who buy milk to consume later buy on average approximately 2.0 liters of milk per purchase for random consumers and 1.5 liters per purchase for POS consumers.

"Sometimes, at the dairy shop, the milk is diluted but I still go there because he gives me credit. At the ATM, I know that they don't add water. I also prefer it when it's very cold. I can put it in the water bucket and it will stay good longer."

Mildred, Ethnographic interview, Huruma

Mildred Makokha (26 years old) and James Baraza (39 years old) live in Huruma with their only daughter and a little girl whose mother does not have enough time to take care of her. Mildred prefers to buy raw milk, as she can use the cream to cook her vegetables. However, she acknowledges the better quality of the ATM milk which is not diluted by the vendors, and buys it in the evening to have fresh milk in the morning.

"On the spot" consumption

For those POS consumers who consume milk on the spot, as many as 68% claim they do it daily and more than once a day. On average, POS respondents who consume milk on the spot do so 1.1 times a day (i.e. between once and twice a day).

Some of the ATMs have longer hours of operation than other shops, which allows for several purchase occasions per day. While shops in Huruma tend to close between 8:30 and 9:30 pm, the Tarakwo Huruma ATM closes at 10 PM[43].

[43] Source: Interviews and Market Observations.

Table 15 – How often consumers buy milk to consume "on the spot" (consumer survey, percentage of respondents)

	Huruma random (N=66)		Langas random (N=84)		POS consumers (N=77)	
	%	Times per…	%	Times per…	%	Times per…
At least every day	73%	1.3 (day)	77%	1.5 (day)	68%	1.5 (day)
At least once per week	24%	2.9 (week)	19%	2.8 (week)	30%	2.9 (week)
Less than once a week/per two weeks	1%	1 (fortnight)	3%	1 (fortnight)	1%	1.0 (fortnight)
Special occasions/per year	0%	1 (year)	2%	12 (year)	1%	1.0 (year)
Average		**1.0 times per day**		**1.2 times per day**		**1.1 times per day**

The POS consumers who consume on the spot spend an average of 39 KES which, at a Tarakwo POS, is equivalent to 0.65 liters of milk at the June 2017 price of 60 KES per liter. The average is significantly higher for random consumers (50 KES spent to consume on the spot), possibly because other ATMs tend to all be more expensive than Tarakwo. For instance, prices at other ATMs ranged between 60 and 75 KES per liter during the field work, when Tarakwo ATMs both charged 60 KES per liter.

The average amount spent when consuming on the spot is also raised by the groups of friends (mostly young men, according to the ATM attendants) who make their purchase as one.

Table 16 – Average consumption for "on the spot" consumers (consumer survey, mean)

	Huruma random (N=66)	Standard deviation	Langas random (N=84)	Standard deviation	POS consumers (N=77)	Standard deviation	Chi square P-value
How many KES' worth of milk did you buy on average to consume right away?	47	33	52	26	39	29	0.002

Consumers on the spot tend to be more men: 69% of the POS consumers who drink their milk on the spot are men compared to 46% of the overall POS consumers[44].

Since the ATMs allow consumers to spend a few KES at a time, consumers often come to have a cup of milk (see image below), either with friends, during breaks from work or even for lunch. In the picture below, the three young men (one of whom is a student and the two others who work) bought a loaf of bread at the bakery across the street and came to have their lunch of bread and milk at the ATM. Several ATMs have started selling bread and cakes for their clients to have while they are drinking milk.

[44] Detailed results in table 48 in the appendix.

Figure 26 – Three young men having lunch at the Huruma Tarakwo ATM (June 2017)

5.3.4. CRITERIA FOR CHOOSING WHICH MILK TO BUY

The main properties that are considered important when choosing which milk to buy are similar for random and POS consumers. They are mainly freshness (which is mentioned by 40% of random consumers and 45% of POS consumers as the first reason to come to mind), followed by price (first reason for 17% of random consumers and 16% of POS consumers), taste (13% of random consumers and 12% of POS consumers) and nutritional value / the fact that it is good for health (11% for both types of consumers).

Table 17 – Three main reasons for choosing which milk to buy (consumer survey, percentage of respondents)[45]

	Random consumers (N=540)			POS consumers (N=244)		
	1st reason	2nd reason	3rd reason	1st reason	2nd reason	3rd reason
Freshness	40%	24%	16%	45%	30%	8%
Taste	13%	23%	24%	12%	21%	31%
Price	17%	13%	14%	16%	10%	8%
Nutritional value/ good for health	11%	8%	14%	11%	11%	16%
Easy to find/availability	4%	8%	11%	3%	15%	16%
Thickness (cream)	6%	10%	5%	6%	5%	5%
Origin of the product/ I like knowing where it comes from	1%	2%	5%	0%	1%	2%
Brand	1%	2%	3%	3%	2%	2%
Pasteurization	1%	1%	3%	2%	3%	3%
Cold temperature	1%	2%	1%	2%	1%	3%
Quality	4%	4%	2%	0%	0%	0%
Uniform consistency	1%	3%	1%	0%	1%	3%
Small quantity available	0%	0%	1%	0%	0%	3%

[45] Split between Huruma random and Langas random in table 49 the appendix.

When specifically asked which of the above criteria is the most important, 53% of POS consumers and 48% of random consumers confirm that freshness is most important for them. The order of the following criteria, however, differs by type of consumers:

For random consumers, the second most important reason is taste (16%), followed closely by nutritional value (14%), and a bit further price (10%).

POS consumers value first nutritional value (18%), followed by taste (11%). Price, on the other hand is the main factor for only 4% of them.

For both types of consumers, thickness is key for 6% and the other main reasons – availability and uniform consistency – fall below 5%.

"I choose Tarakwo because the attendant maintains a good hygiene."

Seth, Ethnographic interview, Huruma

Seth Lisero (30 years old) lives with his wife and their daughter. Seth makes 20,000 KES per month but his wife does not work. Seth started to buy Tarakwo milk in as soon as the ATM opened and is very satisfied with the quality of the milk (the sweetness of the taste and the fact that it is not diluted with water). However, he has not stopped consuming raw milk and buying packed milk, yoghurts and mala from time to time.

"The milk is of good quality; the apparatus is clean." [talking about Tarakwo]

Lovine, Focus Group Discussion

Lovine Afande (26 years old) is a housewife living with her husband and two children. She only buys ATM milk, mainly because of its quality, but also because of its convenience, as it is ready to drink. The point of sale is important to her; she says her Tarakwo ATM's attendants sometimes give her credit and have a really good relationship with their clients.

"I consider the heaviness of the milk, a good price and cleanliness."

Miriam, Ethnographic interview, Huruma

Mirriam Njoki (29 years old) lives with her husband and their three children. The household income of the household is of 13,000 KES per month for five people, which encourages Mirriam to be very careful with the prices and quantity of milk she buys. If she had no financial constraints, she would buy 1.5 liters per day instead of 1 liter, but she wants to buy heavy and good-quality milk and she does not have enough money to afford it.

Table 18 – Most important criteria for choosing milk (consumer survey, percentage of respondents)

	Huruma random (N=244)	Langas random (N=239)	POS consumers (N=233)
Freshness	43%	55%	53%
Taste	14%	20%	11%
Nutritional value	23%	4%	18%
Price	7%	12%	4%
Thickness	7%	4%	6%
Availability	6%	2%	3%
Uniform consistency	0%	3%	0%

5.3.5. CONSUMERS' RELATIONS WITH THEIR MILK VENDORS

POS consumers are significantly more loyal to their vendors, as 92% of them say that they always buy milk for the same vendor, compared to only 65% of random consumers.

Consumers tend to go buy their milk on foot (86% of random consumers and 85% of POS consumers) and tend to live close to their preferred vendor.

It takes random consumers 9 minutes on average to get to their milk vendor and 11 minutes for POS consumers, possibly indicating a willingness to walk a bit further to get a higher quality product.

Figure 27 – Percentage of consumers who always buy milk from the same vendor (consumer survey, percentage of respondents)[46]

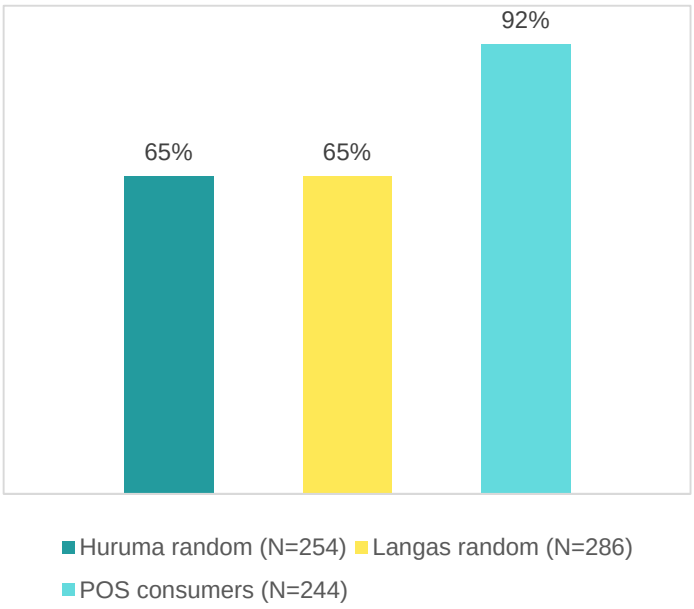
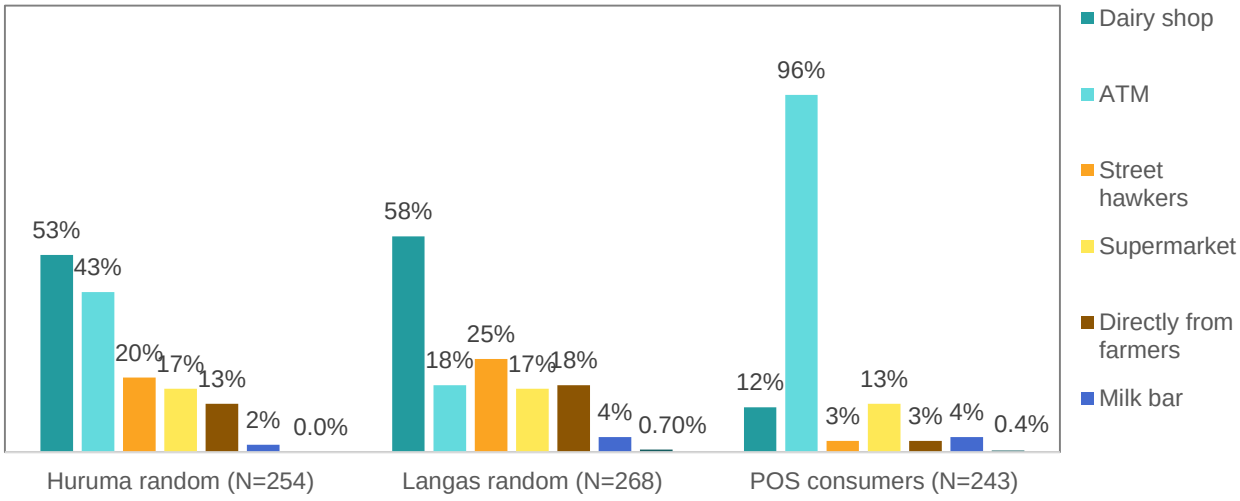


Figure 28 – Places where consumers most often buy milk (consumer survey, percentage of respondents)[47]



Random consumers buy their milk at a variety of places, leading with 54% going to dairy shops and followed by 29% going to ATMs, 22% buying from street hawkers, 16% from supermarkets and 15% directly from farmers.

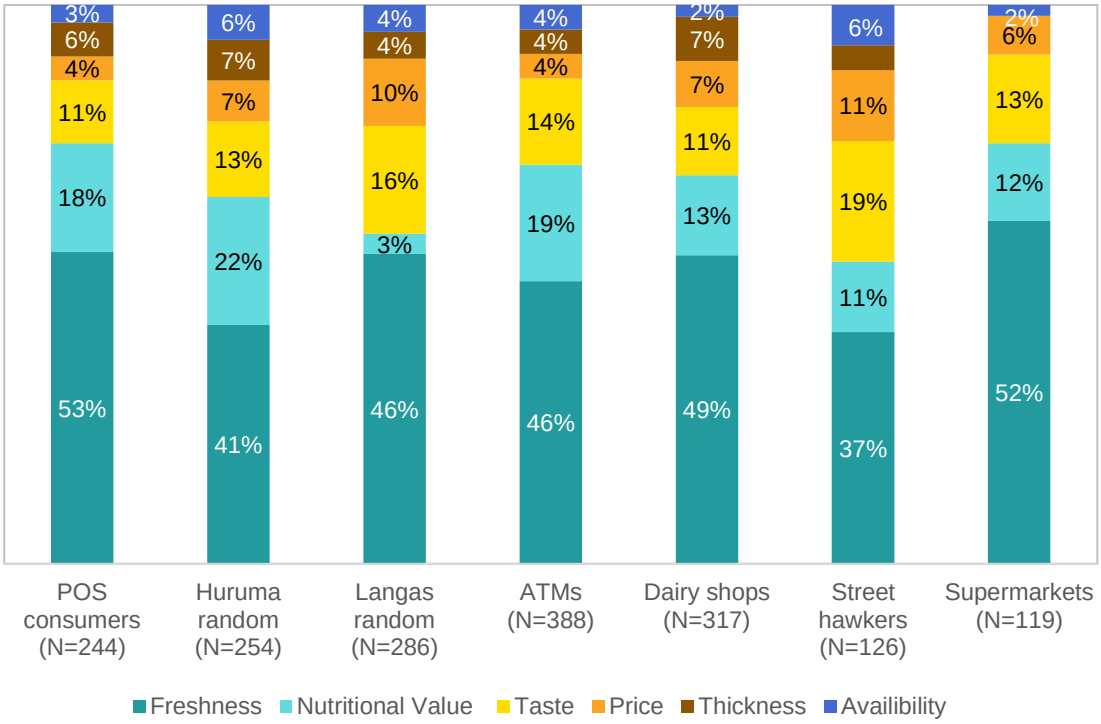
[46] Detailed results in table 54 in the appendix.

[47] Detailed results in table 55 in the appendix.

POS respondents have a more concentrated approach, with 96% saying that they most often buy their milk from ATMs. The two other types of vendors that slightly stand out are dairy shops (12%) and supermarkets (13%). Interestingly, dairy shops mostly sell raw milk and supermarkets mostly packed milk, which may indicate that POS consumers (and possibly other consumers) compartmentalize their purchasing based on what type of milk they want (and the amount of money they have): cheaper dairy shops – which sometimes offer credit – for raw milk, ATMs for fresh pasteurized milk and more expensive supermarkets for the occasional packed milk.

As the graph below shows, consumers have different priorities based on where they prefer to buy their milk: for instance, those who buy from street hawkers are less interested in freshness (37% vs a random consumer average of 44% and 53% of POS consumers) and more in taste (19% vs 15%) and price (11% vs 9% of random consumers and 4% of POS consumers); ATM consumers value nutritional properties more than others (19% vs 12% of random consumers); and supermarket shoppers care about freshness above all (52% vs 44% of random consumers), indicating similar criteria for POS and supermarket consumers.

Figure 29 – Preferred properties of milk by place of purchase (consumer survey, percentage of respondents)[48]



[48] Detailed results in table 57 in the appendix.

"I usually buy packed milk due to the good hygiene observed by the packing companies."

Mary Waithera, Focus Group Discussion, Huruma

Mary Waithera (26 years old) is a housewife living with her husband and their two children. The household monthly income is low (5,600 KES per month) as her husband is the only one working. However she mainly buys packed milk from Brookside Dairies because of the quality and cleanliness of the product. According to her, Tarakwo does not have this good taste and heaviness.

"I buy my milk from a hawker because I trust his quality whole milk."

Carolyne, Focus Group Discussion, Huruma

Carolyne Nduta (33 years old) is a single woman living with her two children. She values above everything else the origin of the milk, which is why she buys raw milk coming "directly from the cows". She has been disappointed by the ATMs, where she says the delivery is often not made in the early morning, which is the only time she can go and buy milk as she is a single working mother.

Most of the consumers (61% of POS consumers and 45% of random consumers) claim that the key criteria for choosing a place to buy their milk is the quality of the milk sold there. Interestingly, those who value quality above all else are more numerous among Tarakwo ATM customers (61%) than amidst random ATM customers (54%)[49].

The second main vendor criteria for all is the aspect of the milk – "the milk looks better", which is considered the main reason to shop someplace by 13% of random consumers and 10% of POS consumers, followed by the cleanliness of the shop (8% for random consumers and 12% for POS consumers).

Table 19 – Main reason for choosing a place to buy milk from (consumer survey, percentage of respondents)[50]

	Average POS consumers (N=244)	Huruma random (N=254)	Langas random (N=286)	Random ATM consumers (N=388)[51]
Better quality	61%	56%	36%	54%
Clean shop	8%	7%	15%	11%
Milk looks better	10%	8%	18%	11%
Milk is more available	3%	7%	5%	4%
Closest shop	3%	4%	6%	4%
Milk is cheaper	3%	7%	3%	3%

[49] "Random ATM customers" are random consumers who answered that they mostly get milk from an ATM.

[50] Excludes les significant answers (i.e. answers that represent less than 3% of respondents).

[51] "Random ATM customers" are random consumers who answered that they mostly get milk from an ATM.

5.4. DESIRABILITY OF PASTEURIZED MILK

KEY TAKEAWAYS

- Raw milk is the preferred milk of random consumers by far;
- Pasteurized milk is also desirable to a lesser extent, even among random consumers, and more so in the intervention market;
- The converse is, however, not the case: POS consumers have no, or very little, desire for raw milk;
- There are different uses for pasteurized and raw milk: pasteurized milk is more likely to be had on its own but raw milk is used for cooking, especially by taking advantage of its cream.

Raw milk is by far the preferred milk of random consumers, 73% of whom prefer to buy raw milk compared to pasteurized milk.

The desire for pasteurized milk among random consumers, however, is not negligible: 27% of them claim to prefer it to raw milk. This percentage is higher in the Huruma intervention market (32%).

Only 5% of POS consumers, on the other hand, claim to prefer raw milk.

"My consumption and buying habits are affected by the climate. I buy from hawkers because it is easily available and it is always offered at a cheap price. But in dry season I buy pasteurized milk from ATMs because at such times fresh quality milk can only be found in ATMs."

Mary Kagai, Focus Group Discussion, Huruma

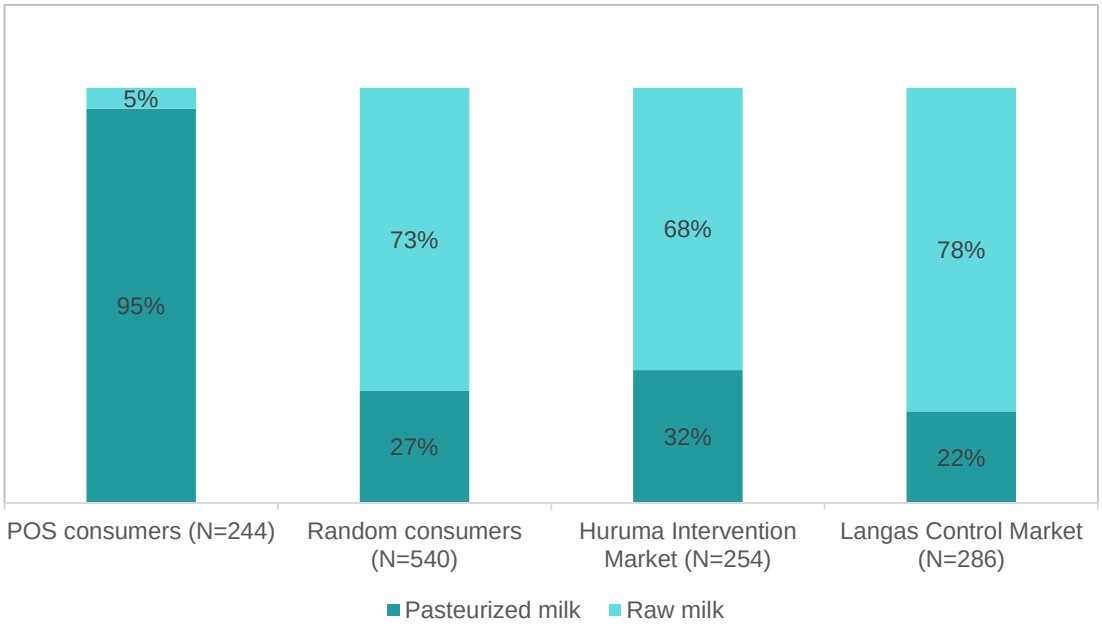
Mary Kagai (24 years old) is a single mother and a college student. She is living with her parents and her four siblings. She usually buys raw milk from their neighbors who have a cow, but the dry season forces her to consume pasteurized ATM milk as raw milk becomes unavailable. She has tried Tarakwo milk but thinks that the quality was bad (diluted with water) and the taste unpleasant.

"I buy raw milk from hawkers because it is cheap and it is easily available. I buy one liter daily and the milk is always delivered to my doorstep. My husband takes UHT milk three times a week as a recommendation from a doctor (He has stomach ulcers)."

Hilda, Ethnographic interview, Huruma

Hilda Akinyi (27 years old) lives with her husband and their only child in Eldoret. The family never buys pasteurized ATM milk, and Hilda had never heard about Tarakwo before the interview. They however had to start buying UHT packed milk last year when her husband got stomach ulcers.

Figure 30 – What type of milk do you prefer to buy? (consumer survey, percentage of respondents)[52]



Milk in general is mostly used to make tea. However, pasteurized milk consumers are more likely to drink it on its own (69% vs 58% of raw milk consumers) and raw milk consumers are much more likely to use it for cooking, especially by taking advantage of the cream (20% vs 6% for users of pasteurized milk).

Figure 31 – Dairy shop in Huruma (June 2017)

[52] Detailed results in table 58 in the appendix.

"*I buy raw milk, I like its natural taste and it is whole.*"

Jane, Focus Group Discussion, Chepkoilel

Jane Ayako (35 years old) lives with her husband and her six children. According to her, the recent increase in the number of raw milk vendors has incited them to fight in order to gain and retain customers, and it has led to a better quality of the milk. She only buys raw milk, as she is convinced that the quality of pasteurized milk is compromised since it remains in fridges.

"I have never consumed Tarakwo milk because I presume that it is a poor-quality milk: skimmed, the cream is removed, so it is not whole milk."

Lizz, Focus Group Discussion, Chepkoilel

Lizz Achieng (24 years old) is a married woman, living with her husband and their child and working as a hairdresser and owner of a cosmetics shop. She usually buys raw milk that the family consumes within a short period of time as it cannot last too long. She does not buy Tarakwo milk because she in convinced that the main nutrients are missing, and because she finds the smell unpleasant.

Table 20 – Ways in which people consume milk by type of milk bought (consumer survey, percentage of respondents)

	Consumers who only buy raw milk (N=230)	Consumers who only buy pasteurized milk (N=216)
Make tea with it	99%	90%
Drink it on its own	58%	69%
Use milk for cooking	17%	12%
Use the cream for cooking	20%	6%
Drink milk with food	15%	14%

5.5. AFFORDABILITY

KEY TAKEAWAYS

- In intervention markets where a Tarakwo ATM is present, pasteurized milk can be considered as affordable because its retail price is close or equal to the price of raw milk. In control markets, the price of pasteurized milk can vary greatly;
- Pasteurized ATM milk is also cheaper than packed milk (even the "24-hour milk");
- The overall perception is that the price of pasteurized milk has increased, although less so in Huruma;
- Regardless, a large majority of POS consumers and more than one third of random consumers in intervention market claim to have increased their consumption of pasteurized ATM milk.

A comparison of observed prices in Huruma and Langas (see table below) shows that in Huruma, the price of raw milk is currently roughly equal to the price of pasteurized ATM milk[53]. As noted previously, the presence of the Tarakwo ATM and its vicinity to the two other Huruma ATMs helps drive their prices down.

In Langas, the picture is a bit different, with slightly lower raw milk prices, especially at the hawker level, and higher pasteurized ATM milk prices, thus making the price differential between raw and pasteurized milk even more striking.

In both cases, packed milk is more expensive. However, because it is sold in small packages (mostly 200 or 500 mL), the price per package remains within the reach of consumers.

Table 21 – Prices of the different types of milk in Huruma and Langas markets (observations)[54]

	Huruma (intervention market)	Langas (control market)
Raw milk (hawkers)	50-60 KES/L	40-50 KES/L
Raw milk (shops)	60 KES/L	55-60 KES/L
Pasteurized ATM milk	60 KES/L	65 KES/L
Packed "24-hour" milk	100-110 KES/L	110 KES/L
Packed "long life" UHT milk	130-140 KES/L	130-140 KES/L

Overall perception is that the price of pasteurized milk has increased, although less so in Huruma. The percentage of respondents who answered that they do not consume pasteurized milk, therefore do not know of its price is much higher in Langas (29%) than elsewhere.

These impressions may in part be due to the very serious drought that hit the area in 2016-17 and the fact that some ATMs do add significant mark-ups on their milk. In addition, inflation, which was

[53] Note that the observations were done in June/July 2017, at the beginning of the rainy season, when, according to most interviewees, prices were starting to come down from their dry season – and actual drought – peak.

[54] Source: Market Observations.

relatively stable around 6% during 2016, spiked from February to May 2017, reaching 11.7% in May and going back down to 9.2% in June and 7.5% in July[55].

Table 22 – How has the price of pasteurized ATM milk on this market / area evolved since this time last year? (consumer survey, percentage of respondents)[56]

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value
Dramatically increased	2%	2%	2%	<0.001
Increased	45%	38%	46%	
Stayed the same	21%	30%	15%	
Decreased	30%	17%	8%	
Dramatically decreased	1%	1%	1%	
Does not consume	1%	12%	28%	

Despite this perceived increase in the price of pasteurized milk, the vast majority of POS consumers consider their consumption has increased in the past year (68% claim it has increased and 16% dramatically increased) and only 2% claim to have actually decreased their intake of pasteurized milk. Even 38% of Huruma random consumers (and 18% of Langas consumers) claim to have increased their consumption of pasteurized milk despite the rise in price.

"Due to the changes in availability and prices of raw milk I now have increased my milk intake from 1 liter to 1 ½ liters have my comfort I don't scramble for milk because I can get it at any time."

Geoffrey, Ethnographic interview, Kahoya

Geoffrey Wanjala is 27 years old and lives with his wife and their only son. Geoffrey is the only one working, as a motorbike driver. The increase in the number of milk vendors and the decrease in prices have enabled him to get more milk than he used to before, for the same amount of money. The drop in milk supply in the dry season is a recurring problem.

"I started buying Tarakwo's milk in April this year. I don't buy raw milk. I only purchase milk at Tarakwo. I started buying there after finding of out the good quality milk."

Miriam, Ethnographic interview, Huruma

Mirriam Njoki (29 years old) lives with her husband and their three children. Mirriam is very careful with the prices and quantity of milk she buys. She used to buy raw milk until this year but has completely switched for Tarakwo milk since she tried it.

[55] Source: https://tradingeconomics.com/kenya/inflation-cpi

[56] Excludes "does not know" answers.

Table 23 – How has your consumption of pasteurized ATM milk evolved since this time last year? (consumer survey, percentage of respondents)[57]

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value
Dramatically increased	16%	5%	1%	<0.001
Increased	68%	33%	17%	
Stayed the same	14%	15%	18%	
Decreased	2%	19%	26%	
Dramatically decreased	0%	7%	5%	
Does not consume	0%	19%	30%	

When it comes to raw milk, random consumers are more numerous to report that the price of raw milk has increased although a significant portion (27% in Huruma and 21% in Langas) reports that it has in fact decreased.

Table 24 – How has the price of raw milk on this market / area evolved since this time last year? (consumer survey, percentage of respondents)[58]

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value
Dramatically increased	0%	2%	5%	<0.001
Increased	37%	53%	58%	
Stayed the same	23%	14%	9%	
Decreased	33%	27%	21%	
Dramatically decreased	2%	3%	1%	
Does not consume	0%	0%	0%	

Again, POS consumers' perceived consumption of raw milk has mostly decreased. For random consumers, however, the perceived increase in price of raw milk has been followed by a perceived decrease in consumption for only 39% (32% decreased and 7% dramatically decreased) of the consumers in Huruma and 27% (24% decreased and 3% dramatically decreased) in Langas.

Table 25 – How has your consumption of raw milk evolved since this time last year? (consumer survey, percentage of respondents)[59]

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value

[57] Excludes "does not know" answers, for this reason sum of percentages may not equal 100%.

[58] Excludes "does not know" answers, for this reason sum of percentages may not equal 100%.

[59] Excludes "does not know" answers, for this reason sum of percentages may not equal 100%.

Dramatically increased	1%	2%	2%	<0.001
Increased	18%	33%	37%	
Stayed the same	12%	22%	28%	
Decreased	49%	32%	24%	
Dramatically decreased	9%	7%	3%	
Does not consume	11%	4%	5%	

Focus box 3 – Insights from a non-Tarakwo consumer (ethnographic interview)

Dorine Omyo, 29 years old, is married and lives with her husband and their two children in Kapsoya. The whole family consumes milk daily, in tea during breakfast and sometimes at dinner to drink on its own. The monthly income of the household is rather low (19,800 KES) for the four people who need to be supported, which explains the fact that the family's food habits are strongly impacted by the seasons. Dorine claims that she rarely uses milk during the dry season and if she has to, she will by only small quantities.

She knows the brand Tarakwo but is not fully aware of its offers, as she thinks that Tarakwo is selling packed milk in addition to mala and yoghurts. She did not even mention pasteurized milk when asked about Tarakwo's products. The main reason for which Dorine and her family do not consume Tarakwo milk is the unavailability of the products of the local market, Kapsoya, located 100m away from the house. Besides, Dorine buys perishable products daily and for her, the proximity of the shop is one of the main criteria for choosing a vendor.

Figure 32 – Dorine at Kapsoya Market

5.6. AVAILABILITY AND EASE OF ACCESS OF PASTEURIZED MILK

KEY TAKEAWAYS

- POS consumers are more satisfied with the availability of milk than their raw milk counterparts;

- Most of the POS consumers consider the milk they buy is available at all times;
- All consumers agree that there has been an increase in pasteurized milk over the last year.

A large share of POS consumers (64% agree and 15% strongly agree) agrees that milk availability has increased in their area compared to last year. This share decreases in Huruma and in Langas, where 39% disagree or strongly disagree. The results are similar when asked about finding milk for a longer period of time than last year[60].

Table 26 – Do you think that there has been an increase in the availability of milk on this market / area over the last year? (consumer survey, percentage of respondents)[61]

To what extend do you agree with the following statement: "Availability of milk has increased compared to this time last year."	POS Consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value
Strongly agree	15%	10%	8%	<0.001
Agree	64%	55%	51%	
Disagree	16%	30%	33%	
Strongly disagree	0%	3%	6%	

A vast majority of POS consumers (89%) consider their milk is available at all times. This percentage rises to 95% among POS when asked about Tarakwo milk (95%) and drops significantly for consumers in Langas (63%) and overall random consumers of raw milk (63%).

Table 27 – Is the milk you buy available at all times? (consumer survey, percentage of respondents)

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value[62]	Random consumers of raw milk (N=420)	POS consumers asked about Tarakwo milk (N=244)
Respondents who think the milk they drink is available at all times	89%	71%	63%	<0.001	63%	95%

POS consumers overwhelmingly (98%) think there is most pasteurized milk available than last year. Random consumers also do a slightly lesser extent, especially in Langas (80%).

Table 28 – Would you say that there is more pasteurized ATM milk than this time last year? (consumer survey, percentage of respondents)

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value
Respondents who think there is more pasteurized ATM milk than last year	98%	86%	80%	<0.001

[60] Results not shown given their similarity.

[61] Excludes "does not know" answers, for this reason sum of percentages may not equal 100%.

[62] P-value only concerns the variable "POS/Huruma random/Langas random" in the columns.

A very small share (9%) of POS consumers said there were times when their milk was unavailable but out of that small share, the majority pointed at the early morning as the time of least availability (which is in line with delivery times, especially since the truck comes from the plant which is about an hour away). Approximately a third of Langas consumers on the other hand answered this question and, for them, issues of unavailability were spread throughout the day, with an intensification in the early morning and around lunch time.

Table 29 – When does the milk you buy tend to <u>not</u> be available? (consumer survey, percentage of respondents)

	POS consumers (N=244)	Huruma random consumers (N=254)	Langas random consumers (N=286)	Chi square P-value
Share of respondents who think milk tends to not be available	9% (N=23)	28% (N=72)	35% (N=101)	<0.001
Early morning	35 %	39%	31%	0.533
Morning	0%	13%	17%	0.097
Around lunch time	26%	22%	32%	0.384
Afternoon	4%	25%	16%	0.059
Later afternoon	26%	13%	24%	0.137
Evening	19%	29%	22%	0.510

"I do make my purchases here in Kapsoya due to its accessibility (…). I also buy raw milk daily, I have been buying it since I was born, just at nearby vendors."

Maurine, Ethnographic interview, Kapsoya

Maurine Adhiambo (29 years old), is married with five children, all living with her and her husband. The monthly household income is 28,000 KES. The general increase in milk products supply has incited her to buy different products, as she now buys pasteurized milk from ATMs (not Tarakwo) in addition to the raw milk that she has been buying for ages.

"Most customers buy our brand because of quality and our strategic position"

Francis, Key Informant Interview, Tarakwo milk vendor in Eldoret

Francis Saina (37 years old) is married and lives with his wife and their five children. He has been working as a quality manager in a Tarakwo ATM and is proud to say that the clients are in general very satisfied with the quality of the milk sold. The ATM started with pasteurized milk only and is now offering mala and yoghurts due to customer demand.

5.6.1. SEASONALITY

As discussed previously, seasonality is a significant issue for milk in Eldoret.

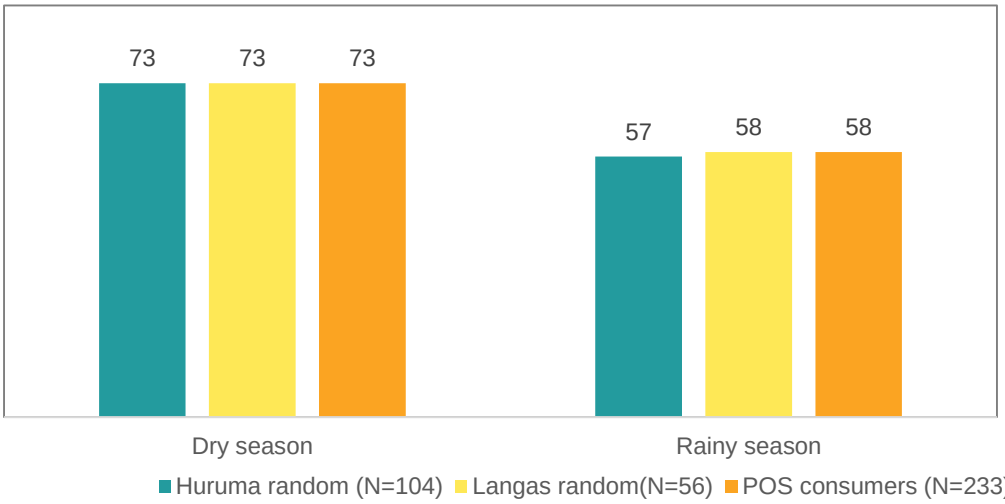
While, during the rainy season, all respondents tend to agree that pasteurized ATM milk is readily available, in the dry and hot season (generally December to March), 33% of POS consumers note that it is not available. This share increases a bit in Huruma and Langas but not very significantly.

Table 30 – How available is pasteurized ATM milk on the market in the dry and rainy season? (consumer survey, percentage of respondents)[63]

	Rainy Season			Dry Season		
	POS consumers (N=244)	Huruma random (N=254)	Langas random (N=286)	POS consumers (N=244)	Huruma random (N=254)	Langas random (N=286)
Very available	61%	50%	51%	5%	9%	5%
Available	38%	46%	40%	61%	48%	52%
Not very available	0%	0%	2%	32%	34%	33%
Not available at all	0%	0%	0%	1%	5%	3%

Prices are affected by the seasons for both random and POS consumers, the latter recalling higher prices in both cases.

Figure 33 – How much do you usually pay for pasteurized ATM milk in the dry and rainy season? (Consumer survey, KES/L)[64]



While almost all the consumers, in either control or intervention markets, claim to consider pasteurized ATM milk affordable in the rainy season, in the dry season, the numbers fall, especially for Langas consumers where 42% (vs 0% in the dry season) think it is not very affordable and 5% not affordable at all.

[63] Excludes "does not know" answers, for this reason sum of percentages may not equal 100%.

[64] Detailed results in table 66 in the appendix.

Table 31 – How affordable is pasteurized ATM milk on the market in the dry and rainy season? (consumer survey, percentage of respondents)[65]

	Rainy Season			Dry Season		
	POS (N=244)	Huruma random (N=254)	Langas random (N=286)	POS (N=244)	Huruma random (N=254)	Langas random (N=286)
Very affordable	55%	36%	41%	3%	9%	2%
Affordable	44%	54%	47%	62%	50%	41%
Not very affordable	0%	2%	0%	32%	28%	42%
Not affordable at all	0%	1%	0%	1%	6%	5%

"Seasons generally have an impact on my diet, in dry seasons when there is a shortage of milk products (…) I reduce the amount from one liter to half a liter. In the rainy season, there is plenty of supply of vegetables enabling me to have a variety of my best vegetables and to increase my milk intake."

Seth, Ethnographic interview, Huruma

Seth Lisero (30 years old) lives with his wife and their daughter. Their household income is 20,000 KES per month. The dry season has a strong impact on the family's food habits, as the shortage in vegetables and milk supply forces them to switch to different products or to get less of the same given the increasing prices.

"Yes, in the rainy season, prices are always low to remain competitive, but the volume goes up. In the dry season, the prices are high but I sell less in quantity."

Patrick, Key Informant Interview, Farmer and street hawker in Kapsaret

Patrick Kirwa (27 years old) is married and works as a raw milk vendor. He is a street hawker and has never heard of Tarakwo milk. Patrick offers smaller quantities of raw milk to his customers during the dry season, when the milk is harder to find and the prices increase significantly. He can sell up to 70 to 75 liters per day.

5.7. QUALITY, SAFETY AND CONVENIENCE

KEY TAKEAWAYS

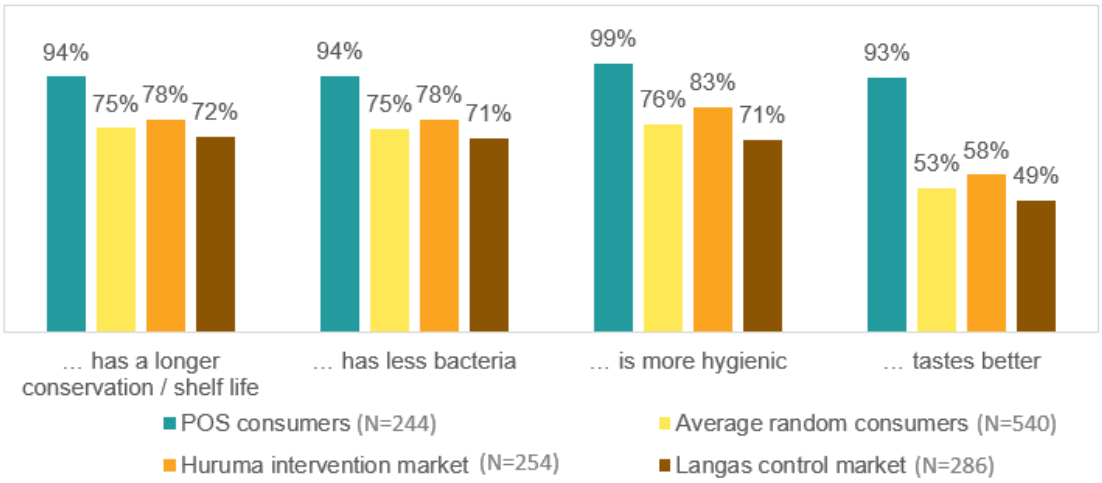
- POS consumers are familiar with the benefits of pasteurized milk; random consumers less so;
- POS consumers claim to prefer the taste of pasteurized milk. Close to half of random consumers prefer the taste of pasteurized milk.

[65] Excludes "does not know" answers, for this reason sum of percentages may not equal 100%.

POS consumers seem to have better knowledge about the qualities of pasteurized milk (on average twenty percentage points more than random consumers in the three first categories), although random consumers are still well informed.

The taste is where the difference is really striking: 93% of POS consumers and only 53% of random consumers prefer the taste of pasteurized milk. This drops to 49% in Langas control market, compared to 58% in Huruma, indicating that there may be an acquired taste in pasteurized milk if the latter is of good quality.

Figure 34 – Do you think that pasteurized ATM milk…? (consumer survey, percentage of respondents answering yes)[66]



[66] Detailed results in table 67 in the appendix.

"Pasteurized milk is milk that has been preserved by using preservatives (chemicals). I presume also its milk from which other nutrients and cream have been extracted. But raw milk is direct from the cows, nothing has been extracted from the milk."

Rafael, Focus Group Discussion, Huruma

Rafael Kalooi (42 years old) is married and lives with his wife and their three children. He is the owner of a dairy business**.** As he sells raw milk himself, he chooses to buy raw milk as well because he is convinced that the quality and the nutrients of the product are better than those of pasteurized milk. He does not want any chemicals or additives in the milk he buys.

"I think pasteurized milk is frozen milk."

Gladys, Focus Group Discussion, Huruma

Gladys Auma (32 years old) is married and lives with her husband and their four children. She works as a hairdresser and earns 15,000 KES per month in addition to her husband's income. She has never heard of the brand Tarakwo and prefers to buy raw milk as it tastes better.

5.8. MILK VENDORS

KEY TAKEAWAYS

- Overall milk vendors (when they are the owners of their shops) make money;
- Raw milk is more profitable in the rainy season when the farm gate prices are low, but pasteurized milk can command a much higher price in the dry season, which drives its margin upwards;
- Competition is increasing, with a large proportion of businesses opening in the past two years (including the two Tarakwo ATMs);
- Vendors still predominantly sell raw milk. A small portion sells both raw and pasteurized milk to fill different types of needs;
- Mala and yoghurt are sold as more exceptional, high margin products;
- Relationships with suppliers of pasteurized milk tend to be stable as long as supply is regular; raw milk supply is more fluid and driven by price and availability.

5.8.1. MARKETS OBSERVATIONS

Focus box 4 – Huruma Market

The Huruma Market is located 4.6km from the Eldoret City Center in Uasin Gishu County, on the western side of Eldoret. There are two large supermarkets, City Matt and Mukai supermarkets, located within a 0.1km radius around the market. The Huruma Market is easily accessible by road, and well served by public transport. Many SACCO minibuses (almost one per minute) bring passengers from Eldoret to Huruma and vice versa. The area remains clean, as garbage is regularly collected and streets are mostly cemented and well maintained.

Figure 35 – Example of products sold in the Huruma Market

Figure 36 – Entrance of the Huruma Market

Every type of basic or perishable products can be found in this market: cooking oil, eggs, meat, fish, various types of flour, rice, vegetables, sugar, dairy

products etc. Consumers can choose to buy from street vendors, grocery shops or minimarkets. The street vendors usually offer their products every day from 8am to midnight, whereas the minimarkets open earlier (between 6:30am and 7am) but close earlier as well (between 8:30pm and 9:30pm). The market is busy every day of the week, especially between 4pm and 9pm, as people come back from work.

Figure 37 – Molo Mart

Three minimarkets and shops selling milk on the market stand out: Molo Mart (open every day from 6:30am to 8:30pm), Umoja Mali shop (open every day from 7am to 9:30pm) and Rexona general shop (open every day from 7am to 9pm). Their opening hours and busy periods are not affected by the seasons throughout the year, with a peak in the number of customers from 4pm to 9pm.

There are three ATMs selling pasteurized milk on the market: the Tarakwo ATM (open every day from 6:30am to 10pm), the My Choice ATM (open every day from 6:30am to 8pm) and the Twin Farm ATM (open every day from 6:30am to 8pm). According to several vendors, ATMs are likely to be out of stock around noon and the busiest hours are from 7am to 8am and from 6pm to 9pm every day of the week.

Figure 38 – MyChoice ATM

Figure 39 – Dennisam Dairy

There are several milk bars and dairy shop offering milk on the market including: Sosiani Spring Dairy (open every day from 6am to 10pm), Dennisam Dairy (open every day from 6am to 9pm) and Berur Dairy Shop (open every day from 6:30am to 9pm). On average, the busiest hours are every day from 7am to 9am and from 5pm to 9pm, but there are additional busy hours on the weekend, from 10am to noon and from 4pm to 5pm on Saturday.

During the market observation, there were 113 women, 33 men and 17 children observed in the morning in one hour (between 10am and 11am, a crowded period). In the afternoon (between 4pm and 5pm), it was still crowded with 107 women, 39 men and 19 children observed. The crowd is usually mostly composed of women, both in the morning and in the afternoon, and of people from the middle-class. The men pass by the market on their way to or back from work and during lunch break. Many children go to the market on their way from or to school.

Some customers come alone, some with their friends, others with their children. They rarely enquire about the products, as they seem to know what they want to buy. Most of them are regular clients and do not try to bargain on **price**s. They take the milk they just bought right away (they do not pick it up later) and bring it back home in most cases.

Pasteurized milk can be bought in polythene bags, plastic containers or small cups according to the required quantity. The cups generally contain from 9 to 15ml and the bags and containers 250 to 500ml.

Figure 41 – Men on a break from work drinking a cup of milk

Figure 40 – Tarakwo pasteurized milk, 500ml

Dairy products sold in Huruma and number of vendors selling each type of product

	Number of street vendors	Number of minimarts	Number of grocery shops	ATMs	Milk bars / dairy shops
Raw milk	31		9		9
Pasteurized milk				5	
Mala		7	3	4	5
Packed milk		11	12		
Yoghurts		10	1	3	1

Focus box 5 – Langas Market

The Langas market is located 5.2km from the Eldoret City Center, in the Uasin Gishu County, and on the southern side of Eldoret. Two supermarkets, Bizcheek and Wananchi Supermarket, are located within a 0.4km radius around the market. The Langas market is easily accessible by a main tarmacked road from Eldoret (but with a few potholes) and by smaller roads all around which are not tarmacked but are in good shape. The area is served by public transport, as various SACCOs minibuses and vans (almost one per minute) bring passengers from Langas to Eldoret and vice versa.

Figure 42 – Minibus bringing passengers to the Langas Market

Figure 43 – Area surrounding the Langas Market

Langas is known to be one of the more populated neighborhoods in Eldoret. The main street is not very clean, as there are no garbage collection points, and people often choose to burn their garbage in the street in front of their premises. The area is known to be insecure, with cases of petty theft and mugging regularly reported. Most of the inhabitants are Kikuyus and the great majority of them are low-income earners, working as casual labor in factories and small businesses in Eldoret.

Almost every type of basic or perishable product can be found in this market: eggs, meat, fish, various types of flour, rice, vegetables, sugar, bread, dairy products etc. Consumers can choose to buy from street vendors, grocery shops or minimarkets. The street vendors usually offer their products every day from 8am to 11pm, whereas the minimarkets open earlier (between 6:30am and 8am) but close earlier as well (between 8pm and 9pm). The market is busy every day of the week, and seasons do not affect the market operations throughout the year.

Dairy products sold in Langas and number of vendors selling each type of product

	Number of street vendors	Number of minimarts	Number of grocery shops	ATMs	Milk bars / dairy shops
Raw milk	24		31		21
Pasteurized milk				3	
Mala	2	13	12		3
Packed milk		20	28		
Yoghurts		17	7		

Three minimarkets and shops selling milk on the market have been more closely studied: Molo Mart (open every day from 6:30am to 8:30pm), Umoja Mali shop (open every day from 7am to 9:30pm) and

Rexona general shop (open every day from 7am to 9pm). Their opening hours and busy periods are not affected by the seasons throughout the year, with a peak in the number of customers from 4pm to 9pm.

There are three ATMs selling pasteurized milk on the market: the Mais ATM (open every day from 6:30am to 10pm), the Mazi ATM (open every day from 8am to 8pm) and the Mwananchi ATM (open every day from 6:30am to 8:20pm). The two first belong to the same owner, who opened within a few months of each other. According to several vendors, ATMs are likely to be out of stock around noon and the busiest hours are from 7am to 8am and from 6pm to 21pm every day of the week.

Figure 44 – Mais ATM

Three milk bars and dairy shop offering milk on the market have been more closely studied: Midwest Dairy shop (open every day from 6am to 10pm), Fun Dairy shop (open every day from 6am to 10pm) and Dadina milk shop (open every day from 6:30am to 8pm). On average, the busiest hours are every day from 6pm to 9pm.

Figure 45 – Dadina milk shop

During the visit of the market, there were 52 women, 29 men and 9 children observed in the morning. In the afternoon, (between 4pm and 6pm), the place was more crowded, with 67 women, 36 men and 8 children observed. The crowd is usually mostly composed of women, both in the morning and in the afternoon, and of multiethnic people from lower classes. The men pass by the market on their way to or back from work and most of them drink cups of fresh milk with cakes or mandazi during lunch break, just before heading back to work. Many children go to the market on their way from or to school as well, but they were not see consuming milk.

Figure 46 – View of the Langas Market

Most customers go to the ATM to buy milk only and carry with them shopping bags containing bread, maize flour, tissues and whatever else they have bought. They rarely inquire about the product or try to bargain and take the products right away to bring them home. They do not seem to be interested in other products or concerned about who supplies the product, as they only inquire about

availability and price. Customers of pasteurized milk generally already know the price of the products they buy and simply ask for a given quantity.

Pasteurized milk can be bought in polythene bags, plastic containers or small cups according to the required quantity. The cups, sold in the ATMs, generally contain from 9 to 15ml and the bags hold 250 or 500ml.

Figure 47 – Packed milk in a minimarket

Figure 48 – Packed milk in a dairy shop

5.8.2. General characteristics of vendors

Table 32 – Characteristics of respondents (vendor survey, number of respondents)[67]

		Values per type of vendors						
		Control markets	Standard deviation	Intervention markets	Standard deviation	POS	Standard deviation	Chi square P-value
	Number of respondents	35		22		2		
Age, years		30	7	28	6	32	7	0.333
Gender, % men		43%		59%		100%		0.180
Education								0.955
	None	0		0		0		
	Primary	5		2		0		

[67]All absolute numbers (count) except percentage of men and average age. Vendors in control markets were all interviewed in Langas (28) and Kimumu (7). Vendors in intervention markets included 19 vendors in Huruma as well as vendors outside of Huruma but selling (3) or having sold (2) Tarakwo milk. "Does not know" and "Does not want to answer" answers were not counted.

	Secondary	17	11	1	
	Higher education	13	9	1	
	Non-standard curriculum (home schooling…)	0	0	0	
Household income					0.837
	<5,000 KES	0	0	0	
	5,001 - 10,000 KES	5	4	0	
	10,001 - 15,000 KES	6	2	1	
	15,001 - 20,000 KES	3	5	0	
	20,001 - 25,000 KES	4	2	0	
	25,001 - 50,000 KES	5	3	1	
	>50,000 KES	5	2	0	

The average age of the vendors is 29. They are evenly split in terms of gender, with more men (thirteen out of 22) in intervention markets and less (fifteen out of 35) in control markets. Their education level is largely split between secondary and higher education, and the two POS vendors achieved respectively secondary and higher education. The two POS vendors are male respondents.

Vendors' income level is spread rather evenly among all the brackets from 5,000 to 50,000 KES and a few above that, in both intervention and control markets. The POS vendors earn respectively between 10,000 and 15,000 KES and between 25,000 and 50,000 KES.

Several of the store owners – for both dairy shops and ATMs – own several businesses. For instance, the owner of Sarora operates several ATMs and has also started a processing plant as well as selling the ATM machines themselves. Similarly, an interviewed dairy shop owner also has an electronics shop across the street. Several owners hire attendants who manage the stores and who make 5 to 6,000 KES on average.

The two Tarakwo vendors are long-time Tarakwo employees, one of them a small farmer who sells milk to Tarakwo.

For the vendor survey, since the target of the interview was very specific (milk vendors), none of the characteristics of respondents (not even gender nor age) were controlled.

5.8.3. VENDORS BUSINESS

Almost three-quarters of the vendors (44 out of 59) started their business in the last five years, including 25 in the last year.

Products sold

Most of the respondents sell one (21) or two (20) milk products but some (3) go as far as selling all five types (raw milk, pasteurized ATM milk, packed milk, mala and yoghurt). Some of the ATMs also sell a bit of raw milk on the side and use it to make yoghurt and mala. Making mala is often used by the vendors as a way to cut their losses by using the less-than-fresh raw milk rather than throwing it.

Most vendors sell raw milk (44 out of 59), some pasteurized milk (11 out of 59) and a minority sell both (4 out of 59). In addition, almost half (27) sell mala, 24 sell packed milk and 19 sell yoghurts.

The proportion of vendors selling raw milk is higher (28 out of 35 compared to 16 out of 22) in control markets and the proportion of vendors selling pasteurized milk in those markets is much lower (4 out 35 compared to 5 out of 22).

All of those who sell raw milk boil it, among other reasons to allow it to stay fresh a bit longer.

40 vendors consider that raw milk is their top selling product. Of the eleven selling pasteurized milk (including the 2 Tarakwo POS), however, nine consider the latter to be their top selling product.

Of the 59 vendors interviewed, more than half (33) sell milk only to consumers while the others sell to both consumers and other vendors.

In general, volumes of pasteurized milk are much higher than volumes of raw milk: indeed, pasteurized milk ATMs can contain several hundred liters of milk and are a significant investment while raw milk is generally sold in a pot or bucket after having been boiled on a regular stove. In line with this, average volumes of raw milk sold by the interviewees go from 5 liters to 400 liters with the median at 30 liters per day during the dry season. Vendors selling pasteurized ATM milk, on the other hand, sell from 50 to 4,500 liters per day, the latter being Tarakwo's ATM in Eldoret Centre, and the median is found at 120 liters per day in summer.

Figure 49 – Milk bar in Langas (June 2017)

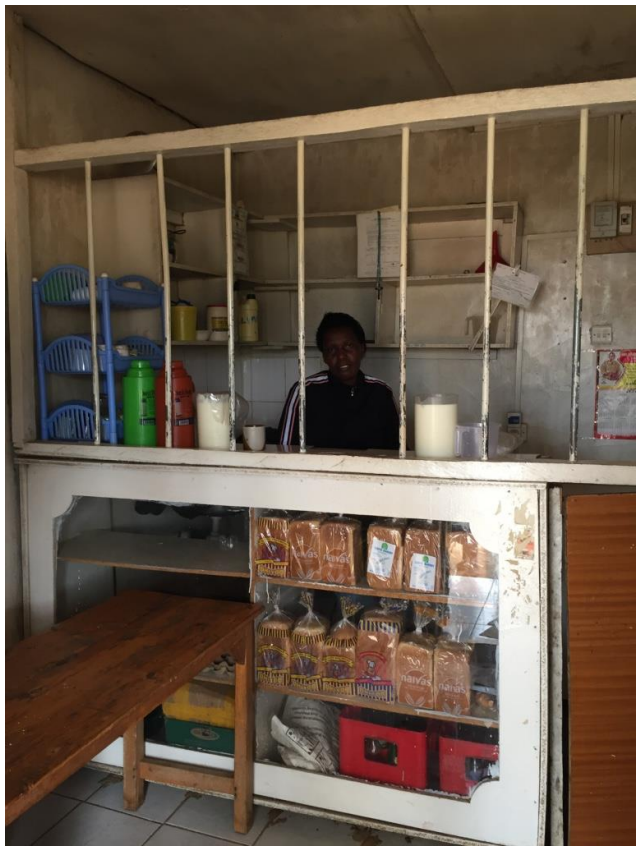
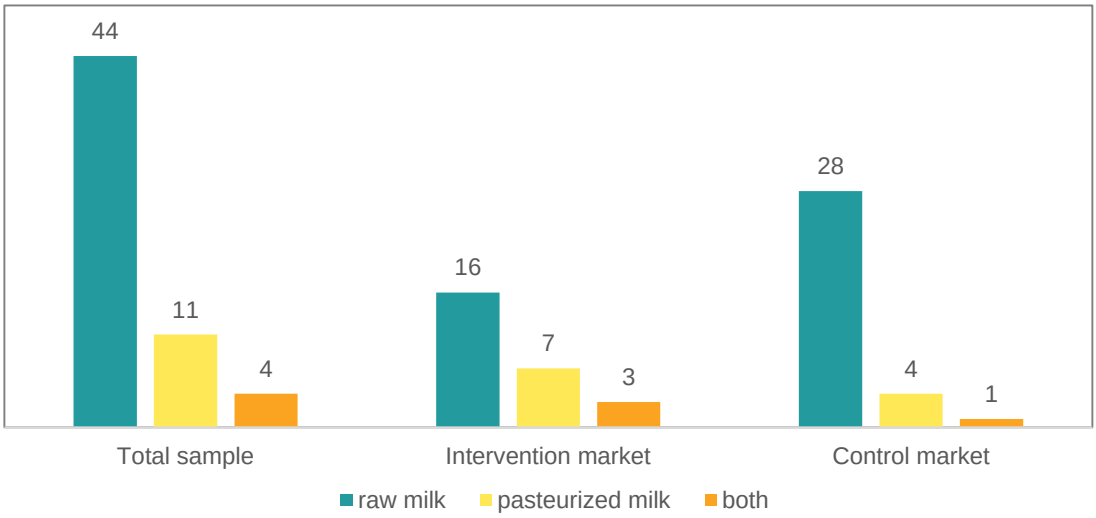


Figure 50 – What products do you sell? (vendor survey, number of answers)[68]

[68] Excludes les significant answers (i.e. answers that represent less than 3% of respondents). Detailed results in table 68 in the appendix.



Suppliers

Most of the vendors (38) have one supplier, leaving a high share (21) of vendors with several suppliers; half of the vendors who have several suppliers sell raw milk (eleven).

The suppliers are generally farmers or wholesalers / milk companies. The tendency towards buying from farmers is slightly higher in the rainy season (28 of 59 buy from farmers in the dry season and 30 in the rainy season) and a large majority (22 out of 27 in the dry season and 25 out of 30 in the rainy season) of the farmers are “small, family-owned”.

This is confirmed by observations on the field during the beginning of the rainy season and by interviews with farmers, some of whom, when they have an excess of milk in the rainy season, decide to take it into town to sell it themselves and cut out the hawkers.

In about three quarters of the cases, in both dry and rainy season, the milk is delivered to the vendor by the supplier. Deliveries happen on average six times a week (with a large majority of vendors getting supplied seven times a week, with very little difference in frequency between the dry and rainy season).

By far, especially for pasteurized milk vendors, the main reason for having several suppliers is to be able to ensure a regular supply of milk, whether on a day-to-day basis (twelve out of seventeen vendors who sell raw milk and four out of five vendors of pasteurized milk and have several suppliers) or seasonally (eight out of seventeen vendors of raw milk).

In-depth interviews with vendors show that, especially in the case of ATMs, once a vendor is satisfied with supply (mostly regularity of supply), they tend to prefer to stay with the supplier. It is much easier for raw milk vendors on the other hand to switch suppliers since they have hawkers coming to them regularly offering their milk, especially during the rainy season.

Table 33 – Why do you have several suppliers of milk? (vendor survey, number and percentage of respondents)[69]

	Vendors who sell raw milk (N=17)	Vendors who sell pasteurized milk (N=5)

[69] Multiple-answer question.

	#	#
So that I do not run out of stocks on a regular basis	12	4
So that I can sell milk for longer periods throughout the year	8	0
So that I can buy different types of milk	3	2
So that I can be flexible and buy from the cheapest offer	3	1

However, when asked about the criteria they consider for choosing their supplier(s) of milk, the answers that stand out are: the freshness of the milk (17 out of 24 respondents in intervention markets and 21 out of 35 in control markets), its price (12 in intervention markets and 16 in control markets) and only in third place (5 in intervention markets and 12 in control markets) the regularity of supply[70].

Table 34 – What criteria do you consider when choosing your supplier(s) of milk (vendor survey, number of answers)[71],[72]

	Intervention markets (N=24)	Control markets (N=35)
The milk is fresher	17	21
The milk is cheaper	12	16
The milk is more regularly available	5	12
The milk tastes better	3	6
I know the supplier(s) personally	3	6
The supplier's shop/warehouse is cleaner than elsewhere	3	5
I know the origin of the milk sold by the supplier(s)	1	4
The quality of the milk is better	1	3
The supplier is friendly/nice	1	2
The supplier sells the type of product I want to sell	1	2
The supplier delivers to me/is close to my shop (no transportation costs)	0	1

[70] In these answers, the 2 Tarakwo POS were included in the Intervention Market answers.

[71] Multiple answer question.

[72] In these answers, the 2 Tarakwo POS were included in the Intervention Market answers.

"Yes, I switched from Sarora to Tarakwo. Sarora was our initial supplier but they used to run out of stock from time to time."

Vigody, Ethnographic interview, milk vendor in West Indies

Vigody Chereno (24 years old) is single and works as the manager of the PNGWM ATM located in West Indies as well as in an electronics shop which belongs to the same owner. Her ATM sells Tarakwo milk, mainly because it is available year-round. She is thinking of selling yoghurts but claims that she cannot find a good supplier.

"I have been approached by other suppliers but I choose to stick with one supplier. I haven't changed since the beginning, eight months ago."

Dennis, Ethnographic interview, milk vendor in Kapsoya

Dennis Amadiva (27 years old) is married and lives with his wife and their child. He is a milk vendor and works with his wife. He has tasted Tarakwo milk as a consumer himself. He does not offer Tarakwo milk to his customers because he did not know that the company could deliver to his shop. Now that he knows, he might try to sell Tarakwo milk one day. [Author's note: he does not seem to know that he needs specialized equipment to sell pasteurized milk]

"When suppliers (farmers) mix the remaining milk from the past day with the fresh milk in the morning, it makes it spoil before I can even reach the market."

Patrick, Key Informant Interview, Farmer and street hawker in Kapsaret

Patrick Kirwa (27 years old) is married and works as a raw milk vendor. He is a street hawker and has never heard about Tarakwo milk. While he picks up milk himself every morning on his motorcycle, he fears that he could be offered milk from the previous day which would spoil his entire stock. For this reason, he chooses his suppliers very carefully and often gets milk from his neighbors.

Figure 51 – Hawker delivering milk to a dairy shop in Langas (June 2017)

Focus box 6 – Vigody, vendor at a competing ATM supplied by Tarakwo (June 2017)

Figure 52 – Vigody in front of the electronics store she also manages

Vigody is 24 years old. She lives alone with her younger sister who is a student. She is the manager of the PNQWM milk ATM in the West Indies neighborhood of Eldoret. She also manages an electronics store for the same owner in the center of Eldoret.

On a typical day, she wakes up at 6am, walks to the ATM and opens it at 6:30am. She stays there for one hour and then goes to the electronics shop, leaving another attendant at the ATM. She spends most of the day at the electronics store, closes it at 7pm and returns to the ATM, which she closes at 10:30pm. She makes 7,000 KES per month. She has been working at the electronics store for a year and a half and started working at the ATM when it opened four months ago (in February 2017).

She goes to Tarakwo's Eldoret Centre ATM twice a day, once around 11am and another time in the evening and buys each time 50 liters of milk, which she takes back on a boda boda (motorcycle taxi) to the ATM.

She pays 60 KES/L for the milk at Tarakwo, the "normal" price since they do not make special prices for large customers, and currently sells it at 75 KES/L. In the recent dry season, her selling price went up to 80 KES/L. She used to buy milk from Saswa and Sarora but during the dry season they did not have enough milk to supply her so she went to Tarakwo. She has never had that issue with Tarakwo. Sarora asked for a second chance but she is not interested in changing suppliers again.

In her area (West Indies), she says there are no other ATMs, just dairy shops, and when her customers have tried her milk, they come back. At the beginning, she tried to also sell some raw milk but people went to the ATM only for pasteurized milk, so she stopped. People go to her ATM either to get a glass of milk (20 KES) on the spot or buy milk for home on the way back from work in the evenings.

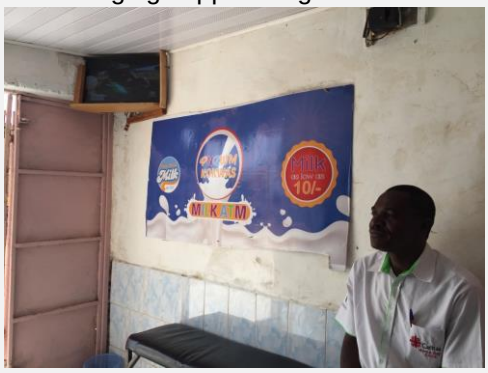


Figure 53 – A client taking advantage of the benches and TV at PNQWM ATM

5.8.4. SEASONALITY

As discussed throughout the report, seasonality has an important role on the milk market in Eldoret: during the dry season, milk is more in demand but production drops and prices increase while in the rainy season, the market can become "flooded" with milk.

The increase in volume sold is particularly striking for pasteurized milk, which goes from an average of 111 liters per day to 180 liters per day per vendor in the rainy season[73]. Volumes of raw milk, on the other hand, drop slightly. This may be due to various reasons:

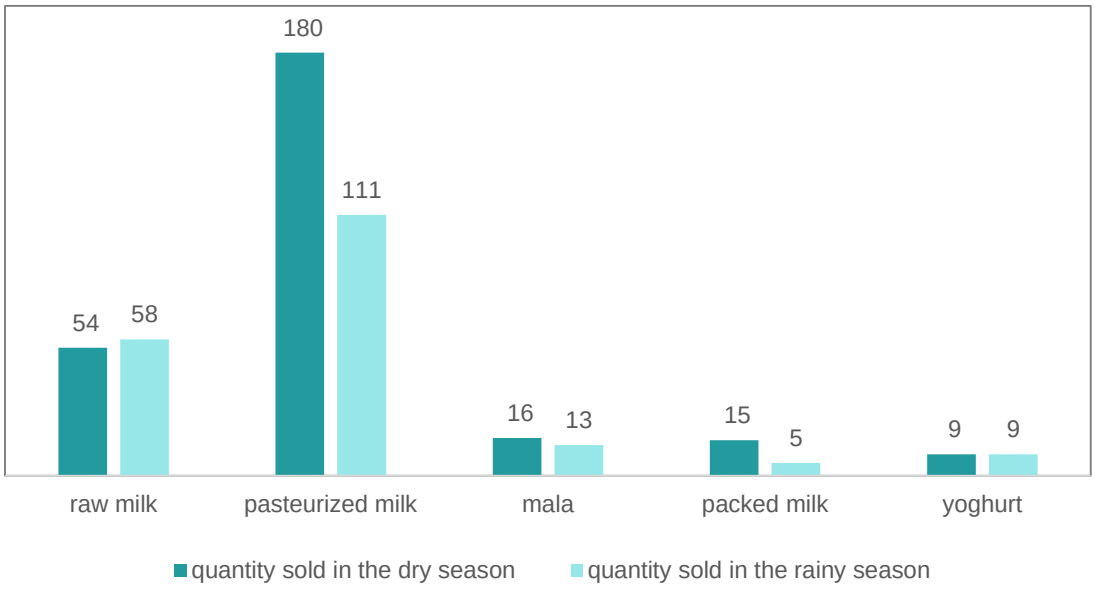
- The small farmers who sell to hawkers who in turn sell to vendors of raw milk are the most affected by the dry season and most likely to completely stop producing milk during the draught;
- The farm gate price becomes high enough for vendors to lose interest in buying and selling milk;
- High temperatures also make the milk business riskier for both hawkers and vendors (as the milk spoils faster and they do not have refrigerated infrastructures);
- Several interviewed consumers alluded to strongly diluted raw milk during the dry season, which would act as a disincentive to buy raw milk;
- Consumer prices are such that the poorer consumers stop consuming milk;
- The price differential between raw and pasteurized milk decreases so that consumers who can afford to switch to pasteurized milk (also explaining the dramatic increase in pasteurized milk volumes);
- Finally, the high temperatures render the cold pasteurized milk more attractive to consumers.

The quantity of packed milk sold also increases in the dry season, confirming what several interviewees said about turning to packed milk when raw milk became unavailable or its quality is too poor in summer.

Figure 54 – What quantity of milk do you sell per day in the dry and rainy season? (vendor survey, liters per day)[74]

[73] Source: Vendor Survey.

[74] The Tarakwo Eldoret Centre ATM was excluded from this analysis as its very large volumes strongly skewed the overall sample.



These economics are also reflected in the prices at which vendors buy and sell their milk in both seasons and the margins they resultantly make.

According to the survey, the vendors tend to make higher margins on all the products in the dry season except for raw milk, the margin of which – although higher in KES/L – is slightly lower in percentage points.

Raw milk is more profitable in the rainy season when the farm gate prices are low but pasteurized milk can command a much higher price in the dry season, which drives its margin upwards.

It should be noted that the mala (and to a certain extent yoghurt) margin as calculated in the survey (price sold minus price bought) is largely under-estimated since a non-negligible portion of the vendors buy raw milk to make mala and yoghurt, thus a more accurate margin would use as a basis the price at which raw milk is bought, leading to mala margins potentially as high as 56% in the dry season and 90% in the rainy season.

Table 35 – How much do you pay and charge for milk during the dry and rainy season? (vendor survey, KES/L)[75]

Dry season	Raw milk	Pasteurized milk	Mala	Packed milk	Yoghurt
Price bought	57	61	81	79	94

[75] The Tarakwo Eldoret Centre ATM was excluded from this analysis as its very large volumes strongly skewed the overall sample.

Price sold	70	78	89	100	132
Margin (in KES/L)	13	17	9	21	38
Margin (in %)	24%	27%	11%	27%	40%
Rainy season					
Price bought	44	53	79	75	102
Price sold	55	64	84	89	123
Margin (in KES/L)	11	11	5	14	21
Margin (in %)	26%	20%	6%	19%	21%

5.8.5. VENDORS' VIEW OF THE MILK MARKET AND ITS RECENT EVOLUTION

When asked about the dairy market's evolution in the past year, vendors are divided in both types of markets: in intervention markets (and the two Tarakwo POS[76]), nine out of 24 say they sell more milk than a year ago, eight that they sell the same and 5 that they sell less. In control markets, eighteen out of 35 say they sell more, three sell the same and, only difference, a higher number (fourteen out of 35) think their sales have actually decreased.

With regards to the price they pay for milk, more than half in both markets say they pay more than this time last year: Twelve out of 24 in intervention markets and 22 out of 35 in control markets. A few more vendors in control markets (eight out of 35 compared with three out of 24) than in intervention markets claim they pay less than this time last year.

Interestingly, there are more vendors who have increased their prices to consumers than say their own buying prices have increased: seventeen of 24 vendors in intervention and 26 of 35 markets say they have increased their prices to consumers compared to this time last year.

Meanwhile, most vendors (in both types of markets) generally agree that the number of vendors selling milk in their area has increased (twelve of 24 in intervention markets and 25 out of 35 in control markets[77]). This perception was confirmed in all the in-depth interviews with vendors, especially for pasteurized milk.

According to intervention markets vendors, there is an average of 22 raw milk and three pasteurized milk vendors in their area and in control markets, vendors think there are 21 (on average) other raw milk and five pasteurized milk vendors.

They mostly think the increase in the number of milk vendors is due to an increase in demand (nine of 24 vendors in intervention markets and fifteen out of 35 in control markets), supply (six out of 24 and ten out of 35) and profitability of selling milk (four out of 24 and seven out of 35).

5.8.6. IMAGE AND AWARENESS OF TARAKWO AMONG VENDORS

Close to half of the vendors have heard of Tarakwo (27 out of 59), with a higher proportion in the intervention markets (twelve out of 22, or 55%) compared to thirteen out of 35 (or 37%) in the control

[76] The two Tarakwo POS are included in the intervention markets for this section.

[77] Includes "dramatically increased" and "increased".

markets. Most (thirteen) have seen one of Tarakwo's ATMs; in five cases, family or friends have mentioned it; three have heard from vendors who get their milk from Tarakwo; three get their milk from there (including the two Tarakwo-owned ATMs); one client has mentioned it; one used to buy milk from Tarakwo and a final one was referred to Tarakwo by Sarora when the latter ran out of milk in summer. Interviewed vendors generally do not realize that Tarakwo is a collective of local farmers and tend to think that it is "one of the milk companies".

Only one non-Tarakwo ATM currently sells Tarakwo milk. This is the PNQWM ATM in West Indies, whose vendor notes that Tarakwo is the only supplier s/he knows (although she used to buy milk from Sarora). Three others used to get their milk from Tarakwo but stopped; one because s/he claims the milk is not fresh; the second because s/he does not know someone from Tarakwo personally and the third because Tarakwo does not deliver to their shop.

The main reason for vendors not to sell Tarakwo milk is that they already have another supplier (thirteen responses). Other noteworthy reasons include the fact that Tarakwo does not deliver to their shop (of these six respondents, three are in intervention markets, including two in Huruma and one is the Eldobliss ATM in Eldoret Centre).

Table 36 – Why don't you sell Tarakwo milk? (vendor survey, number of answers)[78]

	Number of answers
I have another supplier	13
Tarakwo does not deliver to me	6
I do not know someone from Tarakwo personally	3
Tarakwo milk is too expensive	2
My clients prefer raw milk	1
Tarakwo milk is not fresh	1
I prefer to sell raw milk	1
I sell my own milk	1

[78] Ibid.

Focus box 7 – A day with Dennis, a milk vendor in Kapsoya (June 2017)

Dennis is 27 years old. He lives with his wife and their child in Kapsoya, in Uasin Gishu County. He has completed college and has a diploma in mass communication. The household lives with a little bit more than 15,000 KES per month.

Figure 55 – Dennis and his wife in their stall

Dennis works as a milk vendor at the Kapsoya market and has been managing his stall for 8 months by himself, with the help of his wife. He opens his shop every morning at 6 am, starting by cleaning his utensils, wiping the tables and sweeping the floor before welcoming the first customers. He usually takes a 30-minute break at 12:30 for lunch, as it is the less busy hour of his day, and closes his shop at 10 pm.

The business is getting increasingly profitable as the sales are growing, however Dennis stresses the fact that it was accomplished by overcoming a real challenge (especially during the two first months): building trust among his new customers. On a normal day, Dennis now receives on average twenty customers, mostly women, a few or whom are already regular clients. He sells fresh raw milk, mala and snacks such as cakes, bread, etc. for 300 KES per day.

Figure 56 – Dennis' wife bringing fresh milk

Dennis has had the same supplier for eight months now, who provides him with 30 liters of raw milk per day. Dennis then makes his mala himself, by fermenting a part of this milk. He is happy with his choice for now, as his supplier always delivers at least 30L, for 60 KES per liter, and has stocks all year round, even if the quantities tend to decrease during the dry season.

He knows very little about Tarakwo, but has tried to consume the milk when he was in town.

6. QUALITATIVE INSIGHTS

Through the ethnographic interviews of consumers and vendors, the two focus group discussions and the KIIs with vendors, several themes emerged and confirmed the previously presented results from the quantitative survey, in particular with regards to drivers of choice for consumers: indeed, as seen previously, they seem to be most concerned with availability, proximity and convenience, cleanliness, relations of trust with their vendor (this affects vendors as well with their suppliers), financial constraints, issues with the quality of the milk that is available (dilution is a recurring theme) and seasonality. The differences in perceptions between raw and pasteurized milk are also underlined in the qualitative material.

6.1. AVAILABILITY

Availability (linked to two other teams: convenience and seasonality) is an essential criterion in the choice of milk for consumers and in vendors' preoccupations. This is both cause and consequence of an unsophisticated market where the most basic concerns, such as just finding the product, prime. Tarakwo fares well in what concerns this theme and is seen positively.

"I also value […] the constant availability" (talking about the Tarakwo ATM in Huruma)

Mildred Makokha, Ethnographic Interview consumer, Huruma

"Tarakwo is always available, no matter the season."

Seth Lisero, Ethnographic Interview consumer, Huruma

"I drink milk daily, with tea in the morning. I buy raw milk from hawkers because it is cheap and easily available. I buy 1 L a day and it is delivered to my door."

Hilda Akinyi, Ethnographic Interview consumer, Huruma

"I have noticed that the prices have decreased, and that the milk is easily available. I can purchase a greater variety of milk products."

Mirriam Njoki, Ethnographic Interview consumer, Huruma

"[My main concern in my business is] how to find high-quality milk."

Peter Ndegwa, KII, dairy shop, Huruma

"*I only have one supplier, Moi's Bridge, because they have milk all year round […] During weekends, we often run out of stock and are forced to close the shop."*

Judith Khavere, KII, Twin Farms ATM, Huruma

***"**There is a lack of availability due to shortage in supply. There has been a change in food consumption: from milk tea to black tea.*

Gladys, Focus Group Discussion 2, Eldoret

6.2. PROXIMITY AND CONVENIENCE

Proximity and convenience are important factors for consumers, whether it comes to buying milk or any other food items. Men like to be able to milk on the way home from work or to be able to take a break from work, women like to buy it close to home and in the evening so as not to have to go out early in the morning, students to find it close to university. Women also value the fact that they do not have to boil pasteurized milk, one added aspect in convenience.

"[…] a vendor […] must be close to my house."

Dorine Omoyo, Ethnographic Interview, Huruma

"[I buy milk] at the local market (Pilot) because it is close and easily accessible."

Mary Kagai, Focus Group Discussion 1, Eldoret

"[I buy food products] at our local food market in Huruma, I buy from this market because it is convenient and easily accessible."

Rafael, Focus Group Discussion 1, Eldoret

"I buy from an ATM because […] it is ready for consumption […] It is now easy to get milk. Even if I use ATMs, milk hawkers normally pass by my door, calling for buyers."

Lovine, Focus Group Discussion 1, Eldoret

"It is cheap and convenient, I can buy a small portion of milk for 10 KES […] I think the Tarakwo ATM from which I buy is convenient to get milk at any time and for any amount of cash."
Melody, Focus Group Discussion 1, Eldoret

"[I prefer to drink] pasteurized milk because it is ready to drink.

Glady, Focus Group Discussion 2, Eldoret

"I value the brand but if there was a competitor offering the same quality and services closer to my place, I would switch for its products." (talking about Tarakwo)

Seth Lisero, Ethnographic Interview, Huruma

I buy pasteurized milk at an ATM in Chepkoilel. I go there because it is always available even at late hours like 10pm.

Nelson, Focus Group Discussion 2, Eldoret

[I drink pasteurized milk] daily at the University, from the Lel Kina milk ATM.

Mercy, Focus Group Discussion 2, Eldoret

"I buy some from the ATM in the evening because the quality is better and it stays fresh if I keep it in a bucket of cold water."

Mildred Makokha, **Ethnographic Interview, Huruma**

"[Our business] has really improved a lot, we make more money and have more customers. It is good for us to be located near a bus station where people wait for their vehicles."

Henry, KII, Vendor Tarakwo Huruma ATM

6.3. CLEANLINESS

Cleanliness and hygiene are important drivers for consumers, especially when picking a vendor. It is a positive factor for Tarakwo, which comes across positively in this regard.

"[About Tarakwo ATM] I buy here because of the cleanliness, the low prices and the quality of the milk."

Mirriam Njoki, Ethnographic interview, Huruma

"I usually buy from ATMs, and I buy my raw milk from hawkers. I value the cleanliness of the vendor and of the products."

Geoffrey Wanjala, Ethnographic interview, Huruma

"I value cleanliness. […] [about Tarakwo:] the good quality of the milk and the taste. I also value the cleanliness and the professional behavior of the vendors."

Benedicta, Ethnographic interview, Huruma

"I usually buy packed milk due to the good hygiene respected by the packaging companies, and the good nutritional value of the milk. I rarely buy raw milk."

Mary Waithera, Focus Group Discussion 1, Eldoret

"I purchase milk from ATMs because the quality is fine (proper and clean procedures) […] I buy from an ATM because it is clean, one day I even requested to see how the milk is pasteurized and I certify it is a clean and safe process."

Melody, Focus Group Discussion 1, Eldoret

"I value cleanliness so I choose my point of sale according to the degree of cleanliness of the products and the procedures […] I focus on the cleanliness of the utensils which are used to measure the quantity of milk."

Gladys, Focus Group Discussion 1, Eldoret

"The cleanliness. The vendor himself must be clean (a clean vendor sells clean products which are safe for consumption)."

Lizz, Focus Group Discussion 1, Eldoret

"I purchase my milk from the Tarakwo ATM at Huruma market because the place is clean […] The vendors and the utensils are always clean."

Seth Lisero, Ethnographic interview, Huruma

"I value cleanliness above all."

Maurine Adhiambo, Ethnographic interview, Huruma

"The main factors for me are the cleanliness of the products and the containers used to store the products."

Jane, Focus Group Discussion 2, Eldoret

6.4. RELATIONS AND TRUST

Relations and trust are also important factors when it comes to choosing a vendor. Consumers tend to pick a vendor they trust and whose products they will consequently trust. Several of the consumers have been going to the same vendor for years and those visits have become part of their daily routine. The counterpart of this is that they will switch towards another vendor if they are not satisfied with their current relationship. In addition, rumors are important and someone's bad experience will have repercussions on their friends decisions.

"I buy my milk from a hawker because I trust the quality of his whole milk."

Carolyne, Focus Group Discussion 1, Eldoret

"I normally buy raw milk from our neighbor who has his own cows."

Mary Kagai, Focus Group Discussion 1, Eldoret

"From a farm. I like the place because the farmer has an inspecting doctor: he ensures the safety of the milk products and the prices are cheap compared to other places."

Rafael, Focus Group Discussion 1, Eldoret

"Two weeks after the launch of the ATM, I switched for Tarakwo milk because my vendors were unfriendly."

Lovine, Focus Group Discussion 1, Eldoret

"I rarely use Tarakwo because I prefer raw milk from a friend (he is a vendor)."

Jane, Focus Group Discussion 2, Eldoret

"I tried [the other ATMs in Huruma] but I don't like them. The ladies there [the attendants] are not nice. They do not answer when you ask them questions."

Mildred Makokha, Ethnographic Interview, Huruma

"From a local vendor that I know. I trust her commodities because of the way she handles them and she has been serving me for a long time."

Kenneth, Focus Group Discussion 2, Eldoret

"I go to the local vendors because I know them and they are friends of mine."

Gladys, Focus Group Discussion 2, Eldoret

"I also value a good relationship and the cleanliness of the vendors."

Hilda Akinyi, Ethnographic Interview, Huruma

"I have a friend who had a bad experience (the milk spoiled). I use packed milk."

Rose, Focus Group Discussion 1, Eldoret

"I choose mostly based on my relationship with them as most of them are my neighbors."

Patrick Kirwa, KII, vendor, street hawker, Eldoret

6.5. FINANCIAL CONSTRAINTS

Financial constraints are obviously an important factor for consumers and the subject comes back regularly in their interviews and in the focus groups along with the coping mechanisms they use, which include mostly decreasing quantities bought or replacing items when they become too

expensive. ATMs advantage here is the fact that milk can be bought for very small amounts of money. On the other hand, other vendors tend to give them credit. Tarakwo's advantage here lies in having lower prices than other ATMs.

"I go to a nearby market called Pilot, in a shop where I can buy on credit (the milk vendor regularly gives me credit). [Then, talking about Tarakwo], I also value the price stability. Tarakwo usually drops the prices during the rainy season."

Mildred Makokha, Ethnographic Interview, Huruma

"I use raw milk because I get some excess (if I ask for a liter, I get some extra milliliters) compared to Tarakwo which gives an exact amount."

Gladys, **Focus Group Discussion 2, Eldoret**

"I would buy more fruits and more milk. [when asked what she would change to her diet if she less constraints]"

Maurine Adhiambo, Ethnographic Interview, Huruma

"In January milk was sold for 80 KES so most of us decided to avoid buying milk."

Mercy, Focus Group Discussion 2, Eldoret

"The quality of the milk and the low prices. Many customers come every day to the ATM, except for the weekends. They are loyal and say that the other ATMs are too expensive and offer lower-quality milk."

Francis Saina, KII, Tarakwo ATM manager, Eldoret

"This year the sales are not so good because there is no money in circulation in the area […] Mostly women who buy in the evening for the following breakfast. I sometimes give credit to my customers (the five most regular) and they reimburse me within a week."

Peter Ndegwa, KII, dairy shop, Huruma

6.6. SEASONALITY

As discussed in the rest of the report, seasonality has a strong influence on milk supply and consumption in Eldoret and is closely related to the themes of availability and financial constraints. In the dry season, when there is less milk available, prices rise and consumers tend to buy less milk or to diversify their sources in their search for milk. The quality is also affected as we will see in the next theme.

"During the dry season, the milk prices go up, so I have to pay much more for the same quantity."

Maurine Adhiambo, Ethnographic Interview, Huruma

"During the dry season, there is shortage of vegetables, forcing us to eat omena instead. The milk supply is also insufficient and the price goes up so I buy less milk."

Hilda Akinyi, Ethnographic Interview, Huruma

"During the dry season, there is a shortage of vegetables, and prices are very high. I rarely use milk during the dry season and if necessary, I buy small quantities."

Dorine Omoyo, Ethnographic Interview, Huruma

"My consumption and buying habits are affected by the climate (rainy). I buy from hawkers because the milk is easily available and it is always offered at a cheap price. But in dry season I buy pasteurized milk from ATMs because good-quality fresh milk can only be found in ATMs."

Mary Kagai, Focus Group Discussion 1, Eldoret

"There has been a negative change in the first months of this year for most food. Vegetables and milk were hard to find but now hawkers move around, offering food and milk"

Melody, Focus Group Discussion 1, Eldoret

"The changes were negative even if I buy packed milk. In January, I could even lie to a visitor (saying that I was not around) to avoid the costs of welcoming him."

Mary Waithera, Focus Group Discussion 1, Eldoret

"I sell smaller quantities during the draught, as the milk is hard to find."

Patrick Kirwa, KII, vendor, street hawker, Eldoret

"We change what we eat depending on the season: during the dry season, we drink black tea or coffee due to the lack of milk, the high prices and the vendors' diluting it with water. I also change from indigenous vegetables to kale and cabbage. When no milk is available, our daughter drinks chocolate powder (made with water, not milk)."

Mildred Makokha, **Ethnographic Interview, Huruma**

"During the dry season, the milk supply is also insufficient and we do not get the usual quantity because the price increases."

Seth Lisero, Ethnographic Interview, Huruma

6.7. QUALITY ISSUES & DILUTION

There are issues with quality and, especially during the dry season, when milk is hard to find, dilution is a recurrent problem. Both consumers and vendors complain of others in the value chain diluting their milk and even mixing it with the previous day's supply, resulting in spoiling it. This contributed to decrease the trust between vendors and consumers (and even with suppliers).

"The prices have increased […] and there are fewer types of milk products available, as the supply has decreased. I think that it is due to a lower number of vendors. The quality is not as good as usual, as vendors sometimes dilute the milk with water, so I chose to buy more packed milk."

Hilda, Ethnographic Interview, Huruma

"There has a been a drop in prices due to the rainy season, and there are more vendors and suppliers than before. It led to a better quality (no more water added to the milk)"

Benedicta Walela, **Ethnographic Interview, Huruma**

"I used to buy from a hawker but the milk used to go bad and hence I opted for ATM milk in February 2017."

Melody, Focus Group Discussion 1, Eldoret

"The quality of the milk is very good compared to the beginning of the year. Vendors sometimes used to add water in the milk to cater with the demand of the market."

Mary Waithera, Focus Group Discussion 1, Eldoret

"Yes, due to the constant and excessive supply there is no more fake milk i.e diluted milk."

Mercy, Focus Group Discussion 1, Eldoret

***"**It is very bad for me when farmers mix the milk remaining from the previous day with fresh milk, as it causes the milk to spoil before I can even reach the market."*

Patrick Kirwa, KII, vendor, street hawker, Eldoret

***"**[Reasons to buy milk at ATMs] I would say the cleanliness, and the fact that raw milk tends to be diluted with water in many other shops."*

Judith Khavere, KII, vendor, ATM, Huruma

"Sometimes at the dairy shop the milk is diluted but I still go there because they give me credit. At the ATM, I know that the milk has not been diluted and I prefer when it is very cold."

Mildred Makokha, Ethnographic Interview, Huruma

"The sweetness of the taste and the fact that the milk is heavy and not diluted with water. (on why he likes Tarakwo)"

Seth Lisero, **Ethnographic Interview, Huruma**

6.8. RAW VS PASTEURIZED MILK

While there is some knowledge about pasteurization and while consumers all recognize the need to boil raw milk before consuming it, there are still many erroneous preconceptions about pasteurized milk. In addition, raw milk has the benefit of being seen as the traditional, clean, whole product compared to pasteurized milk, "industrialized milk".

"Raw milk is coming directly from the farm: no additives and no preservatives added."

Melody, Focus Group Discussion 1, Eldoret

"Yes, I know about Tarakwo milk as I use it for my consumption daily. Pasteurized milk is milk that has been ultra-heat treated for a better preservation."

Lovine, Focus Group Discussion 1, Eldoret

"Yes, I know about Tarakwo milk, it is the milk sold in ATMs. I used it sometimes but sincerely its quality was bad, I felt like it had been diluted (with water). I know about packed milk though it is too expensive."

Mary Kagai, Focus Group Discussion 1, Eldoret

"I really don't know about Tarakwo milk, but I know about packed milk. I majorly use raw milk because I like the natural good taste. I think pasteurized milk is frozen milk […] Industrialized milk."

Gladys, Focus Group Discussion 2, Eldoret

"Pasteurized milk is milk that has been boiled and preserved, but raw milk is coming from the cows, no preservatives are added."

Mary Waithera, Focus Group Discussion 1, Eldoret

"Pasteurized milk is milk that has been preserved after being boiled. Raw milk is natural milk, coming directly from the cows."

Carolyne, Focus Group Discussion 1, Eldoret

"I purchase raw milk for my business. […] it is natural: no additives and preservatives. […] Pasteurized milk has been preserved using preservatives (chemicals). It is milk from which other nutrients and cream have been extracted. But raw milk comes directly from the cows."

Rafael, Focus Group Discussion 1, Eldoret

"For me, pasteurized milk is packed milk. Raw milk is just milk from the cows: no preservatives and not ready to drink, it must be boiled."

Rose, Focus Group Discussion 2, Eldoret

"I buy raw milk, I like its natural taste and it is whole."

Jane, **Focus Group Discussion 2, Eldoret**

"I think pasteurized milk is frozen milk."

Mercy, Focus Group Discussion 2, Eldoret

"Milk with chemical additives. […] I prefer raw milk because it has all the milk elements (I think that pasteurized milk has had some contents removed like cream and butter)."

Kenneth, Focus Group Discussion 2, Eldoret

7. CONCLUSIONS AND RECOMMENDATIONS

In this case study, the impact of GAIN's MNF investment on increasing the availability, affordability, convenience and desirability of pasteurized milk was assessed using exploratory quantitative and qualitative methods. These methods were applied in two types of markets - intervention and control markets - as well as at two Tarakwo automated milk dispensing machines or ATM Points of Sale.

The following key findings emerged from the study:

Milk holds a significant place in the everyday life of Eldoret consumers: it is purchased and consumed several times a day every day, on its own, in tea or in the preparation of food, at home or, now, with the ATMs, at the point of sale;

- Consumers buy a variety of different types of milk (raw, pasteurized, pouch milk or UHT milk or even mala and yoghurt) depending on their needs, occasion and available means and go to different stores to purchase the required product;
- While raw milk remains the preferred milk of consumers, there is a shift towards pasteurized milk with a significant portion of random consumers (27%) declaring they prefer pasteurized milk and POS consumers tending to disregard other types of milk in favor of pasteurized milk;
- Positive attributes of pasteurized milk are well known by its consumers and a bit less so by random consumers (for instance, 94% of POS consumers say pasteurized milk has a longer conservation compared to 75% of random consumers). This may be due in part to lack of education but also to the fact that not all the pasteurized milk vendors offer the best quality of pasteurized milk and therefore may dilute its reputation;
- Even while over 70% of random customers know that pasteurized milk is healthier, only 53% think it tastes better, thus the continuing attraction of raw milk;
- Consumers care mainly about freshness, taste, price and nutritional value of milk, with varying degrees of importance depending on where they consume the milk (all care about freshness but random consumers tend to also care about taste and price while POS consumers give more importance to nutritional value);
- POS consumers tend to be very loyal to their vendor: once they have switched to Tarakwo pasteurized milk, they are likely to continue to purchase it;
- Distance is an important factor and consumers live close to their point of sale and mostly walk to it;
- Credit is also an important factor, especially among the poorest consumers, with several dairy shops offering credit to their loyal customers.

The supply of milk and market dynamics are largely affected by seasonality:

- In the dry season, production tends to dry up, especially for the smaller farmers who are unable to supplement their cattle's feed. Consequently, prices go up and this increase is generally passed on to consumers by most vendors.
- Many of the poorer consumers declare that they have to cut back their consumption during the dry season because of the high prices. At the same time, the summer months are the highest volume (and margin) months for vendors as consumers do desire cold milk to beat the heat;

- Pasteurized ATM milk becomes particularly attractive in the dry season as the price difference with raw milk lessens and the cold temperature of the milk and the possibility to drink on the spot attract consumers.

Tarakwo has a strong positioning in Eldoret on pasteurized milk:

- Tarakwo's stated aim to slowly diversify away from raw milk is prudent but the move to pasteurization is nevertheless happening quickly: in the first six months of 2017, the share of raw milk dropped to 58% from 92% in 2016;
- Tarakwo's pasteurized milk operations are profitable while at the same time succeeding in offering a higher than average buying price to farmers and an affordable price to consumers;
- Their Eldoret Centre POS is very well situated in the middle of Eldoret Centre's market, on a street with significant pedestrian traffic and is well-known. It attracts more men, students and middle-level employees and, because of its location, a more transient crowd. It also represented by far most of Tarakwo's ATM volume;
- The Huruma POS, on the other hand, serves proportionally more housewives, laborers and unemployed people. It succeeds in driving prices of pasteurized milk down in Huruma as the two other ATMs are following its 60 KES/L lead. Inaugurated in February 2017, it represents 3% of Tarakwo's volume in the first six months of 2017;
- The pasteurized ATM milk sector in Eldoret is quite competitive, with ATMs opening regularly, some of them turning towards collecting and processing their own milk and diversifying their product offering;
- Tarakwo will therefore have to leverage its strengths and work on its weaknesses: the quality of its milk and the good service offered at the ATMs is recognized and should be replicated;
- The selling of products such as yoghurt and mala is likely to also increase passage and are is margin-wise. Other novel ideas for products such as flavored milks or ice cream which several other competitors are planning, may be considered and tested, especially at the Eldoret Centre ATM;
- There is potential for the Huruma ATM to continue to grow. At the same time, if Tarakwo wants to continue to grow its pasteurized milk sales, it will need to open new outlets in other residential areas, taking into consideration the importance of location and distance from the inhabitants (or bus stops where consumers get off from work on their way home). Eldoret is spread out and there are still several neighborhoods that could be reached. This will also help increase Tarakwo's notoriety;
- In terms of notoriety, Tarakwo could also work on its image as consumers tend to consider it is one more "milk company" rather than a collective of farmers;
- One of Tarakwo's strengths is its farmers and the fact that it pays them well and supports them creating loyalty and helping to increase their yield. At the same time, it still experiences challenges in sourcing its milk in the dry season. Thus, it is particularly important that all the programmes to support farmers continue, and where possible, increase and diversify;
- Tarakwo's policy to pay the farmers well is also a good way of ensuring their loyalty;
- With regards to weaknesses, Tarakwo will continue to have to manage very carefully its milk volumes during the dry season: any shortage in supply will be felt immediately by consumers and would be the only reason for which they would switch away from Tarakwo. Theses shortages (even temporary) could have serious consequences in loss of customers;
- Noting that Huruma currently sells 3% of Tarakwo's total volume and that yoghurt and mala are not likely to represent high volumes either, if Tarakwo were to decide to increase pasteurize milk volumes more significantly, it may wish to consider offering a slightly lower

price to large buyers (and letting them know of the possibility by reaching out to them). This could have as a positive impact to lessen the quantity and impact of questionable pasteurized milk being sold in Eldoret). However, this would have to be deliberated carefully given Tarakwo's still existing uncertainties in supply, especially in the dry season, and its contracts with the processors;

8. APPENDIX

8.1. TARAKWO CONSUMERS

Table 37 – What means of transportation do you use to get to your milk shop/vendor? (consumer survey, number of respondents)

	Huruma (intervention market, N=254)	Langas (control market, N=286)	Tarakwo ATM in Huruma (POS, N=203)	Tarakwo ATM in Eldoret Centre (POS, N=41)	Chi square P-value
	Count	Count	Count	Count	
On foot	224	242	180	28	<0.001
By bus /minibus	5	7	3	8	
With my bicycle	10	12	11	0	
With my motorcycle	8	11	6	2	
With my own car	5	5	3	2	
By moto-taxi/bicycle taxi	0	3	0	1	
By taxi (car)	0	1	0	0	
Supplied to me	2	5	0	0	
Other	0	0	0	0	

Figure 57 – People getting to their market/shop by foot (consumer survey, percentage of respondents)

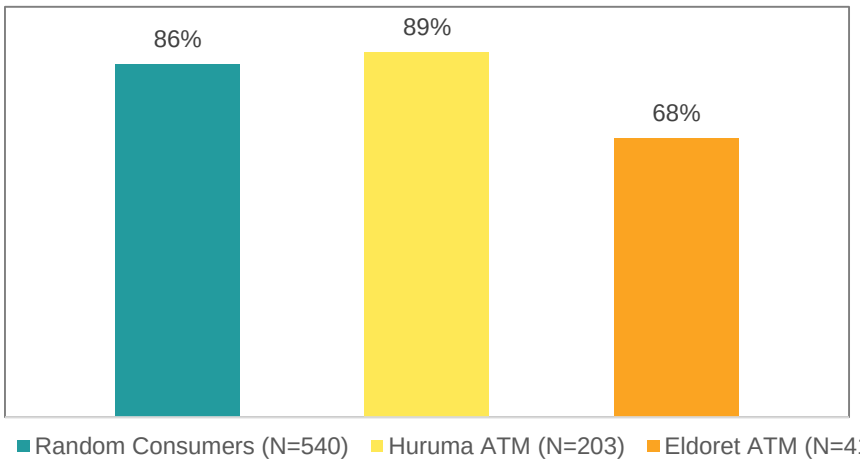


Table 38 – How long have you been buying milk here? (consumer survey, number of POS respondents)

		Huruma POS	Eldoret POS
		Count	Count
It is the first time		**1**	**0**
A few days		**2**	**3**
A few days: Specify days	2	0	2
	5	1	1
	20	1	0
A few weeks		**17**	**4**
A few weeks: Specify weeks	2	5	1
	3	6	3
	4	4	0
	5	1	0
	7	1	0
A few months		**178**	**34**
A few months: Specify Months	1	18	2
	2	1	0
	2	36	5
	3	41	4
	4	24	1
	5	24	2
	6	12	4
	7	4	1
	8	4	0
	9	5	0
	10	1	0
	11	1	0
	12	6	12
	18	0	1
	19	1	0
	24	0	1
	30	0	1
Do not know		**5**	**0**

Table 39 – How has your frequency of milk purchasing evolved since you stared to buy from this shop? (consumer survey, number of respondents)

	Consumers POS (N=244)	Huruma POS (N=203)	Eldoret POS (N=41)
	Count	Count	Count
Dramatically increased	34	29	5
Increased a bit	131	113	18
Stayed the same	73	59	14
Decreased a bit	6	2	4
Dramatically decreased	0	0	0
Do not know	0	0	0

8.2. PURCHASING AND CONSUMPTION HABITS

Table 40 – What types of milk have you bought in the last 30 days? (consumer survey, number of respondents)

	Huruma (intervention market, N=254)	Langas (control market, N=286)	Tarakwo ATM in Huruma (POS, N=203)	Tarakwo ATM in Eldoret centre (POS, N=41)	Chi square P-value
	Count	Count	Count	Count	
Raw milk	188	232	31	10	<0.001
Pasteurized ATM milk	104	56	190	33	<0.001
Mala	39	66	18	4	<0.001
Packed milk	60	67	19	6	<0.001
Yoghurt	22	48	12	2	<0.001
Other	0	0	0	0	N/A

Figure 58 – What types of milk have you bought in the last 30 days? (consumer survey, percentages of respondents)

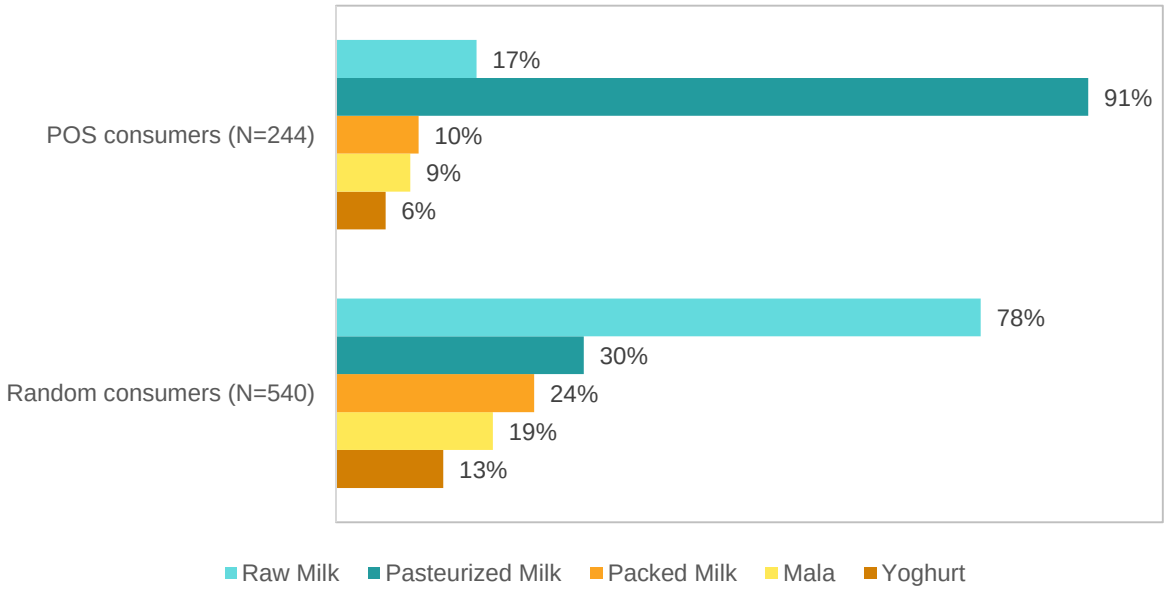


Table 41 – How do you and your family consume milk? (consumer survey, number of respondents)

	Huruma (intervention	Langas (control	Tarakwo ATM in	Tarakwo ATM in Eldoret centre

	market, N=254)	market, N=286)	Huruma (POS, N=203)	(POS, N=41)
	Count	Count	Count	Count
We drink it on its own	145	193	143	23
We make tea with it	246	276	193	36
We use milk for cooking	38	28	22	5
We use the cream of the milk for cooking)	43	43	14	8
We drink milk with food	60	43	27	8
Other	1	7	1	0

	Huruma (intervention market, N=254)	Langas (control market, N=286)	Tarakwo ATM in Huruma (POS, N=203)	Tarakwo ATM in Eldoret centre (POS, N=41)
	Count	Count	Count	Count
Other[79]	253	279	202	41
(1) add as flavour when I'm blending juice	0	1	0	0
(2) at times we bake using milk	0	1	0	0
(3) at times we make mala with it	0	1	0	0
(4) baking using milk	0	1	0	0
(5) make mala out of it	0	1	0	0
(6) making child porridge	0	0	1	0
(7) making mala	1	1	0	0
(8) use the cream to make home-made butter	0	1	0	0

Table 42 – Ways in which people consume milk (consumer survey, percentage of respondents)

	Random consumers (N=540)	POS consumers (N=244)	Chi square P-value
We make tea with it	97%	94%	0.069
We drink it on its own	63%	68%	0.141
We drink it with food	19%	14%	0.107
We use the cream for cooking	17%	9%	0.005
We use milk for cooking	13%	11%	0.608

[79] Answers (1), (2), (4) and (6) have been computed as "We use the milk for cooking". Answers (3), (5), (7) and (8) have been computed as "We use the cream for cooking".

Figure 59 – Do you buy milk to consume right away and/or later? (consumer survey, percentage of respondents)

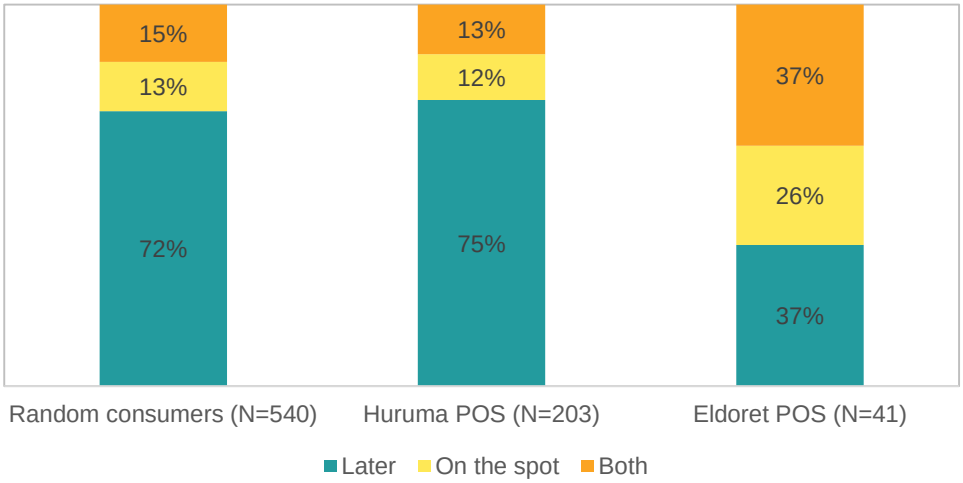


Table 43 – Do you buy milk to consume right away and/or later? (consumer survey, number of respondents)

	Huruma (intervention market, N=254)	Langas (control market, N=286)	Tarakwo ATM in Huruma (POS, N=203)	Tarakwo ATM in Eldoret centre (POS, N=41)	Chi square P-value
	Count	Count	Count	Count	
Both	31	47	27	15	N/A
Later	188	202	152	15	0.080
Right away	35	37	24	11	<0.001

Table 44 – In the past two weeks, how often have you bought raw milk? (consumer survey, percentage of respondents who buy raw milk)

Raw milk	Random consumers (N=375)		POS consumers (N=37)	
	%	Times per	%	Times per
At least every day	84%	1.2 (day)	57%	1.2 (day)
At least once per week	12%	3.1 (week)	32%	2.5 (week)
Less than once a week/per two weeks	3%	1 (fortnight)	11%	1 (fortnight)
Special occasions/per year	1%	1.8 (year)	0%	0 (year)
Average		**1.1 times per day**		**0.8 times per day**

Table 45 – In the past two weeks, how often have you bought pasteurized milk? (consumer survey, percentage of respondents who buy pasteurized milk)

Pasteurized milk	Random consumers (N=132)		POS consumers (N=192)	
	%	Times per	%	Times per
At least every day	52%	1.4 (day)	86%	1.3 (day)
At least once per week	22%	2.9 (week)	13%	2.9 (week)
Less than once a week /per two weeks	14%	1 (fortnight)	1%	1 (fortnight)
Special occasions /per year	12%	1.6 (year)	1%	3 (year)
Average		**0.8 times per day**		**1.2 times per day**

Table 46 – How often consumers buy milk to consume "on the spot" (consumer survey, percentage of respondents)

	Random consumers (N=150)		POS consumers (N=77)	
	%	Times per…	%	Times per…
At least every day	76%	1.4 (day)	68%	1.5 (day)
At least once per week	21%	2.8 (week)	30%	2.9 (week)
Less than once a week/per two weeks	2%	1.0 (fortnight)	1%	1.0 (fortnight)
Special occasions/per year	1%	6.5 (year)	1%	1.0 (year)
Average		**1.1 times per day**		**1.1 times per day**

Table 47 – Average consumption for "on the spot" consumers (consumer survey, mean)

POS consumers (N=77)		Huruma random (N=66)		Langas random (N=84)	
Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
39	29	47	33	52	26

Table 48 – Do you drink the milk you buy on the spot? Gender (consumer survey, number of respondents)

	Random consumers (N=540)		POS Consumers (N=244)	
	Male	Female	Male	Female
	Count	Count	Count	Count
On the spot	103	47	53	24
Later	250	218	92	117

Table 49 – What properties are important when choosing which milk to buy? (consumer survey, percentage of respondents)

	Huruma random			Langas random			POS consumers			Chi square P-value		
	1st reason (N=254)	2nd reason (N=213)	3rd reason (133)	1st reason (N=283)	2nd reason (N=160)	3rd reason (N=56)	1st reason (N=244)	2nd reason (N=200)	3rd reason (N=119)	1st reason	2nd reason	3rd reason
Freshness	32%	32%	13%	48%	14%	23%	45%	30%	8%	<0.001	<0.001	0.001
Taste	9%	20%	27%	16%	27%	16%	12%	21%	31%			
Price	22%	11%	12%	12%	16%	20%	16%	10%	8%			
Nutritional value/ good for health	19%	10%	17%	5%	4%	7%	11%	11%	16%			
Easy to find/availability	7%	12%	14%	1%	2%	4%	3%	15%	16%			
Thickness (cream)	7%	8%	5%	4%	14%	5%	6%	5%	5%			
Origin of the product/ I like knowing where it comes from	1%	3%	6%	1%	1%	2.25%	0%	1%	2%			
Brand	1%	1%	3%	0.5%	4%	2.25%	3%	2%	2%			
Pasteurization	0%	1%	2%	1%	2%	5%	2%	3%	3%			
Cold temperature	2%	1%	0%	1%	3%	2.25%	2%	1%	3%			
Quality	0%	0%	0%	8%	9%	2.25%	0%	0%	0%			
Uniform consistency	0%	1%	0%	2%	5%	5%	0%	1%	3%			
Small quantity available	0%	0%	1%	0.5%	0%	5%	0%	0%	3%			

Table 50 – Among the properties of milk you just mentioned, which one is the most important one when you buy milk?[80] (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
	Count	Count	Count	
Price	10	18	29	<0.001
Cold temperature	2	1	2	
Freshness	129	104	131	
Availability	8	14	4	
Taste	26	33	47	
Nutritional value	45	57	10	
Origin of the product	2	4	0	
Brand	1	2	1	
Pasteurization	5	1	1	
Thickness (cream)	14	17	11	
Uniform consistency	1	1	7	
Small quantity available	1	0	0	
Other specify	0	2	43	

Table 51 – Among the properties of milk you just mentioned, which one is the most important one when you buy milk? (consumer survey, percentage of respondents)

	Random consumers (N=483)	POS consumers (N=233)	Chi square P-value
Freshness	48%	53%	<0.001
Taste	16%	11%	
Nutritional value	14%	18%	
Price	10%	4%	
Thickness	6%	6%	
Availability	4%	3%	
Uniform consistency	2%	0%	

[80] Only the categories with significant percentages are shown in table 15. “Other” answers are split into a multitude of categories, not representing significant percentages either.

Table 52 – What are the main reasons for which you choose this shop/vendor rather than another to buy milk?[81] (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value	Consumers random (N=540)
	Count	Count	Count		Count
Milk is cheaper at this shop/vendor than at others	6	18	9	<0.001	27
Milk looks better here	24	20	51		71
Milk is of better quality here	148	142	102		244
Milk is more available here than elsewhere	7	19	13		32
I can buy cold milk here	14	1	4		5
I know some of the milk vendors here personally	2	5	9		14
I know the origin of the milk sold at this shop/vendor	2	13	8		21
I can buy other products/dairy products (other than milk) from this shop/vendor	0	4	2		6
This shop/vendor is the closest to my home	6	9	18		27
This shop is clean	20	19	43		62
I want pasteurized ATM milk	10	3	0		3
My friends come here	1	0	0		0
Other	4	1	27		28

Table 53 – What are the main reasons for which you choose this shop/vendor rather than another to buy milk? (consumer survey, percentage of respondents)

	Average POS consumers (N=244)	Average random consumers (N=540)	Random ATM consumers (N=388)[82]
Better quality	61%	45%	54%
Clean shop	8%	12%	11%
Milk looks better	10%	13%	11%
Milk is more available	3%	6%	4%
Closest shop	3%	5%	4%
Milk is cheaper	3%	5%	3%

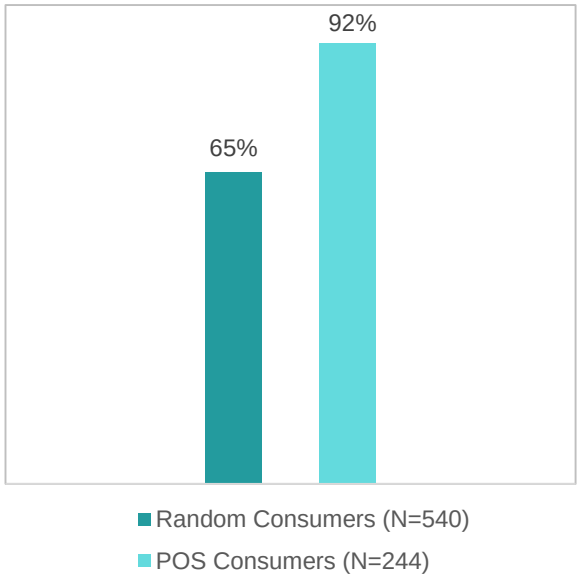
Table 54 – Do you always buy from the same shop/vendor? (consumer survey, number of respondents)

[81] Only the categories with significant percentages are shown in table 16. "Other" answers are split into a multitude of categories, not representing significant percentages either.

[82] "Random ATM customers" are random consumers who answered that they mostly get milk from an ATM.

	Huruma (intervention market, N=254)	Langas (control market, N=286)	Tarakwo ATM in Huruma (POS, N=203)	Tarakwo ATM in Eldoret centre (POS, N=41)	Chi square P-value
	Count	Count	Count	Count	
Do you always buy milk from the same shop/vendor?	165	187	193	32	<0.001

Figure 60 – Do you always buy from the same shop/vendor? (consumer survey, percentage of respondents)



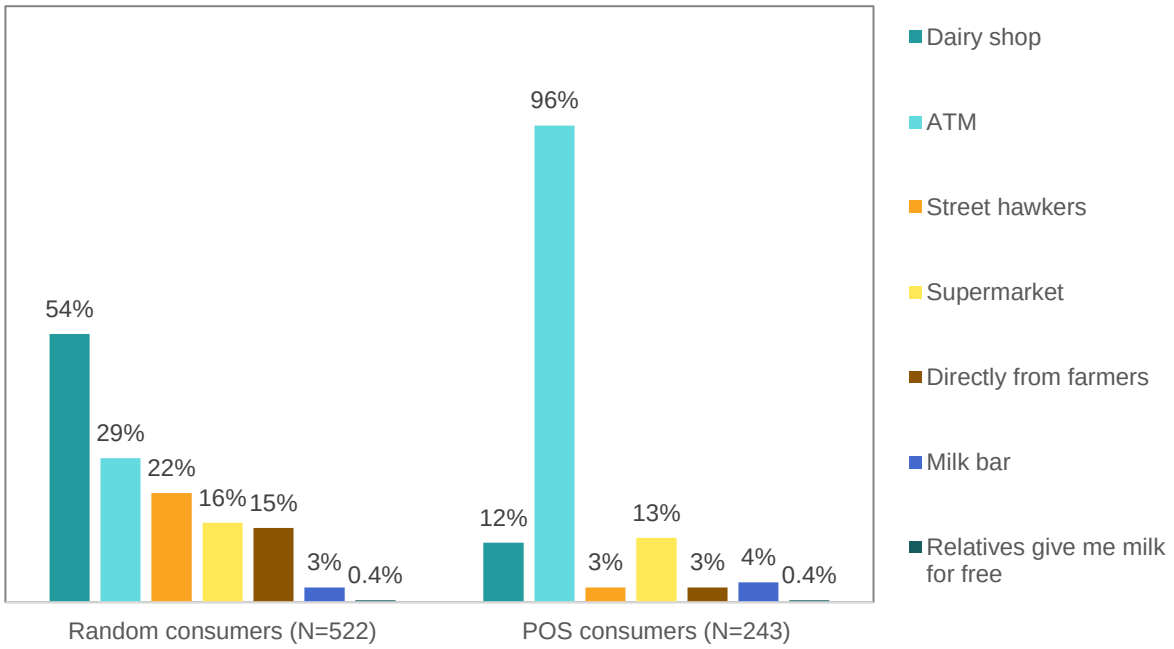


Figure 61 – Where do you most often get milk from? (consumer survey, percentage of respondents) [83]

Table 55 – Where do you most often get milk from? (consumer survey, number of respondents)

	Huruma (intervention market, N=254)	Langas (control market, N=286)	Tarakwo ATM in Huruma (POS, N=203)	Tarakwo ATM in Eldoret centre (POS, N=41)	Chi square P-value
	Count	Count	Count	Count	
Milk ATM	108	47	199	34	<0.001
Dairy shops	134	155	21	7	<0.001
Supermarket	42	46	24	7	0.487
Street hawkers	52	68	6	0	<0.001
Milk bars	6	12	1	0	0.046
Directly from farmers	34	48	2	4	<0.001
Friends and relatives give me some milk for free	0	2	0	1	0.070
I exchange milk against other products/services	0	0	0	0	
Other	0	18	1	0	
Specify	254	268	202	41	<0.001
duka	0	2	0	0	
shop	0	2	0	0	
shops	0	14	1	0	

[83] Excludes answers “other”.

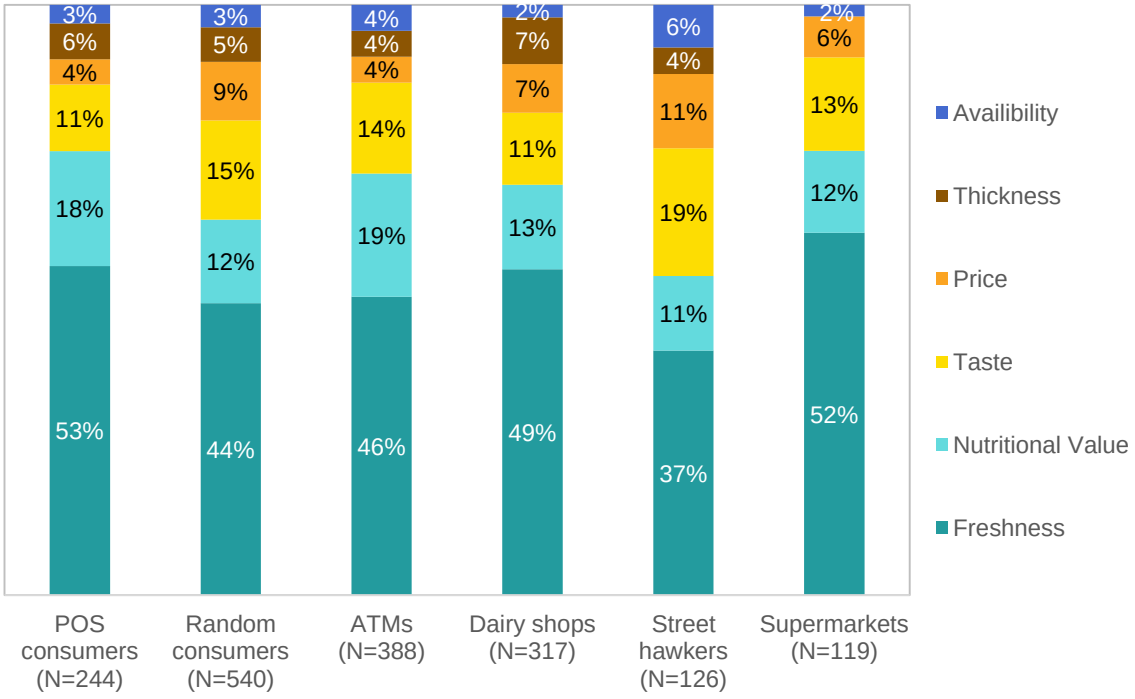
Table 56 – Where do you most often get milk from? (consumer survey, percentage of respondents)

	Dairy shop	ATM	Street hawkers	Supermarket	Directly from farmers	Milk bar	Relatives give me milk for free
Huruma random (N=254)	53%	43%	20%	17%	13%	2%	0%
Langas random (N=268)	58%	18%	25%	17%	18%	4%	0.70%
POS consumers (N=243)	12%	96%	3%	13%	3%	4%	0.40%
Chi square P-value	<0.001	<0.001	<0.001	0.426	<0.001	0.018	0.420

Table 57 – Where do you most often get milk from? What are the main reasons for which you choose this shop/vendor rather than another to buy milk? (consumer survey, percentage of respondents)

	Milk ATM	Dairy shop	Supermarket	Street hawkers	Milk bar	Directly from farmers	Friends and relatives give me some milk for free	I exchange milk against other products/services	Other: specify		
									duka	shop	shops
	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count
Price	17	23	7	14	0	7	0	0	0	1	1
Cold temperature	4	1	1	1	0	0	0	0	0	0	0
Freshness	179	154	62	46	14	34	2	0	2	0	2
Easy to find/availability	16	6	2	8	0	2	0	0	0	0	0
Taste	56	34	16	24	0	7	1	0	0	0	2
Nutritional value/ good for health	75	40	14	14	2	12	0	0	0	0	0
Origin of the product/ I like knowing where it comes from	3	1	0	2	0	2	0	0	0	0	0
Brand	1	3	2	0	0	0	0	0	0	0	0
Pasteurization	6	1	1	1	0	0	0	0	0	0	1
Thickness (cream)	17	22	0	5	1	9	0	0	0	0	2
Uniform consistency	3	7	1	3	0	2	0	0	0	0	0
Small quantity available	1	0	0	0	0	0	0	0	0	0	0

Figure 62 – Where do you most often get milk from? What are the main reasons for which you choose this shop/vendor rather than another to buy milk? (consumer survey, percentage of respondents)



8.3. CONSUMPTION HABITS PER LEVEL OF INCOME

Table 58 – What type of milk do you prefer buying? (consumer survey, percentage of respondents)

	Huruma Random							Langas Random						
	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES
Number of respondents	34	65	40	28	36	18	4	31	69	35	29	19	20	13
Raw milk	59%	71%	82%	61%	69%	67%	100%	81%	75%	74%	72%	58%	100%	77%
Pasteurized ATM milk	41%	29%	18%	39%	31%	33%	0%	19%	25%	26%	28%	42%	0%	23%

Table 59 – What types of milk have you bought in the last 30 days? (consumer survey, percentage of respondents)

	Huruma Random							Langas Random						
	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES
Number of respondents	34	65	40	28	36	18	4	31	69	35	29	19	20	13
Raw milk	71%	74%	88%	75%	81%	72%	75%	94%	77%	80%	76%	63%	95%	85%
Pasteurized ATM milk	47%	29%	35%	43%	50%	44%	25%	26%	17%	20%	24%	26%	20%	15%
Mala	21%	15%	13%	25%	17%	11%	0%	32%	19%	34%	17%	11%	40%	39%
Packed milk	12%	25%	18%	36%	36%	28%	25%	19%	29%	37%	14%	26%	15%	39%

Table 60 – How does your consumption of milk differ during the dry season compared to the rainy season? (consumer survey, percentage of respondents)

	Huruma Random							Langas Random						
	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES
Number of respondents	34	65	40	28	36	18	4	31	69	35	29	19	20	13
I drink more milk during the dry season	9%	6%	5%	11%	3%	29%	25%	3%	4%	3%	4%	16%	5%	0%
I drink less milk during the dry season	62%	63%	65%	61%	56%	55%	25%	74%	57%	60%	62%	63%	50%	54%
I buy my milk from different shops/markets	18%	6%	8%	0%	5%	0%	0%	7%	3%	6%	0%	5%	15%	0%
I buy a different type of milk during the dry season	0%	0%	2%	0%	5%	0%	0%	6%	4%	0%	10%	0%	5%	15%
My consumption of milk is the same during both seasons	12%	25%	20	28%	31%	16%	50%	10%	32%	31%	24%	16%	25%	31%

Table 61 – Do you buy milk to consume right away and/or later? You can choose several occasions. (consumer survey, percentage of respondents)

	Huruma Random							Langas Random						
	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	34	65	40	28	36	18	4	31	69	35	29	19	20	13
Right away	47%	23%	18%	32%	19%	33%	50%	29%	23%	31%	41%	32%	35%	23%
Later	68%	92%	85%	79%	97%	94%	75%	84%	90%	89%	86%	90%	95%	92%

Table 62 – What is the most important factor for you when buying milk? (consumer survey, percentage of respondents)

	Huruma Random	Langas Random

	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES	< 5,000 KES	5,001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 - 50,000 KES	> 50,000 KES
Number of respondents	34	64	40	28	36	17	4	31	59	26	25	18	15	9
Price	9%	9%	5%	7%	3%	0%	25%	19%	14%	19%	8%	11%	7%	0%
Cold temperature	0%	2%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Freshness	32%	36%	37%	54%	53%	59%	25%	55%	56%	46%	60%	39%	47%	22%
Easy to find/availability	6%	5%	7%	11%	6%	0%	0%	0%	3%	0%	0%	5%	0%	0%
Taste	23%	11%	7%	7%	17%	6%	0%	23%	17%	19%	32%	22%	13%	22%
Nutritional value	21%	28%	25%	14%	19%	23%	25%	3%	2%	4%	0%	6%	20%	11%
Origin of the product	0%	2%	3%	0%	0%	6%	25%	0%	0%	0%	0%	0%	0%	0%
Brand	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%
Pasteurization	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Thickness (cream)	9%	6%	13%	7%	3%	6%	0%	0%	3%	4%	0%	11%	13%	0%
Uniform consistency	0%	2%	0%	0%	0%	0%	0%	0%	0%	8%	0%	0%	0%	44%
Small quantity available	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

8.4. DESIRABILITY OF PASTEURIZED MILK

Table 63 – What type of milk do you prefer to buy? (consumer survey, percentage of respondents)

	Consumers POS (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value	Consumers random (N=540)
	Count	Count	Count		Count
Raw milk	12	172	224	<0.001	396
Pasteurized ATM milk	232	82	62		144

8.5. AFFORDABILITY OF PASTEURIZED MILK

Table 64 – How has the price of pasteurized ATM milk on this market / area evolved since this time last year? (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)
	Count	Count	Count
Dramatically increased	4	6	6
Increased	109	97	132
Stayed the same	54	77	42
Decreased	72	43	22
Dramatically decreased	2	3	2
I don't consume	0	0	0
Do not know	3	28	82

Table 65 – How has your consumption of pasteurized ATM milk evolved since this time last year? (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
	Count	Count	Count	
Dramatically increased	38	12	4	<0.001
Increased	166	85	48	
Stayed the same	34	39	52	
Decreased	5	49	73	
Dramatically decreased	0	17	14	
I don't consume	1	48	86	
Do not know	0	4	9	

Table 66 – How has the price of raw milk on this market / area evolved since this time last year? (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
	Count	Count	Count	
Dramatically increased	0	6	14	<0.001
Increased	90	134	167	
Stayed the same	56	36	27	
Decreased	81	69	59	
Dramatically decreased	4	7	3	
I don't consume	0	0	0	
Do not know	13	2	16	

Table 67 – How has your consumption of raw milk evolved since this time last year? (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
	Count	Count	Count	
Dramatically increased	4	6	6	<0.001
Increased	109	97	132	
Stayed the same	54	77	42	
Decreased	72	43	22	
Dramatically decreased	2	3	2	
I don't consume	0	0	0	
Do not know	3	28	82	

8.6. AVAILABILITY AND EASE OF ACCESS OF PASTEURIZED MILK

Table 68 – Do you think that there has been an increase in the availability of milk on this market / area over the last year? (consumer survey, number of respondents)

	POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
	Count	Count	Count	
Strongly agree	36	26	22	<0.001
Agree	157	140	147	
Disagree	40	77	95	
Strongly disagree	1	8	17	
Do not know	10	3	5	

Table 69 – Would you say that there is more pasteurized ATM milk than this time last year? (consumer survey, number of respondents)

POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
Count	Count	Count	
238	218	229	<0.001

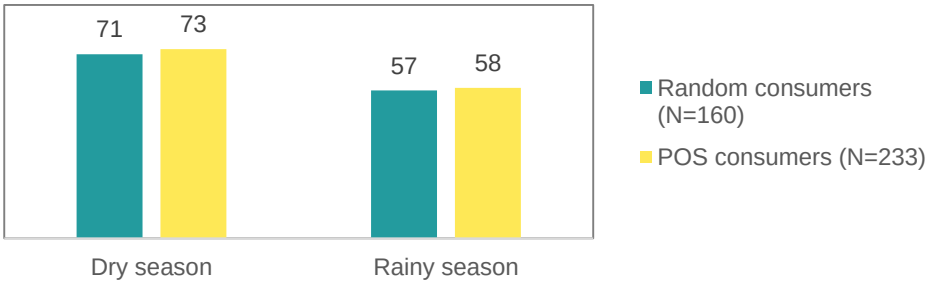
Table 70 – For each of the two seasons of the year (dry and rainy), can you please tell me how available pasteurized ATM milk is on this market/area? (consumer survey, number of respondents)

		POS consumers (N=244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value
		Count	Count	Count	
Dry season	Very available	12	23	14	0.001
	Available	148	122	148	
	Not very available	78	86	93	
	Not available at all	2	13	9	
	Do not know	4	10	22	
Rainy season	Very available	149	126	146	0.001
	Available	92	116	114	
	Not very available	1	2	6	
	Not available at all	0	0	0	
	Do not know	2	10	20	

Table 71 – How much do you usually pay per liter of pasteurized milk you are buying? (consumer survey, mean)

	POS consumers (N=233)		Huruma Random (N=104)		Langas Random (N=56)		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Chi square P-value
Dry season	73	8	73	9	67	12	<0.001
Rainy season	58	5	57	7	55	9	<0.001

Figure 63 – How much do you usually pay per liter of pasteurized milk you are buying? (consumer survey, mean)



8.7. QUALITY, SAFETY AND CONVENIENCE OF PASTEURIZED MILK

Table 72 – According to you, what type of milk has…? (consumer survey, number of respondents)

		Consumers random (N=540)	POS consumers (N)244)	Huruma Random (N=254)	Langas Random (N=286)	Chi square P-value[84]
		Count	Count	Count	Count	
Has a longer shelf life/conservation	Raw milk	135	15	55	80	<0.001
	pasteurized ATM milk	405	229	199	206	
Has less bacteria	Raw milk	137	14	55	82	<0.001
	pasteurized ATM milk	403	230	199	204	
Is more hygienic	Raw milk	128	3	44	84	<0.001
	pasteurized ATM milk	412	241	210	202	
Tastes better	Raw milk	254	16	107	147	<0.001
	pasteurized ATM milk	286	228	147	139	

8.8. PERCEPTIONS OF AVAILABILITY AND AFFORDABILITY AMONG POS CONSUMERS (PER LEVEL OF INCOME)

Table 73 – Do you agree with the following statement: availability of milk on this market/area has increased compared to the same time last year? (consumer survey, number of POS consumers)

	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	16	42	34	28	26	21	5
Strongly agree	1	9	7	4	2	4	1
Agree	14	23	25	22	13	14	4
Disagree	1	9	2	2	11	3	0
Strongly disagree	0	1	0	0	0	0	0

Table 74 – In the dry season, can you tell me how <u>available</u> pasteurized milk ATM is on this market/area? (consumer survey, number of POS consumers)

	Less than 5,000	5,0001 – 10,000	10,001 – 15,000	15,001 – 20,000	20,001 – 25,000	25,001 – 50,000	More than 50,000 KES

[84] P-value concerns the variable "POS/Huruma random/Langas random" in columns.

	KES	KES	KES	KES	KES	KES	
Number of respondents	17	42	34	29	26	23	5
Very available	0	1	1	0	3	2	0
Available	11	20	20	22	18	14	4
Not available	6	21	12	7	5	7	1
Not available at all	0	0	1	0	0	0	0

Table 75 – In the rainy season, can you tell me how available pasteurized milk ATM is on this market/area? (consumer survey, number of POS consumers)

	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	18	43	34	29	26	23	5
Very available	11	29	22	25	12	16	3
Available	7	14	11	4	14	7	2
Not available	0	0	1	0	0	0	0
Not available at all	0	0	0	0	0	0	0

Table 76 – In the dry season, can you tell me how affordable pasteurized milk ATM is on this market/area? (consumer survey, number of POS consumers)

	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	17	42	35	29	26	23	5
Very affordable	0	2	1	0	2	0	0
Affordable	11	22	24	20	16	15	2
Not affordable	6	18	10	7	8	7	3
Not affordable at all	0	0	0	2	0	1	0

Table 77 – In the rainy season, can you tell me how affordable pasteurized milk ATM is on this market/area? (consumer survey, number of POS consumers)

	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	18	42	35	29	26	23	5

Very affordable	8	27	20	22	11	16	1
Affordable	10	15	15	7	15	7	4
Not affordable	0	0	0	0	0	0	0
Not affordable at all	0	0	0	0	0	0	0

Table 78 – Thinking about the same time last year, can you please tell me how the price of pasteurized ATM milk has evolved on this market/area? (consumer survey, number of POS respondents)

	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	16	43	35	29	25	23	5
Dramatically increased	0	0	0	1	0	0	0
Increased	10	15	15	21	15	11	2
Stayed the same	3	15	9	3	3	5	3
Decreased	3	13	10	4	7	6	0
Dramatically decreased	0	0	1	0	0	1	0

Table 79 – Thinking about the same time last year, can you please tell me how your consumption of pasteurized ATM milk has evolved? (consumer survey, number of POS respondents)

	Less than 5,000 KES	5,0001 – 10,000 KES	10,001 – 15,000 KES	15,001 – 20,000 KES	20,001 – 25,000 KES	25,001 – 50,000 KES	More than 50,000 KES
Number of respondents	17	43	35	29	26	23	5
Dramatically increased	0	6	8	9	5	5	1
Increased	16	30	20	17	17	14	4
Stayed the same	1	7	7	2	3	3	0
Decreased	0	0	0	1	1	1	0
Dramatically decreased	0	0	0	0	0	0	0

8.9. MILK VENDORS

Table 80 – What products do you sell? (vendor survey, number of respondents)

	Intervention	Control	POS	Chi square P-value
	Count	Count	Count	
Raw milk	16	28	0	0.040

Pasteurized ATM milk		5	4	2	0.006
Mala		9	16	2	0.275
Packed milk		6	18	0	0.096
Yoghurt		4	13	2	0.037
Biscuits		2	10	0	0.158
Other		0	5	0	0.154
Specify:		22	30	2	0.958
	cakes	0	1	0	
	foodstuffs e.g. biscuits, flour, eggs, etc	0	1	0	
	it's a shop so it sells almost all products, i.e. sweets, cakes, charcoal, mandazi, bread, sugar, salt, diapers, flour (porridge),	0	1	0	
	shop products	0	1	0	
	shop products	0	1	0	

Table 81 – Do you have one or several suppliers of milk? (vendor survey, number of respondents)

		Count
Do you have one or several suppliers of milk?	One	38
	Several	21

Table 82 – Where do you most often get your milk? (vendor survey, number of respondents)

	Dry season	Rainy season
Directly from farmers/producers	28	30
From wholesalers who buy it from producers in the surrounding areas	25	21
From wholesalers who bring it from far away / import it	3	3
From retailers	1	1
From my own /my family's farm	2	2
Other (specify):	0	2

Table 83 – Why do you have several suppliers? (vendor survey, number of respondents)

	Selling raw milk (N=17)	Chi square P-value	Selling pasteurized milk (N=5)	Chi square P-value
	Count		Count	
So that I do not run out of milk on a day-to-day	12	0.342	4	0.469
So that I can sell milk for longer periods throughout the year	8	0.422	0	0.027
So that I can buy different types of milk	3	0.364	2	0.060

So that I can be flexible and buy from whoever sells me the cheapest products		3	0.736	1	0.950
Other		0	0.035	0	0.567
Specify:		44	0.084	11	0.629
	competition	0		0	

Table 84 – What criteria do you consider when choosing your supplier(s) of milk? (vendor survey, number of respondents)

		Intervention (N=22)	Control (N=35)	POS (N=2)	Chi square P-value
		Count	Count	Count	
Lower price	Yes	11	16	1	0.949
The milk is fresher	Yes	16	21	1	0.565
The milk is more available	Yes	4	12	1	0.339
The milk tastes better	Yes	3	6	0	0.778
I know the supplier personally	Yes	3	6	0	0.778
I know the origin of the milk	Yes	1	4	0	0.601
It is close to my shop	Yes	0	1	0	0.706
The warehouse is clean	Yes	1	5	2	0.001
The supplier is nice	Yes	1	2	0	0.928
The supplier alerts me when he has fresh products	Yes	0	0	0	N/A
The supplier gives me discount	Yes	0	0	0	N/A
Quality of the milk	Yes	1	3	0	0.780
The supplier sells the types of products I want to sell	Yes	1	2	0	0.928
Other	Yes	1	1	0	0.909
Specify:		21	34	2	0.667
	If the milk sours, we share the loss	1	0	0	
	quantity	0	1	0	

Table 85 – Why don't you (currently) sell Tarakwo milk? (vendor survey, number of respondents)

	Intervention (N=11)	Control (N=13)	Chi square P-value
	Count	Count	
Tarakwo milk is too expensive	1	1	0.902
I already have (an)other supplier(s) of milk	8	5	0.093
My customers do not like Tarakwo milk	0	0	N/A
My customers prefer raw milk	0	1	0.347
Tarakwo milk is not fresh	1	0	0.267
Tarakwo milk does not taste good	0	0	N/A
I do not know anyone from Tarakwo personally	1	2	0.642

I have a troubled relationship with the owner		0	0	N/A
Tarakwo does not deliver to my shop/stall		3	3	0.813
Tarakwo's supply is too variable (they often run out of milk) on a daily basis		0	0	N/A
I sell my own / my family's milk		0	1	0.347
I sell my friend's milk		0	0	N/A
I prefer to sell raw milk		1	0	0.267
I do not have the facilities required to sell Pasteurized ATM milk		0	0	N/A
Other		0	1	0.347
Specify:		22	34	
	I do not know Tarakwo milk	0	1	0.706

9. TABLES

10. Focus Boxes

11. FIGURES