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High Value Cheese Market Study Report



3R STRATEGY LLC Business & Investment Consulting



EUROPEAN NEIGHBOURHOOD PROGRAMME
FOR AGRICULTURE AND RURAL DEVELOPMENT

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LIST OF ABBREVIATIONS

AMD	Armenian Dram (national currency)
GEL	Georgian Lari (national currency)
RUB	Georgian Lari(national currency)
US\$	Unites States Dollar
GDP	Gross Domestic Product
MoA	Ministry of Agriculture
EEU	Eurasian Economic Union
ENPARD	European Neighborhood Programme for Agriculture and Rural Development
NGO	Non-Governmental Organization
SDA	Strategic Development Agency
USDA	United State Department of Agriculture
UNCCD	United Nations Convention to Combat Desertification
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNDP-CO	UNDP Country Office
UNEP	United Nations Environment Programme
HQ	Headquarter
USAID	United States Agency for International Development
WB	World Bank
LLC	Limited liability Company
CJSC	Close Joined Stock Company
SE	Sole Entrepreneur
HORECA	Hotels, Restaurants and Cafes
MCP	Milk Collection Point
HV cheese	High Value cheese

Program Background

With funding from the European Union, the European Neighborhood Programme for Agriculture and Rural Development (ENPARD) supports the Ministry of Agriculture of the Republic of Armenia in ensuring an efficient and sustainable agriculture that contributes to better living conditions in rural areas. The recent global financial crisis seriously undermined Armenia's economic growth and increased the poverty rate, leaving 32.4% of the population below the national poverty line (2012), most of who live in rural areas.

Under the framework of ENPARD, the EU Delegation to Armenia has requested UNIDO and UNDP to provide technical assistance for the development of producer groups and selected value adding chains. The Austrian Development Agency (ADA) has also provided the associated top-up funding for the implementation of this component.

The project is in line with the UN Development Assistance Framework (UNDAF) 2010-2015, the Millennium Development Goals, as well as the 2010-2020 Sustainable Agricultural Development Strategy of the Republic of Armenia¹. With regard to the latter, the strengthening of producer groups, the makes the case for assisting in the formation of cooperation between farmers and processing entities, assisting smallholders in the establishment of production that can more quickly adapt to changing markets. With respect to rural development, the government aims to create non - agricultural jobs and expand the share of non-agricultural incomes in rural areas. Main targets of government support to agro-processing and other value addition include the introduction of advanced technologies and the increased competitiveness of products.

The overall objective of the UNIDO and UNDP complementary support is threefold, namely (1) strengthening and newly establishing producer groups, (2) engaging producer groups effectively in value addition and (3) strengthening value chains that provide improved access to affordable, better quality food.

Aim and Approach of the Project

The project aims to strengthen producer groups, effectively engage producer groups in value addition activities, strengthen value chains that provide improved access to affordable, better quality food, contribute to the development of rural areas, improve access to local and international markets, and ensure the introduction of environmentally-friendly farming and food processing practices. To this end, the project will focus on improving primary production, value addition (to include product development), and marketing. The primary outcome of the project is to increase rural household incomes through increased production and value addition in targeted value chains and marzes.

¹Government of Armenia. 2010-2020 Sustainable Agricultural Development Strategy of the Republic of Armenia.

In addition, Armenian consumers will directly benefit as more products will be available nationally of a better quality and price. Furthermore, the project will promote exports which will lead to improved trade balances, a stronger currency, higher incomes, job creation, and resulting multipliers in the targeted components of the value chains.

The target direct beneficiaries of the project are the agricultural producers, members of producer groups and their employees, their families and SMEs along the value chains as well as Armenian consumers. The project also will focus on women, youth, and other vulnerable groups.

In essence UNIDO will be responsible for capacity strengthening, coaching, and the provision of machinery, equipment, and other inputs as part of pilot projects when producer groups are value addition related, and UNDP when the groups are commodity production and marketing related.

The Government stakeholder of the project is the Ministry of Agriculture. Implementation partners are, amongst other:

- Regional departments of agriculture, local authorities, and extension services;
- Non-governmental and other organizations and providers of advisory services engaged in agricultural, rural and agro-processing development; and
- Input providers and buyers of products of the targeted value chains.

Project coordination is undertaken by the Project Manager in Vienna HQ and a Project Coordinator (PC) in Armenia/ Yerevan.

In the framework of this project a value-chain analysis was conducted which identified High Value cheese as a high value product to be produced by Armenian farmers.

Assignment Purpose and Objectives

The purpose of the current study is to analyze the specific production and marketing characteristics of HV cheese, elements of the HV cheese value chain, including production costs, market size, and major constraints. It is expected that the analysis will enable a better understanding of the required support to the farmers. The research will also be beneficial for other HV cheese producing groups which applied for project support.

The objective of this assignment is to conduct **in depth market study of HV cheese** in Armenia, namely:

1. **HV cheese value chain diagnostic:** Develop a diagnostic study of HV cheese in Armenia, gathering information on the firm and marz level regarding types of HV cheese, sales, seasonal price fluctuations, technology used, food safety standards applied, marketing constraints, average production costs and net margins. The diagnostic includes a final section on major limitations with regard to procurement, technology and marketing.

2. **Armenian market study:** Develop a market study on HV cheese and related products in Armenia. This involves collecting information on:
 - The sales channels of HV cheese in Armenia,
 - An estimation of the volumes of sales,
 - Origin of HV cheese and related products,
 - Wholesale and retail prices,
 - Purpose of use, e.g. cooking, fresh consumption, etc.,
 - An evaluation of consumer preferences,
 - An overall evaluation of sales potentials.

3. **Export market study:** Identify the most promising export markets for HV cheese and related products from Armenia. Develop a market study of these products targeting Georgia and Russia, to involve collecting information on:
 - The types of HV cheeses and related products consumed in the target countries,
 - An estimation of the volumes of sales,
 - Origin of HV cheeses and related products product consumed in the countries,
 - An evaluation of consumer preferences
 - An overall evaluation of sales potentials.

Describe the main constrains of HV cheese export from Armenia to the targeted countries and the basic requirements for cheese import to the mentioned countries.

Product recommendations and marketing plan: Develop an overall recommendation on what HV cheese products the ENPARD supported cooperatives could produce and a local and export marketing strategy with specific contact and sales points for each. Identify what types of HV cheeses, what quantities and which packaging would sell at what price in the various sales channels (retail, wholesale) for HV cheese on the Armenian, and export markets.

Methodology

Data collection sources

To conduct HV cheese value chain diagnostic, the main actors of the value chain were identified and interviewed, using snowball techniques. HV cheese production chain was selected as a start point for collection of relevant information in terms of current research and identification of other value chain actors.

Thus, 14 HV cheese producers were interviewed from 7 marzes of Armenia (Aragatsotn, Shirak, Gegharkunik, Tavush, Lori, Vayots Dzor, Syunik) and Yerevan (see Annex 1, table 1).

The other sources of information for current survey were sector experts and representatives of organizations supporting HV cheese value chain (see Annex 1, table 2).

Besides above mentioned experts, unstructured interviews have been conducted with other local and international experts, who refused to publish their names within the scope of the survey.

Research team distinguished four groups of respondents *for implementation HV cheese market study*.

- HV cheese consumers (Population),
- HORECA institutions: restaurants and hotels,
- Retail trade points,
- HV cheese producers,
- Pastry workshops.

The survey was conducted in Yerevan and 10 marzes. The sample and geography of the researches is presented in tables below.

TABLE 1 SAMPLE AND GEOGRAPHY OF HV CHEESE MARKET STUDY

Marzes	HV cheese consumers	Hotels and restaurants	Retail trade points	Pastry workshops
Yerevan	198	19	10	6
Aragatsotn	10	2	1	
Ararat	20		1	
Armavir	20	1	1	
Gegharkunik	20	2	11	
Kotayk	33	2	1	
Lori	30	2	12	
Shirak	30	2	12	
Syunik	15	2	11	
Tavush	15	2	1	
Vayots Dzor	10	2	1	
Total	401	36	63	6

The other important source of information was the screening of major retailers in Yerevan, namely: SAS, Yerevan City, Nor Zovk and Kaiser Supermarkets.

Alongside with primary data received during the research, available secondary data was reviewed, such as official statistics of targeted countries, sector related reports, Armenian legislation, product requirements and quality standards, websites of foreign producers etc.

Data collection methods

The main methods for *primary data collection* were face-to-face structured and semi-structured and in-depth interviews with above-mentioned respondents. Interviews with almost all types of respondents were conducted by direct visits to their place. The sample of the survey included 401 respondents from Yerevan and 10 marzes, respondents/HV cheese consumers. The methodology of the survey and its sample size made it possible to get efficient and representative data.

To ensure the accuracy and efficiency of collected data the following actions were performed

- The schedule of fieldwork was designed including human, financial and time resources needed for implementation of the survey.
- The optimal maximum daily quantity of interviews was set per each interviewer to avoid overworking and to reduce the impact of human factor on quality of the survey.
- All interviewers and supervisors were trained on basic technique of survey conduction and content of the survey tool.
- Pilot interviews were conducted to explore the particular issues that might potentially have a negative impact on the survey results and to test the correctness of the instructions to be measured by whether all the respondents in the pilot sample are able to follow the directions as indicated.

Secondary data collection was conducted using desk research methodology from verified sources of information.

Data collection instruments

Several types of survey tools were designed for this research to enable sufficient primary data collection according to the ToR requirements. Taking into consideration the diversity of data collection sources and information needed for different sections of the research, separate questionnaires and guides were designed for each group of respondents. The list of survey tools used for data collection is presented below:

TABLE 2 LIST OF SURVEY TOOLS

Target groups	Survey tools	Number of Interviews
HV cheese producers	Semi-structured questionnaire	14
Retails trade points	Semi-structured questionnaire	63

HV cheese consumers (individuals/households)	Structured questionnaire	401/1065
HV cheese consumers (HORECA institutions)	Semi-structured questionnaire	36
Pastry workshops	Unstructured questionnaires	6
Sector experts and value chain supporting organizations	Unstructured questionnaires	5

401 HV cheese consumers/individuals took part in the survey. An overall evaluation of their preferences have been performed, which included an estimation of the volumes and frequency of their purchases, preferred types of HV cheeses, purposes of HV usage, etc.

Questionnaires were structured in a way to receive information about their family members' preferred types of HV cheeses. In the study were analyzed the results of those representatives of families (1065 in total) who consume/prefer "HV cheese".

Data processing and analyses

Data collected during the research was revised and encoded, where upon special databases were developed. Taking into consideration the structure of questionnaires and sample sizes of different respondent groups, the results of population survey were processed with SPSS software, while the data collected from other respondent groups (hotels and restaurants, bakeries, retails trade points, cheese producers and wholesalers) were combined and analyzed in Microsoft Excel software. To ensure the efficiency of analysis all available primary and secondary data were verified, validated and crosschecked.

Definition of high value cheese

In the framework of this study High Value cheeses have been examined for Armenian Market. Conventionally High value cheeses are considered the ones represented in the relatively high-price segment (compared with traditional local cheeses). In Armenian cheese market high value varieties are mostly of European origin (Gouda, Mozzarella, Roquefort, Emmental, etc.).

Origin of cheese

According to ancient records passed down through the centuries, cheese making dates back more than 4,000 years. The origin of cheese is assumed to lie in the practice of transporting milk in bladders made of ruminants' stomachs, with their inherent supply of rennet. There is no conclusive evidence indicating where cheese-making originated, either in Europe, Central Asia, the Middle East or Sahara. Cheese-making had spread within Europe at the earliest level of Hellenic myth and, according to Pliny the Elder, had become a sophisticated production by the time ancient Rome came

into being, when valued foreign cheeses were transported to Rome to satisfy the tastes of the social elite.

Cheese is a multifunctional food, nutritious, useful and rich in vitamins and proteins. It is suitable for different tastes, demanded by different age groups; it can be consumed in any quantity and event. Roquefort was also pointed out in the ancient records of the monastery at Conques, France as early as 1070. Cheddar dates back to about 1500 in England, while records show that Italy has been producing Parmesan since 1597. The resourceful Dutch have been making wheels of Gouda since 1697, and mild French Camembert dates from before 1791. Cheese-making continued to flourish in Europe and became an established food.

Regardless of regional variety, cheese is essentially water, lactose, fat, protein and minerals. The protein is whey, the liquid, and casein which makes up the bulk of cheese solids. Cheese can be made from the milk of just about any milk producing animal: from cow to camel, goat to sheep, water buffalo to yak.

In most countries, consumption of cheese has been on the rise over the past decades. Increasing evidence exists between the positive relationship of calcium consumption and prevention of disease such as osteoporosis. In addition, the increased availability and appreciation of specialty cheeses by those individuals willing to expand their culinary horizons has increased consumption of these types of products, along with the more common domestic cheeses.

Cheese has traditionally been the one of the most demanded products for Armenian consumers. Correspondingly, Armenia can be considered as a cheese consuming country, 2014 statistics shows that per capita annual cheese consumption was about 9.6 kg (9.5 kg in 2013). For comparison, in European countries that are traditionally classified as cheese consuming countries, cheese consumption per capita is quite high. The highest demand was recorded in European countries Greece, France and Iceland, where the annual consumption volume per capita amounted to 31 kg, 26 kg and 25 kg respectively.

Main types of high value cheese

Over 2,000 natural cheeses have been named and identified, including "original" cheeses, as well as "imitations" of originals. Establishing suitable criteria for cheese classification is difficult because of the wide variety of cheeses as well as the differences amongst various types of cheese. Methods of classification include systems based on method of processing, consistency (e.g., hard or soft cheeses), country of origin, general appearance, chemical analysis, microbiological properties and milk source used for cheese production.

Cheeses are normally classified according to hardness, which varies with the degree of moisture. The moisture content of hard cheeses may be as low as 30%, while that of soft or fresh cheeses may be as high as 80%.

One of the common classes of cheese includes:

- **Fresh (or unripened) cheeses.** Fresh or unripened cheeses are coagulated under the action of lactic acid fermentation in the milk instead of adding rennet. While they are drained after formation of the curd, they are neither ripened nor fermented. This category includes *cottage cheese*, *ricotta*, *mascarpone*, *cream cheese*, *mozzarella*, *suluguni*, *quark*. Fresh cheeses are mainly used in baking and desserts, plain or flavored with vegetables, fruits, herbs or spices. They have a moisture content of as low as 35%.



cottage cheese



mozzarella

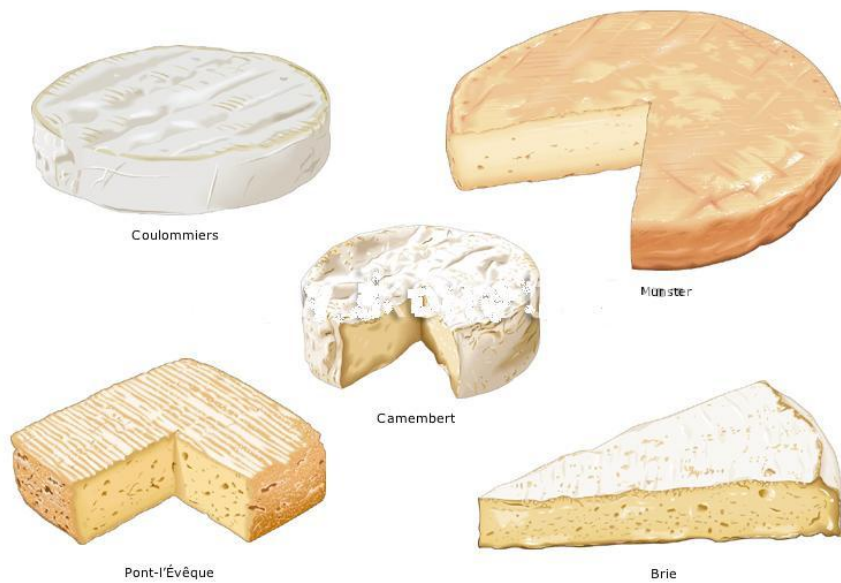


cream cheese

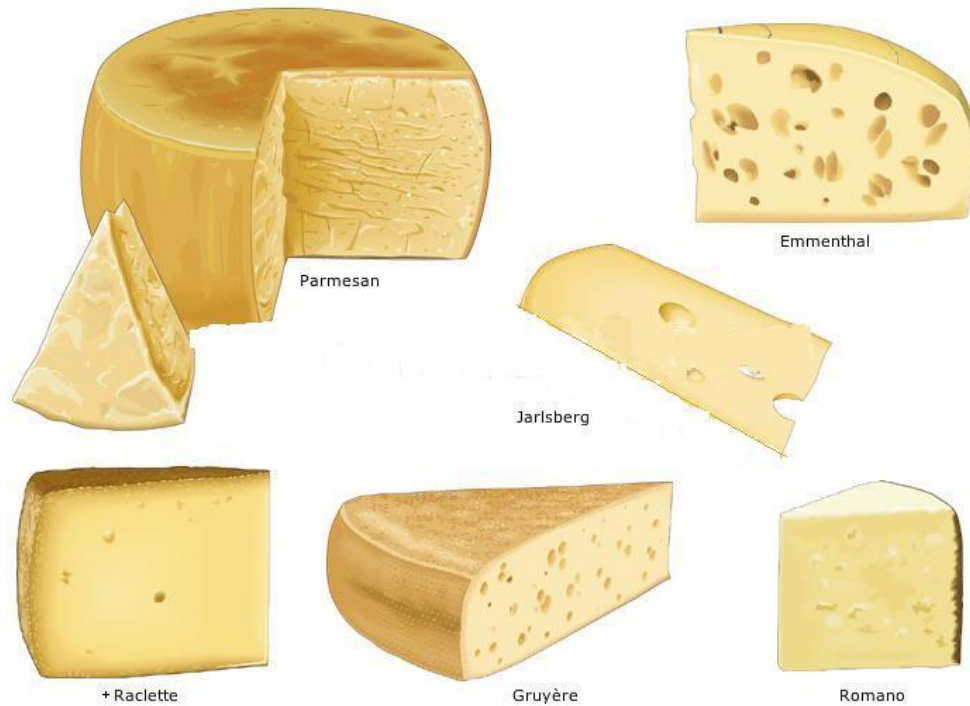


ricotta

- **Soft ripened cheeses.** Soft cheeses are ripened for a relatively short period of time before being drained and turned into molds without being pressed or cooked. They have a moisture content of up to 60% and their fat content represents 20% to 26% of the cheese's weight. They develop a soft rind that can be more or less satiny and are usually eaten with bread, since they tend to lose a lot of flavor when heated. Soft cheeses are divided into two categories according to the characteristics of the rind: the surface-ripened soft cheeses (covered with a thin layer of a white down or mold) like *Brie*, *Feta*, *Camembert* and *Coulommiers*, and the interior-ripened soft cheeses (washed in light brine to maintain the moisture level and softness of the cheese) like *Munster*, *Pont-l'Évêque* and *Époisses*.



- **Semi-hard cheeses.** This is the largest and most diverse group of cheeses including *Gouda*, *Edam*, *Colby*, *Brick*, *Montasio*, *Oka*, *Muenster* and many others. Semi-hard cheeses are uncooked pressed cheeses that are dense and usually pale yellow in color. They have a moisture content of 39-46% and their fat content represents around 40-50% of the cheese's weight.
- **Hard cheeses (Low and High temperature).** Hard cheeses are characterized by lower moisture than other families. Lower moisture permits removal of sufficient lactose by syneresis to avoid the necessity of washing. Low moisture is achieved by high temperature cooking (high temperature subclass) or by controlled fermentation and curd handling (low temperature subclass). **Low temperature hard cheese subclass** includes *Cheddar types*, *Pasta Filata types*, *Emmental* and others. They have a moisture content of around 36-38%. **High temperature hard cheese subclass** includes *Romano*, *Parmesan*, *Swiss* and others with a moisture content of as low as 35%.



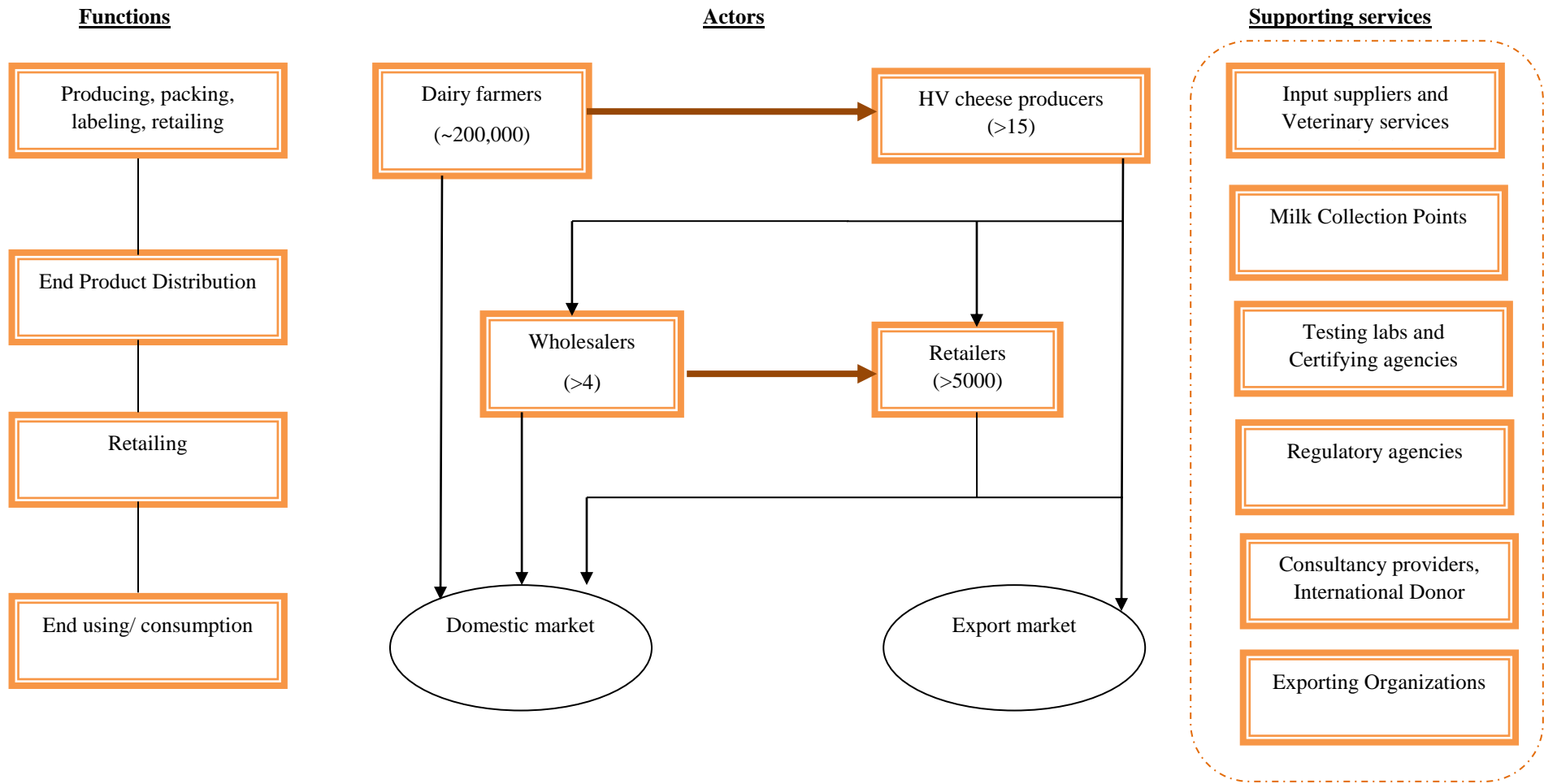
- Blue-veined cheeses.** Blue-veined (or blue) cheeses are neither cooked nor pressed; the curd is inoculated with a species of blue-green mold, which is injected into the cheese by means of long needles. Fermentation occurs from the inside towards the outside. Those cheeses are including *Roquefort*, *Gorgonzola*, *Stilton*, *Bleu de Bresse* and *Danish Blue* types of cheeses, have a strong and sharp, peppery flavor and are often crumbled in texture.



- **Processed cheeses.** Processed cheeses are cheeses made from one or several cooked or uncooked pressed cheeses that are re-melted, and to which milk, cream or butter is added; they are kept for a long time. Depending on the product, stabilizers, emulsifiers, salt, colors, sweeteners and seasonings may be added. A more or less soft and elastic texture and a mild flavor are obtained. In North America, these cheeses are mostly made using Cheddar cheese, whereas in Europe, Emmental and Gruyère predominate. Processed cheeses have different names depending on the quantity of cheese they contain (processed cheese, processed cheese food, cheese spread).

Processed cheeses are not included in this study, because of their production technology and used raw materials.

CHEESE VALUE CHAIN DIAGNOSTIC



Value chain actors

Total yearly production of dairy products in Armenia ranged within 600,000—700,000 tons in 2005—2014 (700,000 tons in 2014), which highlights an increase since the fall of the Soviet Union, when production figures ranged within 440,000—575,000 tons (for 1980—1990). Despite this, the sector still has many opportunities to increase efficiency and quality standards. Since 2009, the total number of cows has been gradually rising back to pre-crisis level, reaching 303,300 cows in 2012 and 313,900 in 2015 (compared to 310,600 in 2008). The leading regions in terms of milk production are Gegharkunik, Shirak, Aragatsotn and Lori. Per capita consumption of milk has been increasing during last 3 years. In 2012, it was 261 kg/year. While cheese exports are increasing, there is still a potential for import substitution. Armenia is importing around 152,000 tons of milk² (including 5,000 tons of butter and 1,200 tons of cheese) annually. Self-sufficiency of milk decreased recently due to reduced volume of produced milk. In recent years, that ratio is improving but it's still around 82—84% (compared to 97.6% in 2008).

Input and service suppliers: There are few large feed providers/crop millers in Armenia, due to the fact that the majority of farms are small and buy only minor quantities of concentrated feed. Vet services (Vaccination and Artificial Insemination) are provided by public or private firms. Public entities are mostly responsible for vaccinations only (the government supports the combating of six diseases). New breeds are mostly imported, yet there are also farms that received imported cows from the MoA and act as breeding farms. Winter fodder quality is generally poor given a lack of proper pasture management, and lack of specialized fodder producers.

Farmers: Small farmers are seen as the main producer of raw milk, accounting for 99% of production in 2014. According to experts' estimations, there are approximately 170,000 (maximum 200,000) farmers in Armenia involved in milk production, of which about 96% own up to seven cows³. The Caucasian Brown is the main cattle breed in Armenia, although Holstein, Simmental, Jersey breeds have been imported in the recent period by “Agroholding Armenia”, “Dili LLC”, “Eco Farm” “Vamaks”, “Arzni Holding” and “Multi Agro”. The main milk suppliers of current high value cheese producers are relatively large farms as well as small and medium size farmers supplying milk through milk collection points.

Milk collection points: There are two types of collection points: either owned by large milk processors, or independent entities owned by cooperatives. Both have a similar relationship with farmers. A typical collection point would have a 2-ton milk container (refrigerator) and collect milk from neighbouring communities. Some may also have cars equipped with a smaller container (200-300 litres), which drive within the region and collect milk from households (up to 50 small farmers in one round). Notably, regular milk tests are done at the collection points only. Thus, in cases when milk is brought by cars, the test will be made for the whole mix (measuring 6 parameters). At the

²Includes data on butter, milk powder, yogurt, cottage cheese, cheese, ice-cream and other milk products, transformed into equivalent quantities of fresh milk.

³Based on statistical data, this indicates that there is an average of 1.8 milk cows per dairy farmer in Armenia.

analysed collection point, farmers receive a fixed price of AMD 140⁴ per litre. The collection point then sells this at up to AMD 155 per litre to a large-scale processor. The milk collected with the car from small-scale farmers is also tested; however a strict schedule wasn't specified. For large farms (over 20 cows) the processor may have direct milk testing and collections at the farms, bypassing the collection point facilities.

HV cheese producers: The total number of dairy processors (including milk collection point firms) is estimated at 284 firms⁵, of which about 60—70 are specialized processors. Dominant dairy processors in the market are Ashtarak Kat, Doustr Marianna LLC and Chanakh LLC. There are about 100 cheese producers in Armenia, of which 20 companies used to produce high value cheeses. Comparatively large HV cheese producers are Mastarachedo, Igit and Golden Goat. HV cheese production is mainly concentrated in the regions where it is possible to produce and procure high quality milk (Shirak, Gegharkunik, Aragatsotn, Syunik regions). Some of HV cheese producers (e.g. “Dili LLC”) perform different functions through value chain: milk production, milk processing, distribution and retail (through their shop located in Yerevan).

HV cheese importers: 10 companies are involved in import of HV cheeses. Some of importers focus on certain HV cheese types import, others operate as distributors of famous international brands. There are also importers that are not specialized in dairy or cheese trade, but in none regularly bases import some type of HV cheeses (mainly before Christmas). Major HV cheese importers are “ARDIS”, “Two ERIAK”, “ANDAKO”, “BRANDLEADER”, “ALPHA FOOD SERVICE”, “LACTALIS ARMA”, etc. Imported HV cheeses varieties (more than 90) are widely presented in retail networks. Some importers have their own supermarkets, which enables them to sell their products with higher net profit margins.

Retail and wholesale network: The main players of retail network are wholesale points, supermarkets, and small shops. The supply of HV cheeses to retail network is performed by HV cheese producers directly or distributors/intermediaries. The wholesale trade is not viewed as a priority distribution channel for high value cheeses since the sales volumes are not sufficiently high. However, to assure a wider presence in the market some producers and importers supply their produce to wholesale markets (“Petak”, “Surmalu”, “Gum”) located in Yerevan, where from small stores including from the regions of Armenia buy their assortments (and HV cheeses amongst those).

Consumers: Locally produced high value cheeses are sold in local market (53% of total sales volumes)⁶ and exported (47% of total sales volumes)⁷. During 2014-2015 the only export market for

⁴Average raw milk price paid to farmers during 2015 year.

⁵World Bank (2012).Agriculture and Rural Development Policy Note.

⁶Data for 2014 year.

⁷Data for 2014 year

high value cheeses was Russia. In local market major consumers of HV cheeses are individual consumers and HORECA sector.

Milk production

Type and quality of raw milk used for high value cheese production: Depending on the type of HV cheese milk of cow, goat, sheep, buffalo or their mixtures are used. In Armenia cow milk is the most common raw material for high value cheese production. During processing, milk should not contain any additives (antibiotics, soda, detergents, etc.), must be subjected to the primary treatment (mechanical cleaning and cooling to $4 \pm 2^{\circ}\text{C}$ at most in 2 hours after milking). The process of milk cooling should not take more than 24 hours. During delivery of milk to processing company the milk temperature must not exceed $+ 8^{\circ}\text{C}$.

According to the GOST standard⁸, milk has the following classification:

- high class
- first class
- second class
- milk without classification.

The main features of this classification are physical, organoleptic, microbiological indicators. For HV cheese production only high and first class milk meets all the technological requirements.

In Armenian reality milk quality control is not always in appropriately high level. Processors and milk collection points are usually equipped with limited tools performing basic milk testing for fat and protein content, acidity, content of dry residuals. For producing high quality cheese (high or first class) milk should meet requirements presented in table 3 and table 4.

TABLE 3 ORGANOLEPTIC CHARACTERISTICS OF RAW MILK

Indicator	Norms for milk classification			
	High class	First class	Second class	Without classification
Consistence	Homogeneous liquid without sediment and flakes. Freezing is not allowed			The presence of flakes of protein solids
Taste, flavor/ smell	Clean, without odors and flavors		Bland taste and smell of the feed (It is allowed in the winter-spring)	Severe fodder taste and odor

⁸ GOST refers to a set of technical standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standards organization operating under the auspices of the Commonwealth of Independent States (CIS).

		period)	
Color	From white to light cream		From cream color to light gray to gray

TABLE 4 PHYSICOCHEMICAL CHARACTERISTICS OF RAW MILK

Indicator	Norms for milk classification			
	High class	First class	Second class	Without classification
Acidity, °T	From 16,00 to 18,00	From 16,00 to 18,00	From 16,00 to 20,99	Less than 15,99 or More than 21,00
Group purity not lower	I	I	II	III
Density, kg / m ³ , not less	1028,0	1027,0	1027,0	Less than 1026,9
Freezing temperature, ° C	Not higher than - 0.520			Higher than - 0.520

There are few factors that affect the quality of milk:

- Diet of the dairy animal (livestock kept in natural alpine and sub-alpine pasturelands is able to produce high-quality milk),
- Breed of the dairy animal (substantial part of dairy animals are not highly productive, as Armenian most common Caucasian brown average yearly milk yield is too low),
- Health of the dairy animal,
- Milking methods (Small and medium-sized farms still practice hand milking),
- Storage methods (In fact, the major problem faced by both: suppliers and collectors/processors is prompt transportation of milk from field to the collection point and from the collection point to the processing factory. In Armenian reality milk loses its quality mainly in the process of transportation and storage,
- Stage of lactation,
- Time of the year/season.

Depending on the above mentioned factors, fluctuations in protein content, fat content, acidity, mechanical purity and quality of milk occur, which has a considerable impact on production of high value cheese.

Generally, the quality of milk produced in Armenia **does not meet** the quantitative and qualitative standards (microbiological indicators) for production of HV cheeses, as milk produced by Armenian farmers does not meet the requirements of **high and first classes** milk. Nevertheless, as stated by

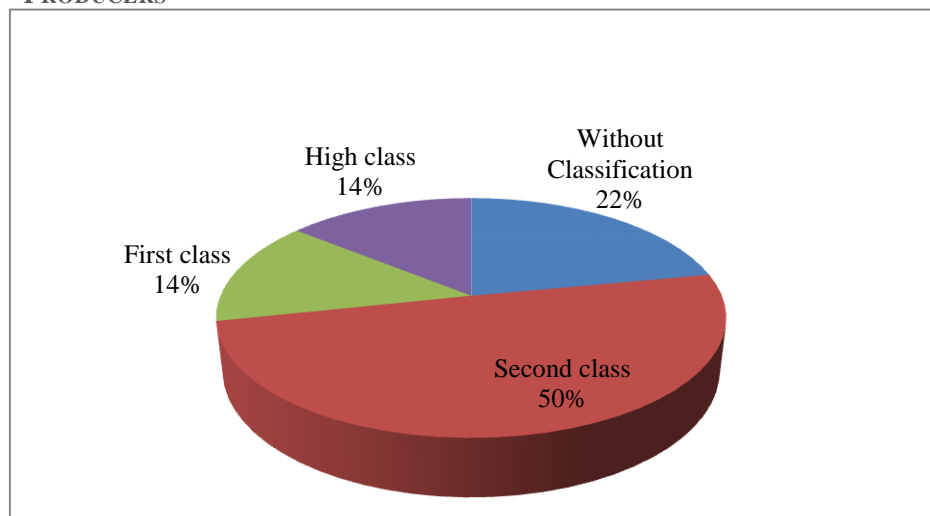
HV cheese producers, some Armenian farmers⁹ do produce high-quality milk in limited volumes suitable for HV cheese production (see table 5 below).

TABLE 5 PROCESSORS' PERCEPTION ON MILK QUALITY IN ARMENIA

Answers	Share of surveyed HV cheese producing companies, %
Milk produced in Armenia meets the HV cheese production requirements	64%
Milk produced in Armenia does not meet the HV cheese production requirements	29%
Milk produced in Armenia partially meets the HV cheese production requirements	7%

In the meantime, 50% of surveyed HV cheese producing companies in Armenia are using second class milk and only 28% of surveyed HV cheese producers are using high or first class milk. High and first class milk is supplied by comparatively large farms situated in Vayots Dzor, Tavush and Syunik marzes. 22% of surveyed HV cheese producers use raw milk without classification, as they think that high and first class milk are not available in Armenia, taking into consideration current conditions of applied animal keeping practices.

FIGURE 1 TYPE OF MILK USED BY HV PRODUCERS IN ARMENIA (% OF SURVEYED HV PRODUCERS)



In general, Armenian HV cheese producers accept milk with following parameters:

Parameter	Acceptable range of parameters
Acidity, °T	16-19
Fat Content, %	3,6 and more
Protein contents, %	3 and more

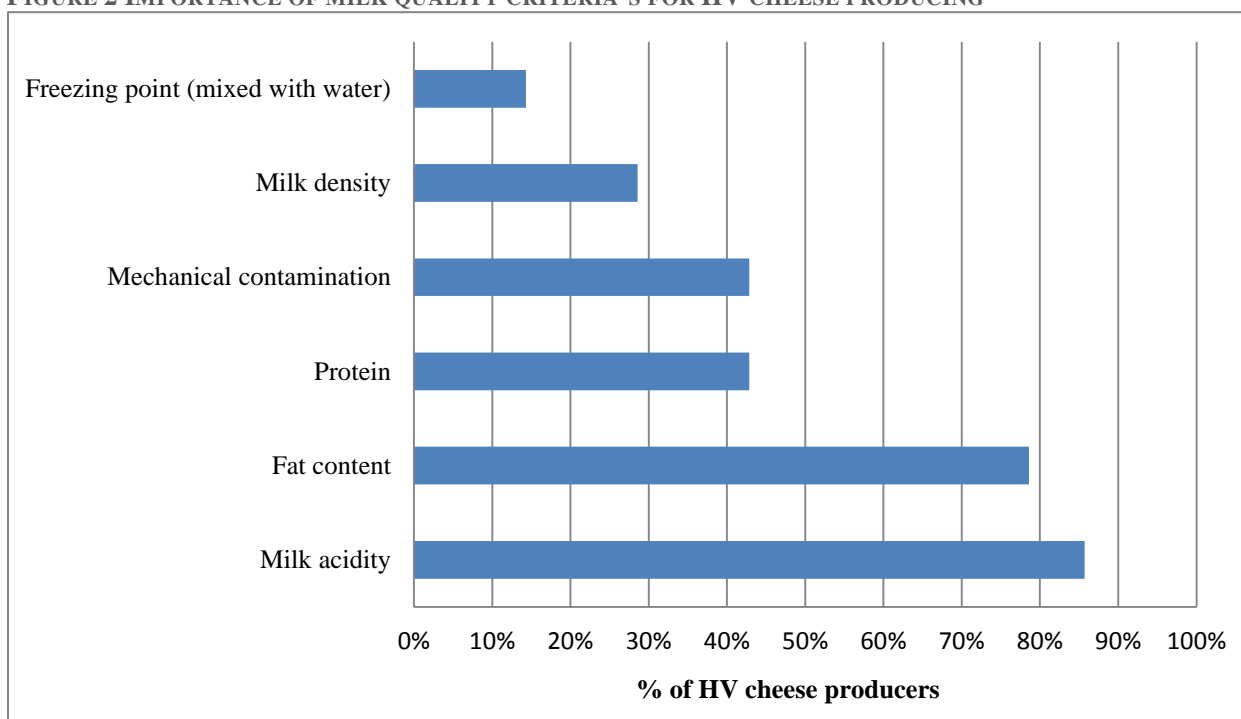
⁹Mostly large farms with modern milking centers and milk coolers.

Appearance	with cream-colored shade without eye visible mechanical contaminants
Cooling point temperature	not higher than 8°C
Water content %	0-2

The price of 1kg milk is actually being calculated by a formula based on 3.6% fat content as standard. The higher fat content is the more expensive is milk paid for.

During the survey, the producers were asked to rank the importance of milk quality parameters by reducing significance (see below Figure 2). (*The producers were able to give more than one answer*).

FIGURE 2 IMPORTANCE OF MILK QUALITY CRITERIA'S FOR HV CHEESE PRODUCING



After initial milk analysis all HV cheese producers are mechanically cleaning and pasteurizing collected milk (though nowadays a more advanced microbiological cleaning is applied abroad, it is not commonly used by domestic Armenian HV cheese producers). The major reason of not using microbiological cleaning is that cheese yield decreases in this case causing financial losses to producers. In the meantime some of the market leaders (i.e. “Doustr Marianna” LLC) started to use such kind of equipment to raise the raw milk class for getting a better quality fresh dairy produce and extend the shelf life of the latter. Relatively slow, but in past few years, local dairy processing companies have been continuously investing in improvement of quality of milk collected and processed in Armenia.

Seasonality of raw milk production: Milk production in Armenia is mostly pasture-based (more than 60% from total milk production is supplied during the pasture season). Milk production is

highly seasonal – starting from the late spring until mid-September the production volumes may double, when cows are sent to pastures for grazing. High season for grazing in pastures varies from May to August (mountainous areas) and in certain areas from April to September. Calving is also timed for spring in order to maximize milk production that uses cost free or low cost grass inputs. This contributes to the excess production of milk during the summer months and the shortage of milk during the winter months. As a result, milk prices are inversely correlated to the production - milk prices rise in winter and drop significantly during the grass growing season – from the late spring to the early fall.

Alpine and sub-alpine meadows are believed to be the best pastures for dairy animals to produce high-quality milk. Subalpine pasturelands are mainly concentrated in Shirak, Aragatsotn, Gegharkunik, Vayots Dzor, Syunik region of Armenia (2200-2800m above sea level). Some areas of alpine pasturelands are available also in Aragatsotn and Gegharkunik marzes, at 2700-3000 m above sea level). In winter time, when dairy cattle is kept in barns, milk yield per animal significantly drops down compared to the summer pasture season.

FIGURE 3 DISTRIBUTION OF KEY SOIL TYPES IN ARMENIA



FIGURE 4 ALTITUDE VARIATIONS WITHIN ARMENIA (MEASURED IN METERS ABOVE SEA LEVEL)



Some high value cheese producer companies invited experts from Europe and USA to analyze the quality of pastures they source the milk from and according to those experts the most quality pastures are located in the provinces of Amasia and Ashotsk of Shirak marz, partially in Syunik and Aragatsotn marzes. In other cases, large farms are able to produce high quality milk for HV cheese production by purchasing grass from alpine meadows (including from other marzes) and following advanced farming practices and feeding ratios. Understandably, middle and small size farmers usually are not able to invest and follow advanced farming and feeding practices, which results in low productivity, worse quality and small production volumes of milk produced.

Milk suppliers: The main milk suppliers of current high value cheese producers are: (a) relatively large farms (e.g. OFMA, Agro holding in Lori; DILI LLC in Tavush; ECO Farm in Vayots Dsor; VAMAX LLC in Syunik etc.); (b) limited number of small and middle size farms (in Amasia, Ashotsk, Goris etc.) through milk collection points; (c) farms owned by HV cheese producers.

Production of milk for high value cheese in Armenia is mostly concentrated in a few large agricultural farms, which usually have in place quality breed animals, an automatic milking system, milk storage and transport facilities and advanced farming practices (e.g. cattle birth planning) to assure production and supply of relatively stable volumes of quality milk throughout the year.

30% of all HV cheese producers buy milk from 1 or few farms based on long-term cooperation arrangements. Another 30% of HV cheese producers use milk produced in their own farms and buy from other farms. "Dili" LLC is the only HV cheese producer who exclusively uses milk from own farm.

Milk suppliers and HV cheese producers are in formal contractual relations, but according to HV cheese producers these contracts are just for formality, they do not have any considerable impact on further dispute reinforcement. HV cheese producers find such contracts useful to include them into their tax reports.

The main constraints preventing HV cheese producers from the high quality milk are:

- Farmers' knowledge and application of proper animal husbandry practices,
- Lack of automatization of animal husbandry processes,
- Limited number of advanced farms in Armenia,
- Small volumes of high quality milk production,
- Lack of infrastructure (access to remote pastures, roads),
- Lack of financial resources.

Processors

High value cheese local producers

Armenians made cheese since ancient times, which is evidenced by the discovery of granite dishes for cheese production. In Soviet times Armenia's successes in cheese production were notable, and even cheese making was one of the advanced sub-sectors of Armenian Republic. During Soviet Union Armenia was rather specialized in production of both: traditional and European types of cheeses, including Swiss cheese, which was amongst the winners of Paris World Exhibition (1937).

However, after the collapse of the Soviet Union, together with other sectors of the economy, cheese making also nearly stopped and good traditions were lost. After the independence, only some of cheese producing companies reopened for HV cheese production, but Swiss cheese production totally stopped and special storage facilities left currently are used for other types of cheeses (Lori, Edam, Dutch). Nowadays, there are about 100 cheese producers, but only 20 of them are involved in production of HV cheeses.

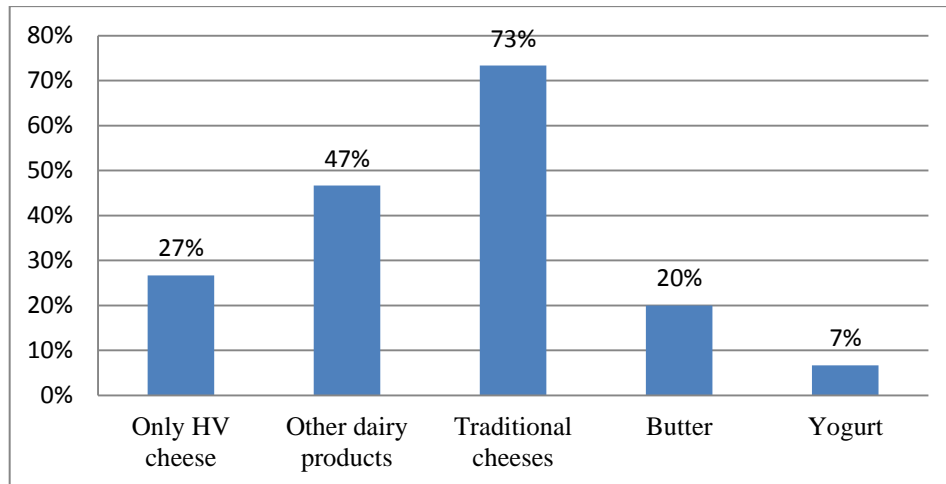
In Armenia, as well as many of the CIS countries (Russia, Ukraine, etc.) "Dutch" cheese is abstraction. Basically it's about the imitation of any cheese type produced in Netherlands. Back in the 19th century Russian technologists formed a special technology for semi-hard or hard cheese on the basis of Dutch technology, called "Dutch cheese" or "Gallandsky" since then, including during the Soviet Union era.

Table 6 High value cheese producers

Name of company	Organizational Form	Location of production unit (Marz)	Types of HV cheeses produced
Borisovka	LLC	Syunik	Camembert, Mozzarella
Elola	CJSC	Syunik	Armtermeni
Golden Goat	CJSC	Vayots Dzor	Feta, Tommi
Ashtarak Kat	CJSC	Gegharkunik	Roquefort
Araks-2 (EcoKat)	PC	Gegharkunik	Gouda
Daughter Melania	LLC	Lori	Dutch
CheeZler	LLC	Aragatsotn	Gouda, Hella
Gor Sargsyan (Gloria Cheeses)	SE	Aragatsotn	Maasdam, Gloria, Gouda
Mastarachedo	LLC	Aragatsotn	Roquefort, Mozzarella
Igit	LLC	Shirak	Graf Orlov, Emmental
Ashotsk Cheese Factory	LLC	Shirak	Edamer
Dili	LLC	Tavush	Mozzarella, Burata, Fungo, Riccotta, Armenian
Doustr Marianna	LLC	Yerevan	Mozzarella, Gouda

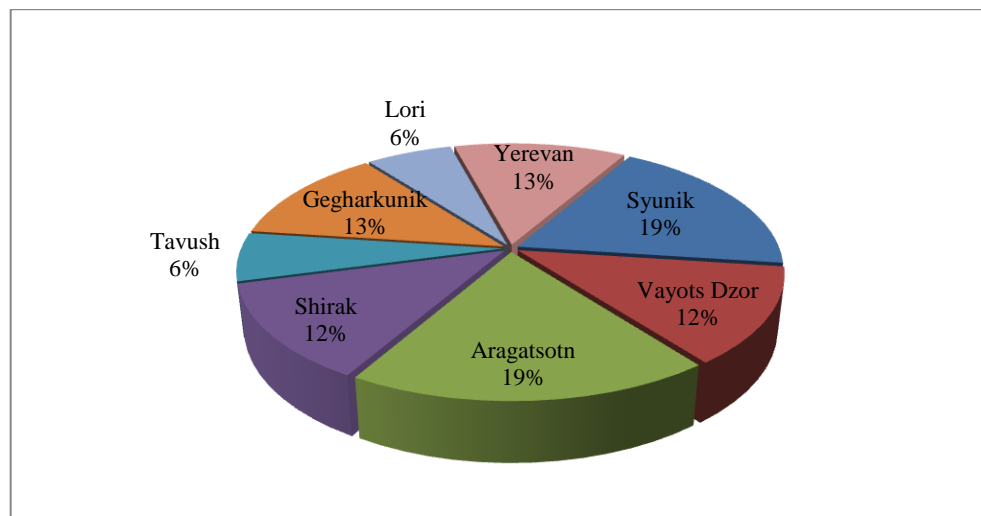
73% of HV cheese producers are also involved in traditional cheese production, 47% of them are producing dairy produce and only 27% of surveyed HV cheese producers are purely specialized in high value cheese production (see graph below).

FIGURE 5 OTHER DAIRY PRODUCTS PRODUCED BY HV CHEESE PRODUCERS



It is noteworthy that HV cheese production is mainly concentrated in the regions where it is possible to produce and procure high quality milk (Shirak, Gegharkunik, Aragatsotn, Syunik regions). In addition to these regions, HV cheese is produced also in Vayots Dzor, Tavush and Lori marzes and in Yerevan. In 2015 one of the leading Armenian dairies "Ashtarak-Kat" launched production of Roquefort cheese in its' factory located in Chambarak (Gegharkunik marz), but since the produce have not been marketed yet this data was not included in this study.

FIGURE 6 HV CHEESE PRODUCERS LOCATION



Most of the cheese producer companies (69%) have a legal status of Limited Liability Company, 13% of them are Closed Joint Stock companies and the rest 18% are consumers or producers cooperatives and sole entrepreneurs.

According to the “State Support of Small and Medium Enterprises” law production companies in Armenia are classified by the number of workers¹⁰, as shown below:

- Micro enterprises - up to 5 employees
- Small enterprises - from 6 to 50 employees
- Middle size enterprises - from 51 to 100 employees
- Large enterprises - more than 101.

As shown in the below table, the lion part (84%) of HV cheese producers are small enterprises with less than 50 employees.

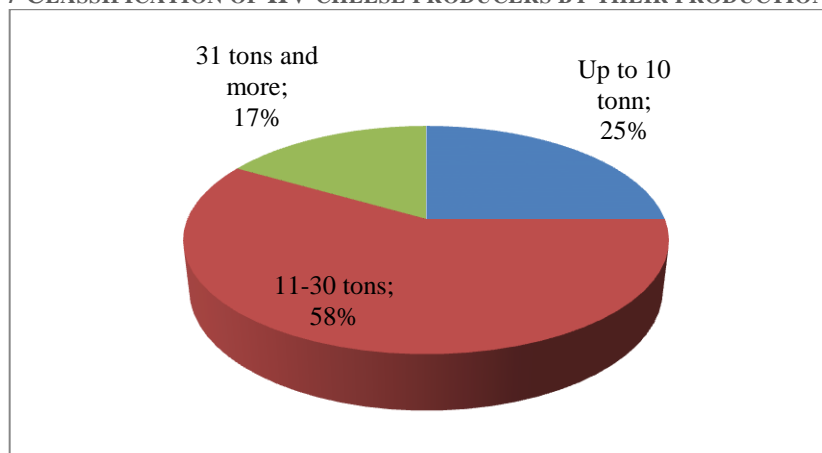
TABLE 7 CLASSIFICATION OF HV CHEESE PRODUCERS BY NUMBER OF EMPLOYEES

Type of enterprise	Share of HV cheese producers, %
Micro enterprises (up to 5 employees)	0%
Small enterprises - from 6 to 50 employees	84%
Middle size enterprises - from 51 to 100 employees	8%
Large enterprises - more than 101 employees	8%

By production volumes, HV cheese producers can be conventionally grouped as follows:

1. 25% are small producers (up to 10 tons of HV cheese produced per year);
2. 58% are middle size producers (from 11 to 30 tons cheese per year);
3. 17% are large producers (more than 30 tons of cheese per year).

FIGURE 7 CLASSIFICATION OF HV CHEESE PRODUCERS BY THEIR PRODUCTION VOLUME



Mastarachedo, Igit and Golden Goat are the companies with the largest production volumes of high value cheese production in Armenia.

¹⁰ Depending on industry, numbers vary.

Product

Types and quality of high value cheese produced in Armenia: The cheese produced in Armenia can be conventionally grouped into two major groups: (a) *traditional cheeses* (most frequently consumed on daily basis). Salty cheeses (Chanakh, Lori, Sheep cheese, as well as homemade cheese) represent the largest share (94 %) of Armenian cheese market. (b) *Non-traditional cheeses* that can also be sub-grouped as:

- *Complementary/substitute of traditional cheeses* (Chechil, Eghegnadzor, Horac, Alashkert). These cheeses are bought frequently, but not so much as traditional ones. In this group majority types of products are made in Armenia.
- *Not commonly used and relatively high value cheeses*, more expensive, of European origin and with low salt content. This group includes also blue-veined cheese, hard cheese, and the semi-hard (e.g. Gouda, Edam, Roquefort, etc.).

Complementary/substitutes of traditional cheeses are produced mainly by middle and comparatively large size producers. Gradually these varieties of cheeses are becoming more and more demanded and a positive growth trend in sales in the local market is visible.

Several types of substitute cheeses ("Akunq", "Alashkert", "Lalvar") are technologically similar to Lori, Dutch, Gouda etc. with some minor differences.

As noted above, historically Armenia has been producing European varieties cheeses and exporting those to other Soviet republics. In recent years, significant investments were made by local producers for expansion of HV cheese assortment and quality improvement.

Local HV cheese producers mainly produce fresh, soft and semi-hard cheeses. The most common types of locally produced European cheeses are Mozzarella and Gouda. HV cheese producers list with produce varieties is provided below.

TABLE 8 MAIN TYPES OF HV CHEESES PRODUCED IN ARMENIA

Type of cheese	Producer	Producer	Producer	Producer	Producer
Mozzarella	Doustr Marianna	Borisovka	Mastarachedo	Dili	Bnakan Kat
Gouda	Doustr Marianna	CheeZler	Gor Sargsyan SE	Araks-2	
Dutch (Gollandsky) ¹¹	Daughter Melania	Ashotk Cheese Factory			
Edamer	Ashotk Cheese Factory	Igit			

¹¹ Dutch / Gollandsky cheese technology was developed by Russian/Soviet cheese technologists and is widely used in CIS countries.

Roquefort	Mastarachedo	Ashtarak Kat			
Ricotta	Dili	Borisovka			
Feta	Golden Goat				
Tommi	Golden Goat				
Camambert	Borisovka				
Hella	CheeZler				
Maasdam	Gor Sargsyan SE				
Gloria	Gor Sargsyan SE				
Burata	Dili				
Armenian ¹²	Dili				
Fungo	Dili				
Graf Orlov	Igit				
Armtermani	Elola				

For quality comparison of local and imported HV cheeses, indicators have been developed, as well as similarity/difference assessment was carried out for Gouda, Mozzarella and Dutch for both: locally produced and imported cheeses. Testing was also carried out by experts and simple consumers.

The assessment carried out by the organoleptic method, the main criteria were: taste, smell, consistency/composition, shape and color. Rated by a scale of 10 (highest rating of 10/origin of the cheese complies with the European standards, very low 1/origin of the cheese does not comply with European standards). *In order to protect and ensure business confidentiality the names of companies are not highlighted.*

Observed results are as follows:

Testing - Gouda

Few locally produced Gouda cheeses were compared with the same type produced in Germany. Gouda imported from Germany, received a **"10"** rating - corresponds to all parameters and indicators.

- The consistency of the cheese is hard and elastic.
- Eyes, round or oval, uniformly distributed throughout the cheese.
- The flavor and taste of cheese, sweet, turning into spicy. But it is not sour.
- Color slightly yellowish, dull.

¹² Semi-hard cheese used to be produced in Armenia during Soviet times, produced using technology similar to Gouda.

One of Gouda cheese samples of domestic production did not meet any of requirements. Cheese color was orange. The consistency was soft. The taste of the cheese was a bitter with musty aroma, eyes were absent.

The rest samples of domestically produced Gouda in general were consistent with imported one, except for taste and flavor parameters. Taste and flavor of those cheeses were evaluated “more like Lori” rather than Gouda. Overall score for those cheeses was "7".

Testing- Mozzarella

Several kinds of domestically produced Mozzarella were compared with Mozzarella produced in France. Due to the fact that there is no national standard for that cheese, tasters based on the general requirements for Mozzarella cheese manufactured in European countries. These requirements are as follows:

- Consistency of the cheese to the best of elastic, soft and moist, slightly fibrous, without corks. Soft, porous cheese mass;
- Color of cheese is white;
- Pure taste of cheese, deflating and slightly salty;
- Without smell.

All tested cheeses were made from cow milk, had a circular or oval shape. The smell and color in all species tested were the same. The only difference was noticed in consistency and taste.

The first sample was totally different from imported cheese in almost all aspects.

In the second sample there was curd content in cheese mass and bitter taste present in the cheese caused by calcium chloride. Cheese diameter was matching with the French one. **Overall score for the second and third samples was "7".**

The fifth and fourth samples were slightly elastic. Cheeses diameter was even bigger than French one. **Overall score for these samples were "8".**

Testing- Dutch/Holland

As it was described above Dutch/Gollandsky cheese has technology was developed by Russian cheese technologists and currently, the Dutch/Gollandsky cheese has a considerable market share in almost all CIS countries (especially in Russia). That is why domestically produced Dutch/Gollandsky compared with its analogue imported from Russia. Import sample was assessed at “10” points due to the following criteria:

- Plastic dough slightly brittle on bending.
- The color of cheese mass was yellow.
- The smell of cheesy.

- The taste of sour milk cheese is moderately spicy.
- Round Eyes with a diameter of 2-4 mm.

One of the domestically produced cheeses did not match any of the criteria.

The second sample of the domestic cheese had more in common with imported cheese. The color of the cheese was uniformly distributed (white along the edges and yellow inside). There were occasional round eyes, evenly distributed throughout the cheese mass. Cheese was slightly elastic with the smell of cheesy. Taste was more like the taste of imported Dutch cheese. The total score for this cheese was "8".

The remaining samples of domestic cheeses differed from imported ones mainly by color and consistency. The color of the cheese was much darker than the imported sample and consistency - much softer. The total score for those samples was "7".

Production volumes: In 2014, the volume of HV cheese production totaled 268 tons, and in the period of January-mid December 2015 total production comprised 285 tons. The growth¹³ in cheese production is not significant compared to 2014 (6% only).

TABLE 9 TOTAL PRODUCTION VOLUME OF HV CHEESE

	2014	2015	Increase/Decreases, %
Production volume , tons	268	285	6%

As it can be seen from the below figures, the structure of HV cheese market segment by varieties produced locally did not change much in 2015 compared to 2014. None of those varieties exceeds 20% of the market with Roquefort (19%), Feta (18%) and Gouda (12%) as top three in 2015. The only vivid change is the drastic increase of Roquefort production volumes entirely exported to Russia.

FIGURE 8 HV CHEESE PRODUCTION VOLUMES PER TYPE OF CHEESE, 2014

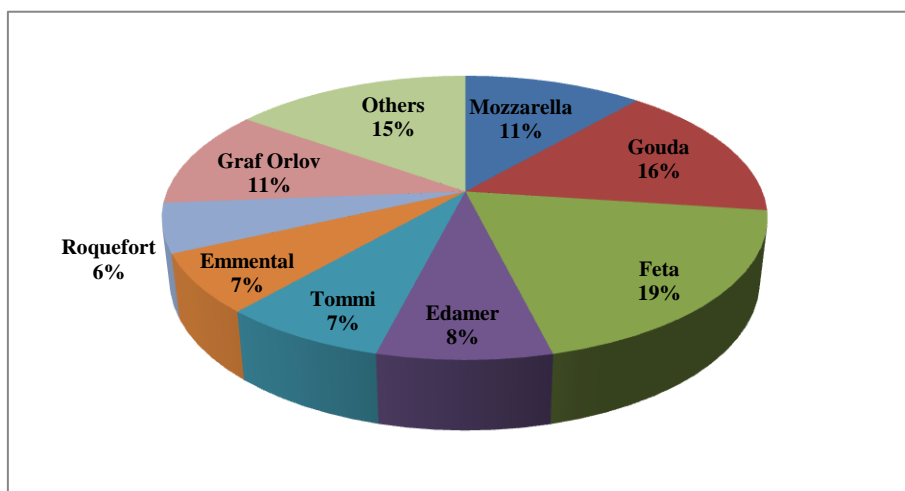
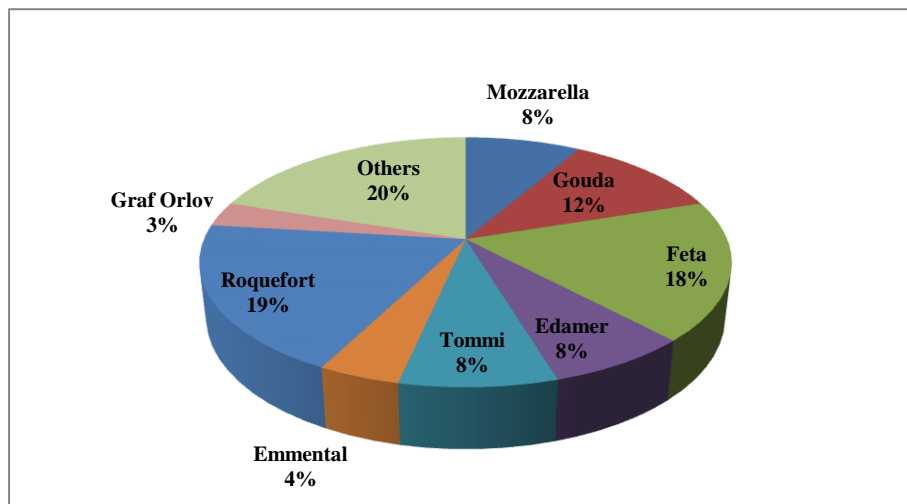


FIGURE 9 HV CHEESE PRODUCTION VOLUMES PER TYPE OF CHEESE, 2015

¹³Since the majority of companies are producing HV cheeses in summer, therefore data received at the moment of the study is taken as a basis for the yearly production volume calculation.



HV cheese producers believe that in Armenia it is possible and beneficial to produce the following varieties of HV cheeses.

TABLE 10 HV CHEESE PRODUCERS' OPINION ON TYPES OF HV CHEESES WHICH COULD BE PRODUCED IN ARMENIA

Type of high value cheese	Feedback of surveyed HV cheese producers		
	Demand in local market	Demand in export market	Demand in HORECA
Roquefort	V	V	V
Gouda	V		V
Brinza			V
Mozzarella	V		V
Dutch (Gollandsky)	V	V	
Russian		V	
Edamer	V	V	V
Feta		V	
White -veined cheeses			V
Italian type cheeses		V	

Majority of HV cheese producers stated that they are willing to start Roquefort production in the near future, as there is high demand in local and export markets (mainly Russia) and Roquefort production is more profitable comparing to other HV cheeses. According them the problem is that for launching Roquefort production, they need to have a separate factory with its own storage facilities. HV cheese producers believed that Roquefort, Dutch, Edamer, Feta, Russian, and Italian types of cheeses have high potential for exporting. Despite above mentioned types Brinza and White-veined cheeses have demand in HORECA institutions. According to local HV cheese producers production costs of Gouda and Edamer are almost equal, Dutch/Gollandsky is a bit less, but net profit margin of Gouda is the smallest among them in Export market. The latter fact as well as some producer unsuccessful trials of exporting Gouda cheese made local producers not to believe to success of Gouda in export market.

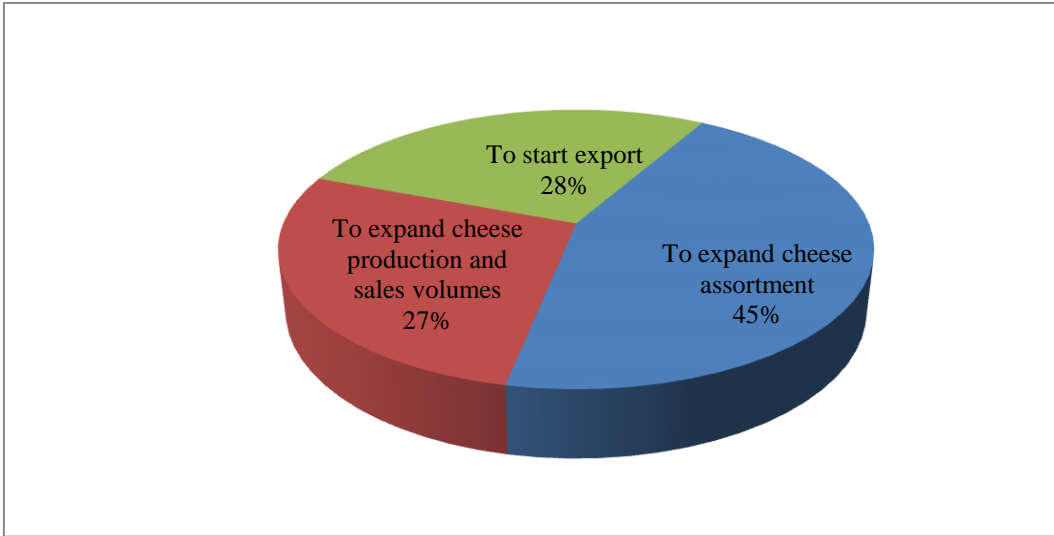
During the past 10 years cheese producers piloted and experimented with a number of European cheeses and still continue doing so trying to find “best sellers”. For instance, during 2015 one of the HV cheese producers piloted 3 new types of HV cheeses. Understandably, not all the attempts were successful and some of the failed pilot examples are listed below:

TABLE 11 EXAMPLES OF FAILURES WHILE PILOTING PRODUCTION OF HV CHEESES

Type of high value cheese	The arguments for stopping production
Swiss	Low demand, higher production and storing costs
Emmental	Low demand for locally produced Emmental
Mozzarella	Pilot production with "Suluguni" technology, low demand
Maasdam	NA
Roquefort	Mold was spread entirely in the factory, and damaged all other products
Feta	Goat farm was closed, faced a problem of raw goat milk supply
Camambert	NA

In general, HV cheese producers are keen to continue expanding their products assortment and initiate new pilots in the near future. Amongst reported future plans are “to increase production volumes, to organize export or to expand export volumes etc. ”However, it should be noted that by the research team observation, for the most of HV cheese producers increasing production volumes is rather a "wish" than a clear business goal with proper justification and/or strategic plan in place.

FIGURE 10 FUTURE PLANS OF HV CHEESE PRODUCERS



Supply of milk

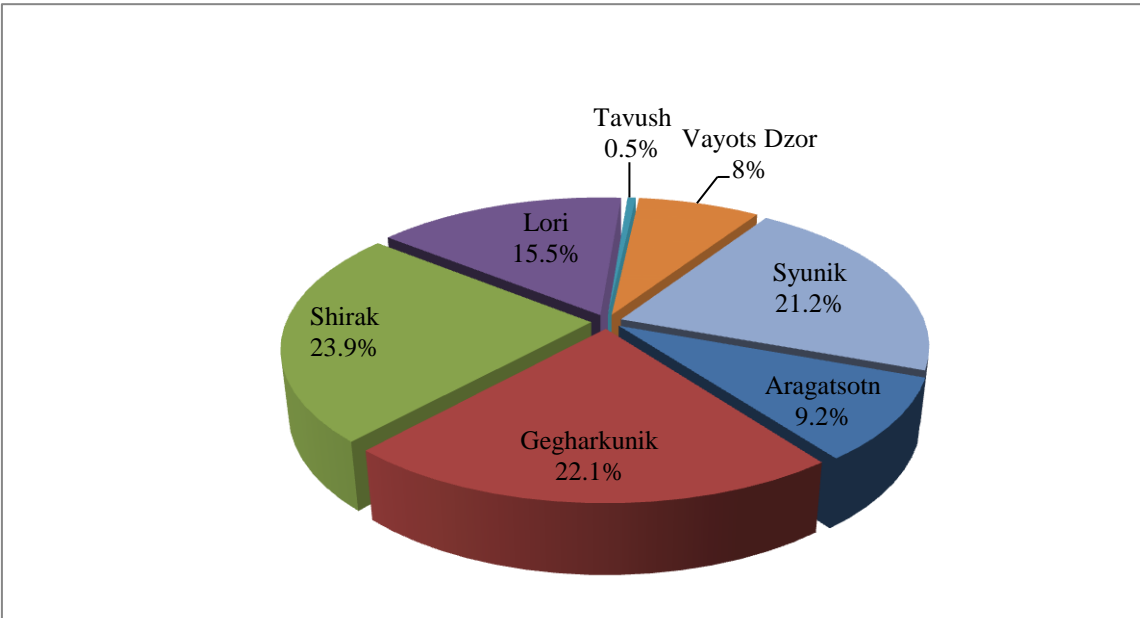
According to official statistics, in 2014 in Armenia there were produced 700.4 thousand tons of milk, from which nearly 50% in Gegharkunik, Aragatsotn and Shirak marzes. The level of commercialization of milk production is reported to be about 56%, which means that some 387,000

tons of milk was sold in the market: to processors for being transformed into dairy or cheese, directly to consumers in the form of milk, matzoun or cheese.

For HV cheese production purposes, local producers bought about 2,700 tons of quality milk (or 0.7% of the total milk sold). Only 8% of the total milk used by HV cheese producers is goat milk. Goat cheese production volumes are rather small in Armenia, with few producers concentrated in Vayots Dzor marz (Golden Goat, Selim). In 2015, milk volumes supplied for high value cheese production increased (by 7%) and comprised about 2,900 tons.

As it can be seen from the below Figure 11, the raw milk for HV cheeses is mostly collected from Shirak (24%), Gegharkunik (22%), Syunik (21%) and Lori (16%) marzes. As mentioned earlier in this report, these are the regions rich with alpine meadows and high quality milk supply sources.

FIGURE 11 MILK COLLECTION GEOGRAPHY



As shown in the below Table 12 HV cheese producers buy/collect milk mostly (68%) from private dairy farms based on long-term contractual relationship. Share of raw milk bought from Milk Collection Points (hereinafter MCPs) has a significantly smaller share (20% only).

TABLE 12 SOURCE OF MILK MILK SUPPLY

Source of purchasing	Share in whole volume, %
Collecting milk directly from dairy farms, with whom they have contracts and succeeded experience of cooperation	68%
Collecting milk directly from random/seasonal farmers, with whom they don't have contracts and experience of cooperation	6%
Milk procurement from middleman	5%
Milk procurement from Milk Collection Point	20%
From their own farm	1%

Total	100%
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Source of information: Local HV cheese producers' survey

Majority of surveyed HV cheese producers mentioned that for HV cheese production they prefer to buy milk from comparatively large farms due to a number of reasons such as:

- Consistency of volumes and quality of raw milk supplied,
- Easiness of control/monitoring over milk producers/farmers to assure high quality of raw milk supplied,
- Provision of extension services/consultancy to a small number of supplier farmers.

Only 1/3 of surveyed HV cheese producers have their own MCPs. Most of HV cheese producers have written contracts with the MCPs and farms they cooperate with. However, though 64% of HV cheese producers do not have own MCPs, some producers are cooperating with MCPs and 20% of total milk bought is sourced from those MCPs. Shirak and Aragatsotn producers do not cooperate with MCP's at all, even more, by their opinion the role of MCPs in dairy value chain is negative. They say the MCPs are not following milk quality and cooling standards effectively, and their main goal is to gain as much profit as possible (by lowering milk acceptance price and by re-selling it to producers at higher prices).

Though there are written contracts between supplier farmers and buyer processors, as reported by surveyed processors occasionally problems arise with the price of milk, often, if higher price offered by other buyers, milk producer farmers might violate their agreements and undersupply the volumes of milk agreed.

High-quality milk purchasing mechanism is different from “traditional” milk collection: to avoid milk quality deterioration, most of the processor companies send their own cooling trucks to collect the milk from the farms (milk could be transported directly to the processor or to the MCPs). As it is illustrated in the table 13, 71% of collected milk is transported by processors.

TABLE 13 MILK COLLECTION METHODS FOR HV CHEESE PRODUCTION

Milk collection mechanism	Share in whole volume, %
Farmers transporting their own milk to the factory with their own cars.	12%
Producers collect milk from farmers	71%
Producers collect milk from MCPs	7%
Middleman are transporting milk from farms to factory	5%
MCPs are organizing milk transport to factory	5%
Total	100%

Source of information: Local HV cheese producer survey

Capacities

40% of surveyed HV cheese producers are using equipment/machinery for traditional cheeses as well as special HV cheese forming and pressing units. 20% of producers have fully equipped advanced production lines (e.g. for Feta, Mozzarella). Almost all equipment is imported from Netherlands, Bulgaria, Poland. Some production lines are newly installed and not yet operational - producers plan to launch operations in 2016. The rest 40% of HV producers use production facilities for traditional cheeses while producing HV cheeses.

Majority of relatively small HV cheese producers received support from internationally funded programs (USDA, USAID etc.). With such grant programs those factories were equipped with special forms and equipment for HV cheese production, Roquefort-piercing tools, etc. 65% of current HV cheese producers had closely worked with USDA, and got above mentioned equipment for HV cheese production.

In addition, with support of the same program dairy technologists from abroad organized trainings and practical seminars to the producers.

In the meantime, 35% of HV cheese producers (and largest amongst them: Doustr Marianna LLC, Dili LLC, Igit LLC) invested entirely their own financial resources for producing HV cheeses.

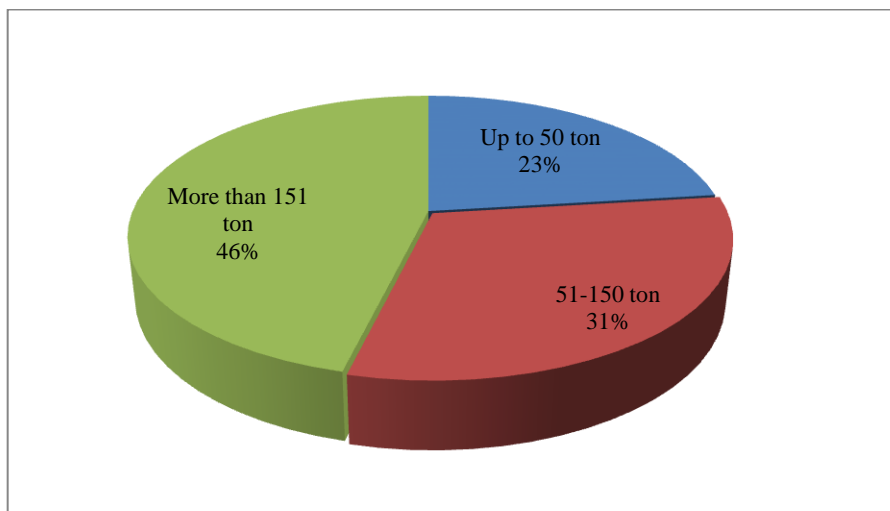
All HV cheese producers together have more than 5,000 square meters storage area (capacity for 2,000 tons of HV cheese), but about 50 percent of this area is used for storage of "Lori" and other traditional types of cheese. 2 largest interviewed companies' storage areas comprise 60% of the total (or 3,000 square meters). If excluding the mentioned two largest companies, for all the rest HV cheese producers the **average storage area will be 70-90 square meters, with a capacity of 30-40 tons.**

Some of the producers (30%) do not have separated warehouses for each type of cheese. The remaining producers have separated warehouses with special thermal conditions, which ensure proper ripening and preservation of the cheese.

By production capacities, HV cheese producers can be conventionally grouped as follows:

- 2 23% are small producers (up to 50 tons of cheese per year);
- 3 31% are average producers (from 51 to 150 tons cheese per year);
- 4 46% are large producers (more than 151 tons of cheese per year).

FIGURE 12 HV CHEESE PRODUCERS CLASSIFICATION BY THEIR PRODUCTION CAPACITIES



Doustr Marianna, Igit, Daughter Melania and Araks-2 are the companies with the largest capacities for high value cheese production in Armenia.

None of the HV cheese producers entirely used its production capacity during 2014 and 2015. Generally, only 30% percent of production capacities have been used by the HV cheese producers. Only 4 producers used more than 50% of existing production capacities (SE Gor Sargsyan, Golden Goat, Elola and Mastarachedo).

Amongst reasons preventing intensive use of existing capacities are:

- Lack of sufficient volumes of quality raw milk,
- Limited market demand for domestically produced HV cheese,
- Lack of financial resources.

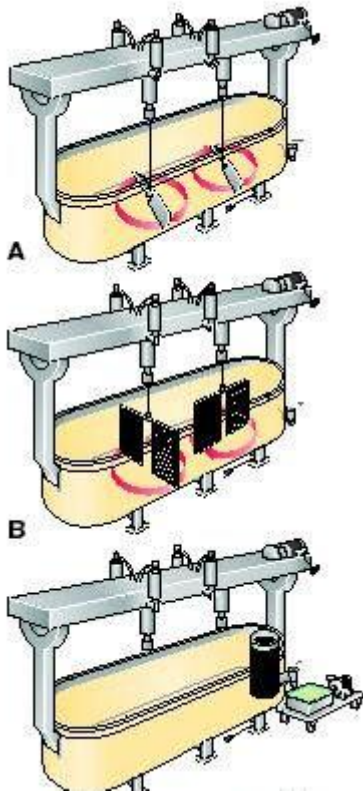
Those three reasons are almost equally distributed among the producers. It is interesting that in recent years, half of the HV cheese producers increased their production and storage capacities, as well as invested in buying special equipment.

Most of the producers did not face any difficulties while enlarging their capacities. Only four of them had financial difficulties.

Considering this, it can be concluded that in general investments in production and storage capacities made in the past years allow increasing production and sales volumes of HV cheeses by 70% without additional investments provided that there is enough supply of quality raw milk and sale markets.

Technology

Cheese making involves a number of main stages that are common to most types of cheeses. The raw milk for cheese is pre-treated after addition of a bacteria culture appropriate to the type of particular cheese and mixed with rennet.



The enzyme activity of the rennet causes the milk to coagulate to a solid gel known as coagulum or **curd**. This is cut with special cutting tools into small cubes of the desired size in the first place to facilitate expulsion of **whey**. During the rest of the curd making process the bacteria grow and form lactic acid, after which the curd grains are subjected to mechanical treatment with stirring tools, while at the same time the curd is heated according to a preset program.

The combined effect of these three actions – growth of bacteria, mechanical treatment and heat treatment – results in syneresis, i.e. separation of whey from the curd grains. The finished curd is placed in cheese forms (metal, plastic), which determine the shape of the finished cheese.

The cheese is pressed, either by its own weight or more commonly by applying pressure to the curd. Treatment during curd making and pressing determines the characteristics of the cheese. The actual flavor of the cheese is determined during the ripening of the cheese.

Pasteurization

Pasteurization requirements for milk used to make specific cheese varieties are regulated differently in each country.

Milk intended for original Emmental, Parmesan, some extra hard types of cheese, must not be heated to more than 40°C, to avoid affecting flavor, aroma and whey expulsion. Milk intended for these types of cheese normally comes from selected dairy farms with frequent veterinary inspection of the herds.

Cheese made from unpasteurized milk is considered to have a better flavor and aroma; nevertheless most of HV producers (except makers of the extra hard types) pasteurize the milk. Few of them, being 100% sure of the quality of milk they collect are taking the risk of not pasteurizing that to receive a better quality of finished HV cheeses.

Pasteurization must be sufficient to kill bacteria capable affecting the quality of the cheese, which can cause early “blowing” and a disagreeable taste. Regular pasteurization at 72 – 73°C for 15 – 20 seconds is most commonly applied.

All Armenian producers pasteurize the milk before processing.

Starter cultures

The starter culture is a very important factor in cheese making; it performs several duties. Two principal types of culture are used in cheese making:

- *mesophilic* cultures with a temperature optimum between 20 and 40°C and;
- *thermophilec* cultures which develop at up to 45°C.

Other additions before making the curd

Calcium chloride (CaCl₂)

If the milk is of poor quality for cheese making, the coagulum will be soft. 5-20 grams of calcium chloride per 100 kg of milk is normally enough to achieve a constant coagulation time and result in sufficient firmness of the coagulum. Excessive addition of calcium chloride may make the coagulum so hard that it is difficult to cut.

Saltpetre (NaNO₃ or KNO₃)

Fermentation problems may be experienced if the cheese milk contains butyric-acid bacteria (*Clostridia*) and/or *coliform* bacteria.

Saltpetre (sodium or potassium nitrate) can be used to counteract these bacteria, but the dosage must be accurately determined with reference to the composition of the milk, the process for the type of cheese, etc., as too much saltpetre will also inhibit growth of the starter. Over dosage of saltpetre may affect the ripening of the cheese or even stop the ripening process.

Coloring agents

The color of cheese is to a great extent determined by the color of the milk fat, and undergoes seasonal variations. Colors such as carotene, a natural anatto dye, are used to correct these seasonal variations in countries where coloring is permitted. Green chlorophyll (contrast dye) is also used, for example for blue-veined cheese, to obtain a “pale” color as a contrast to the blue mould. Cheese production in our country accepts use artificial colors. Local producers use artificial colors (mainly Annatto) to give a yellow color to cheese. For Armenian consumers sometimes good quality cheese associated with its colors: yellow cheese considered to be creamy. Even one of the sellers stated: "*What kind of cheese do you want to bring with a yellow color, good sales is guaranteed*". Anatto color is imported by 2-3 companies in Armenia.

Rennet

Except for types of fresh cheese such as cottage cheese, in which the milk is clotted mainly by lactic acid, all cheese manufacture depends upon formation of curd by the action of rennet or similar enzymes.

Cutting the coagulum

The coagulation time is typically about 30 minutes. Before the coagulum is cut, a simple test is normally carried out to establish its whey eliminating quality. Cutting gently breaks the curd up into grains with a size of 3 – 15 mm depending on the type of cheese. The finer the cut, the lower the moisture content in the resulting cheese.

Pre-stirring

Immediately after cutting, the curd grains are very sensitive to mechanical treatment, for which reason the stirring has to be gentle. It must however be fast enough to keep the grains suspended in the whey. Lumps may influence the texture of the cheese as well as causing loss of casein in whey.

Pre-drainage of whey

For some types of cheese, such as Gouda and Edam, it is desirable to rid the grains of relatively large quantities of whey so that heat can be supplied by direct addition of hot water to the mixture of curd and whey, which also lowers the lactose content. Some producers also drain off whey to reduce the energy consumption needed for indirect heating of the curd. For each individual type of cheese it is important that the same amount of whey – normally 35%, sometimes as much as 50% of the batch volume - is drained off every time.

Heating/cooking/scalding

Heat treatment is required during cheese making to regulate the size and acidification of the curd. The growth of acid-producing bacteria is limited by heat, which is thus used to regulate production of lactic acid. Apart from the bacteriological effect, the heat also promotes contraction of the curd accompanied by expulsion of whey.

The time and temperature program for heating is determined by the method of heating and the type of cheese. Heating to temperatures above 40°C, sometimes also called cooking, normally takes place in two stages. At 37 – 38°C the activity of the mesophilic lactic acid bacteria is retarded, and heating is interrupted to check the acidity, after which heating continues to the desired final temperature. Above 44°C the mesophilic bacteria are totally deactivated, and they are killed if held at 52°C between 10 and 20 minutes.

Heating beyond 44°C is typically called *scalding*. Some types of cheese, such as Emmental, Parmesan and Grana, are scalded at temperatures as high as 50 – 56°C. Only the most heat-resistant

lactic-acid-producing bacteria survive this treatment. One that does so is *Propionibacterium freudenreichii ssp. shermanii*, which is very important to the formation of the character of Emmental cheese.

Final stirring

The sensitivity of the curd grains decreases as heating and stirring proceed. More whey is exuded from the grains during the final stirring period, primarily due to the continuous development of lactic acid but also by the mechanical effect of stirring.

Final removal of whey and principles of curd handling

As soon as the required acidity and firmness of the curd have been attained – and checked by the producer – the residual whey is removed from the curd in various ways depending on the type of cheese.

Final treatment of curd

The curd can be treated in various ways after all the free whey has been removed. It can be:

1. transferred direct to moulds (granular cheeses),
2. pre-pressed into a block and cut into pieces of suitable size for placing in moulds (round-eyed cheeses), or
3. sent to cheddaring, the last phase of which includes milling into chips which can be dry-salted and either hooped or, if intended for Pasta Filata types of cheese, transferred unsalted to a cooking-stretching machine.

Pressing

After having been molded or hooped the curd is subjected to final pressing, the purpose of which is fourfold:

- to assist final whey expulsion,
- to provide texture,
- to shape the cheese,
- to provide a rind on cheeses with long ripening periods.

The rate of pressing and pressure applied are adapted to each particular type of cheese. Pressing should be gradual at first, because initial high pressure compresses the surface layer and can lock moisture into pockets in the body of the cheese.

Salting

In cheese, as in many foods, salt normally functions as a condiment. But salt has other important effects, such as retarding starter activity and bacterial processes associated with cheese ripening.

Application of salt to the curd causes more moisture to be expelled, both through an osmotic effect and a salting effect on the proteins. The osmotic pressure can be likened to the creation of suction on the surface of the curd, causing moisture to be drawn out.

Salt content in different types of cheese, % salt

- Emmental 0.4 – 1.2
- Gouda 1.5 – 2.2
- Cheddar 1.75 – 1.95
- Feta 3.5 – 7.0
- Gorgonzola 3.5 – 5.5
- Other blue cheeses 3.5 – 7.0

Ripening and storage of cheese

Ripening (curing)

After curdling all cheese, apart from fresh cheese, goes through a whole series of processes of a microbiological, biochemical and physical nature.

Storage

The purpose of storage is to create the external conditions which are necessary to control the ripening cycle of the cheese as far as possible. For every type of cheese, a specific combination of temperature and relative humidity must be maintained in the different storage rooms during the various stages of ripening.

Different types of cheese require different temperatures and relative humidity (RH) in the storage rooms. The climatic conditions are of great importance to the rate of ripening, loss of weight, rind formation and development of the surface flora - in other words to the total nature or characteristic of the cheese.

- Cheeses like *Gouda*, may first be stored for a couple of weeks at 10 – 12°C and a RH of some 75 %. After that a ripening period of about 3 – 4 weeks may follow at 12 – 18°C and 75 – 80% RH. Finally the cheese is transferred to a storage room at about 10 – 12°C and a relative humidity of about 75%, where the final characteristics are developed.
- Cheeses like *Emmental* may need to be stored at 8 – 12 °C for some 3 – 4 weeks followed by storage in a “fermenting” room at 22 – 25 °C for some 6 – 7 weeks. After that the cheese is stored for several months in a ripening store at 8 – 12 °C. The relative humidity in all rooms is normally 85 – 90 %.

Technological gaps of local producers: In general HV cheese producers maintain the technological process for production of European cheeses, but sometimes technology gaps make

their produce differing from the standards, therefore not perceived well by final consumers. The most common technological gaps are the following:

- Using the raw milk without classification and/or of second class;
- Using the same starter cultures and applying the same ripening regimes as for traditional cheeses (for example "Lori" and "Gouda", that is the why sometimes domestically produced Gouda have a taste similar to "Lori");
- Secondary heating or drying is not always performed, which results in a higher than required humidity level in the cheese;
- Excessive quantity of Calcium chloride (CaCl₂) used in brine and milk, resulting in a bitter test of cheese;
- For production of HV cheese conventional pepsin/enzymes used, which also deteriorates the taste of the cheese.

Human resources: Most HV cheese producers use semi-automated systems in process of production. There are some devices that automate the process of cutting and mixing cheese mass. However, the human factor is indispensable in the production of HV cheeses.

In HV cheese production are mainly involved specialized dairy technologists with Soviet background, who have many years of experience in this field. Approximately, 70% of surveyed companies have foreign-trained professionals and technologists for production of European cheeses. It is worth mentioning, that often local dairy technologists use books and some other sources (e.g. internet) for experimenting with new varieties of cheeses.

Food safety standards: Mandatory general standards of dairy and cheese production in Armenia are defined by the RA Law on Food Safety; a number of subsidiary regulatory decrees including Government Decree N1925-N adopted on December 21st, 2006 on Approval of Technical Regulations on Milk, Dairy and requirements for their production. These official documents are specifying the allowed content/limits of dangerous materials, bacteriological features, nutritive value for each dairy product and requirements for labeling, packaging and technological processes.

According to the decision of the Eurasian Economic Commission (EurAsEC) No 293 dated 25.12.2012 there were approved the Common Forms of the Certificate of Conformity and the Declaration of Conformity to Technical Regulations of the Eurasian Economic Union (*EEU Certificate-EAC*). This document certifies the compliance of the products with the requirements of the EEU and at the same time, enables marketing, distribution and sales of approved products on the territory of the EEU without any additional requirements and additional assessment or permission (such as Rostechnadzor RTN¹⁴ Approval) procedures.

TR EEU Certification EAC (TR CU) can be issued for certain quantity, shipment base or for serial production with the term of up to 5 years.

¹⁴ Rostechnadzor is a Russian federal agency charged with enforcing safety of use of all potentially hazardous equipment.

In the meantime, by joining the EEU Armenia took the responsibility of applying and following the regulatory requirements and regulatory frameworks of the EEU. According to EEU Technical Regulation on Safety of Food Products (CU TR 021/2011), product compliance assessment (confirmation) should have become mandatory for application in Armenia since the beginning of 2016. At that moment, any enterprise producing food in Armenia should have installed Hazard Analysis and Critical Control Points (HACCP) system. But, in summer 2015 the RA Government re-negotiated the schedule of mandatory introduction of HACCP. The new schedule is set for various groups of products differently, thus meat and fish products, including dairy, have to be adjusted to HACCP standards till January 1, 2020.

The number of certification (not only for HACCP) organizations in Armenia is limited to the National Institute of Standards (SARM), GlobalGroup, EcoGlobe, TuVRheinland, Hay Consult, etc.

Starting from 2004 National Institute of Standards became the national standardization body working on development, research, publication and dissemination of national (AST), interstate (GOST) and international (ISO, EN, CEN) standards. Aside from food safety mandatory requirements, some producers also apply voluntary standards. For example, some producers of high value cheese products installed internationally accepted quality and food safety standards (e.g. ISO, EAC). Some of the HV cheese producers have ISO and companies who are exporting to Russia have EAC certification.

Packaging and labeling

The cheese is "alive" food and even after the completion of ripening it continues the maturation process. Cheese ripening dates are different; for the brine cheeses maturation 1-2 months are enough, conversely hard cheeses maturation lasts up to one year. It is noteworthy that during cheese ripening a favorable environment is created for not only good but also bad influence (worsening the quality of the finished product, contributing to the bad taste, smell, shape and color).

One can find a wide range of varieties of HV cheese in the market, that differ from each other by organoleptic, structural and other properties. And this difference is also due to the correct packaging and storage. Cheese packaging must maintain at least some of its important functions.

- To extend expiration date
- Comply with the transportation requirements, sometimes even for longer period,
- To provide screening and product attractiveness in shops, etc.

Currently, manufacturers pay more attention to the issue of packaging, which is also an important component of quality control. Conventionally, cheese packaging requirements can be divided into two groups.

1. For special types of cheeses, especially with the active surface (i.e. bacteria growing or surface mold), and usually short-term storage of cheese. Depending on the nature of moisture and air transparency, the package has an important role in the maturation process.

2. Hard cheeses requiring a long period of maturation are more preferably to have a completely vacuum packaging.

For choosing packaging material the following factors should be taken into account.

- water vapor, NH₃, CO₂,
- light insemination,
- penetration of food and other materials into the package,
- package material compliance with food preservation, transportation etc.

Hard cheese is usually packaged in plastic vacuum packs or polyamide. For special types of cheeses, such as Gouda, traditional packaging materials were used, but gradually modern latex emulsion (plastic covering) are becoming more convenient and popular for packaging purposes.

Soft cheeses should be packed with special attention to avoid mechanical impact. Fresh cheeses, which contain a lot of moisture can lose moisture (get dried), so it should be packed into the moisture-resistant containers protected also from exposure of oxygen and light. Those may be hermetic plastic containers, buckets etc.

Local producers in general keep the HV cheese packaging standards and requirements. Vacuum packaging is used for Semi-hard cheeses (Gouda, Edam, Dutch, etc.). Packages are mainly in yellow or red colors and with different shapes.

One packed piece of cheese is usually of 3-5 kg of weight. The products are also marketed in smaller pieces with colorless vacuum packaging of 0,3-1kg of weight. Latex-packaging practice is also used by local Gouda cheese producers.

Mozzarella cheese is marketed in plastic buckets full of brine (1 kg). However, Mozzarella produced for pizzas is packed in vacuum packs.

Gouda





Mozzarella



Locally produced uncommon types of HV cheeses, such as Edamer, Emmental, Maasdam, Dutch are vacuum-packed with yellow or red color, square and rectangular shape. Locally produced Camembert cheese has a unique wooden packaging form (0,2 kg).

All HV cheese producers are labeling their products in their factories.

Costs and margins

In this section of the report, production costs per unit (kg) for main types of HV cheese were calculated. The results are varying amongst producers, so the average figures are as follows Gouda: 2020-2100 AMD, Mozzarella` 1990-2800 AMD.

Logically direct production costs comprise the largest share of the total production costs (including raw milk, ferment, cultures, different materials, packaging, wages of production personnel and other production costs).

The share of direct costs varies from 70% to up to 95% of total production costs. The cost of procured milk has 50-84% share and other direct costs account for 5-8% share in total costs. The other direct and packaging costs do not differ so much amongst HV cheese producers, as most of them source from the same few suppliers existing in the market and usually pay the same price for inputs.

A relatively large share of indirect costs is registered in comparatively larger producers whose administrative, marketing, operational etc. costs are higher than in small ones.

Normally, large companies spend significant amounts on brand development and promotion, marketing, distribution, finance and administration etc.

In the meantime, the companies that are purchasing high quality milk pay a higher price for that, therefore their costs increase.

TABLE 14 DIRECT AND INDIRECT COSTS ASSOCIATED WITH HV CHEESE PRODUCTION

	Producer 1	Producer 2	Producer 1	Producer 2
	Gouda	Gouda	Mozzarella	Mozzarella
Direct costs	90.5%	70.8%	90.0%	94.6%
<i>milk</i>	76.2%	50.5%	73.0%	83.9%
<i>other materials and packaging</i>	4.8%	5.0%	8.3%	5.4%
<i>milk, other materials, packaging</i>	81.0%	55.5%	81.2%	89.3%
<i>Labor</i>	4.8%	5.1%	2.9%	2.9%
<i>Electricity, gas and etc.</i>	4.8%	10.2%	5.9%	2.5%
Indirect costs	9.5%	29.2%	10.0%	5.4%
TOTAL COST per kg/AMD	2100	2043	2056	2800

For other species of HV cheeses such as Dutch and Emmental producers' costs vary in the range of 1800-2000 AMD, and the average cost of Feta cheese is about 2,000 AMD.

For three most common types of domestically produced HV cheese net profit margins are presented in the below table 15.

TABLE 15 NET PROFIT MARGINS

Type of cheese	Min margin	Max margin	Average margin
Gouda	13%	38%	23%
Mozzarella	21%	51%	32%
Dutch	40%	44%	42%

In general, average profit margin was 30-35 %, cheese type had significant role in setting profit margins. For example, Dutch, Emmental, Feta and Mozzarella producers set higher net profit margins than Gouda producers. One reason is that prices of imported Gouda cheese are

comparatively lower than other types of imported cheese, that is why local producers set prices in a way to be competitive in the market (with lower price than their imported analogues). The other reason is that Gouda cheese, after Mozzarella, is the second in terms of assortment produced by different local producers, which in turn, creates price competition amongst local producers.

Prices

Wholesale pricelist of all locally produced HV cheeses is presented below.

TABLE 16 LOCAL PRODUCERS' PRICELIST FOR HV CHEESES¹⁵

Type of cheese	Producer name/ Price (AMD)	Producer name/ Price (AMD)	Producer name/ Price (AMD)	Producer name/ Price (AMD)	Producer name/ Price (AMD)
Mozzarella	Doustr Marianna 3110	Borisovka 2400	Mastarachedo 3200	Dili 3500	Bnakan Kat 2600
Gouda	Doustr Marianna 2440	CheeZler 3000	Gor Sargsyan SE 2900	Araks-2 2600	
Dutch (Gollandsky) ¹⁶	Daughter Melania 2400	Ashotsk Cheese Factory 2600	Gor Sargsyan SE 2900		
Edamer	Ashotsk Cheese Factory 2900				
Roquefort	Mastarachedo 5000	Ashtarak Kat NA			
Feta	Golden Goat 2800				
Tommi	Golden Goat				
Camambert	Borisovka 6500				
Hella	CheeZler 2500				
Maasdam	Gor Sargsyan SE 2900				
Gloria	Gor Sargsyan SE 2900				
Burata	Dili 11600				
Armenian ¹⁷	Dili 3400				
Graf Orlov	Igit				

¹⁵ As of December 2015

¹⁶ Dutch / Gollandsky cheese technology was developed by Russian/Soviet cheese technologists and is widely used in CIS countries.

¹⁷ Semi-hard cheese used to be produced in Armenia during Soviet times, produced using technology similar to Gouda.

	2400				
Armtermani	Elola 2300				

Prices of HV cheeses are largely influenced by popularity of a particular cheese (i.e. Mozzarella), external appearance/"attractiveness", a form of packaging, color, taste, availability of eyes and so on. While setting up prices, producers take into account consumers' purchasing power and prices of imported products (setting lower prices compared with the imported ones to be competitive).

Majority of HV cheese producers do not change prices of their produce during the year. Interestingly, the producers who produce HV cheese together with traditional varieties had certain seasonal price fluctuations (lower in summer compared with other seasons). Producers specialized in production of HV cheese only keep their prices stable throughout the year.

Prices vary significantly amongst HV cheese producers dependent on the production technology used. Closer the technology to the western high-quality classic one, higher the production costs and consequently the price are. For instance, Gouda type of cheese produced by the original technology is sold at a higher price (f.i 3000 AMD per kg) and vice versa: Gouda produced with Lori technology (or Mozzarella with Suluguni technology) is relatively cheaper (up to 2445 AMD per kg).

To analyze the price differences between the same types of HV cheese, Gouda and Mozzarella were selected due to a relatively large number of local producers of those varieties.

Gouda cheese producers' sale price variation reaches 23% (minimum 2,445 AMD and maximum 3,000 AMD per kilogram), while the price of Mozzarella price difference is even more drastic - 45% (minimum 2,400 AMD, the maximum – 3,500 AMD per kilogram). The reasons for such a difference in prices is discussed in the above paragraph.

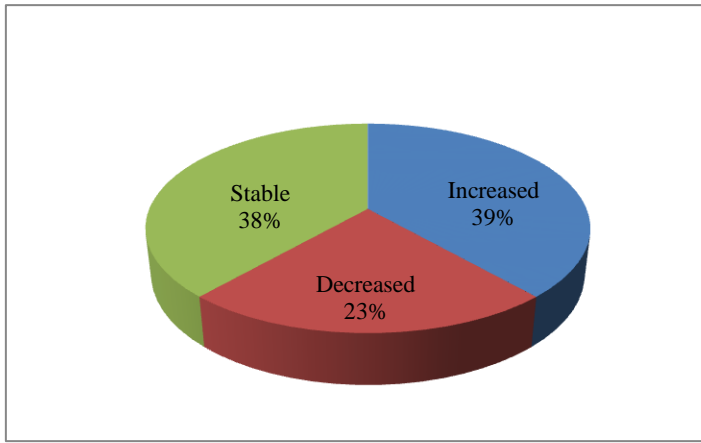
Marketing and sales

Sales markets: 53% of locally produced cheeses were sold in local market and 47% was exported in 2014. As of the mid December, 2015 share of locally produced HV cheeses sold in local market and exported comprised 42% and 58% accordingly.

In the local market in 2014, the local producer companies sold about 140 tons of HV cheeses (including 7 tons of 2013 produce). Compared to 2014, in 2015¹⁸, approximately 120 tons of HV cheese was sold. Considering expected sales during Christmas holidays the volume of sales of locally produced HV cheeses is exceed the one in 2014.

FIGURE 13 HIGH VALUE CHEESE SALES IN LOCAL MARKET

¹⁸As of the mid December

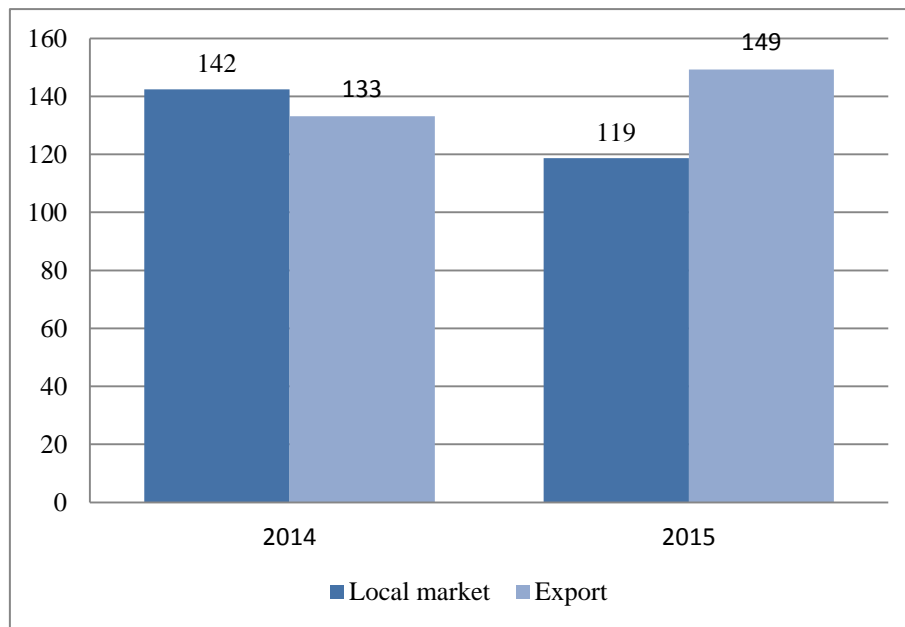


As shown in the Figure14, about 3/4 of surveyed HV cheese producers registered either increase or stable local sales in 2015 compared to 2014. Only 23% of surveyed producers reported decrease in local sales in 2015 compared to 2014.

Almost half of the producers increased production volumes due to starting exports or increase in their export volumes during 2014-2015. A few HV cheese producers

increased their export volumes due to the fact that they have signed export contracts in 2015 and started to export their newly developed cheese types to Russia (i.e. Roquefort). The remaining producers have decreased volumes of HV cheese production and exports to Russia, as ruble devaluation caused significant financial losses.

FIGURE 14 PROPORTION OF THE HV CHEESE PRODUCERS' LOCAL SALES AND EXPORTS IN 2014-2015, TONS

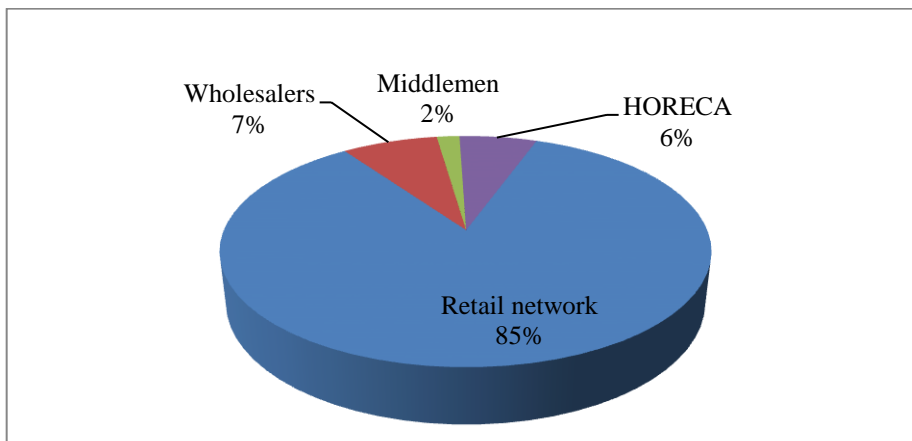


Though in 2015 export volumes of HV cheese increased (from 133 tons 149 tons), but still ruble devaluation negative effect was visible. In 2015 almost 1/3 (50 tons) of HV cheese export was done by “Mastarchedo” LLC, who signed export contract in 2015 and started exporting their newly developed cheeses to Russia (i.e. Roquefort). If we exclude “Mastarchedo” LLC from the list of exporters in 2015, the total volume of HV cheese exports will be less by 25%. Other HV cheese producers faced serious difficulties due to ruble devaluation and decreased their export volumes (Igit LLC, Elola CJSC) or just quit Russian market (Ashotsk Cheese Factory).

According to survey large volume (85%) of locally produced HV cheese is being sold directly in supermarkets and large retail networks (Yerevan City, SAS etc.) distributed by the supplier

companies' vehicles. Cases when HV cheese producers sell their product to middlemen at relatively lower prices are quite rare (2% of HV cheeses sold to middlemen).

FIGURE 15 SALES CHANNELS USED BY LOCAL HV PRODUCERS' IN LOCAL MARKET, % OF TOTAL SALES IN LOCAL MARKET



Share of HV cheeses sold directly to HORECA sector comprised 6% of total sales in the local market. 30% of surveyed HV cheese producers are working directly with HORECA sector: the hotels and restaurants such as Armenia Marriott hotel, Congress hotel, Dolmama restaurant etc.

The wholesale trade is not viewed as a priority distribution channel since the volumes are not sufficiently high (7% of total sales). However, to assure a wider presence in the market some producers occasionally supply their produce to wholesale markets ("Petak", "Surmalu", "Gum") located in Yerevan, where from small stores including from the regions of Armenia buy their assortments (and HV cheeses amongst those).

40% from HV cheese producers sell their products entirely in Yerevan market, others' produce is available also in the local regional markets, where their production is based. Only Elola and Doustr Marianna`s products are available in 4 and more marzes. As it can be seen, the lion part of local sales of domestically produced HV cheeses is concentrated in Yerevan.

TABLE 17 SHARE OF LOCALLY PRODUCED HV CHEESES SOLD IN YEREVAN MARKET, % IN TOTAL SALES

Type of HV cheese	Yerevan, %	Type of HV cheese	Yerevan, %
Dutch (Gollandsky)	100	Fungo	100
Feta	100	Hella	95
Tommi	100	Edamer	100
Camambert	100	Armtermani	90
Maasdam	100	Mozzarella	90
Gloria	100	Gouda	90
Roquefort	100	Emmental	85
Burata	100	Graf Orlov	80
Armenian	100	Bruni	80

Marketing: It is noteworthy that HV cheese producers are weak and passive in developing and implementing marketing policies. As observed during the research, nearly no promotional activities are either planned or implemented to increase local sales of HV cheeses.

The major reason reported by surveyed HV cheese producers is that produced small volumes of cheese is mostly sold mainly in the same year of production.

Domestically produced HV cheeses have a much lower selling price (10-30 %) compared to the imported ones, which is the only competitive advantage of local produce, the evidence of “low price” strategy applied by the local producers.

So far, just one company organized the Mozzarella tasting in retail stores to attract new consumers.

According to producers the main marketing constraint is the cooperation with retailers and supermarket chains. Conditions offered to local HV cheese producers are stricter than those for importing companies. For instance, the return of HV cheeses from retail stores is applicable only for local producers, whereas HV cheese importers do not accept returns from the stores. The other problem mentioned is delayed payments and/or credit requested from HV cheese producers against the produce supplied (e.g. one or two months).

Exports and major constraints

2014-2015 years nearly 50% of all HV cheese producers exported their produce, and the only destination was Russia (99.7 % from total Armenian HV cheese exports volumes accounts for Russia). Only one company tried to export cheese from Armenia to Iran. Armenia had a successful cheese export history with USA in 2012 (8% from total Armenian cheese exports) with USDA support. By 2012 USDA operation mandate expired (who supported cheese producers to export their products to USA), that is why exports to USA significantly dropped.

TABLE 18 MAIN EXPORTERS AND DESTINATIONS OF ARMENIAN HV CHEESE

Name of company	Exporting year	Country	Type of HV cheese
Elola CJSC	2014-2015	Russia	Armtermeni
Golden Goat CJSC	2014-2015	Russia	Feta, Tommi
Doustr Marianna LLC	2014-2015	Russia	Special cheese
Gor Sargsyan SE	2015	Iran (trial)	Gouda
Ashotsk Cheese Factory LLC	2014	Russia	Emmental
Mastarachedo LLC	2015	Russia	Roquefort
Igit LLC	2014-2015	Russia	Edamer, Graf Orlov
Araks-2	2015	Russia	Feta

Pricelist of exported HV cheeses is presented below.

TABLE 19 PRICELIST OF EXPORTED HV CHEESES

Type of high value cheese	Price for exporting dram/kg
Mozzarella	3200
Feta	2800
Tommi	3100
Roquefort	4500
Armtermani	2300

According to HV cheese producers the main and most attractive export destination is Russia, which still maintains a reputation of a "big market" amongst Armenian cheese producers. However, some exporters, apart from Russia, tried to export their traditional cheeses to other countries, particularly US, United Arab Emirates, Georgia and Iran but concluded single pilot shipments. Producers think that the quality of the product and the right marketing will enable Armenian cheese penetrate the markets of the CIS countries (Georgia, Turkmenistan etc.) and Iran.

Exporter producers should meet the following requirements and conditions:

- High-quality cheese, which should also have appropriate packaging,
- Have a competitive price compared to the market prices in the importing country,
- Have an attractive appearance,
- Long shelf life,
- Necessary documents and certificates required for particular export destination,

Generally, HV cheese producers do not face any problem while exporting their products to Russia. Procedures and documentation required for Russia are considered to be fairly simple and lasting. As one of the HV cheese producers mentioned, the only problem with exports is that *"...such an easy access to Russian market is even dangerous, as some local producers with bad quality products can easily damage the reputation of Armenian cheeses in Russian market, which will have negative impact on all Armenian producers"*.

Wholesale

HV cheese wholesale trade in Yerevan is mostly concentrated in Surmalu, Petak, HAYCOOP, Malatya etc. wholesale markets of food and grocery products.

Wholesale outlets operating in those markets alongside with other food suppliers work closely with the HV cheese importers and producers, but mostly without formal written contracts. In general, the

wholesale trade of various food and non-food products in those markets comprises a substantial share in the trade structure of Yerevan, nevertheless as mentioned earlier in this report; sales of HV cheeses here are not significant. According to HV cheese producers, trade through these wholesale outlets is viewed more as an opportunity for a produce display and wider representation in the market (including regional traders) rather than a serious sales channel. HV cheese producers and wholesale traders are in flexible, long-term though non-formal contractual relationships. In general, wholesalers do not change products before selling it.

The average net profit margin for HV cheese wholesalers ranges from 5 to 15%. Variations of wholesalers' profit margin mostly depend on the type of cheese, the purchase price, quantity and demand.

Intensive marketing activities are not in place in the HV cheese market. One of the reasons is that HV cheese consumers are usually indifferent to the name of producer and/or the brand. Wholesalers regularly offer discounts and flexible payment schemes. Large importers occasionally carry out promotions by distributing gifts to the customers.

Importers: The import of cheese is organized by specialized food import companies, brand representatives and other importers importing HV cheeses along with other products. There are importers who import exclusively one type of HV cheese, such as Cheddar; others import many types of several known brands.

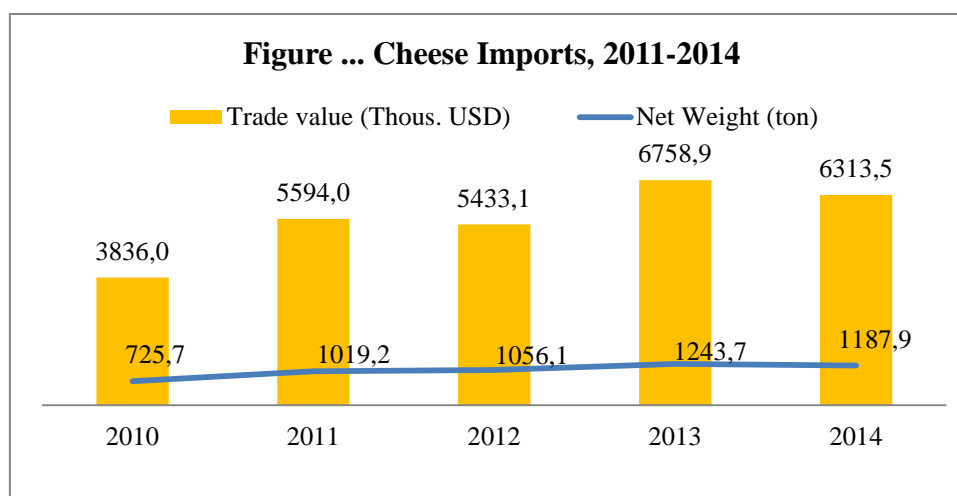
10 companies are mostly involved in HV cheeses imports ("Ardis", "Two Eriak", "Andako", "Brandleader", "Alpha Food Service", "Lactalis Arma" etc.). Some of importers focus on certain HV cheese types, others operate as distributors of famous international brands. There are also importers that are not specialized in dairy or cheese trade, but in none regularly bases import some type of HV cheeses (mainly before Christmas). Importers have comparative advantage towards local producers in terms of sales volumes due to the following reasons:

- Have a wide-range representation (varieties and volumes) in the retail network,
- Have many years of experience of cooperation with retail outlets, and their imported products has been captured stable market share,
- Have developed distribution system.

Importers set higher margins, especially when cheese is sold directly through retail network. Importers margins may vary from 25% to 100% (when importers have own stores). High gross profit margins of imported HV cheeses are due to higher additional expenses related to transportation, warehousing, and distribution.

Imports of high value cheese: The wide range of European origin cheeses is being imported. The volumes of cheese imports have been steadily growing over past 10 years reaching the maximum figure of about 1,250 tons in 2013.

FIGURE 16 PRICELIST OF IMPORTED HV CHEESES



Source: UN ComTrade

In 2014 1,188 tons of cheese and curd (HS 0409) was imported. Semi-hard and Hard cheeses have the largest share amongst all kinds of cheese. Blue veined cheeses had 13 % share in total imports (158 tons, 2014).

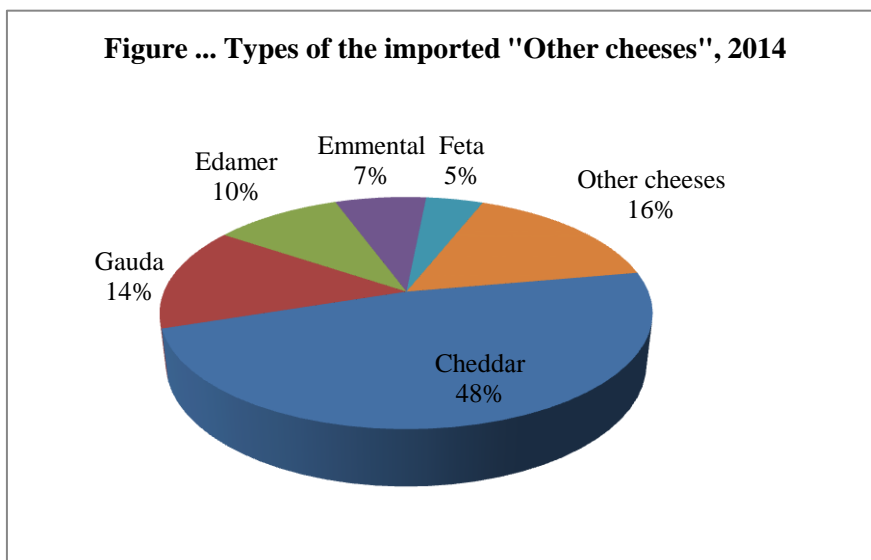
TABLE 20 CHEESE IMPORTS BY TYPES, 2014

Type of cheese	Net Weight (tons)	Share in total volume, %
Fresh (unripened or uncured) cheese, including whey cheese and curd	188.5	15,87%
Grated or powdered cheese of all kinds	0.064	0,01%
Processed cheese, not grated or powered	226.1	19,03%
Blue-veined cheese and other cheese containing veins produced by <i>Penicillium roqueforti</i>	157.8	13,28%
Other cheeses:	615.4	51,81%
<i>Cheddar</i>	293.7	25%
<i>Gouda</i>	88.8	7%
<i>Edamer</i>	61.4	5%
<i>Emmental</i>	43.9	4%
<i>Feta</i>	27.5	2%
<i>Other cheeses</i>	99.7	8%

Sources: UN ComTrade and NSS of RA

Semi-hard and hard cheeses are included in "other cheeses" group. The main imported types of "other cheeses" are Cheddar (about 300 tons), Gouda (about 90 tons), Edamer (about 62 tons).

FIGURE 17 TYPES OF THE IMPORTED "OTHER CHEESES", 2014



Source: NSS of RA

The average prices of imported cheeses are presented in table 21.

TABLE 21 THE PRICES OF IMPORTED CHEESES, IN 2014

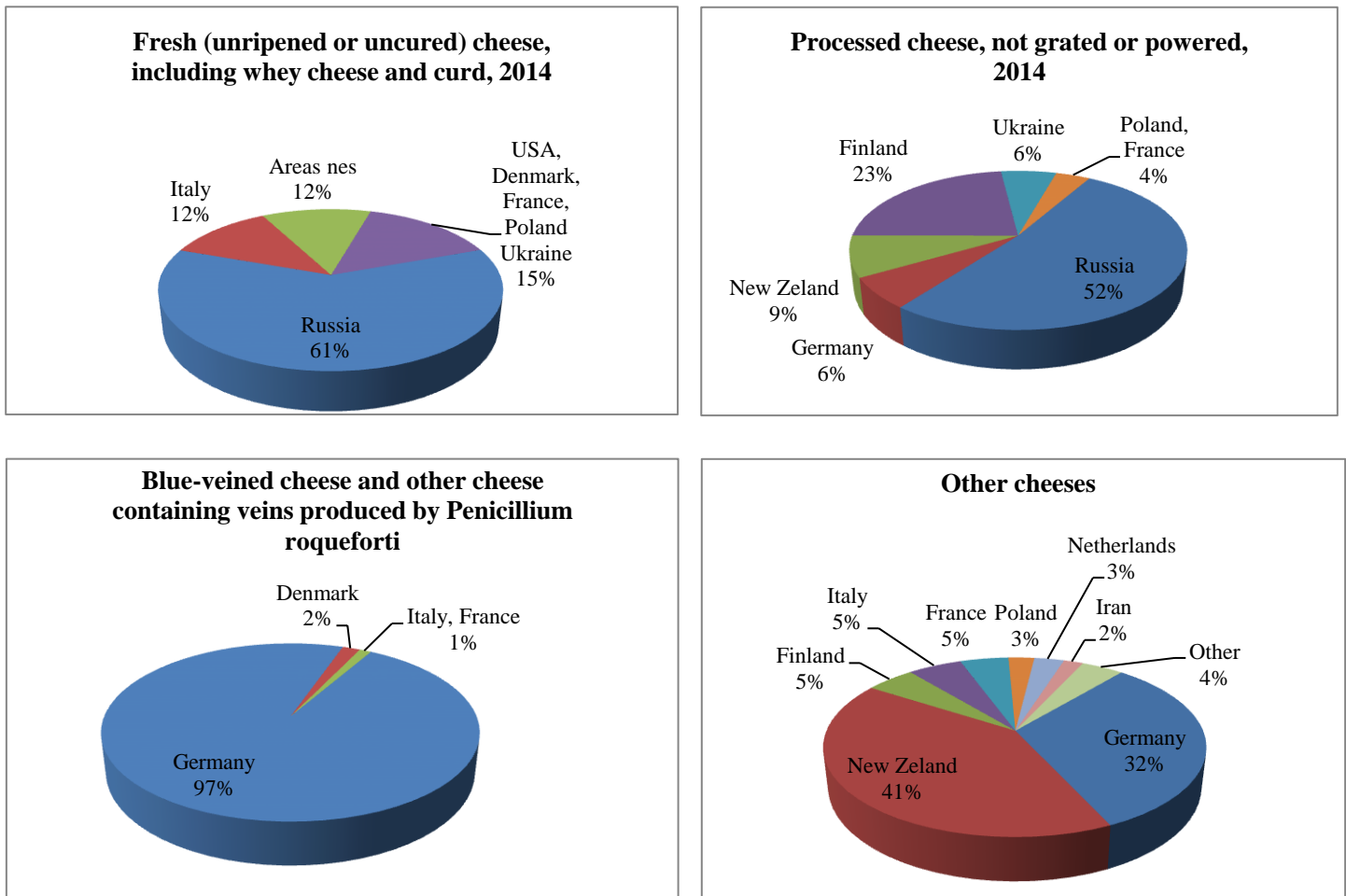
Types of imported cheeses	Price per kg (USD)	Price per kg (AMD)
Fresh cheeses	4,3	1830
Blue-veined cheeses	9,2	3890
Cheddar	4,2	1800
Gouda	5,1	2160
Edamer	4,6	1960
Emmental	6,5	2760
Feta	2,7	1150
Other cheeses	5,3	2250

1 USD=425 AMD

Fresh cheeses are imported mainly from Russia, which accounts for more than half of total imports of fresh cheeses (61%, 2014), the rest countries of imports are Italy, Ukraine, USA, Denmark. 52% of processed cheeses are also imported from Russia, followed by Finland (23%) and New Zealand (9%).

All kinds of grated or powdered cheeses are imported only from Italy. The blue-veined cheeses (mainly Roquefort) are predominantly imported from Germany.

FIGURE 18 IMPORTED CHEESE VARIETIES, COUNTRIES OF ORIGIN



Varieties of “other cheeses” like Gouda, Edam, Cheddar, Emmental are imported mostly from New Zealand and Germany, 41% and 32% respectively. Imports from other European countries are almost equally distributed (see the figure 19 above).

Retail trade

In Armenia there are about 16,600 operating trade institutions, including 12,800 shops. About 7% of the shops are specialized grocery stores, 54% are non-specialized stores, and the rest are non-food stores. If we take into account that a large part of non-specialized stores have also food sections, we can conclude that 42% of shops are involved in sales of food. More than half of the shops in Armenia are allocated in Yerevan.

HV cheeses are mainly represented in groceries and supermarkets. The large supermarkets are: Yerevan City, SAS, Kaiser, New Zovk, Krpak, Evrika, Parma, Best, Hayr & Vordi Yeritsyanner and others. It is noteworthy that even in small (“yard”) shops buyer can find at least one type of HV cheese. Petak and Surmalu wholesale and retail traders have a limited assortment of HV cheeses,

and they are not slicing whole cheese into pieces during sales. Wide variety of cheeses in small packages sold in shops and supermarkets.

Retail traders do not change the products form before selling. Relatively small number of stores, mostly supermarkets are slicing cheeses and packing small pieces with clear plastic bags. The reason for that is to stimulate sales since HV cheese buyers generally prefer to buy cheese in smaller weights.

Depending on the type of cheese, producer, and cheese origin, the net profit margin of retailer in average varies from 10 to 45%. Supermarkets are setting higher profit margins than the small shops. Location of shops (Yerevan or marzes) has a considerable influence on setting margins: for instance centrally located high-end supermarkets earn more than small stores in the regions of Armenia.

In general, we can say that between supplier companies and retail traders no written contractual arrangements exist, only few supermarkets (i.e. Carrefour) are working on a formal contract basis with suppliers.

Retail traders do not implement any marketing campaigns at all; often they do not even support the producers/importers to organize such events. Shelf life of HV cheeses is normally quite long (e.g. several months), which enables retailers to sell the stock of cheese without the risk of dates expiration.

Cooperation between producers and retail outlets is rather flexible in terms of the frequency of deliveries, regularity of payments, as well as the return of the perished products to suppliers. In average suppliers deliver HV cheese to supermarkets, restaurants and hotels 1-2 times a week.

HV cheese importers provide more varieties than local producers. Retail traders purchase smaller amounts of cheese without any preconditions.

30% of surveyed shops mentioned that certain problems are arising during deliveries (sometimes suppliers deliver insufficient or extra quantities, sometimes perished products etc.)

Shops fully take responsibility for the delivered imported HV cheeses (they do not have a right to return it to the importer, even if it is expired/unsold/damaged). This is the most frequently encountered problem in cooperation with importers. This problem has been solved to some extent for local producers, who are now re-equipped and have appropriate production capacities to process expired/unsold/damaged chesses and make other products (like: melted cheeses).

HV cheese sales problems arise about in half of the stores surveyed. The main problems mentioned are high prices and as a result a low demand of HV cheeses.

High Value Cheese Market Study

Overview of Armenian High Value Cheese Market

A wide range of HV cheeses is represented in Armenian market with high share of imported cheese. Imported HV cheese packaging, appearance, attractiveness, diversity, as well as retail prices are different from locally produced ones. HV cheese availability in retail outlets, their origination, sales prices, the best-selling types and other issues have been identified through market study.

Small varieties of locally produced HV cheeses are available in retail outlets (see table below). Thus, the most represented locally produced HV cheeses in retail network are “Dutch” cheese (16% of surveyed stores) and Gouda (14% of surveyed stores). Latter’s monthly sales volumes were respectively 4,6 and 5,9 kg.

TABLE 22 MAJOR TYPES OF LOCALLY PRODUCED HV CHEESES AVAILABLE IN RETAIL CHAIN

Types of HV cheeses	Share of surveyed shops where the product is available (%)	Average monthly sales per shop, kg
Dutch cheese	16%	4,6
Gouda	14%	5,9
Mozzarella	3%	7,0
Goat cheese	3%	3,0
Blue veined cheeses	2%	0,5

As it was already mentioned imported cheese are more widely represented in retail outlets.

During the survey more than 40 types of imported HV cheeses have been identified. The table below shows the types of imported HV cheeses presented in more than 2% of surveyed stores. The largest HV cheese varieties (about 30 types with 90 brands) were available in SAS supermarkets chain.

TABLE 23 MAJOR TYPES OF IMPORTED HV CHEESE TYPES AVAILABLE IN RETAIL OUTLETS

Type of cheese	Country	Share of surveyed shops where the product is available (%)	Brand
Dorblu (Blu veined cheese)	Germany	73%	Dorblu
Cheddar	New Zealand	57%	Ferndale
Gouda	Germany	41%	Oldenburger
Edammer	Germany	22%	Oldenburger
Cheddar	Great Britain	11%	Arla
Emmental	Germany	10%	Illertaler

Emmental	Germany	10%	Allgautaler
Dutch (Gollandsky)	Russia	10%	Голландец
Maasdam	Germany	8%	NA
Maasdam	France	8%	President
Radamer	Poland	8%	Spomlek
Brie	France	8%	President
Emmental	Germany	8%	Patriarkh
Camambert	France	6%	President
Roquefort (Blu veined cheese)	Denmark	5%	Castello
Emmental	Germany	5%	Paladin
Mascarpone	Italy	5%	Galbani Mascarpone
Mozzarrela	Denmark	5%	Arla Finello
Maasdam	Netherland	3%	Veldhuyzen
Maasdam	Netherland	3%	Frico
Gouda	Netherland	3%	Veldhuyzen
Edammer	Netherland	3%	Frico
Mascarpone	Italy	3%	Sterilgarda
Emmental	Italy	3%	Galbani Emmental
Parmigiano-Reggiano	Italy	2%	Zanetti Parmigiano Reggiano
Grana-Padano	Italy	2%	Auricchio Grana Padano

From imported varieties most represented types of cheeses are Dorblu (available in 73% of surveyed retail outlets) and Cheddar (57 %).

After summarizing the results of three main information sources of this study (national statistics, survey with HV cheese producers, survey with HV cheese consumers) the volume of locally produced HV cheese have 12% share (or 135 tons) in total HV cheese market.

Packaging and shelf life: Locally produced and Russian HV cheeses have lower shelf life than European types. European producers are able to produce HV cheese with longer shelf life, as they are following all the technological stages and standards. Locally produced HV cheese shelf life is in average 6 months, but still there are some local producers who set even 1 year shelf life for their product (i.e. Gouda). The other important fact is that some of the locally produced HV cheeses changed their organoleptic properties even before their shelf life was expired. According to field experts the reason is related with the quality of processed raw milk and applied technology.

Best-selling types of high value cheese and selected dairy products: Best-selling imported and local HV cheese types are presented in the table below. From surveyed retail outlets the "best performer" amongst imported cheese in terms of monthly sales was Cheddar "Ferndale". Locally produced Gouda (Gloria Cheeses and CheeZler together) also had noticeable result of 5,5 kg per month per shop. It was reported, that in recent years the demand for Gouda cheese had increased, proved by its' representation and sales trend in retail network.

TABLE 24 BEST-SELLING IMPORTED AND LOCAL HV CHEESE TYPES

Best-selling types	Share of surveyed shops where the product is available (%)	Average monthly sales per shop, kg
Cheddar "Ferndale"	57%	12,3
Gouda "Oldenburger"	41%	8,2
Blue-veined cheese Dorblu	73%	7,2
Gouda /Locally produced/	14%	5,9
Голландец /Россия/	10%	5,5
Cheddar "Arla"	11%	5,1
Edamer "Oldenburger"	22%	5
Dutch /"Locally produced"	16%	4,6
Emmental "Allgautaler"	10%	4

During the survey best-selling yogurt and butter types were also identified. Armenian (Ashtarak Kat, Doustr Marianna) and Russian (Campina, Danone) yogurts are in tough competition in the yogurt and drinking yogurt markets (see table 25 and table 26).

TABLE 25 BEST-SELLING TYPES: YOGURT

Brand	Taste	Origin	Producer	Retail price, AMD	Average monthly sales per shop, pcs	Share of surveyed shops where the product is available
"Нежный"	mainly strawberries, peaches	Russia	Friesland Campina	140	193	67%
Ashtarak Kat	mainly strawberries, peaches and chocolate.	Armenia	Ashtarak Kat	170	67	33%
Fruttis	mainly strawberries	Russia	Campina	190	280	29%
Активия	curd	Russia	Danone	400	103	24%
Yogurt	mainly strawberries, peaches	Armenia	Ashtarak Kat	170	46	24%
Marianna	mainly strawberries, peaches	Armenia	Marianna	170	32	24%
Marianna	fruit	Armenia	Marianna	220	17	10%
Растишка	peach	Russia	Danone	260	125	14%

TABLE 26 BEST-SELLING TYPES: DRINKING YOGURT

Brand	Taste	Origin	Producer	Packing weight, gram	Retail price, AMD	Average monthly sales per shop, pcs	Share of surveyed shops where the product is available
Yogu-Mogu	strawberries	Armenia	Ashtarak Kat	200	300	59	45%
Fruttis	strawberries,	Russia	Campina	300	350	68	40%

	peaches						
Marianna	fruit mix	Armenia	Marianna	300	310	34	30%
Нежный	strawberries	Russia	Campina	270	330	16	25%
Mojo	bananas, strawberries	Armenia	Ashtarak Kat	270	320	36	25%
Drinkable	strawberries	Armenia	Ashtarak Kat	240	270	75	20%
Активия	plum	Russia	Danone	290	630	61	25%
Растишка	peach	Russia	Danone	290	700	60	10%

According to retail outlet survey the distribution network of imported types of butter is larger than of locally produced one. Still with small representation in the retail chain local butter producer ("Factory of Katnarat" Ltd) recorded comparatively high volumes of monthly sales (30kg/month per store). Based on sales volumes and availability in retail chain unpacked New Zealandian and Anchor (200 g) butter varieties are considered to be the best-sellers.

TABLE 27 BEST-SELLING TYPES OF BUTTER

Brand	Country of origin	Producer/Importer	Without pack or Kg/package	Retail price, AMD	Average monthly sales per shop, kg	Share of surveyed shops were the product is available, %
Anchor	New Zealand	Fronterra LLC	0,2	820	29	55%
New Zealandian	New Zealand	Fronterra LLC	Without pack	2550	41	50%
Doyarushka	Russia	Fronterra LLC	0,2	820	24	27%
Valio	Finland	Valio	0,2	820	15	27%
Valio	Finland	Valio	Without pack	2650	27	18%
President	France	Lactalis International	0,2	920	7	18%
Katnarat	Armenia	"Factory of Katnarat" Ltd	0,2	750	6	14%
Anchor	New Zealand	Fronterra LLC	Without pack	3200	30	9%
Katnarat	Armenia	"Factory of Katnarat" Ltd	0,5	1200	30	5%

Prices

If we compare the retail prices of local and imported varieties of cheese, we can see that the price of imported cheese is quite high compared to the local one.

TABLE 28 RETAIL PRICES FOR LOCAL AND IMPORTED HV CHEESES

Type of HV cheese	Locally produced	Imported
Gouda	3000-4200	3800-5200
Edamer	2700-3200	4500-5000
Mozzarella	3600-5000	4000-5000
Goat Cheese	3000-4500	-
Emmental	3100-3500	5000-9000
Blue cheeses	4500-5000	6000-9000
Maasdam	-	4500-7000
Cheddar	-	3000-4000
Parmesan	-	10000-17000

As it was shown in above table locally produced and imported Mozzarella are almost in the same price range, due to the fact that Mozzarella cheese have small shelf life and high demand in HORECA sector.

Highest price difference was detected in Edamer, Emmental retail prices (imported Edamer, Emmental retail prices are higher than its locally produced analogues by 60-70%). Retail prices of imported Gouda are 20-30% higher than of local producers.

TABLE 29 PRICES OF LOCAL AND IMPORTED HV CHEESE

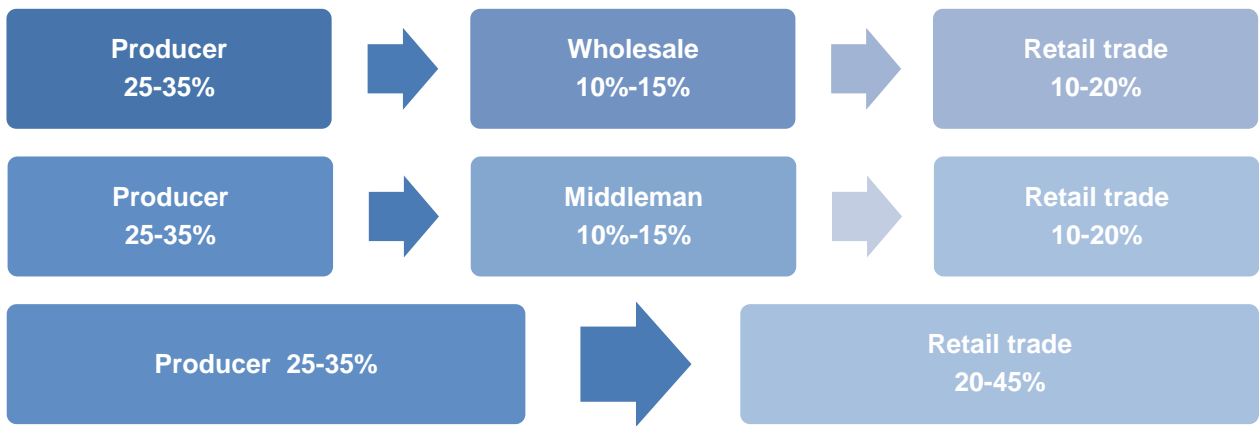
	Local producer price	Import price of foreign origin cheeses	Retail price (locally produced)	Retail price (imported)
Dutch (Gollandsky)	2570	NA	3000-3300	3000 ¹⁹
Gouda	2600	2160	3000-4200	3800-5200
Edamer	2400	1960	2700-3200	4500-5000
Roquefort	-	3890	-	6000-9000
Mozzarella	3030	-	3600-5000	4000-5000
Cheddar	-	1800	-	3000-4000

In general (taking into consideration sales volumes and varieties) average prices for locally produced and imported HV cheeses differ by 25%.

Gross margins/overhead added by VC actors (locally produced HV cheeses)



¹⁹This "Dutch"/Gollandsky cheese is imported from Russia



According to survey in average producers' selling prices are increasing by an average 30%.

Supply chain includes producers, middleman, wholesalers and retailers. As a rule wholesalers and middlemen overhead are set to be a maximum 10-15%. Retail outlets` overhead is in average 10-20% if they are buying the cheese from middlemen/wholesaler. It is noteworthy that retail outlets operating in Armenian regions are setting even lower overhead (10%), than some of the shops in Yerevan. Retail outlets who buy HV cheeses directly from local producers are setting in average 20-45% overhead.

In case of imported HV cheese mostly two supply chain mechanisms are used:

Gross margins added by VC actors (imported HV cheeses)



In contrast to locally produced HV cheeses, overheads set by different VC actors of imported HV cheese are higher. One of the main reasons is that a large share of HV cheese importers had their own retail outlets, which enables them to sell their products with up to 100% overhead.

Value/costs added of HV cheese importers are as follows:

- Transportation/shipment from Producers (5-10%),
- 20% VAT on top of value totaled at the moment of custom clearance,
- 10% of import tax,
- In-country transportation, storing, marketing and distribution (3-5%).

Standards

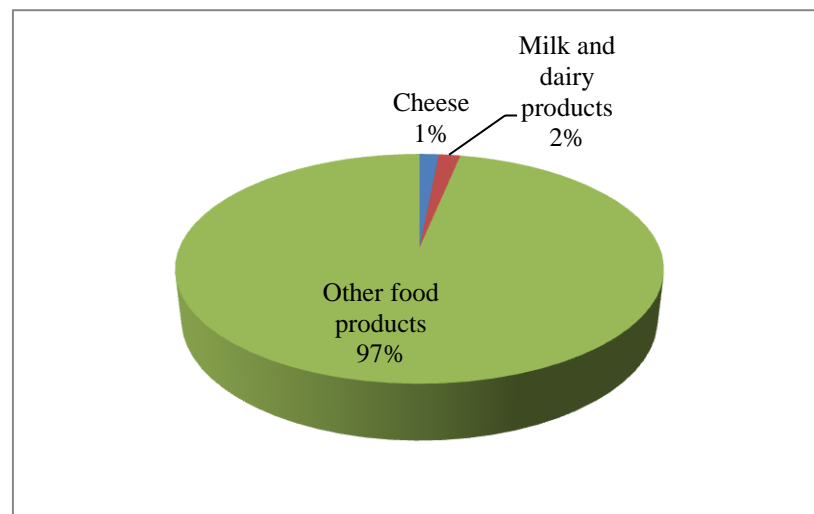
According to the National Institute of Standards, all food processors should have Standard for RA (AST), but only supermarkets require an AST certificate from suppliers.

Most consumers do not pay attention to product certification. Only for 20% of respondents the existence of a certificate is important.

Sales volumes

Estimated volumes of sales of locally produced and imported high value cheese: According to official sources, the food retail trade in 2014 amounted to 863,527 million AMD, of which 0.9% of the retail trade was in cheese (13,195 million AMD), while milk and dairy products retail trade was 1% (14,661 million AMD). It should be noted that according to official statistics, trade turnover is quite different from reality to some extent.

FIGURE 19 ARMENIA: CHEESE AND DAIRY PRODUCTS SHARE IN TOTAL FOOD RETAIL TRADE, 2014



As mentioned in the Producers section, local HV cheese production in 2014 totaled about 270 tons of cheese. In the same year, 133 tons of high-quality cheese were exported and 962 tons of HV cheese were imported in Armenia. For obtaining the total HV cheese market size, Processed, Grated or powdered cheese imports are excluded. Thus, the HV cheese market volume in 2014 was estimated at 1,097 tons.

TABLE 30 HIGH VALUE CHEESE MARKET SIZE IN ARMENIA, 2014

	Cheese, ton	High value cheese, ton
Production	18,317	268
Import	1,188	962

Export	1,542	133
Market size, ton	17,963	1,097

As shown in the table above, the HV cheese market size has only 6 percent share from the total market size. Traditional cheeses ("Lori" and "Chanakh") remain the most demanded types of cheese in local market. However, local consumers prefer some types of HV: Blue-Veined, Cheddar, Dutch (Gollandsky), Gouda, Edam, and Mozzarella. Summary table of all above mentioned types of cheese is provided below.

TABLE 31 SUMMARY FOR ARMENIAN DAIRY AND CHEESE MARKET SIZES, TON, 2014

1. Total dairy market size	38,217.2 ²⁰
2. Total cheese market size	17,963
3. Total HVC market size	1,097
4. Market segmented by origin:	
a. Total imported HVC segment	962
b. Total locally produced HVC segment	135
5. Market segmented by consumer ²¹ :	
a. HVC consumer segment	811,8
i. Imported	704.8
ii. Locally produced	107
b. HVC HORECA segment	285,2
i. Imported	257.2
ii. Locally produced	28
6. Market segmented by cheese	
a. Roquefort and blue veined cheeses	172,8
i. Imported	157,8
ii. Locally produced	15
b. Dutch type cheeses (semi-hard)	200,8
i. Imported	152.8
ii. Locally produced	48
c. Fresh cheeses (unripened or uncured) including Mozzarella (Fresh and for pizza)	219
i. Imported	188,5
ii. Locally produced	30,5
d. Cheddar type cheeses (hard)	293,7

²⁰This volume includes market sizes of Cheese, Curd, Matzoun, Sour Cream, Kefir, Yogurt, Butter. Milk volume is not included, as it is calculated by liters.

²¹ Expert estimates

i. Imported	293,7
ii. Locally produced	-
e. Emmental type cheeses	58,9
iii. Imported	43,9
iv. Locally produced	15
f. Feta	38,5
i. Imported	27,5
ii. Locally produced	11
g. Other type cheeses	113,3
i. Imported	97,8
ii. Locally produced	15,5
7. Dutch type cheese market segment	
a. “Dutch”(Gollandsky)	7,6
i. Imported	2,6
ii. Locally produced	5
b. Gouda	130,8
i. Imported	88,8
ii. Locally produced	42
c. Edamer	62,4
i. Imported	61,4
ii. Locally produced	1

Source: Expert`s estimates based on armstat.am, expert interviews and other dairy sector reports.

According to our surveys locally produced HV cheese have 12% share in the local market, amongst them the highest share had the following types of cheeses: Cheddar 26,7%, Fresh cheeses (unripened or uncured) including Mozzarella 20%, Blue-veined cheeses 15,7%, Gouda 12%:

Potential for market growth: According to HV cheese producers there is a low potential for local market growth, mainly because of increased number of poor, lack of economic and employment opportunities, migration etc.

Major opportunities and challenges for local producers are import substitution and export promotion. For being competitive in international and local markets, HV cheese producers should take more attention to HV cheese inputs and applied technologies.

As it was shown in the HV cheese market size calculation, demand for HV cheeses in Armenia is larger than local production (see Table 31). 829 tons of under supply of locally produced HV cheeses are compensated by imports. Of course, there is some possibility to decrease imports by boosting local HV cheese production, but still there is a segment of population who had already

became “loyal” consumers of imported HV cheeses. That is why full substitution of imported HV cheeses does not seem to be realistic.

61% of HV cheese producers believe that the HV cheese market segment in Armenia does not have big growth potential, as purchasing power of consumers and population is continuously falling down. The rest HV cheese producers believe that there is an increasing trend for HV cheese demand, people starting to consume HV cheese more frequently. According to them, for growing HV cheese market producers have to produce competitive to imported HV cheese with attractive packaging. Product specialization in production of a specific type of cheese is viewed as extremely important.

Feedback of surveyed HV cheese producers regarding the demand and market situation in Armenia for HV cheeses segment can be grouped as below by the following major categories of answers:

1. “Consumers prefer traditional salty cheese, the demand for HV cheeses is low...”
2. “Locally produced HV cheese does not enjoy loyalty of Armenian consumers, there is a lack of confidence...”
3. “Low purchasing power of consumers...”

Only one producer from all interviewed mentioned, that the demand for good quality HV cheeses is even higher than they are able to produce. The preventing reason for small volume of production mentioned was the limited supply of good quality raw milk available in their region.

Estimated volumes of sale of locally produced and imported dairy products: For the dairy products (sour cream, curd, cottage etc.), Yogurt, Butter and Ghee market size, local production and import volumes are presented in the table below:

TABLE 32 DAIRY PRODUCTS (SOUR CREAM, CURD, COTTAGE ETC.), YOGURT, BUTTER AND GHEE MARKET SIZES IN ARMENIA, 2014

	Dairy products, ton	Yogurt, Ton	Butter and ghee, ton
Production	10,012	439	1,093
Import	3,859	415	5,262
Export	706	0	120
Market size, tons	13,165	854	6,235

According to data from official sources, in 2014 market size of Dairy products was about 13,200 tons; yoghurt market: 854 tons, butter and other oils market: 6,235 tons. Local producers have the following shares in the local market:

- Dairy market (70%),
- Yogurt market (50 %),
- Butter/ghee market (15 %).

Consumer Analysis

Consumer types

HV cheese consumers can be grouped into two groups:

1. The final consumers: individuals, households,
2. Large institutional consumers: HORECA (including restaurants, pubs, cafe, wine bars hotels), pastry workshops, etc.

According to the survey, approximate size of the individual consumers/households segment is 74%. Restaurants, fast food outlets, cafes, hotels had 26% share in HV cheese market.

In each group (individual/households and HORECA) HV cheese consumers have been segmented based on their characteristics (age, gender). Consumers' preferences of different HV cheese types (locally produced or imported HV cheese) were identified, due to factors (i.e. quality, taste, color, packaging, price, origin) affecting their choice. At the end the HV cheese purchase and usage mechanism is presented separately for each group.

The final consumers: individuals, households.

Age and gender of interviewed HV cheese consumers are presented in below table.

TABLE 33 AGE AND GENDER OF INTERVIEWED HV CHEESE CONSUMERS

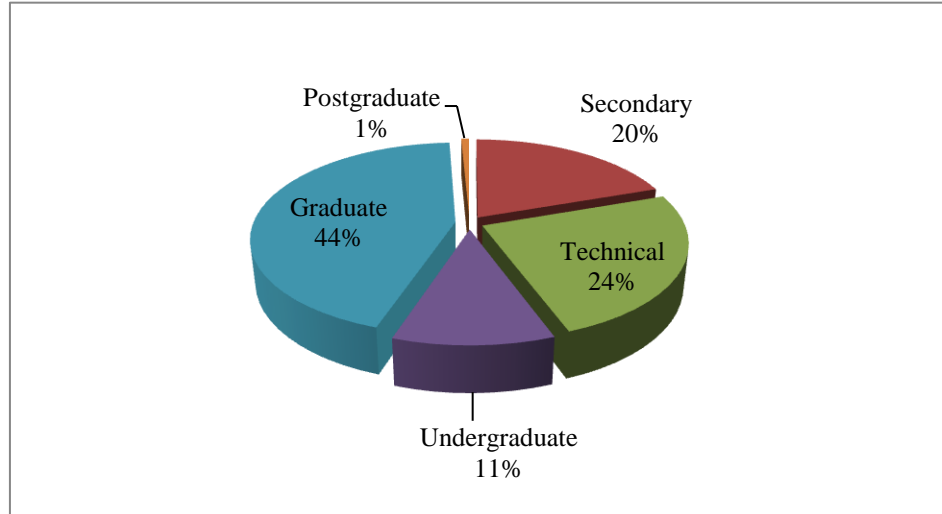
Group of ages	Male, %	Female, %	Total interviewed, %
Up to 15 year	0.25%	0.25%	0.5%
15-24 year	10.5%	11.7%	22.2%
25-34 year	10.2%	11.5%	21.7%
35-44 year	7.7%	10.5%	18.2%
45-54 year	8.0%	9.0%	17.0%
55-64 year	8.0%	9.5%	17.5%
65 and more	1.2%	1.7%	3.0%
Total	45.85%	54.15%	100.0%

54,1% of interviewees were female and 45,9% male. Majority of interviewed HV cheese consumers (62,1%) ages ranged from 15 to 44 years.

70% of interviewed consumers responded that their family members also consume HV cheeses. Their family members' preferences are also included in this market study.

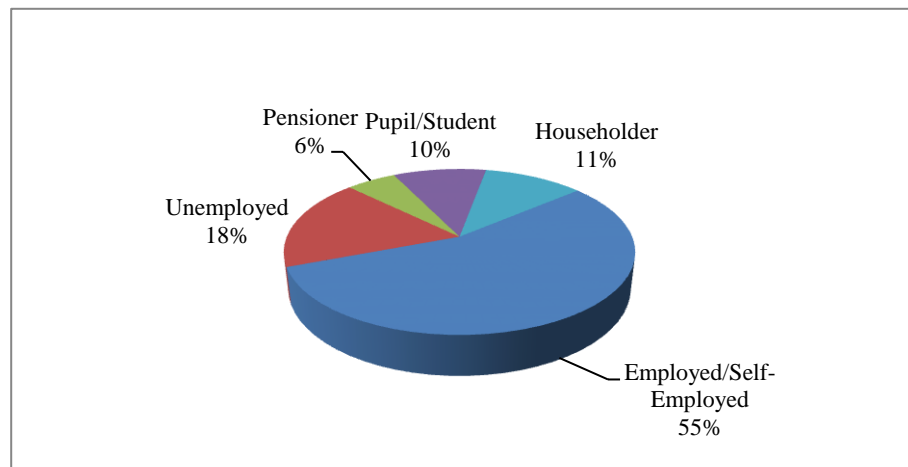
As shown in the below figure people with higher education level are considered to be main consumers of HV cheese.

FIGURE 20 EDUCATIONAL DEGREE OF HV CHEESE CONSUMERS



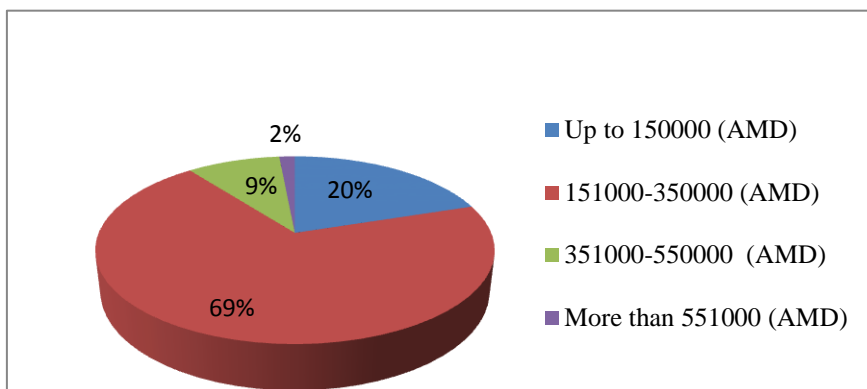
As shown in the figure most of the interviewed consumers are employed/self-employed (55%), Main occupation and specialization of HV cheese consumers are presented below.

FIGURE 21 EMPLOYMENT OF HV CHEESE CONSUMERS



As for the income of HV cheese consumers, about 80% of the respondents had a monthly family income of more than 150,000 drams (with 4 family members in average). Only 11% of respondents have more than 350,000 drams monthly family income. However, as a rule, consumers usually underreport their real incomes, a large part of which is transfers from abroad. Consumers are generally relying on their family members' regular salaries, pensions.

FIGURE 22 FAMILY INCOME OF HV CHEESE CONSUMERS



However, the majority of consumers buy HV cheese several times during the year for special occasions: New Year, birthday and other family events.

Types of high value cheese preferred by individual consumers: According to survey consumers' responses most preferred types of HV cheeses are Dutch (62% of respondents), Roquefort (51% of respondents) and Cheddar (13% of respondents). Majority of HV cheese consumers named "Dutch" as the most consumed type of HV cheese, partially due to a traditionally higher demand and partially calling "Dutch" other types of HV cheeses close to Dutch technology. This clearly demonstrates the low level of awareness ("Dutch" by respondents' opinion includes Gouda, Edam and other varieties, which is not the case). Dutch cheese they associate with yellow cheese of European production and it is not important for majority of consumers to know that the cheese's name is Gouda or Edammer. This situation can be used by producers group to offer in the market "Dutch" cheese as other Armenian and CIS producers are doing.

Mozzarella and Gouda type of cheeses are preferred by about 6% of Armenian consumers, and the least popular HV cheeses are Mascarpone, Emmental, Maasdam, Camambert etc. (preferred by less than 1% of respondents).

TABLE 34 PREFERENCES OF INDIVIDUAL CONSUMERS

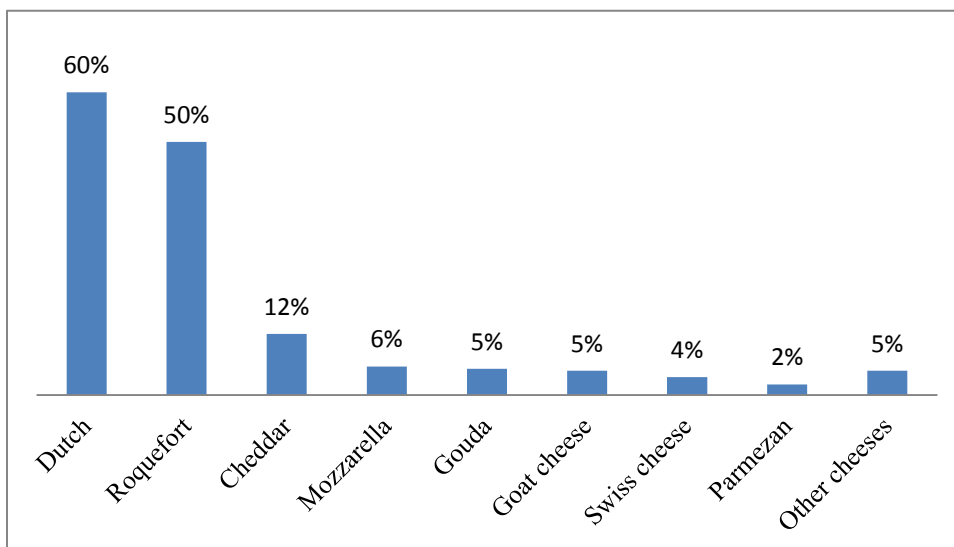
Type of cheese	Share of total surveyed consumers, %
Dutch	61.9%
Roquefort	50.8%
Cheddar	12.9%
Mozzarella	6.4%
Gouda	6.3%
Goat cheese	4.4%
Swiss cheese	3.6%
Parmesan	2.8%
Edamer	1.1%
Feta	1.0%

Mascarpone	0.9%
Emmental	0.8%
Basiron	0.8%
Maasdam	0.8%
Brinza	0.6%
Camambert	0.3%
Brie	0.2%
Total number of surveyed consumers	1,065

As mentioned in the Methodology section, questionnaires were structured in a way to receive information about interviewed consumers family members' preferred types of HV cheeses. In the study were analyzed the results of those representatives of families (1065 in total) who consume/prefer "HV cheese".

Gender disaggregated analysis did not demonstrate any significant difference amongst male and female consumer groups (see figure below), except that female consumers seem to be better distinguishing cheese varieties.

FIGURE 23 CONSUMER PREFERENCES (MALE)



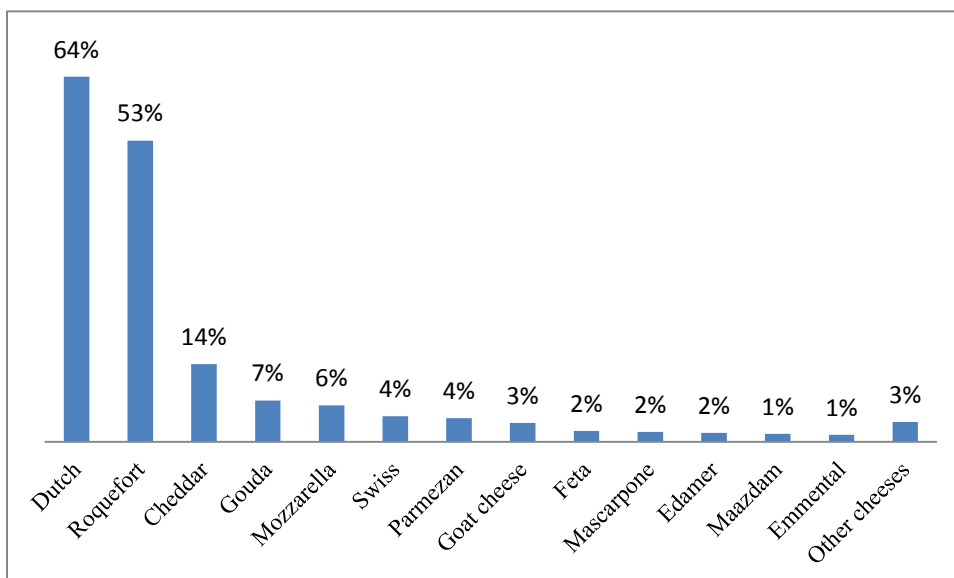


FIGURE 24 CONSUMER PREFERENCES (FEMALE)

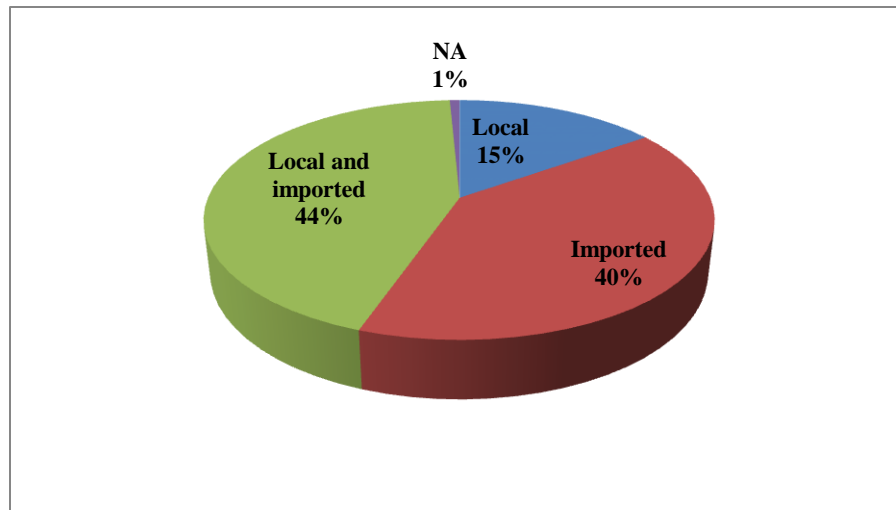
The table below shows the major consumers' group classified by demographic characteristics (sex and age) for each type of most popular HV cheeses amongst individual consumers in Armenia. Thus, if "Dutch" type of cheese is consumed by all age groups of male and female consumers, "Roquefort" is less popular amongst children and more popular amongst 15-64 female as well as 15-24 and 55-64 years old male consumers.

TABLE 35 DEMOGRAPHIC (SEX AND AGE) CHARACTERISTICS OF HV CHEESE CONSUMERS PER PREFERRED CHEESE TYPE

Type of cheese	Male (by age group)							Female (by age group)						
	Up to 14-years old	15-24	25-34	35-44	45-54	55-64	More than 65 years old	Up to 14-years old	15-24	25-34	35-44	45-54	55-64	More than 65 years old
Dutch	6%	8%	7%	6%	8%	7%	2%	5%	11%	8%	10%	11%	8%	3%
Roquefort	4%	7%	9%	7%	7%	9%	2%	3%	9%	10%	10%	12%	8%	4%
Cheddar	7%	7%	12%	4%	5%	7%	1%	4%	9%	15%	5%	12%	9%	2%
Mozzarella	4%	9%	13%	7%	6%	1%	0%	0%	7%	18%	12%	13%	9%	0%
Gouda	3%	9%	7%	4%	3%	7%	3%	1%	4%	25%	13%	6%	12%	0%
Goat cheese	0%	2%	11%	9%	11%	13%	4%	0%	2%	13%	11%	9%	15%	2%
Swiss cheese	8%	13%	3%	8%	11%	3%	0%	5%	21%	8%	8%	5%	8%	0%
Parmesan	0%	10%	7%	7%	0%	3%	3%	0%	17%	20%	0%	13%	20%	0%

Consumer preferences towards locally produced and imported cheeses: 40% of consumers prefer only imported HV cheeses, whereas 44% do not have a strong preference buying both: imported and local. Only 15% of consumers who mentioned that they prefer exclusively local HV cheese demonstrate the low level of consumers' loyalty towards domestically produced HV cheeses.

FIGURE 25 CONSUMER PREFERENCES TOWARDS LOCALLY PRODUCED AND IMPORTED CHEESES



Most of the comments of consumers on locally produced HV cheeses sound as follows: *“There is a high likelihood, that local products will be fresher”*, *“Loyalty towards domestic production”*, *“It has a better quality and cheaper”*, *“It is made from local raw milk”*.

Talking about imported high value cheeses, consumers emphasize the following aspects:

- High quality,
- Taste of imported HV cheese is much better,
- Confidence in the quality of imported produce,
- Did not meet locally produced HV cheese in retail outlets,
- Imported cheeses are more familiar to consumers,
- Imported HV cheeses have much more varieties and better representation in the local market.

There were numerous cases, when consumers were not aware about the country of origin of high value cheeses they buy stating that they bought “Armenian Cheddar and Parmesan”, whereas none of Armenian companies is producing such types of cheeses.

40% of HV cheese consumers could not name any country of origin of imported products bought, while only 30% of them named producer countries properly, the rest 30% were mistaken. (For instance, for Roquefort cheese 12 “countries of origin” were mentioned). In other words, only 30% of surveyed consumers are aware what type of imported cheese is produced in which country.

In terms of brand recognition the situation is even worse. Only 6% of respondents were able to name the right brand for Cheddar cheese, which is one of the best-sellers amongst HV cheeses.

Purchase volumes, frequency and place of purchase: The majority of consumers, (68%) buy HV cheeses by weight measure (mainly in grams or kg), while 32% of consumers prefer to buy entire cheese (pack, head). Most consumers prefer to buy a small triangular recycled packaging blue

veined cheese. Consumers also prefer to buy packaged Mozzarella cheese. Average weight of one-time purchase is 0.7 kg, which is largely dependent on the purchasing frequency.

TABLE 36 HOW DO CONSUMERS BUY HV CHEESE (SLICED/KG VS PACKED)

Type of cheese	Sliced/kg	Packed/head
Roquefort	43%	57%
Mozzarella	15%	85%
Feta	60%	40%
Gouda	100%	0%
Edamer	100%	0%
Maasdam	100%	0%

49% of consumers mentioned that they purchase HV cheese few times an year, particularly during the New Year and Christmas, other holidays or parties etc. 36% of households used to buy high value cheeses 1-2 times per month and only 15% on regular basis (1-2 times per week).

FIGURE 26 PURCHASING FREQUENCY OF HV CHEESES

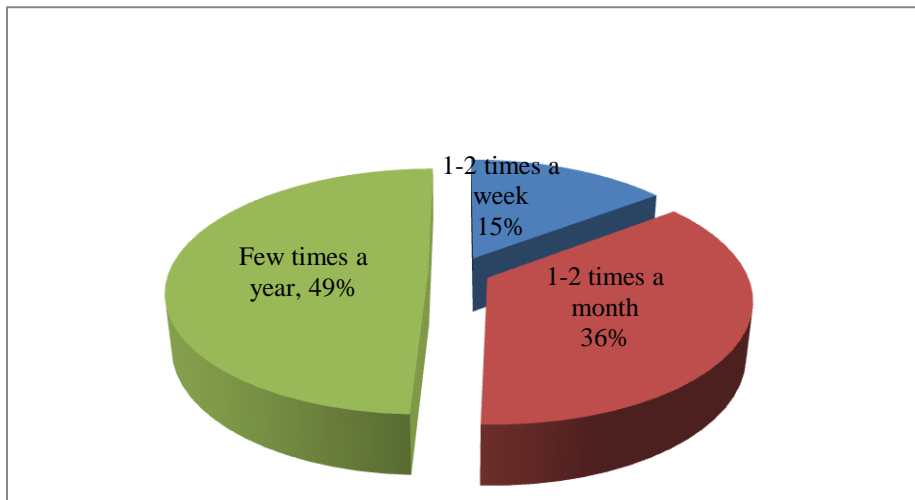


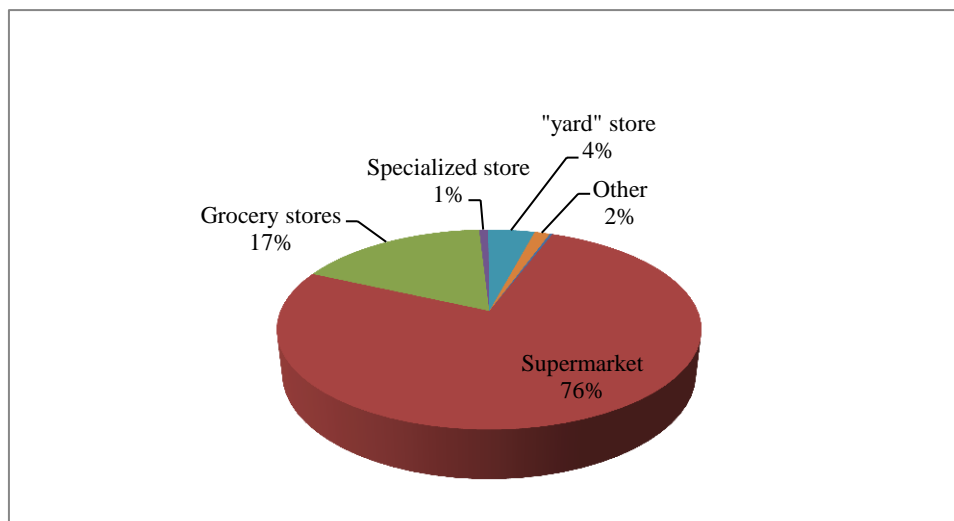
Table 37 shows that households consuming “Dutch” and Cheddar make purchases more frequently compared with consumers buying Roquefort. Thus, 30% of households consuming “Dutch” cheeses and 43% of households consuming Cheddar used to make purchases 1-2 times a month or more frequent. And only 18% of households consuming Roquefort purchase it on regular basis (1-2 times a month or more frequent).

TABLE 37 PURCHASING FREQUENCY OF THE MOST PREFERRED HV CHEESES

	Dutch	Roquefort	Cheddar
1-2 times a week	11%	5%	3%
1-2 times a month	30%	18%	43%
Few times a year	59%	77%	54%
<i>Number of households</i>	250	198	68

Consumers/respondents mainly prefer to buy HV cheeses from supermarkets (76% of respondents) for a large variety of choice, freshness and convenience/comfort etc. reasons.

FIGURE 27 PLACE OF PURCHASING HV CHEESE



Main factors affecting consumers' choice and purpose of usage: During the survey HV cheese consumers were asked to assess the factors (quality, price, origin, brand name, etc.) influencing consumers' purchasing decisions. Possible assessments were: "Extremely important", "Important"; "Quite important", "Slightly important" "Not important at all".

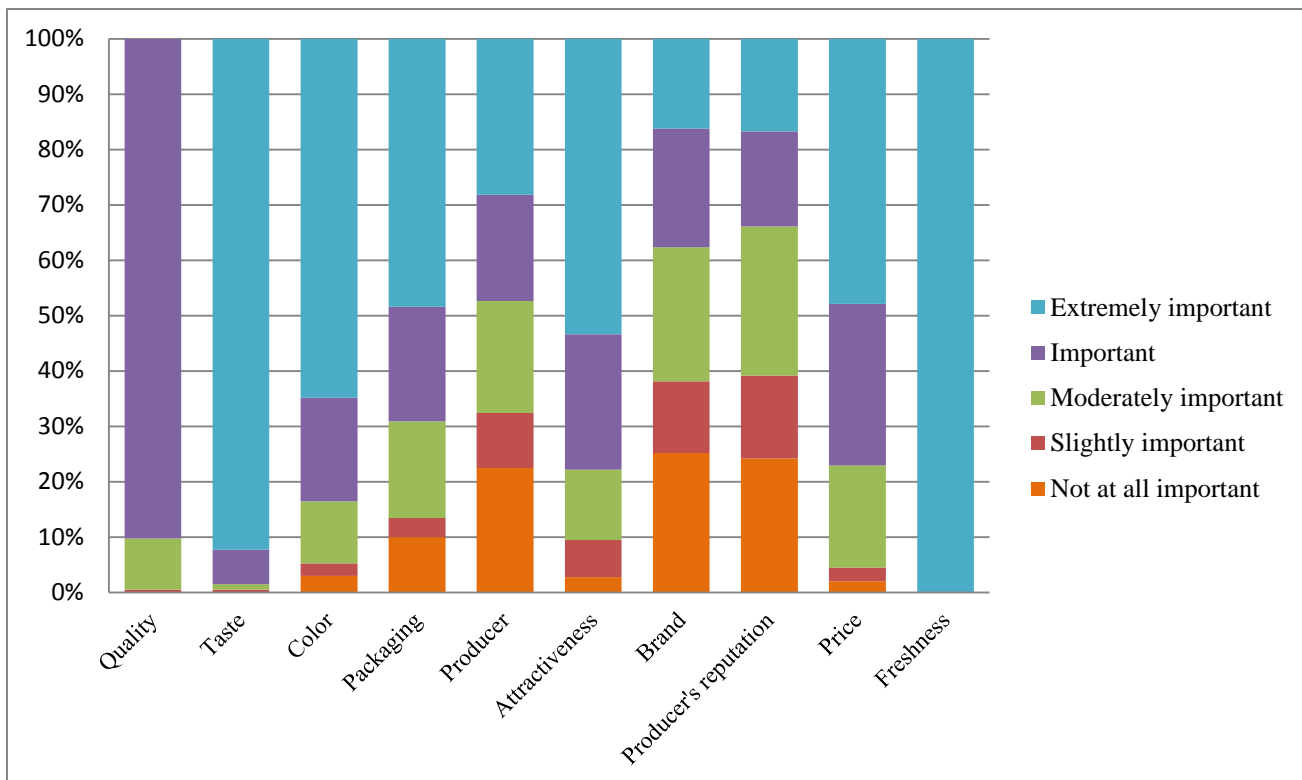
The results are brought below by declining importance:

- Quality²²
- Taste
- Attractiveness
- Packaging
- Appearance/Attractiveness
- Price

Producer name, reputation, and brand have quite a little influence on consumer purchasing decision-making process. Interestingly, price influence to consumers' HV cheese purchasing decision is not high enough.

²² Under the importance of HV cheese **quality** consumers assess the consistency of cheese mass, smell of the cheese, the relevance of shelf life to reality and compliance with their European analogue

FIGURE 28 MAIN FACTORS AFFECTING CONSUMERS CHOICE



Individuals/households are purchasing HV cheeses mainly for immediate consumption without further processing unlike Feta, Mascarpone, Parmesan, the first of which is primarily used for salad preparation, the second for preparation of cakes (i.e. Tiramisu) and the third one is used for mixed purposes.

TABLE 38 HV CHEESE USAGE PURPOSES: INDIVIDUALS/HOUSEHOLDS

Cheese Type	Fresh/breakfast	Fresh/during parties	Fordishes	Salads	Cakes and desserts	Pizza
Roquefort	61%	76%	2%	3%		5%
Dutch (Gollandsky)	62%	61%	12%	20%	1%	36%
Cheddar	66%	59%	13%	19%	1%	23%
Goat cheese	47%	47%		7%		
Mozzarella	44%	51%	8%	21%	5%	21%
Swiss Cheese	100%					6%
Parmesan	32%	21%	37%	37%	5%	16%
Emmental	75%	88%	13%			
Feta	20%		20%	80%		
Gouda	67%	58%	22%	6%	3%	22%
Mascarpone					75%	25%
Baziron	100%	40%				
Edamer	50%	75%				
Maasdam	67%	78%		22%		

According to consumer's preference survey, the characteristics of HV cheese consumers like/demand is described in the below table.

TABLE 39 PREFERENCES OF CONSUMERS ON SIZE, SHAPE AND PACKAGING OF HV CHEESES

Shape	Share of Consumers	Small size	Medium size	Big	Color of package	Perceived HV cheese type by consumers
Rectangle	71%	13%	70%	30%	Mainly Yellow	Dutch
Circle	60%	38%	63%	8%	Red, Orange, Green, White	Gouda
Square	33%	47%	46%	11%	Red, Orange, White	Edamer
Triangle	60%	68%	40%	3%	Mainly Green	Roquefort

Majority of consumers liked medium sized Dutch and Gouda, and small size Roquefort, respectively with Rectangle, Circle, and Triangle shapes.

HORECA institutions

Interviewed HORECA institutions mainly use Roquefort, Gouda, Edamer, Dutch, Cheddar cheeses. Majority of respondents (80%) uses Roquefort; about half of the institutions use Gouda. Other types of HV cheeses (e.g. Gorgonzola, Maasdam, Feta, Goat Cheese etc.) are also used in HORECA, but in significantly smaller volumes.

Unlike individual consumers, representatives of HORECA sector are in general aware about cheeses' brands, their country of production and origin. Information about usage of HV cheeses by HORECA is shown in the table 40.

TABLE 40 HV CHEESE USAGE PURPOSES: HORECAS

Type of cheese	Percentage of users	Fresh condition	For Dishes	For Salads	For pastries
Goat Cheese	11%	75%	25%	0%	0%
Gouda	50%	89%	50%	39%	11%
Edamer	11%	100%	50%	25%	0%
Dutch (Gollandsky)	14%	80%	40%	40%	0%
Mascarpone	6%	0%	0%	0%	100%
Mozzarella	14%	20%	80%	20%	0%
Cheddar	42%	93%	47%	67%	7%
Parmesan	6%	0%	50%	50%	0%

Parmigiano-Reggiano	28%	30%	80%	70%	0%
Roquefort	69%	60%	28%	4%	0%
Feta	25%	100%	56%	22%	0%

As it was shown in the table below for HORECA most demanded HV cheese types are Roquefort, and Gouda, which have been used respectively in 69% and 50 % of surveyed HORECA institutions. HORECA institutions use Roquefort and Dutch cheeses to be served fresh for immediate consumption. For dishes and salads (mostly Greek) Cheddar, Parmesan and Parmigiano-Reggiano cheeses are mainly used. Mozzarella is used entirely in food preparation (e.g. pizza) and Mascarpone cheese is used only for pastries. Unlike other HORECA institutions hotels did not use HV cheeses for pastries.

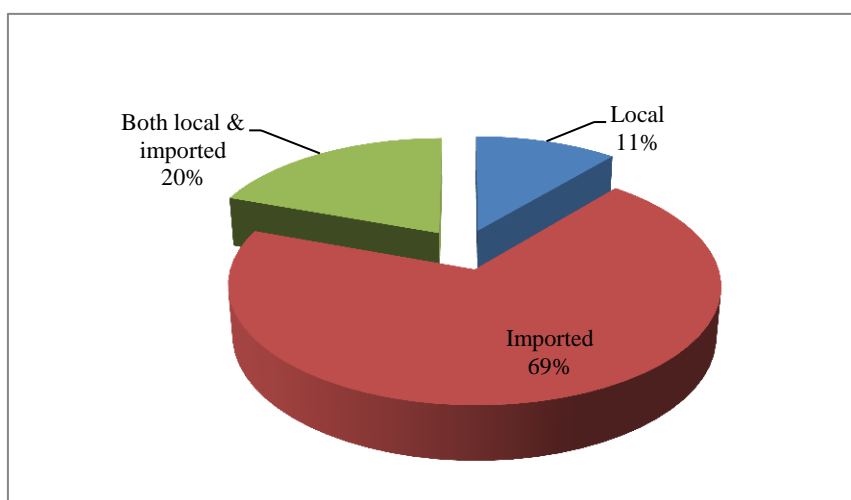
Some of the dishes that HORECA institutions are preparing is listed below.

TABLE 41 HV USAGE BY HORECA

Type of cheese	For salads	For Dishes
Roquefort	Olivier salad	"Paloma" sauce, blue cheese, steak-sauce Roquefort, pizzas, burgers, soup
Gouda	Greek chicken in pomegranate salad	pasta, sandwich, pizza, eggplant dish
Dutch		pizzas
Edamer	Greek salad	sandwich burger
Cheddar	Greek, chicken, beef salad, mushroom salad	pizza, sandwich, lunch, toast, mushroom, stuffed potatoes stuffed with tomatoes, mushrooms knob
Parmigiano-Reggiano	Greek, mushrooms, chicken salad	Sicilian dish, sauce, pasta carbonara, pizzas
Parmezan		pizzas
Feta	Greeksalad	

HORECA institutions prefer imported HV cheeses due to their standard high quality (69 % from the respondents).

FIGURE 29 HORECAS' PREFERENCES OF HV CHEESE (LOCAL VS IMPORTED)



Feedback of consumers/HORECAs on imported HV cheese are the following:

- Tasty,
- Essential to get the flavor of the dish,
- Quality and demand are high,
- Local producers do not have such varieties,
- Satisfactory appearance of the product,
- Easy to work with it,
- Confidence towards,
- There is no alternative,
- Longer shelf life.

For HORECAs important factors are cheese flavor, quality and appearance/attractiveness, shelf life. Cheese brand, packaging, certification are not decisive factors for HORECA.

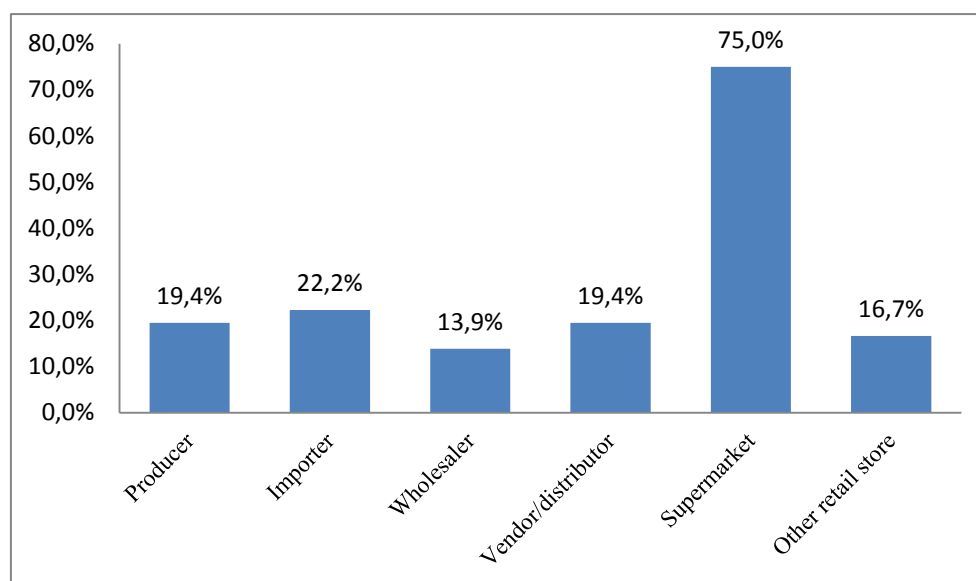
TABLE 42 THE MAIN FACTORS AFFECTING CONSUMERS' CHOICE: HORECA

FACTORS	Not important at all	Slightly important	Quite important	Important	Extremely important	Total
Quality	0%	0%	0%	6%	94%	100%
Taste	0%	0%	0%	0%	100%	100%
Packaging	17%	14%	11%	31%	28%	100%
Producer	25%	3%	17%	17%	39%	100%
Origin	11%	3%	22%	25%	39%	100%
Attractiveness	3%	0%	3%	8%	86%	100%
Brand	14%	6%	25%	19%	36%	100%
Producer's reputation	17%	3%	22%	17%	42%	100%
Availability of international certificate	19%	6%	22%	19%	33%	100%
Supply conditions	11%	0%	11%	19%	58%	100%

Price	3%	8%	19%	14%	56%	100%
Customers prefer	3%	0%	0%	14%	83%	100%
Necessary for preparing dishes	0%	0%	8%	6%	86%	100%
Shelf life	6%	0%	0%	6%	89%	100%

In terms of supply systems, HORECA institutions use mixed approaches (e.g. purchasing HV cheeses from different sources), therefore in the figure below the responses are grouped by priority sources (understandably the total does not give 100%). As it can be seen from the figure supermarkets are the main source of supply of HV cheeses to HORECA institutions followed by specialized suppliers (providing a wide variety of food and non-food products). In the meantime, occasional purchases are made also from wholesale markets, importers and producers. In contrast to other HORECA institutions hotels are using lower HV cheese supply options. According to survey results they did not buy HV cheeses from wholesale points and distributors.

FIGURE 30 OPTIONS FOR HV CHEESE SUPPLIES, HORECA



The following HV cheese varieties are used by HORECA sector:

- From local producers: goat cheese, Gouda, Dutch
- From importers: Roquefort, Parmigiano, Gorgonzola, Provolone
- From supermarkets: UP to 15 types of local and imported HV cheese

In specialized wine bars (a relatively new trend in Armenian market) in addition to the assortment of wine, a wide range of imported and local HV cheeses (Italian cheeses, Camembert, Pecorino, Parmesan, Mozzarella, Roquefort and so on) is offered to the customers. Here the emphasis is put on the variety of cheeses served. Though the overall sales volumes in this segment are not quite high yet, this new trend has a serious growth potential – supported also by the secondary data reported by the wine industry. (A lot of Armenians gradually shift from vodka towards wine consumption).

Pastry Workshops: A separate group of HV consumers are comparatively big pastry workshops (Mono cakes, cheese cake producers). Mascarpone and Philadelphia are used for preparation of cheese cakes, tiramisu. Philadelphia, Mascarpone used mainly in pastry workshops. Some of the pastry workshop owners imports HV cheeses by themselves, while the rest (rare users) buy them from local markets.

EXPORT MARKET ANALYSIS

Overview of global dairy market

The cheese market has been one of the most active food segments in the last 20 year with steady growth in international trade, production and consumption. According to the 2014 statistics on cheese exports by countries cheese is considered as one of the most demanded products in the world. In 2014, cheese exports by country totaled \$33.1 billion (29.3% increase compared to the results of 2010). European countries accounted for the highest dollar value worth of cheese exports during 2014 with shipments amounting to \$27.3 billion or 82.6% of overall cheese export sales. Meanwhile, developing markets such as Latin America, Asia, Middle East and Africa recorded superior growth rates over the period of 2006-2015.

Milk production during 2015 among major suppliers is increased by 1 percent over the previous year. According to USDA dairy report/forecast for 2016, low milk prices are expected to restrain growth in milk output, which is forecasted to increase modestly by less than 1 percent declining by 640,000 tons in Oceania but offset by projected gains of 2.9 million tons of milk production in the EU, Argentina and the United States. Although the pace of increasing milk production is forecasted to slow, prices for such dairy products as skimmed milk powder (SMP) and whole milk powder (WMP) are expected to remain relatively weak. These products face strong headwinds due to the continuation of the Russian ban on imports of dairy products, the strong dollar, and weak import demand from China. The world cheese production reached the 20 million MT production mark in 2011 and the growing trend has continued in 2012 and 2013. The global estimation includes all natural cheeses except processed cheese. Cheese from cow's milk transported to dairies represents more than 80% of the global natural cheese production. The rest is made up on farm and home-made products, but also cheeses made from other milk (sheep, goat, and buffalo). Europe and Northern America produce more than 75% of the world cheese production. EU and USA account for 70% of the world cheese production in 2012 and the production of cheese is expected to show dynamic growth until 2020 where EU and USA production will amount to 16.6 million mega tones. However, the relative share of EU and USA production will decrease from 70 % to 66% in 2020, due to relatively higher cheese production growth. World cheese export leader countries are presented below. From our target countries only Armenia record a growth for cheese exports.

TABLE 43 WORLD CHEESE EXPORTS, 2014

Countries	Trade value, US\$	Growth rate %	World share %	World rank
Germany	5 121 657 150	-0,5	15,61	1
Netherlands	4 508 923 285	1,94	13,74	2
France	4 039 947 132	0,89	12,31	3
Italy	2 863 676 427	4,75	8,73	4
USA	1 713 388 453	25,59	5,22	5
Denmark	1 696 854 175	7,68	5,17	6
New Zealand	1 280 815 668	10,79	3,9	7
Belgium	1 009 408 558	-2	3,08	8
Ireland	999 526 663	3,4	3,05	9
Poland	869 626 424	-4,99	2,65	10
Russia	86 541 906	-0,22	0,26	35
Armenia	4 890 008	6,09	0,01	60
Georgia	13 079	-83,79	0	93

Source: <http://data.trendeconomy.com/>

The consumption of cheese has been a success story with growth in all regions of the world in the last decades. In 1980, the consumption was 8.4 million MT and it grew to 11.2 million MT in 1990 and in 2000 the world consumption of cheese reached 15.3 million MT nearly a doubling of the level in 1980. This has been the case in all regions of the world and the dynamic growth has continued in the new millennium.

TABLE 44 WORLD CHEESE CONSUMPTION, 1000 MT

	2000	2012	2012/2020
EU-28	7,502	8,87	18%
Other Europe	245	318	30%
CIS	714	1,15	61%
North America	4,39	5,557	27%
Oceania	266	268	1%
South America	918	1,642	78%
Asia	557	1,023	84%
Middle East + Africa	1,108	1,84	66%

Source: IDF, ZMB, FAPRI, CNIEL, PM FOOD & DAIRY CONSULTING.

Rising population and incomes in the world is the major driving factors for exceptional growth in cheese consumption. That's why experts in this field forecasted such high percentage increase in world consumption.

TABLE 45 WORLD CHEESE IMPORTS 2014

Countries	World Cheese imports 2014			
	Trade value, US\$	Growth rate %	World share %	World rank
Germany	4 582 670 016	5,5	14,91	1
Italy	2 434 172 711	-0,07	7,92	2
United Kingdom	2 397 284 290	5,76	7,8	3
France	1 784 628 983	7,46	5,81	4
Russia	1 582 036 393	-27,01	5,15	5
Belgium	1 575 949 866	-1,13	5,13	6
Netherlands	1 381 432 380	-4,09	4,5	7
USA	1 328 096 245	11,48	4,32	8
Spain	1 220 858 891	2,02	3,97	9
Japan	1 188 382 217	6,14	3,87	10
Georgia	7 435 607	7,58	0,02	92
Armenia	6 313 523	-6,59	0,02	94

Source: <http://data.trendeconomy.com/>

Georgian cheese market

In Georgia cheese is known as a historical and one of the most popular products. In Georgian cuisine cheese is one of the most valuable products. It is important to mention that Georgia is the first amongst the EU neighborhood countries to take important step towards protecting its local food and beverages from being copied in other countries. Almost every region in Georgia boasts its own variety of cheeses: Samegrelo is famous for Suluguni, Imereti offers Imeruli (curd cheese made from cow milk) and Gadzelili, a very soft cheese with mint; and Tusheti prefers Gouda, a sheep cheese. (according to the 1970s sources, Sulguni accounted for around 27% of cheese production in Georgia. It was the 3rd most popular pickled cheese in the Soviet Union, with 16.5% share in 1987, after Brynza and Ossetian cheese).

The traditional Georgian meal consists of wine and plain bread (Ozsoy and Apil, 2005). Georgians are proud of their cheese, too. Cheese and wine are culturally bound products and they have a strong wine and cheese tradition, that is why Georgian consumers perceive Georgian alcoholic drinks and cheese to be better than others. According to the Euromonitor international report unprocessed cheese is more preferred by Georgians than processed one. Amongst unprocessed cheeses the most popular is the soft one (Suluguni, Imerulli, Mozzarella). Reconstituted cheese is widely used in cooking for the preparation of breakfasts, pizza and a wide range of other dishes. In general, the sales of all types of cheeses have an increasing trend in Georgia. Sulguni (Suluguni), Imeruli, Inguli, Ossetian cheese, Gadzelili, **Gouda**, Kobis Kveli, Tushuri, Parmesan, **Mozzarella**, etc. Nevertheless, the most popular types of cheese are **Suluguni and Imeruli**, which belong to artisanal products in most cases. These two are followed by a number of Georgian types of cheese which vary by amount of salt and their softness.

Georgia has an important role in the trade with Armenia. Table 46 shows the main import/export data in 2012-2014 and its share in total import and export. It is obvious that the trade with Georgia is stable over time comprising 1.2-1.6% of total imports and 5.2-5.8% of total exports. Furthermore the balance of trade (BOT) is positive during this period.

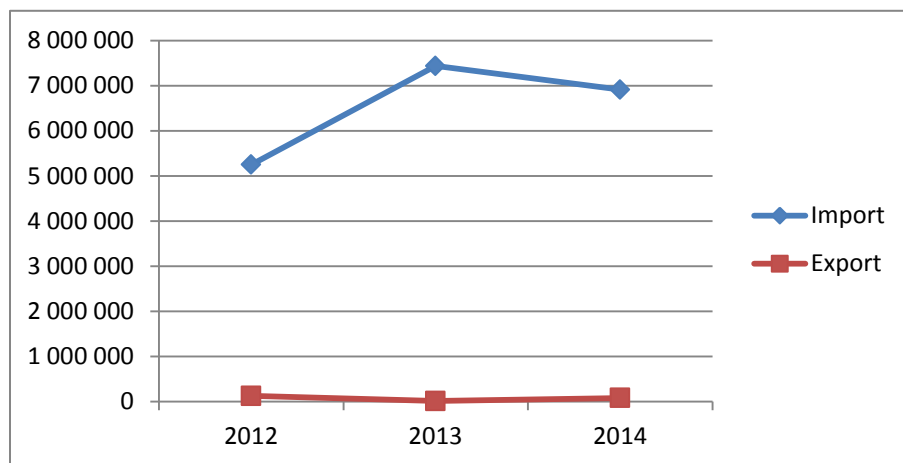
TABLE 46 TRADE STATISTICS BETWEEN ARMENIA AND GEORGIA IN 2012-2014 IN US THOUSANDS

	2012	% share in total	2013	% share in total	2014	% share in total
Imports	51,129	1.2%	65,840	1.5%	71,905	1.6%
Exports	71,398	5.2%	85,166	5.8%	78,598	5.2%

Cheese products trade between the producers of those countries was too low, even with such preferable trade conditions. Production volumes of cheese in Georgia are declining, consequently cheese export is decreasing, at the same times imports are increasing year by year.

From the graph below it is visible that growing cheese production in Armenia has a “potential” to enter the Georgian market, but so far HV cheese producers do not consider Georgia as a beneficial market for Armenian HV products. According to them demand for Armenian HV cheeses in Georgia is too small and trade with small shipments is not beneficial for them.

FIGURE 31 GEORGIAN CHEESE MARKET FOREIGN TRADE (\$ VALUE)



Source: <http://data.trendeconomy.com>

TABLE 47 TRADE/IMPORT PARTNERS OF RUSSIA, 2014

Country	Trade value (US\$)	Net weight (KG)
1. Russia	1,852,253	601,761
2. Germany	1,475,853	264,102
3. France	1,039,443	132,500

4. Turkey	663,870	128,900
5. Ukraine	622,038	216,781

Georgia is importing cheeses mainly from Russia, Germany, France Turkey and Ukraine. Such high share of Russian exports to Georgia is due to the fact that Georgian main partner of Fresh cheese and curd (HS 040610) is Russia which accounts almost 60% of total Georgian imports from Russia (\$1,852,253 all cheese imports from Russia, \$1,108,078 accounts for Fresh cheese and curds).

TABLE 48 HV CHEESE WHOLESALE AND RETAIL PRICES IN GEORGIA (1 GEL= 200 AMD)

Cheese Type	Wholesale price		Retail price	
	GEL	AMD	GEL	AMD
Dutch	11-15	2200-3000	16-18	3200-3600
Gouda	12-14	2400-2800	15-17	3000-3400
Edamer	13-15	2600-300	15-20	3000-4000
Roquefort	20-22	4000-4400	22-25	4400-5000
Mozzarella Fresh	18-21	3600-4200	22-24	4400-4800

The overall picture of wholesale/retail prices in Georgia and Armenia is nearly the same. Overhead of Georgian and Armenian wholesalers and retailers do not differ as well, that is why final prices in retail outlets are approximately the same for all types of HV cheeses.

TABLE 49 SUMMARY FOR MARKET SIZES, GEORGIA, 2014, TONS

1. Total dairy market size	730250
2. Total cheese market size	47500 ²³
3. Total HVC market size	950
4. Market segmented by origin:	
c. Total imported HVC segment	602
d. Total locally produced HVC segment	348
5. Market segmented by cheese	
h. Roquefort and blue veined cheeses	10,5
iii. Imported	10,5
iv. Locally produced	0
i. Dutch type cheeses (semi-hard)	
iii. Imported	517,3
iv. Locally produced	NA
j. Mozzarella	

²³According to Euromonitor international, total consumption predictions

iii. Imported	74,4
iv. Locally produced	NA

Source: Expert's estimates based on geostat.ge, Euromonitor international, expert interviews and other dairy sector reports.

Georgian HV cheese imports are in average 600 tons/year, which is even lower than Armenia. According to Georgian experts and Euromonitor international surveys Georgian consumer prefer mostly their traditional cheeses. Though in terms of price some Armenian HV cheese producers can compete with other Georgian cheese importers, but in terms of distribution, producers of Dutch, Gouda, Edamer and Roquefort will face difficulties with such small shipments required by Georgian markets. Another reason is that it is not realistic for Armenian HV cheese producer to compete with such well-known HV cheese producers such as Bayernland and Hoffmeister, who already have their loyal consumers in Georgia,

Only Mozzarella producers will be able to work in such tough conditions, as compared to other HV cheese demand of imported Mozzarella is fairly high, due to expert estimation (as there is no official statistics on it), imports of mozzarella is about 74 tons per year.

Russian cheese market

Although dairy farmers in Russia are facing low milk prices, high interest rates, and a lack of capital, output per cow has been improving consistently for the past several years as the smaller, inefficient, non-commercial household farmers exit the industry. In mid-2015, the Russian government reported that these small household farms still accounted for 47 percent of the milking herd, with the balance held by large agricultural establishments (40 percent) and small private farms (13 percent). State aid, which totaled about \$4.0 billion to all agricultural producers, remains a critical factor in supporting the dairy sector and in meeting import substitution goals for dairy products. This level of aid is expected to continue in 2016. Russian cheese market in 2014 has brought mixed outcomes. New prospects for local producers occurred due to the introduction of food sanctions against the EU, USA, Canada, Australia and Norway. In 2014 the share of imports decreased to 36.2%, while domestic production, on the other hand, increased by 41.5%. Thus, the food embargo has created favorable conditions for development of import substitution in the cheese market. On the other hand, the experts of the Institute of Agricultural Market Studies (IKAR) believe that in the fall of the ruble and the reduction of bank financing investment in different categories of milk production, the volumes of the latter will be reduced, and the level of industry risks will grow.

Since August 2014, after the introduction of food sanctions, Russia faced a deficit of dairy products, which prompted processors to produce high added value products such as cheese. Overall, in 2014 domestic producers increased the volume of cheeses by almost 10% compared to 2013 (from 344.7 thousand tons to 378.4 thousand tons).

Many regional companies, after the introduction of sanctions announced their intention to expand product range and set up production of European cheese varieties. The ban on the importation of various food category and will operate over 2015. Therefore Russian producers increase production by another 4.2% relative to 2014 estimates. According to Business Stat, the volume of cheese production will be 394.3 thousand tons in 2015.

Despite the increase in domestic production, attempts to avoid cheese deficit in the market failed. Cheese Imports in the country in 2014 decreased by more than 25% compared to the previous year. In 2014 the five largest suppliers of cheese to the Russian market were:

TABLE 50 CHEESE TRADE/IMPORT PARTNERS OF RUSSIA, 2014

Country	Net weight (Tons)	Trade value (US\$)
1. Belarus	130,708	605,837,981
2. Netherland	24,953	126,111,274
3. Lithuania	22,639	111,594,376
4. Finland	21,867	110,354,855
5. Argentina	18,561	92,655,638
21. Armenia²⁴	1,535	4,778,354

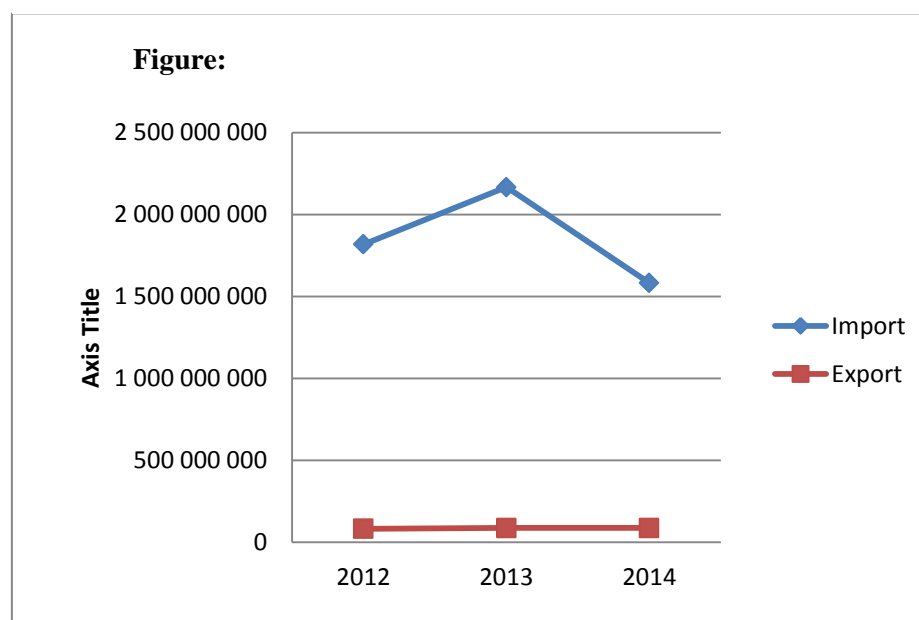
Source: <http://comtrade.un.org/data/>

As we can see from the table Belarus is the main cheese supplier to Russian market. Armenia is only 21th²⁵ in terms of cheese exports to Russia. In order to minimize the presence of the deficit in the cheese market in Russia, authorities started stimulating/increasing domestic production capacity. Currently, Russian government implements various projects in order to support Russian cheese producers to increase production volumes and varieties. The main challenge for Russian local cheese producers is to produce analogues of European type's cheeses for the local market.

Increasing cheese imports from countries which have survived a working relationship with Russia is another important factor. As of Armenia, it has not only working relationship with Russia, but is a member of the EEU with Russia which provides good chances to Armenian producers for being present in the Russian cheese market.

²⁴ Russian cheese import volumes from Armenia, which includes both Armenian traditional and HV cheeses.

FIGURE 32 RUSSIAN CHEESE MARKET FOREIGN TRADE (\$ VALUE)



Source: data.tradeeconomy.com

According to Euromonitor international surveys Russian consumers perceived cheeses in factory package as less fresh and more expensive and about 80% of sales volume in hard cheeses is provided by unpacked produce. The attractive package is not yet a key factor for consumers. But still, in short-term perspective as the market will be getting more branded the importance of package is set to grow. Consumer choice is currently driven by other factors such as density, shape, color, package/expiry date; price. The majority of consumers have poor knowledge of brands offered by the market. According to consumers, this situation is determined by lack of information and advertising, and in some cases - by unattractive logos of manufacturers on package. Among Russian consumers the most popular HV cheese is considered to be blue-veined cheeses (Roquefort), “Russian” types of cheeses, Edam, Dutch and Gouda. The majority of the cheese consumed in Russia (i.e., 43 percent) was comprised of the lowest cost cheeses, such as “Russian,” Poshekhonsky priced at lower than RUB300 (\$4)/kg. Nearly the same share of cheese consumed was comprised of average and higher-than-average priced cheeses ranging from RUB 300 (\$4)/kg to RUB 400 (\$5,4)/kg, including “Dutch/Gollandsky” Edam, Gouda, and Maasdam cheeses. Only 11 percent of the cheese consumed in Russia was comprised of the highest-priced cheeses, including Roquefort, Kasserri, and Champignon, priced at more than RUB400 (\$5,4)/kg.

TABLE 51 HV CHEESE WHOLESALE AND RETAIL PRICES IN RUSSIA (RUB=7 AMD)

Cheese Type	Wholesale price		Retail price	
	RUR	AMD	RUS	AMD
Dutch	275-290	1925-2030	320-350	2340-2925
Gouda, Edamer	275-290	1925-2030	320-400	1950-2400

Roquefort	650-700	4500-5000	750-900	5250-6300
Mozzarella	200-350	1300-2275	250-400	1625-2600

Source: <http://www.agroserver.ru/syry/>, <http://www.russianfooddirect.com/food/cheese/>

As it was shown in the table, in Russian market the most favorable sales condition (in terms of Wholesale/Retail prices) for Armenian HV cheese producers have Roquefort cheese, even taking into consideration current ruble devaluation. Average prices of Dutch, Edam and Gouda cheeses produced by Russian producers are lower by 5-10% than their analogues produced in Armenia, but still if Armenian producers will be able to produce mentioned types of cheeses with high quality their products will be competitive in Russian market. Mozzarella cheese produced by Armenian producers is not competitive in Russian market, as prices of Mozzarella in Russia are twice cheaper than their analogues in Armenia.

TABLE 52 SUMMARY FOR MARKET SIZE, RUSSIA, 2014, TONES

1. Total dairy market size	30 800 000 ²⁶
2. Total cheese market size	667 926
3. Total HVC market size	380 717
4. Market segmented by origin:	
e. Total imported HVC segment	303 697
f. Total locally produced HVC segment	77020
5. Market segmented by consumer:	
c. HVC consumer segment	317917
i. Imported	NA
ii. Locally produced	NA
d. HVC HORICA segment	62 800
i. Imported	NA
ii. Locally produced	NA
6. Market segmented by cheese	
k. Roquefort and blue veined cheeses	NA
v. Imported	2804
vi. Locally produced	NA
l. Dutch type cheeses (semi-hard)	NA
v. Imported	225242
vi. Locally produced	NA
m. Mozzarella	5710

²⁶Total milk production volumes

7. Focus on Dutch type cheese market segment	
d. Market size “Dutch- Gollandsky”	41878
e. Market size for Gouda	22843
f. Market size for Edam	11421

Source: Expert`s estimates based on www.gks.ru and <http://mdpetrova.ru/>, euromonitor international, expert interviews and other dairy sector reports.

Based on the above, one can conclude that Russia can be considered as a high potential market for Armenian HV cheese producers.

Exporting and tax regulation in Cheese market

For cheese export promotion in Armenian legislation 3 important aspects were considered:

- Armenian membership in the EEU

As new customs legislation of EEU is already at the stage of finalization, not all the gains of the trade were observable in Customs and trade regulation, but still current trend of cheese exports growth to Russia is quite a realistic reason for further development of this field

- VAT threshold (115 million AMD)

For export promotion the exemption of value added tax is the most influential and beneficial action by the government, despite starting from 07.07.2015 new law amendments had been accepted in “Turnover tax”, which enables companies not to pay VAT tax if they have less than 115 million turnover, before this amendment the threshold was 58,35 which was too low, as even small size Cheese producing with annual capacity of 40 tons of cheese can easily pass the threshold and pay VAT tax which is too costly for investors and entrepreneurs.

- Exports’ exemption from VAT

It makes Armenian cheese to be more competitive in international markets in terms of price attractiveness, as Armenian producers can afford them to sell their products at lower prices than their analogues in international markets.

- Import tax exemption of agricultural machinery and equipment, which makes producers to be more active and follow international innovations and import new technologies without import duties.

Even though in the last 5 years positive changes have been made for simplification of procedures and decrease of bureaucracy at the customs, still there are some custom hindrances such as illegal payments for produce exporting, complicated customs bureaucracy, delays in passing customs, etc. One of the serious constraints for exports is the fact that most of the cheese producers are not exporting themselves but use intermediaries to do that.

Cheese exporting procedures, bureaucracy, logistics, certification

According to Armenian legislation the main steps for exporting cheese are as follows:

Stage 1: Preparation of export documents

- Invoice
- Truckload document
- Transportation insurance
- The certificate of origin, veterinary certificate
- The certificate from the State Service for Food Safety of The Ministry of Agriculture RA

Stage 2: Preparation of cheese for export.

- Produce weighting, packing, labeling, storage
- Customs inspection of cheese, truck seals and reference

Stage 3: Customs clearance

- All documents are submitted
- Empty customs declaration
- Calculated and entered in the customs value
- After checking the documents, the customs authority accepts the declaration.
- The exporter is applying for the clearance
- The exporter makes all relevant payments
- The cargo customs clearance

Stage 4 Export-border activities

- Several types of inspections by customs.

Stage 5.1 Import regulations for cheeses in Russia (EEU, Russia)

- Cheeses imports/exports inside EEU members are exempted from custom duties
- Cheeses imported from countries outside the EEU apply a common customs tariff.
- The mandatory pre-shipment information to be submitted to the customs on arrival
- Consignor of the cargo customs on arrival
- Customs initiates control
- Assigned to the customs regime for goods
- Documents submitted to the clearance
- Appropriate inspection of cheese is carried out in Control passes
- All payments are made.

Stage 5.2 Import regulations for cheeses in Georgia (EU-Georgia Association Agreement, October, 2014)

- Since 2000 Georgia has become a member of World Trade Organisation (WTO 2000). Armenia joined WTO later 2013. In the frame of the membership Armenia and Georgia imports 1.3% of the agricultural products.
- Since 2005 Armenia uses the Generalized Scheme of Preferences (GSP). This gives the opportunity to enter the EU market with preferential conditions as well.
- Armenia has a free trade agreement with the most of the CIS countries as well as with Georgia, but some of the exemptions/privileges with Georgia will expire in 2019.

MARKETING PLAN

Target markets and sales volumes

As it was mentioned in Export market analysis section Russia and partially Georgia considered to be main trade partner for Armenian HV cheese producers (see export market analyses).

TABLE 53 MARKET SIZES OF TARGETED HV CHEESE MARKETS

Russia, 2014	HV Cheese, ton	Georgia 2014	HV Cheese, ton	Armenia 2014	HV Cheese, ton
Production	90,530	Production	348	Production	268
Import	303,697	Import	602	Import	962
Export	13,510	Export	0	Export	133
Market size, ton	380 717	Market size, ton	950	Market size, ton	1,097

For Semi-hard cheeses (Dutch, Edamer, Gouda, etc.) Russian Market is quite promising (Other Cheese imports were totaled to **225,242** tons and **\$1,230,754,411** under HS040690 from this substantial share was Semi-hard cheeses). According to official sources Russian blue veined cheese imports were also considerably high (**2,804** tons, **\$20,457,607**), that is why above mentioned favorable trade conditions will enable Armenian Semi-hard and blue veined cheese producers to be present in the Russian Market. Current successes of locally produced Semi-hard and Blue veined cheese producers in Russian market once more prove that this field has a growth potential in Russian Market. Georgian case is more problematic, due to lower demand (compared to Russia) of HV cheese. But still for some of the HV cheese types with comparatively lower shelf life and high demand in Georgia, Armenian producers can benefit from trade with Georgia.

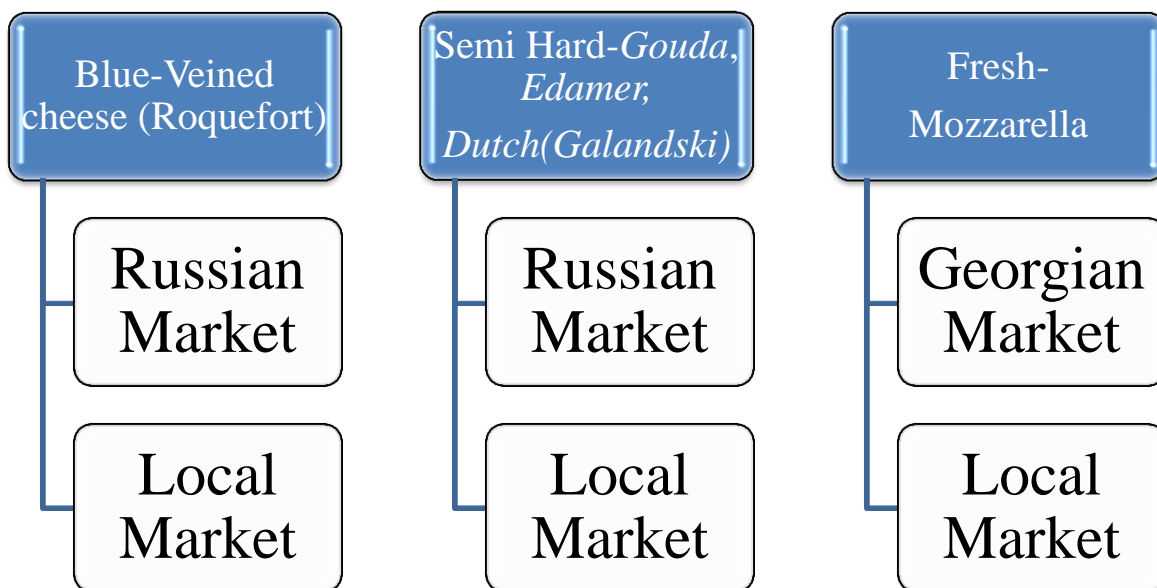
Recommendations for producers groups

The producer groups are recommended to produce HV cheese products, which meet the following requirements:

- Relatively high-quality milk is available or there is a possibility to get it with small investment,
- Demand is relatively higher in the target market (Armenia, Russian Federation, Georgia)
- Relatively small investments are required for technological upgrades.

According to cheese production experts with current circumstances Armenian HV cheese producers will not be able to produce Maasdam, Cheddar, and other Hard cheeses, as large investments in technology, storage facilities and raw milk production are required.

Due to above mentioned factors, and main outcomes of this study the following cheeses producers' groups should produce.



Marketing plan

Product Policy

Local (Armenian) Market

For Local market the only possibility is import substitution, which is about **962** tones, but as it was already mentioned zero level import of HV cheeses is not realistic.

Due to the consumer and producer analysis, expert interviews, and official export/import statistics for producer groups the most beneficial types of HV cheese to produce are the following: Blue-veined cheese (Roquefort), Semi-hard cheeses (Edamer, Gouda, “Dutch” (Gollandsky) and Fresh-Mozzarella).

According to consumer analysis Blue-veined cheese (especially Dorblu, Roquefort) is considered to be one of the most demanded HV cheese for consumers/households and HORECA sector. As Roquefort was mainly used in fresh condition by local consumers, it is suggested to enter the market with following product characteristics: it should be packed in small and medium size, respectively with Triangle and Rectangle shapes. The best characterized color of this type of cheese is Green, but Producer groups may use blue color as well.

Semi-hard cheese (Gouda, Edamer and “Dutch”) also had comparatively higher demand in consumers/households and HORECA sector. Gouda, Edam, “Dutch” cheeses should not be bitter and like to the taste and appearance of locally produced traditional cheese (e.g. Lori). They must also pay particular attention to enhancing the reputation of the producers, focusing especially on high-quality milk procuring/processing, technological process, and product uniqueness factors.

Mentioned types of HV cheese is used in fresh condition as well as ingredients of pizzas, salad and other foods. Producer groups should pay attention to the following characteristics: Gouda and Edamer cheese should be packed in medium size package preferably with circle shape. The package color might be Red, Orange, Green and White. “Dutch” cheese should be packed in medium size package, with Rectangle shape. Yellow is the main color, which characterizes “Dutch” cheese in the local market. As it was already mentioned in “Consumer Analysis”, “Dutch” cheese is an abstraction for Armenian, Russian and other CIS countries, that is why cheese named as “Dutch” can be marketed for local and Russian markets without problems. Producer groups will not put much effort for marketing “Dutch” type of cheese, as it is already well known by local consumers.

In contrast to above mentioned HV cheese the main consumers of Mozzarella is considered to be HORECA sector. That is why the requirement of packaging is quite different: it should be packed in small or medium sized buckets. Currently Fresh Mozzarella market is mainly covered by local producers, only a few imported products are available in local retail outlets (i.e. Carrefour).

HV cheese producer groups should focus on the following important characteristics of cheese: appearance, attractive packaging (Mostly like their analogues of European origin).

Russian Market

For Russian Market there is no limitations in terms of volumes, the market is too large for Armenian producers, and even by using all available raw milk for production of HV cheeses, Armenian HV cheese producers will not be able to cover significant part of Russian demand of HV cheese. For comparison, total Armenian cheese production volumes (traditional+HV+homemade) are just 6 % of Russian cheese import volumes. For Russian market Armenian HV cheese producers can produce a wide variety of cheeses, but as it was already discussed “Blue-Veined cheeses” have not only high demand, but also beneficial price in Russian market (as mentioned by Russian wholesale/distributor centers).

Georgian Market

As discussed in the Export market analysis Georgian consumers mostly consume soft cheeses.

Georgian imports for Blue veined cheese is only 10 tons, on the other side they imported **744** tons of fresh and soft cheeses (Mozzarella and fresh Mozzarella). As Mozzarella has relatively smaller shelf life, Armenian HV cheese producers (operating in Northern Armenia) have a comparative advantage for entering the Georgian market.

Price Policy

For local market 10%-20% lower price than imported analogues should be set by local HV producer, which still can provide in average 20-25% net profit margin to producers. For ensuring competitiveness in export markets the producer price for local and export markets can be set differently: for export markets producer groups can set lower profit margins (10-15%) and due to high export volumes get considerable profit.

Two pricing scenario should be considered taking into consideration irregular appreciation/depreciation of AMD/RUB and AMD/GEL.

TABLE 54 EXCHANGE RATES SCENARIOS: 1 RUB>8.6 AMD, 1GEL>200 AMD²⁷

Type of HV cheese	Prices for Local market	Price for Russian market ²⁸		Price for Georgian market	
	AMD/kg	AMD/kg	RUB/kg	AMD/kg	GEL/kg
Dutch (Gollandsky)	2600-3000	2340-2500	275-290		
Gouda	2600-3000	2340-2500	275-290		
Edamer	2600-3000	2340-2500	275-290		
Blue-veined	4500-5000	5500-6100	640-715		

²⁷ During reporting period 1RUB exchange rates fluctuated from 5.77 to 7.76 AMD

²⁸ Wholesale Prices in Russian market

cheeses/Roquefort					
Mozzarella Fresh	3700-4200			3700-4200	18-21

For the first case above mentioned HV cheese prices will be acceptable and competitive in Russian/Georgian for local HV cheese producers. Within these exchange rates local producers will be able to get some profit in export markets.

TABLE 55 EXCHANGE RATES SCENARIOS:1 RUB<8.6 AMD, 1GEL<200 AMD

Type of HV cheese	Prices for Local market		Price for Russian market	
	AMD/kg		AMD/kg	RUB/kg ²⁹
Blue-veined cheeses/Roquefort	4500-5000		4500-5000	640-715

With the second scenario the only cheese which still will be beneficial to produce and export will be Roquefort for Russian market only. Even more during telephone calls/interviews with Russian distributor centers, it was clear that Armenian Roquefort is becoming famous in Russian market, and interest of Armenian Roquefort cheese is increasing, due to embargo on Russian cheese imports.

For other HV cheese varieties prices will be out of competition. Georgian market of Mozzarella cheese will also become unattractive for Armenian HV cheese producers with such exchange rates (1 GEL<200 AMD)

Place/Distribution

Local Market

For the local market it is preferable for producer groups to have their own distribution channels, which will enable them to cooperate directly with retail outlets. The cooperation with retail outlets normally start when producers have sample of their products, without availability of the sample of products, retail outlets do not offer any precondition for cooperation.

According to HV cheese producer past experience, one shipment of HV cheese to supermarket chain should be at least 100-150 kg. Regularity of shipments depends on particular cheese demand. New shipment is ordered to HV cheese producer, when seller sees that small quantity of cheese is available in their stores.

Export Market

The following options/supply channels for exporting cheeses from Armenia are currently available:

²⁹ As of 10.12.2015 exchange rate, 1RUB=7.01 AMD

- The first option is development of own supply/distribution channel abroad. Though that creates serious difficulties for managing it from Armenia, it is much more profitable and therefore some of Armenian HV cheese producers have already created their own supply chains in Russia (Krasnodar, Moscow).
- The second way is to export HV cheese via wholesalers/distribution centers operating in Russia. Collaboration mechanism with them is too simple, firstly they are requiring cheese samples, and once the sample cheese fulfils all their requirements, representatives of wholesale points/distributors and producers are negotiating prices and shipment volumes.
- The third and the rarest option is direct cooperation with retail outlets abroad. Supermarket chains operating abroad require stable supplies (sometimes up to 100 tons of HV cheese per shipment).

Analyzing all these distribution options and previous experience/lessons learnt by Armenian HV cheese producers, for producer groups it is recommended to start exporting by effective collaboration with wholesalers/distributors operating in Russia and then after to think about creation of own distribution network or to cooperation directly with supermarket chains. Some of the contacts of such wholesalers/distribution centers are provided in below table.

TABLE 56 LIST OF WHOLESALERS AND DISTRIBUTORS

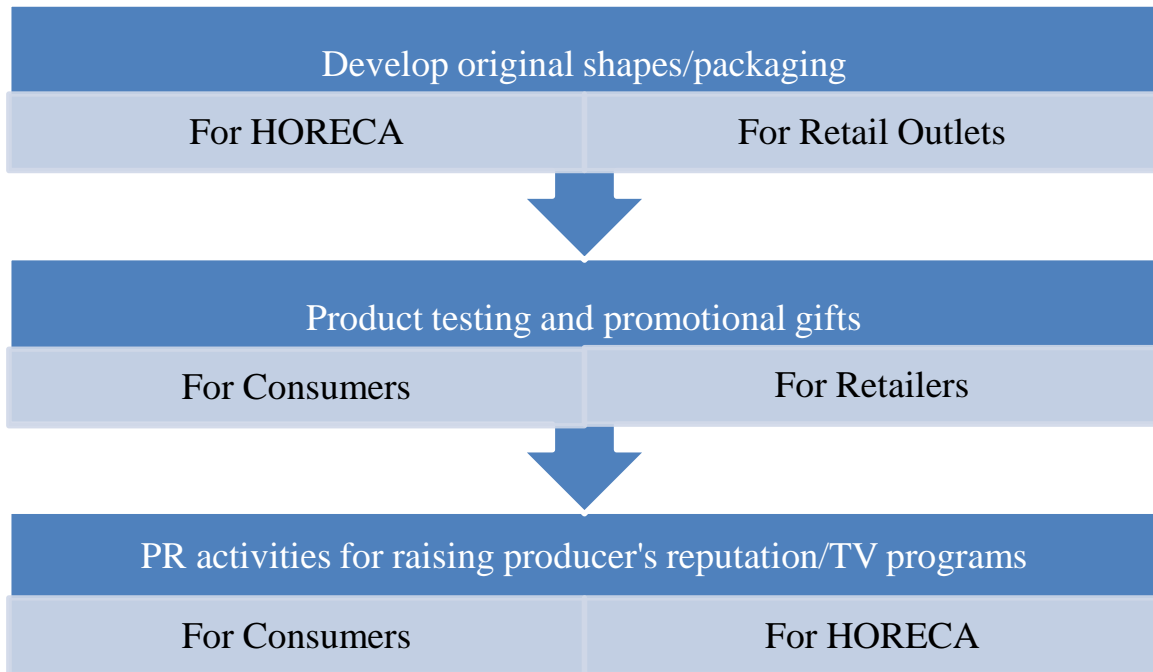
Wholesale / distributor company name	Telephone number	Website	Address
«Trading House Milk-West»	+7(499) 519-00-30	http://www.milk-west.ru/	Moscow, Kuskovskaya 12 building
UNIVITA	+7(495) 780 76 77	http://www.univita.eu.lt/	105005, Moscow, st Radio, 24/2
Trading House "Exclusive Product"	+7(495) 797-80-62	www.exprod.ru	111394, Moscow, st Perovskaya, д. 61/2, office 311-317
Ltd. "Milk Blues"	+(792)5775-47-08	http://molochnyj-blyuz.tiu.ru	Moscow, st. Promishlennaya 10

For Georgian market the only available supply chain mechanism is direct cooperation with local HORECA sector.

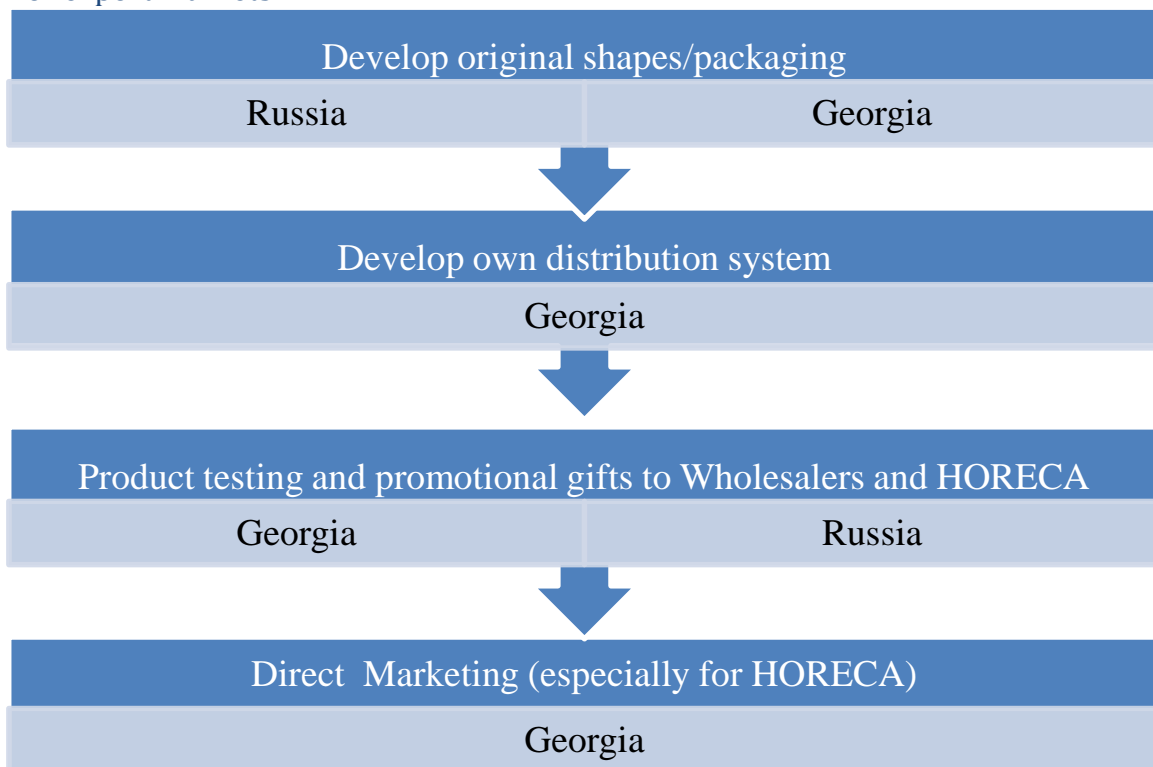
Promotional activities

According to HV cheese producers/consumers surveys, and expert interviews the following promotional activities could be recommended:

For local market



For export markets



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Cheese Market Research (Armenia, Russia, Georgia and Arab Emirates) by Armenian Development Agency, 2011,

http://georgien.ahk.de/fileadmin/ahk_georgien/Armenien/ADA-Cheese_Markets_2012.pdf

Armenian Statistical Service, <http://www.armstat.am/am/>

Customs Service of Republic of Armenia, <http://customs.am/>

USDA, Food & Agricultural Organization

Russian Statistical Service, <http://www.gks.ru/>

Georgian Statistical Service, <http://www.geostat.ge/>

UN Comtrade | International Trade Statistics Database, <http://comtrade.un.org/>

Food and Agriculture organization of the United Nations, <http://www.fao.org/home/en/>

Euromonitor International, <http://www.portal.euromonitor.com>

Exchange Rates, <http://rate.am/>

U.S. Department of Agriculture, <http://www.usda.gov/wps/portal/usda/usdahome>

Eurasian Economic Commission, <http://www.eurasiancommission.org/en/Pages/default.aspx>

Annex 1: List of respondents

TABLE 57 LIST OF INTERVIEWED HV CHEESE PRODUCERS

Company/Brand	Role in VC	Name	Position	Phone
Mastarachedo LLC	HV cheese Producer	Nelly Nersisyan	Deputy Director	+374 93 89 99 95
Gor Sargsyan SE (“Gloria Cheeses”)	HV cheese Producer	Gor Sargsyan	Director, Owner	+374 77 22 49 88
Daughter Melania LLC	HV cheese Producer	Ruben Harutyunyan	Director	+374 91 22 45 47
“Araks-2” Production Cooperative (“Ekokat”)	HV cheese Producer	Arthur Movsisyan	President	+374 77 66 61 12
Igit LLC	HV cheese Producer	Andranik Igityan	Director, Owner	+374 91 43 13 46
Elola CJSC	HV cheese Producer	Ruben Hovhannisyan	Director	+374 94 40 44 41
Ashotsk Cheese Factory LLC	HV cheese Producer	Georgy Baghdasaryan	Director, Owner	+374 77 72 72 78
CheeZler LLC	HV cheese Producer	Hayk Gevorgyan	Director	+374 93 17 90 01
Golden Goat CJSC	HV cheese Producer	Khachik Martirosyan	Director	+374 93 08 18 78
Doustr Marianna LLC	HV cheese Producer	Albert Hovhannisyan	Deputy Director	+374 43 99 92 56
Borisovka LLC	HV cheese Producer	Myasnik Grigoryan	Director, Owner	+374 94 98 83 00
Dili LLC	HV cheese Producer	Astghik Tamrazyan	Director	+374 93 99 33 23
Sisalp LLC	HV cheese Producer	Husik Stepanyan	Director, Owner	+374 94 16 00 35
Gerasim Consumer Cooperative	Cheese producer	Arthur Nazaryan	President	+374 77 88 98 44

TABLE 58 LIST OF INTERVIEWED HV CHEESE SECTOR EXPERTS AND REPRESENTATIVES OF SUPPORTING ORGANIZATIONS

Organization	Name	Position	Phone
Union of Cheese Producers “Larri”	Armen Gigoyan	President	+374 93 40 16 01
Sun Food LLC	Arsen Khachatryan	Director	+374 10 46 46 41
Strategic Development Agency NGO	Anush Avakimyan	Cheese Technologist	+374 94 00 84 30
Sisalp LLC	Husik Stepanyan	Cheese Technologist	+374 94 16 00 35

TABLE 59 LIST OF INTERVIEWED RETAIL TRADE POINTS

Organization	Type	Marz	Community	Address	Phone
Norik Aslikyan S/E	Supermarket	Gegharkunik	Gavar	4 Nalbandyan str.	+374 99140199
Pegas	Shop	Shirak	Gyumri	169 Myasnikyan str.	+374 98654490
KrpaK	Supermarket	Shirak	Gyumri	143/15 Khorenatsi str.	+374 94222077
Davit	Supermarket	Tavush	Ijevan	n/a	+374 91373060
Margar Hakobyan S/E	Shop	Ararat	Artashat	23 Ogostos str.	+374 77705026
Artavazd Petrosyan LLC	Supermarket	Armavir	Armavir	3 Nalbandyan str.	+37491239554
Daniel-ash LLC	Shop	Aragatsotn	Ashtarak	n/a	+374 94902100
Serob-Arman LLC	Shop	Vayots Dzor	Vayk	n/a	+374 94403020
Levon Chakhoyan S/E	Shop	Lori	Vanadzor	122 Vardanants str.	+374 55665515
Green Plaza	Supermarket	Lori	Vanadzor	49 G. Lusavorich str.	+374 95901909
Shaqe	Supermarket	Syunik	Sisian	136/1 Syunik str.	+37493187898
Riko	Supermarket	Syunik	Sisian	39 Israyelyan str.	+37494201744
Safari	Supermarket	Kotayk	Charentsavan	n/a	n/a
Hayr & Vordi Yeritsyanner	Supermarket	Yerevan	Yerevan	21 Papazyan str.	+374 91378940
Ham&Dav	Supermarket	Yerevan	Yerevan	28 Artsaxi str.	+374 77926651
Nona	Supermarket	Yerevan	Yerevan	7 Alek Manukyan str.	+374 10555930
Tsiran	Supermarket	Yerevan	Yerevan	5 Kilikia str.	+374 91857353
Eva & Syuzi LLC	Supermarket	Yerevan	Yerevan	5 Avan Arinj str.	+374 55552200
Pekin	Shop	Yerevan	Yerevan	39/77 Komitas str.	+374 10201625
Elena Sargsyan S/E	Shop	Yerevan	Yerevan	63 Komitas str.	+374 10234384
Vaz2	Shop	Yerevan	Yerevan	4 Moldovakan str.	n/a
Punj	Supermarket	Yerevan	Yerevan	5 Davit Balyan str.	+374 99099710
Aygedzor	Supermarket	Yerevan	Yerevan	2/1 Proshyan str.	n/a
Nano	Shop	Shirak	Gyumri	Garegin Njdeh 13	+374 93627695
Viva	Supermarket	Shirak	Gyumri	24 Shedrini str.	+374 77610120
Пятёрочка	Supermarket	Shirak	Gyumri	23 Yeghishe Charents str.	+374 77066838
Basen	Supermarket	Shirak	Gyumri	15/3 Paruyr Sevak str.	+374 98987650
Shirak	Shop	Shirak	Gyumri	n/a	+374 94347141
Javakhq	Shop	Shirak	Gyumri	36 M. Khorenatsi str.	+374 93424213
Karona	Supermarket	Shirak	Gyumri	n/a	+374 55308580

Tartu	Shop	Shirak	Gyumri	1 Rijkov str.	+374 98309524
Basen	Supermarket	Shirak	Gyumri	n/a	+374 77651746
Armenia	Shop	Shirak	Gyumri	8 Paruyr Sevak str.	+374 93206164
Khachik 90	Supermarket	Gegharkunik	Gavar	n/a	+374 96969354
Vasil Navasardyan S/E	Shop	Gegharkunik	Gavar	26 Abrahamyan str.	+374 77571256
Vahan Avetisyan S/E	Shop	Gegharkunik	v. Karmir	n/a	+374 93598962
Vachagan Hovhannisyan S/E	Shop	Gegharkunik	Gavar	Hatsarat block	+374 91400480
Aramayis Tsegalyan S/E	Shop	Gegharkunik	Gavar	1/1 Shahumyan str.	+374 93763553
Varsenik Shahinyan S/E	Shop	Gegharkunik	Gavar	2 Z. Andraniki str.	+374 99070729
Gor	Supermarket	Gegharkunik	Gavar	Hatsarat block	+374 93204467
Samvel Mneyan S/E	Supermarket	Gegharkunik	Gavar	Artsvaqar block	+374 99909059
Arayik Aghoyan S/E	Shop	Gegharkunik	Gavar	Hatsarat block	+374 94509111
Hayk Khachatryan S/E	Shop	Gegharkunik	Gavar	n/a	+374 93821592
Smile	Supermarket	Lori	Vanadzor	1/1 M. Khorenatsi str.	+374 93769829
Gor	Shop	Lori	Vanadzor	13/19 Demirchyan str.	+374 55040745
Sena	Shop	Lori	Vanadzor	12 Myasnikyan str.	+374 32250377
Gandzak	Supermarket	Lori	Vanadzor	21/15 Baghramyan str.	+374 98825651
n/a	Shop	Lori	Vanadzor	79 Tigran Mets str.	+374 98448899
Zepyur	Shop	Lori	Vanadzor	59a Aghayan str.	
Sparapet	Shop	Lori	Vanadzor	n/a	+374 32220063
Voske Tslik	Shop	Lori	Vanadzor	116 Vardanants str.	
Lilvar LLC	Shop	Lori	Vanadzor	61 Aghayan str.	+374 93322980
Vardan Yulchnyan S/E	Shop	Lori	Vanadzor	1/1 Abovyan	+374 94326129
Smile	Supermarket	Lori	Vanadzor	1/1 M. Khorenatsi str.	+374 93769829
Lena Meliksetyan S/E	Shop	Syunik	Sisian	4 Gayi str.	+374 93111151
Armen Harutyunyan S/E	Supermarket	Syunik	Sisian	2 Vorotan str.	+374 98287088
Gayane Hovhannisyan S/E	Shop	Syunik	Sisian	1 Vorotan str.	+374 93777593
Geghastgh LLC	Shop	Syunik	Sisian	1/1 Khanjyan	+374 77748380
n/a	Shop	Syunik	Goris	76 Ankakhutyan str.	+374 93030947

Shande	Shop	Syunik	Goris	15/1 Ankakhutyan str.	+374 93635044
Goris city	Supermarket	Syunik	Goris	21 Artsakhi str.	+374 91705040
Mini Market	Supermarket	Syunik	Goris	n/a	+374 94323716
Angel market	Supermarket	Syunik	Goris	19 Ankakhutyan str.	+374 94323716

TABLE 60 LIST OF INTERVIEWED HORECA INSTITUTIONS

Organization	Type	Marz	Community	Address	Phone
Ashtaraki Dzor	Restaurant	Aragatsotn	Ashtarak	n/a	+374 98272829
Dok Raz	Restaurant	Tavush	Ijevan	40 Ankakhutyan str.	+374 91301905
Lchak	Restaurant	Vayots Dzor	Yeghegnadzor	Yerevan- Meghri highway	+374 93998900
Narine Toplaghatsyan S/E	Restaurant	Gegharkunik	Gavar	20 Z. Andraniki str	+374 93721541
Vanatour	Restaurant	Shirak	Gyumri	70 Gorku str.	+374 94084099
Shanson	Restaurant	Armavir	Armavir	12 Jivanu str.	+374 98070808
KAH	Restaurant	Kotayk	Tsaghkadzor	n/a	+374 94301706
Oasis	Restaurant	Lori	Vanadzor	42 Tigran Metsi str.	+374 98709912
Tashir Pizza	Restaurant	Lori	Vanadzor	67 Tigran Metsi str.	+374 32244411
Hrashk Mankik LLC	Restaurant	Yerevan		2 Arshakunyac str	+374 98772155
Smak	Restaurant	Yerevan		1/1 Gayi str.	+374 10611610
Vivaldi	Restaurant	Yerevan		24 Azatutyan str.	+374 91698777
Tomas Smoky	Restaurant	Yerevan		58 Hanrapetutyan str	+37498761111
Charentsi 28	Restaurant	Yerevan		28 Charentsi str.	+374 95570175
Gusto	Restaurant	Yerevan		11 Abovyan str.	+374 98581121
Ararat Hall	Restaurant	Yerevan		30 Koghbatsi str.	+374 10536798
High Rest	Restaurant	Yerevan		21/1 Tumanyan str.	+374 11212111
Gabbi LLC	Restaurant	Yerevan		5 Sebastyan str	+374 43243888
Olivia LLC	Restaurant	Yerevan		30/26 Koghbatsi str.	+374 10532233
Vayk	Hotel	VayotsDzor	Jermuk	10 a Jermuk roadway	+374 93289326
Mosh	Hotel	Tavush	Ijevan	3 Yerevanyan str.	+374 94031102
Ureni	Hotel	Aragatsotn	Ashtarak	2 Ashtarak roadway	+374 91017484

Alik	Hotel	Gegharkunik	Gavar	1 Zoravar Andranik str.	+374 94449878
Berlin Art Hotel	Hotel	Shirak	Gyumri	25 HaghTanaki str.	+374 55377573
Best Western Aghveran	Hotel	Kotayk	Aghveran	n/a	+374 95433211
Lalaner	Hotel	Syunik	Sisian	29 Sisakyan str.	+374 91481606
Diana	Hotel	Syunik	Goris	Artsakhyan Hwy	+374 99777711
Imperial	Hotel	Yerevan		23 Koryuni str.	n/a
Park hotel	Hotel	Yerevan		28/75 Koghbatsi str.	+37493082220
Paloma	Hotel	Yerevan		10/7 D. Anhaghti str.	+37496644646
Valensia	Hotel	Yerevan		40 Myasnikyan str.	+37494987858
Venezia Palazzo	Hotel	Yerevan		38/4 Myasnikyan str.	+374 98791517
Ararat	Hotel	Yerevan		7 G. Lusavorich str.	+374 93271960
Metropol	Hotel	Yerevan		2/2 Mashtots avenue	+374 93355868
Nork Residence	Hotel	Yerevan		56/1 Moldovakan str.	+374 93539992
Amira Palace	Hotel	Yerevan		55/7 Myasnikyan str.	+374 93574488

TABLE 61 LIST OF INTERVIEWED PASTRY WORKSHOPS

Organization	City	Address	Phone
Queen Cake LLC	Yerevan	3 Baghramyan ave.	+374 10547912
Villa De Torta LLC	Yerevan	36/2 Chekhov str.	+374 10464900
Laki Dessert Art Studio	Yerevan	27 Rubinyants str.	<u>+374 93402204</u>
Agnes Cake	Yerevan	22 Paronyan St	+374 10500302
Lucy dessert	Yerevan	27 Rubinyants str.	+374 93334080
Lord Bakery	Yerevan	Artsakhyan str.	+374 77349070