DEFINING THE STRATEGIC OBJECTIVES OF HUNGARIAN MUTTON PRODUCT CHAIN AND ELEMENTS OF MARKETING STRATEGY IN THE BEGINNING OF THE SECOND DECADE OF THE CENTURY

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Summary: The sheep sector is regarded to be a "black sheep" in Hungary, both in terms of economy and marketing. On one hand, the sector is not easily traceable as available relevant data are partial and infected by the effects of black market or underground economy; on the other hand, there are no clear, concrete statistical data or surveys on consumption either.
The present study attempts to dissolve the above anomalies and present findings by fact-based model calculations and actual marketing surveys. The fact-based model developed and used for more than 200 variables verifies the correctness of economic calculations. Original examinations were performed by Béla Cehla, doctoral candidate, in 2000–2011. The marketing survey, although not in full accordance with statistical requirements, was carried out in 2012 and it processed relevant data authentically.

The main conclusions are the following:
It is clear so far that genetic basis should primarily be evolved in the industry, as it is the factor that mainly contributes to profitability and price-type factors come only following it.
Genetic modification is achievable by changing breeds or crossbreeding. The findings of product chain level sensitivity analysis have provided clues that the added value generated in the sector is already determined during slaughter lamb production and progeny influences this value in approximately 80%. Critical points are feed conversion ratio and the relating price of lamb feed, which influence added values by 2.7–2.9%. The remaining factors affect added value through feeding costs, although not considerably.

The following activities can boost interest in the market of sheep products:
- Comprehensive market research
- Stimulation of cultural development by product-tasting, exchanging information and recipes
- Development of supply in accordance with demand
- Identification of target markets, positioning products
- Diversification of product range
- Community trade mark to guarantee excellent quality and Hungarian origin
- Selection of credible poster faces, organization of advertising campaigns

Keywords: Mutton product chain, strategic objectives, economic efficiency, marketing strategy in Hungarian mutton products

Introduction and literature review

The significance of the sheep sector might differ in terms of continents, countries as a result of the structure and development of economy and agriculture; however, the relevance of sheep as a utility animal should be unquestioned. The current performance of the sheep sector is rightly classified as an essential part of global animal husbandry.

Sheep can be found in all continents; the species is rich in varieties, all the products are utilizable and sheep lends itself as the raw material of valuable, sometimes luxury category goods. Sheep, as small ruminants, utilize grasslands and although they are periodically kept in stalls, their keeping is environmental-friendly. In contrast with all the positive aspects of the sector, the number of these animal species drops worldwide, in the European Union and in Hungary as well. Out of the four main sheep products (meat, fleece, milk and pelt), meat is the primary product in several parts of the world, especially in areas of temperate climate, and the relevance of meat production grows all over the world (Morris 2009). The ratio

of sheep population is gradually reducing within the number of utility animals globally and in the European Union (EU) and the role of the sector in meat production and trade shows a declining tendency simultaneously.

Whereas in 2007 the number of sheep population was 1.11 billion in the world, this number reduced to 1.07 by 2009. A similar tendency emerges in the EU, where the number of sheep population decreased by almost 15 million animals during the past 15 years (FAO, EUROSTAT).

Sheep breeding has a long tradition in Hungary; however, its share out of the total agricultural production value is merely 1%. The share of sheep farming out of products of animal origin is 2%, which lags behind its share before the political transformation considerably, when it exceeded 4%. Similarly, the significance of domestic sheep faming and its commercial role have been diminishing for years, as it is confirmed by the reduction of population number in domestic sheep stock (844 000 ewes KSH /Central Statistical Office/, 2011a, Cehla et al.; Nábrádi et al.).

The current situation and potential future developments of sheep sector are fundamentally determined by the efficiency of production, the judgement of sheep products and the structure of production in the sector.

More than 87% of sheep bred in Hungary belong to the Hungarian Merino species kept under half-intensive farming technologies. The dominance of the Merino species and the resulting market situation made the small-weight slaughter lamb, produced under half-intensive circumstances, the single marketable product of domestic sheep farming much in demand in the Italian slaughter lamb market.

Consequently, export orientation targeting mainly Italian markets is characteristic of the industry, which markets live lambs almost entirely. Domestic demand for the products of the sheep sector is minimal, approximately about 0.38 kg/person/year, which is outstandingly low as compared to domestic meat consumption.

The focal problem of Hungarian sheep sector is its deteriorating competitiveness, its low efficiency in added value and innovation which hinder sustainability in the long run. The basic problem can be broken down into three areas: social and societal, economic, market related and environmental problems (Nábrádi 2009, 2011; Nábrádi et al. 2012; Cehla 2011; Cehla at al. 2012).

The unfavourable nature of these factors led to low outputs, the stagnation of domestic consumption and to low income-generating capacity in the sector in the past years.

The EU has been the net importer of sheep meat for years; its import-export balance is about 201 thousand t.

The prevailing shortage of products provides Hungary with market opportunities which have only been exploited in the area of slaughter lamb export. In addition to slaughter lamb sales, our market potentials are boundless in the market of mutton-based processed meat products into EU member and non-member states as well (Lebanon, Switzerland, and Japan etc.).

All the above are confirmed by the fact that the growth of slaughters in 2010 (sheep 15%, lamb 38%) expedited the massive boost of mutton export. Consequently, Hungarian mutton processing and sales for foreign markets might improve the existing unfavourable situation. For the precise assessment of the economic significance of the sector, our study attempts to explore the volume of value added generated in certain phases of the production chain, which requires the determination of these phases in the sector. Parallel to this, as domestic demand for sheep products is extremely low (Nábrádi 2009; Fenyves et al. 2010), market research has been carried out to unveil the tendencies on demand and supply correlations.

Material and method

As for economic analyses, our study has applied the methods used by the "Debrecen Applied Economics School" and their improved versions. In terms of marketing, the widely acknowledged methods successfully used by the "Food Marketing Workgroup", University of Kaposvár for years were incorporated in our analysis.

The objective evaluation of product chain phases was carried out by using the research of B. Cehla 2011, based on earlier publication of Szőllősi (2009), on the grounds of stochastic and deterministic, realistic model calculations for three primary areas (raw material production, slaughterhouse processing, domestic consumption and sales in foreign markets).

The core of the analytical system was to simulate economic efficiency (typical of the years 2000–2011) on more than 200 real data-based input variables. All the calculations are built on physical data and expenses related to them express the characteristics of reality. The stochastic simulation includes correlations among functions which were submitted to rigorous professional verification. Modelling and the "Monte Carlo" simulation method expedited the quantification of risk, i.e. a quasi-deterministic model was converted into a stochastic one.

The findings of sensitivity analyses from modelling made the identification of factors which significantly affect the added value (all these have been analyzed by the methodology of descriptive statistics) possible. The next step was the definition of the added value function by matching, which required a set of numerous input combinations out of production factors obtained during simulations. Revenues and varying input values were gained from physical data in the case of all sub-modules. On one hand, these allowed to identify the impact of prices and output on earning; on the other hand, to determine the effect of varying outputs given by output on earnings and costs. Modelling and its calculations for realistic values have been prepared several hundred thousand times. This was necessary for the analysis of all potential changes and their realistic values within the meaning of "large numbers". *Being aware of the above mentioned, we have formed our opinion for the preparation of decision-making in relation to the Hungarian sheep sector.*

The two key methods of marketing-based primary market research are quantitative and qualitative data collection. Qualitative market research provides rather indicative (it is not for generalization) than statistically reliable results, which

are obtained through two highly accepted methods: individual and focus group interviews. The findings of qualitative market research are of exploratory nature and they are usually not suitable for statistical analysis; information is textual and cannot be quantified (Scipione 1994; Malhotra 2001).

Individual in-depth interviews were used to reveal the opinion of the supply side in the market and focus group interviews to explore consumers' attitude. The simultaneous application of the two methods lent itself for the comparison of demand and supply, and through this we could develop the elements of a potential marketing strategy.

The subject of the deep interview was the head of a Hungarian mutton-processing plant, who is a well-renowned, respected expert. The areas of the draft in-depth interview were the following: the position of the sector, lamb and mutton consumption, definition of target consumer groups, market positioning, the elements of product, price, marketing and communication strategy.

The first step in the organization of focus groups was to ask potential consumers to fill in a test-survey (Scipione 1994; Malhotra 2001), which classified the participants in various groups by several aspects (e.g. participation in earlier projects of market research). Another viewpoint was to have a certain level of information about mutton and sheep milk: only those people were recruited who had already tasted and preferred the preparations of the category.

The focus point scenario was suitable to reveal consumer mentality in depth. First preferences and attitudes concerning mutton and sheep milk were questioned, followed by questions about the knowledge of the two product categories. Finally, respondents could taste mutton and sheep milk products and the elements of the marketing strategy were outlined.

Results

Phases of the mutton production chain and its sales channels

The Quantified Agribusiness Value Chain of mutton can be broken down into three phases (Figure 1.) The **first phase** is raw material production, which showed a massive decline in the past years. Although in 2000 892 098 slaughter lambs were sold in foreign markets (Juh Terméktanács, Sheep Product Council), this number dropped to 600 000 by 2008 and has practically remained the same so far. The situation of the sector is further aggravated by the obligation of electronic tagging introduced in 2010, which exerts additional burdens on farmers (400HUF/lamb).

The number of sheep farms has plunged markedly and the number of ewes has showed a simultaneous setback. Juhász (2009) claims that the following tendency looms in relation to the reduction of population number: the number of animals radically drops in stock farms with larger animals (above 500 ewes or rather 1000 ewes), primarily resulting in the gradual decline of Hungarian ewe population.

In agreement with ideas of Nábrádi (2012, 2011, 2009), Fenyves et al. (2012), Madai et al. (2009), Cehla et al. (2011, 2012), this is due to the gradual decrease of ewe population, the low level of sheep farm concentration, insufficient profitability, the lack of processed products and the unfavourable utilization of the species.

In 2010 there were 6862 sheep farmers in Hungary (MJKSZ, 2010), who owned 844 000 ewes. The progeny of this ewe population, with frequent farrowing, calculating with the farrowing ratio of 100% and 1 weaned lamb per ewe, is 844 thousand lambs. The ratio of mortality, calculating with 5% means 42.2 thousand ewes. If the livestock is improved properly, culling of 15–17% can be calculated, which in this instance appears as slaughter animal in Hungarian mutton markets.

The replacement of slaughtered ewes, with a culling rate of 17%, requires presumably 143 480 ewe lambs annually. Overall, the domestic sheep sector offers 660 thousand lambs for the purpose of slaughter lamb export as commodity supply, assuming that sheep breeders improve their livestock every year. For the identification of the precise number of livestock refreshment the periodical information note of MJKSZ (Association of Hungarian Sheep and Goat Breeders) was reviewed, which highlighted that the number of ewe lambs for further breeding differed widely from calculated data. As the number of actually remaining ewe lambs was almost one fifth of that defined by Cehla (2011), Hungarian sheep population is likely to be regarded ageing.

The average weight of slaughter lambs for EU markets (90% Italy) is 20–20 kg/animal, so live weight has become measurable in export commodity supply (in live weight), and its value was 13 860 t in 2010. The commodity supply of domestic consumption includes cull slaughter lambs, mutton import and some thousands of slaughter lambs which are officially slaughtered in two slaughterhouses in Hungary. Domestic consumption consists of 3889 cull sheep and 100 t of slaughter lambs given in carcase.

The **second phase** includes slaughterhouses and processing plants. Currently there is only one sheep slaughterhouse in Hungary, which performs not only cutting but processing as well. The bony and boneless products of this slaughterhouse (lamb, pre-cool vacuum packed, half-oven ready, raw sliced and diced lamb) can be ordered and purchased all over the country, mostly in hyper and supermarkets (60%). Moreover, restaurants, hospitals and hotels (25%), wholesalers in Budapest (15) buy these products (Kukovics 2008). Naturally, several slaughterhouses assume slaughtering and deboning services in Hungary, but their number is minimal and practically they are not indicated in statistical data. In addition, the statistics does not include slaughters performed in households or sheep farms, although dishes prepared of mutton look back to long traditions in certain regions.

In several sheep farms the majority of culling activities usually takes place before major festivities, as most consumers in rural areas purchase mutton for the festive board directly from shepherds. For the sake of completeness, import mutton was included in the second phase.

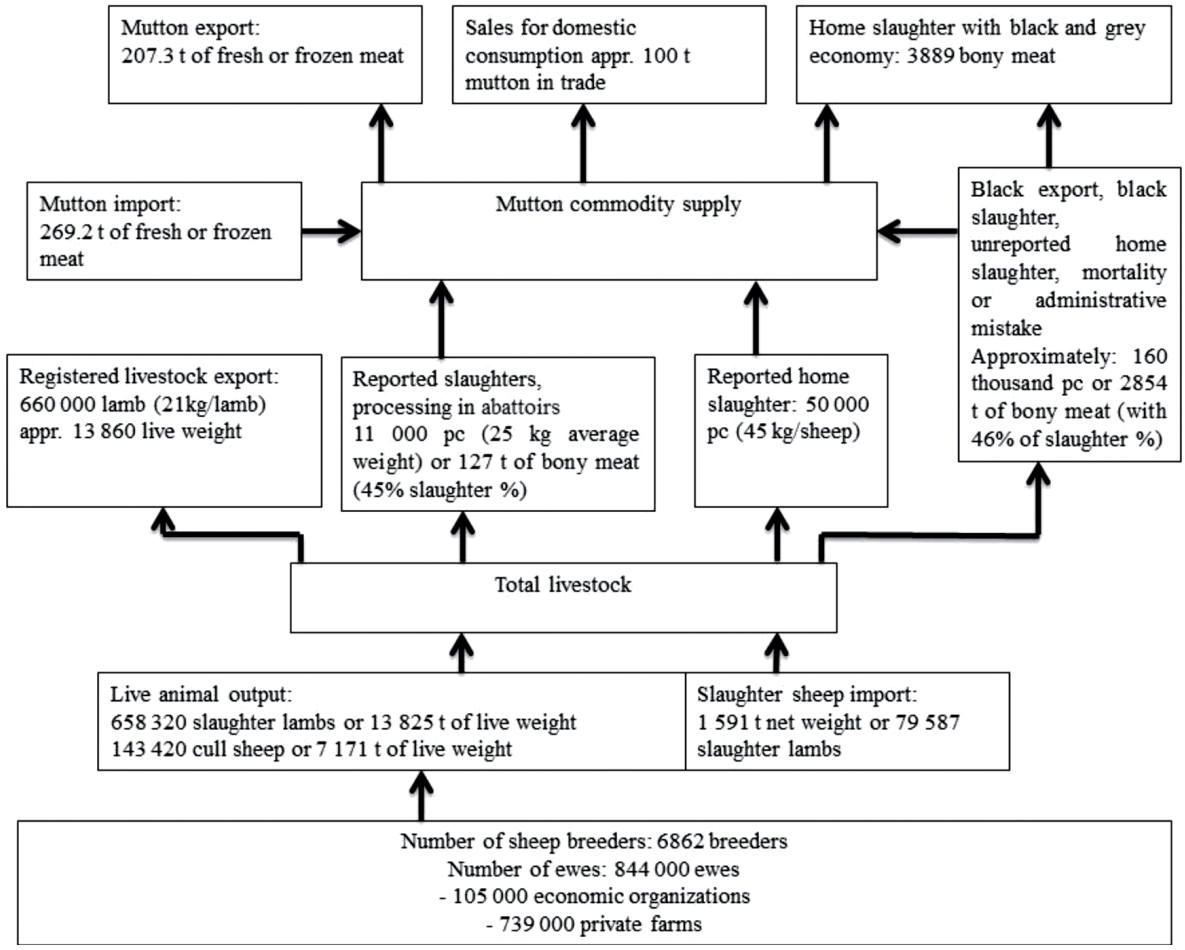

Figure 1. Quantified Agribusiness Value Chain of mutton production cycle

Source: Cehla 2011

Data in the second phase suggest that domestic consumption is based on officially reported home slaughters (1035 t of carcase), the meat of sheep from lack and grey slaughters (2854 t of carcase) and the lamb of some tonnes (100 t) which appear in statistical data. If these numbers are added up, the result indicates the volume of Hungarian mutton consumption and allows the calculation of consumption per person, 0.4 kg/person/year.

The **third phase** of the production cycle is represented by domestic consumption and export sales. Exports sales are made up of the marketing of slaughter lamb in almost 100%. The export sales of processed products are not significant these days. The quantity of export mutton was 207 t in 2010, whereas the quantity of mutton import was 269. Consequently, Hungary is a net importer in terms of processed mutton. Moreover, a part of meat export quantity is likely to be re-export, as the export commodity supply of statistically reported slaughters just exceeds 127 tonnes, where mutton export amounts to merely 40%.

There is no hope for change in the export sales of processed products as long as domestic slaughterhouse capacities are expanded.

Cost-benefit analyises of certain product chain phases on the grounds of model calculations

The precise assessment of the significance of certain product chain phases requires analysis on the volume of cost claims and production value which are characteristic of production in certain phases. As for slaughter and trade, costs and outputs have been studied from two sides. In one part of our calculations parameters typical of Merino sheep were taken and defined as “extensive” type; whereas in the other part the parameters of Merino X meat type crosses, which were tagged “intensive” type. This was needed as output parameters were different at slaughter, therefore production value varied differently (Figure 2.)

Subsidies are outstanding in the production value of lamb production. Normative support and de minimis support for ewes was listed in aids with the total sum of 2700 HUF/ewe. Subsidies included area payments on grasslands and the amount of claimable supports for grazing livestock among the target programs of agro-environmental management and excise duty on diesel oil, which has been defined in terms of

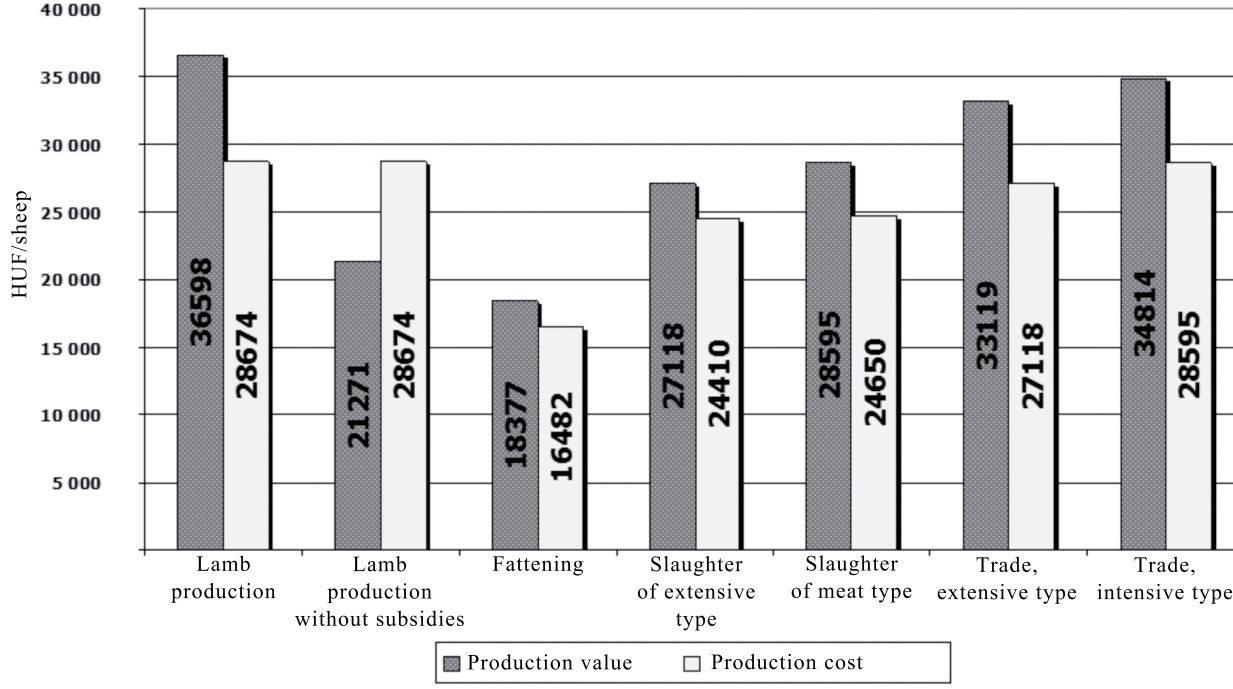

Figure 2. Cost-benefit analysis of certain product chain phases

Source: Cehla 2011

the required area size for grazing. With the newly launched subsidies for restructuring, the amounts are more promising, although no calculations have been carried out in this respect.

The evaluation of fattening results suggests that its income generating capacity significantly depends on market prices, since fattening as an economic activity becomes loss-making immediately if costs run higher or the ratio of mortality is considerable.

Certain indicators in the next phase of the production line show more favourable values than in the case of slaughter and trade. This phase of the production line realizes considerable returns from processed and sold lambs and intensive type sheep may increase economic benefits can.

Sensitivity analysis on the players in certain phases of the product chain

Our study carried out sensitivity analysis on the economic activities of certain players in certain phases of the product chain and also in the whole product chain. The software used for sensitivity analysis highlighted only those inputs which exerted significant influences on output variables (Table 1.)

In all plant sizes, the development of production cost is dominantly influenced by progeny. Data reveal that the formation of production cost depends on the volume of progeny in 76–80%. The following input variable is full time employment, of which fluctuations increase costs in 7–15.6% in plants where ewe number is lower than 1000. Daily weight gain should also be highlighted as it reduces costs similarly to progeny. In plants with 101–300 ewes factors influencing production costs also include the ratio of lamb mortality. Findings reveal that progeny and body mass growth vary in common, and the formation of these two values is primarily influenced by genotype. Even if to a lesser degree, the formation of production cost is further influenced by the daily weight gain of lambs, the prices of meadow hay and lamb feed as well.

Besides progeny, gross margin (GM) values depend on the price of meadow hay and lamb feed, the fodder conversion of weaned lambs and also the price of alfalfa hay. Deterioration in the values of fodder conversion involves the decrease of GM as well. The impact of Easter lamb price is not considerable, it is merely 1.2%.

The next phase of the production line is fattening, where we also studied the factors affecting the volume of GM and production costs. Our findings are presented in Table 2.

Among the findings of the sensitivity analysis, the price of starter feed for lambs and fodder conversion decrease gross margin values and increase production costs almost in equal proportion. The third key indicator is daily weight gain. If its values increase, it involves the reduction of production cost. The remaining factors include market prices which affect the values of gross margin and production costs in about 1%. In brief, we concluded that the results of fattening are indirectly influenced by genotype, as it affects the three most significant factors listed in the sensitivity report.

Contrary to the foregoing, in the next phase of the production line, only factors affecting added value were examined within the framework of sensitivity analysis (Figure 3.).

Slaughtering of meat-type and extensive-type lambs was examined separately. The most important factor influencing

Table 1. Significant results of gross margin – optimized simulations by plant size (activities of raw material production, 250 000 runs)

	0–100	100–300	300–500	500–1000	1000–3000
Production cost					
Progeny	–80.20%	–79.50%	–76.10%	–79.70%	–79%
Full time employment		13.10%	15.60%	9%	8.30%
Part-time wages	7.10%				
Daily weight gain, weaned lamb	–3.40%	–3.20%	–3.30%	–3.70%	–3.70%
Price of meadow hay	4.20%	1.40%	1.50%	2.40%	2.70%
Price of rearing lamb feed	1.40%		0.90%	1.60%	1.90%
Feed conversion weaned lamb	1.20%	0.60%	0.80%	1.20%	1.70%
Mortality, lambs		0.60%			
Gross margin					
Progeny	78.40%	80.50%	81.70%	82%	82.10%
Price of meadow hay	–9.30%	–6.60%	–5.50%	–5.10%	–4.80%
Price of starter feed	–2.90%	–3%	–3.20%	–3.20%	–3.30%
Feed conversion weaned lamb	–2.70%	–2.90%	–2.70%	–2.70%	–2.90%
Price of alfalfa hay	–2.50%	–2.50%	–2.40%	–2.50%	–2.40%
16–20 kg Easter price	1.80%	1.80%	2%	2.10%	2%

Source: Cehla 2011

Table 2. Major results of sensitivity analysis on the sub-module of fattening house simulations

Fattening farm	FH HUF/lamb	Production cost HUF/lamb
Price of starter lamb feed	–32.5%	32.10%
Fodder conversion	–28.8%	28.70%
Daily weight gain	8.5%	–28.10%
24-27 kg price in October	5.5%	
27-30 kg price in November	3.8%	4.60%
27-30 kg price in January	2.8%	
27-30 kg price in July	2.20%	
27-30 kg price in March		1%
24-27 kg price in January		0.9%

Source: Cehla 2011

the *value added of slaughterhouse is slaughtering percentage*. In the case of slaughtering meat-type lambs, value added depends on slaughtering percentage in 61%, while this figure is only 52% in the extensive case. The leg and the ratio of spine and chop follow the slaughtering percentage from among the parameters modifying value added.

Summarizing the results previously mentioned, I conclude that every factor influencing the examined output depends only on genotype (i.e. progeny indicator). In a few cases, it turned out that even prices influenced the examined categories, but the number of these factors decreases with higher levels of the product chain. It is clear so far that genetic basis should primarily be evolved in the industry, as it is the factor that mainly contributes to profitability and price-type factors come only following it.

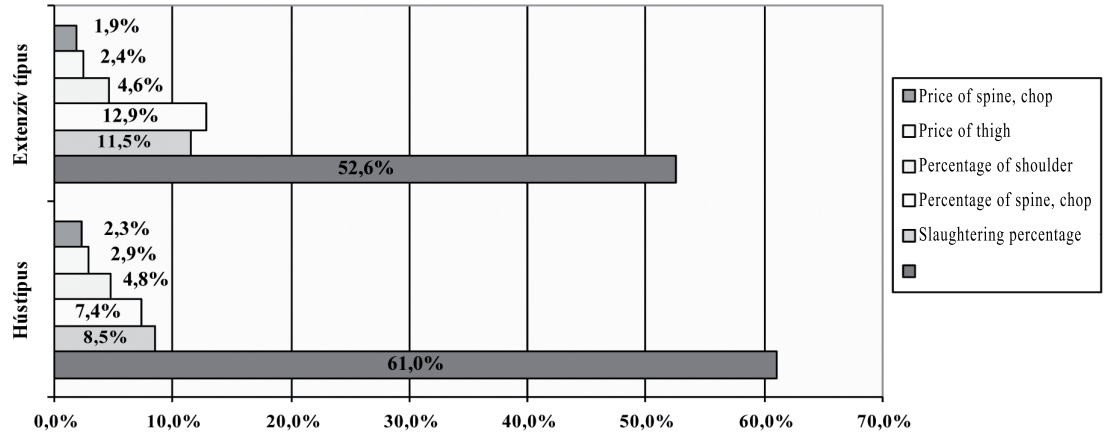

Figure 3. Major results of sensitivity analysis on the sub-module of slaughterhouse simulations

Source: Cehla 2011

The Sensitivity Analysis of the Whole Mutton Product Chain

My product chain investigations were carried out for farm sizes with 500 to 1 000 ewes, on the basis of model variants presented previously as well as a literature review. The effect of factors influencing value added was analyzed in every phase (Table 3). The table reflects that the effect of the same factors may be considered as significant in the chosen farm sizes.

The volume of value added generated in the industry takes a shape even during lamb production, as value added of the given product chain phase depends on the progeny in 79%, while the values of progeny influence the value added of the whole product chain in 58 to 59%.

Table 3. Results of Sensitivity Analysis of the Product Chain Simulation

	Meat-type	Extensive-type
Total value added generated through the product chain, HUF/lamb		
Progeny	58%	59.30%
Slaughtering percentage	9.60%	9%
Daily weight gain in fattening house	5%	4.30%
Meadow hay price	–3.80%	–3.70%
Daily weight gain of weaned lambs	2.60%	2.60%
Value added of hypermarket, HUF/lamb		
Daily weight gain in fattening house	30.50%	30.90%
Selling price of thigh	–21.60%	–20.30%
Slaughtering percentage	21%	21.40%
Spine price	–15.80%	–16%
Daily weight gain of weaned lambs	5%	5.00%
Value added of slaughterhouse HUF/lamb		
Slaughtering percentage	51.4%	50.5%
27–30 kg March	–16.6%	–18.3%
27–30 kg December	–10.3%	–11.0%
Daily weight gain in fattening house	7.4%	5.8%
Daily weight gain of weaned lambs	4.0%	3.6%
Value added of fattening house HUF/lamb		
Starter lamb feed price	–16.5%	–16.6%
16–20 kg February	–14.9%	–15.0%
Feed conversion of fattening house	–14.3%	–14.2%
Daily weight gain	11%	11.0%
27–30 kg March	8.4%	8.5%
Value added of raw material production HUF/lamb		
Progeny	78.8%	79.0%
Meadow hay price	–5.0%	–4.9%
Rearing lamb feed price	–3.1%	–3.1%
Feed conversion of raw material production	–2.8%	–2.7%
Price of alfalfa hay	–2.5%	–2.4%

Source: Cehla 2011

Feed conversion ratio and the relating price of lamb feed influence the value added in 3.1%. The other factors have effect through the feeding costs of ewes.

To sum up, the biggest risk may be found in progeny in every case in the model of lamb production. Risk in cost changes has an effect to the examined indicators through the market prices of inputs, while the effects of prices are not significant.

Value added generated during fattening operating in integration is modified by prices of lamb feed as well as that of February lambs of 16 to 20 kg. The third and fourth most important factors are feed conversion and weight gain, because genotype has the most significant role in forming these two indicators.

Regarding the factors of the slaughterhouse, the daily weight gain of raw material production and fattening modify the value added as well. The purchase prices of paschal and Christmas lambs of 27 to 30 kg have significant effect on the result of the slaughterhouse as they decrease value added in case of both extensive and intensive breeds. In both types, the effect of slaughtering percentage is the most relevant, as it contributes to generating value added by more than 50%.

The value added of hypermarkets is mostly modified by the daily weight gain of fattening house by more than 30% in both cases. The selling price of leg and slaughtering percentage are the next two parameters contributing to generating value added in the same ratio. The growth of daily weight gain increase the value added of hypermarket, while the increase of prices of leg, spine and top of the shoulder in the slaughterhouse reduce it. The increase of slaughtering percentage modifies positively the value added.

In product chain level investigations, the priority of certain factors is the following: progeny contributes to increasing value added by near 60%, slaughtering percentage by near 10%, the daily weight gain of fattening house by approximately 5%, the daily weight gain of weaned lambs by 3%.

Defining the strategic objectives of Mutton Product Chain

The above findings and the underlying technological parameters make the definition of the strategic objectives for the enterprise possible.

We think that in addition to Merino, other sheep types may and should produce excellent results by cross-breeding.

On the grounds of our model calculations:

The first is the value of progeny indicator, the most significant point in the sector. Progeny is the first indicator, which was ***1.6 to 1.7*** lambs/ewe/year in the gained production structure. *These values cannot be reached with every breed. Professional literature most frequently recommends the British Milking Sheep, Charolais, Lacaune, furthermore Suffolk, Texel and Ile de France among terminal breeds. Our calculations high-*

lighted one of the weakest points, i.e. the progeny indicator, which practically affects the profitability of the whole product chain. The next indicator is the ratio of **daily weight gain**. On farm-level, its quantity is approximately 240gr/day for suckling lambs and in the case of weaned lambs the optimal mean value is about 320 g/day. Equal values are typical of the fattening period as well.

Feed conversion with Merino sheep in average cases varied **between** 3.3–3.9 kg/kg, its improvement further narrows the number of utilized breeds, which seems to be practically impossible for Merino.

If the indicators of progeny, weight gain and feed conversion are taken together, it becomes evident that the use and purposeful crossbreeding of the above mentioned types is essential to realize the goal of economic sheep breeding.

Slaughter yield, one of the most significant factors influencing the economicalness of slaughter and the rate of valuable meat parts are also paired with the above mentioned. **Slaughter yield** has to reach 50% on average to become profitable, and the targeted value is about 54%.

The findings of our model calculations suggest two alternatives:

– The first is the full change of the breed by changing the stock, which is costly, can only be implemented by means of tender resources and it is exclusively recommended for new farmers.
– The second is the application of crossbreeding.

Thinking in a vertical integration

Following a separate analysis on the players of production cycle, our study focused on the formation of value added in the event of cooperation among certain players in a vertical integration.

Our calculations were carried out in two versions for intensive and "quasi intensive" cases introduced earlier.

Value added developed differently at certain phases of the production cycle and in the applied functions. The formation of the generation of **value added** was the following in certain phases (Figure 4.)

Figure 4. clearly illustrates that the production of the intensive type generated higher value added.

The findings of sensitivity analysis on the players of the production cycle suggest that all the factors influencing the most essential outputs depend exclusively on the genotype of the breed. In some cases prices also altered the studied categories; however, the number of these factors decreased towards the upper levels of the production cycle.

On the basis of all this it can be concluded that genetic basis is the factor to be modified as it is the cornerstone of efficiency and price-type factors come only following it. As discussed above, genetic modification should be achieved by changing the breed or by cross-breeding.

The findings of production cycle-level sensitivity analysis have revealed that value added in the sector is already determined during slaughter lamb production. Progeny modifies the volume of the value added in the sector in approximately 80%. The critical point of producing stocks is feed conversion and the price of closely-related lamb feed, influencing value added in 2.7–2.9%. The remaining factors affect value added through fodder costs for ewes, but not significantly.

The results of sensitivity analysis have confirmed that on-farm fodder production might considerably decrease costs and it is manifested in the effects of fodders exerted on value added.

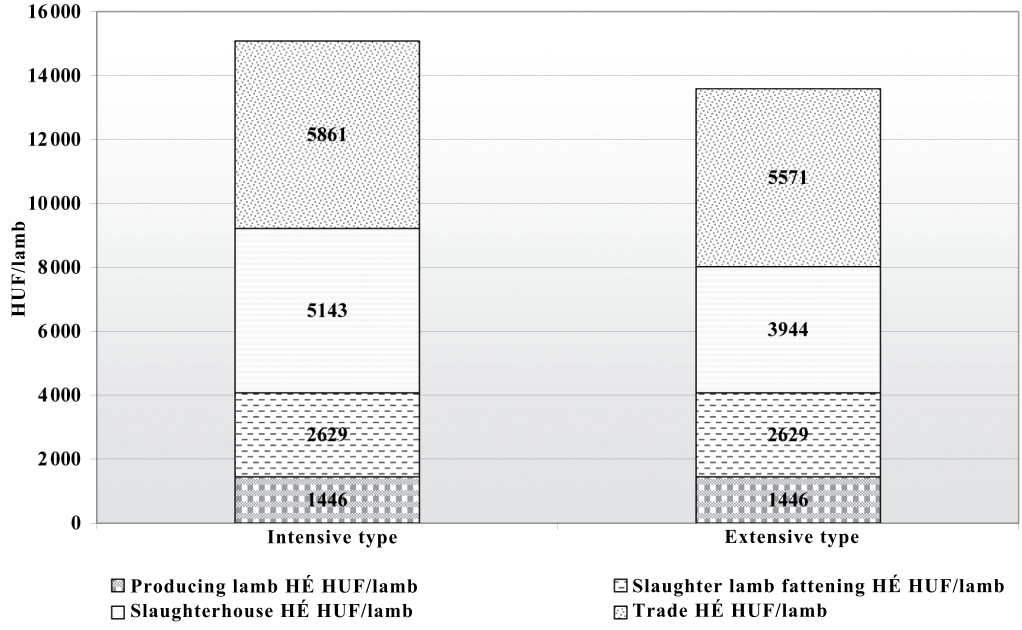

Figure 4. Value added generated in certain phases of the production cycle for extensive and intensive types

Source: Cehla 2011

Elements of marketing strategy from the viewpoint of a Hungarian meat processing plant

Characteristics of domestic consumption

Domestic mutton and lamb consumption is not as seasonal in nature as export acquisition. Demand is higher at Easter and at Christmas as in other periods, but in the remaining part of the year demand for sheep products is steady. At harvest, demand for mutton usually rises. Harbouring a lot of prejudices against mutton, customers rather refrain from mutton products. Most Hungarians are not innovator-type consumers, they are unwilling to try out novelties, they are conservative and prefer customary dishes. Dynamic communication campaigns, powerful marketing strategies are required to dissolve these fixations which take a lot of time. Not only expertise and well-built professional programs are needed, but considerable funds as well; therefore progression is slow for processing plants.

Lamb is a premium product, so it is exclusively purchased by wealthy customers or in gastronomy by those restaurants where guests can afford to buy it. 30% of the turnover of processing industry directly serves the HORECA sector (exclusive restaurants, hotels), 20% is purchased by wholesalers (METRO), where restaurants, hotels buy their products and the remaining 50% finds its way to end-users and households through retail trade. Upper and middle class people take part in direct consumption who have information on mutton and lamb products, who know how to prepare them and can also afford them. They usually belong to young urban dwellers in high income categories. The consumption of mutton is fashionable these days, which is indicated by 10–15% increase in annual domestic turnover. The price of mutton is much lower. Its primary consumers are those elderly people in the Great Hungarian Plain who eat it with or without tallow habitually and have a liking for it; who know its favour and appreciate its palatability traits. The volume of marketed quantity has stagnated for years.

Market positionin-g

For the positioning of lamb in markets, its health values, gastronomic properties may be highlighted; furthermore, viewpoints of convenience might be attractive for consumers, although flavoured and grilled lamb products have not lived up to expectations. The nutritional benefits of lamb include its full value protein content, which the body makes use of in 100%, therefore it is recommended as a dietary product in several countries. Its potassium content is high, making it especially suitable for patients with cardiovascular diseases. Sheep milk is rich in protein with a high palpability value. Its composition significantly differs from that of cow's milk.

Elements of the marketing mix

Processed mutton or lamb products are not available in Hungary and merely cottage cheese and cheese are made of sheep milk. Typically, sheep milk is not consumed anywhere in the world, and it is not marketed in retail trade either. In contrast with Hungary, sheep milk products are sold in a wide range in other countries, where their consumer base is also significant (France, Italy). Several countries produce kefir and yoghurt of it.

Product development is one of the potential solutions to boost consumption with promising prospects, however, the innovation realized by Hungarian processors failed to achieve the expected results in the market. At the same time, the product offers a much wider scope of potentials and more imaginative solutions compared to its present day utilization. There are several solutions to prepare several mutton and lamb products, to introduce them in the market and there have already been several attempts in Hungary. Based on a German formula, "köfte" (meat roll of Turkish origin) was prepared earlier from mutton and beef tallow, which was marketed in an oven-ready version and was served to domestic hotel chains. Moreover, gammon was prepared of leg of lamb for the catering industry. Product tasting proved to be very successful; however, the product was a complete failure in the market: it was delicious, but nobody was willing to buy it. The cause of the failure remained undisclosed; meat trade experts claimed that consumers were not ready to appreciate these products.

The high price of lamb is well-known. The most expensive product made by the enterprise is Fresh rack, a lamb spine of gastronomic value with the retail price of 10 000 HUF. Despite this price, it is sometimes in short supply in markets. The lowest lamb product price category is lamb chop and bony stew meat with the retail price of 1000–1200 HUF. The price of bony lamb thigh is 4500–5000 on the market; that of lamb without bone is 5-6000 HUF. Lamb typically piles up from time to time as consumers are highly price sensitive with this product. This is understandable as bony, vacuum packed thigh is about 1.5kg at the retail price of 7-8000 HUF. Price differences occur as a result of the split ratio in certain products, as lamb spine and carcase amount only to 8%, and bony thigh to 24–25%.

Lamb and mutton products are available for customers in hyper and supermarkets. Specialist shops are not characteristic of Hungary and merely an insignificant part of products are sold on markets. In the Nagycsarnok (BIG Marketplace), Budapest the processor has two partners who are the suppliers for several restaurants and has significant sales through them. In other towns sales are typically restricted to very cheap products. Consumers consciously purchase mutton and lamb and their consumer's attitude is typically pre-planned: they know the trade unit and the shop itself where they find these products. The establishment of a country-wide shop chain exclusively for the sale of mutton products would be hopeless, as it could not operate in a viable and sustainable way solely out of the turnover of these products.

The company's marketing and communication activities are both weak. They put advertisements in a gastronomic newspaper altogether once or twice annually. This form of communication has been selected as cooking is highly fashionable today. In addition, they publish their sales in the newspapers

of large commercial chains and there is also an ad agency, which periodically advertises their products abroad. The impact of these advertisements is not observable abroad, only in Hungary, where the advertisements of large commercial chains on sale prices foster the demand of mutton products. In these periods it often occurs that working hours for employees in processing plants have to be considerably expanded to provide appropriate product quantity.

Targeting non-consumers and inciting higher consumer demand for these products could be realized by including the media. The idea of persuading the star chef of a cookery show to use lamb in his program would open up opportunities for mutton and lamb products. If the cook praises the magnificence of these products, sales would run high for at least temporarily. However, the company's concern is the safe fulfilment of emerging surplus demand, even if they could pay the price of getting into the show, which is rather doubtful on account of the high amount.

Tasting could foster the recruitment of new customers, but the company is fully aware that this step will not encourage too many people either. However, lamb and mutton products are not to be converted into commodity products and their exclusive nature should be maintained.

The main message of communication should focus on palpability value and prestige. Although lamb and mutton influence human health positively, several other products feature the same advantage, so it is not a distinctive property. It can be mentioned, but not highlighted.

Community marketing

There are several community organizations in the sheep sector, but none of them is engaged in specifically marketing tasks. On one hand, their scope of activity focuses on other areas; on the other hand, as domestic market is served by this company almost completely, community organizations refuse to launch a community campaign for the company's products.

Most products of the company have won the "KMÉ" trademark (Quality Food from Hungary), but the contribution of AMC to marketing is not considerable: it merely provides opportunity for participation. At present an opportunity presents itself through the community marketing organization to show lamb and mutton products in international food industrial exhibitions.

This is a potential breakout for this enterprise, as it can offset the challenge of decreasing domestic demand due to the world wide crisis, if its export markets are successfully expanded. Participation in international venues certainly means potential opportunities. Markets similar to the Japanese one are difficult to find: it not only demands outstandingly high quality products, but it is also ready to pay for them. The processing capacity also seems to be satisfactory to meet further market demands.

Time for the introduction of a community trademark to certify quality and origin has not yet arrived; this move needs more products and more processors. As for hidden opportunities in the sector, additionally 3-4 processors should operate with capacities similar to that of the greatest domestic processor. The present situation indicates that they could earn a living increasing the number of producers, providing safe production, good organization and secure market supply.

However, the system could probably not work in a form of cooperation. If these producers started their activities, they would have to provide services not only for the domestic markets but they would also have to find export markets.

Characteristics of consumer behaviour

Customer preferences and attitudes concerning mutton and sheep milk

The first association of the population related to mutton is its tallow content, revealing the existence of false beliefs. Mutton is linked with the Great Hungarian Plain, the puszta or in some cases with dishes, typically with stew. The image of mutton includes that it is rather difficult to purchase and it is a special, unique product. The majority of people would gladly see more mutton products in retail trade. It makes no difference for them, which retail shops market the products; they willingly attend markets (unorganized trade) where they can benefit from the local nature, personal relationships and trust.

Sheep milk itself does not conjure up any images among respondents, they have never drunk such products, and they have not met with it in retail trade. They have a concrete picture merely of ewe's cheese and cottage cheese. Even these products are not customary in families, they are typically not preferred by everyone and this fact restricts the size of target groups. Similarly to mutton and lamb, sheep dairy products are also specialities, rarities. Consumers claim that sheep milk has health care traits and its nutritional value is high – although it is not verified by factual data. If sheep dairy products were available in retail trade or in the market on a wide scale, more would be purchased by the public.

Information on mutton and sheep milk products

The most characteristic mutton product is stew, known and tasted by almost everybody. This is the core of the problem. There are some who complained about the tallowy taste of the stew, while some other people praised it and regarded it excellent. The method of preparation seems to determine the view of customers about mutton, therefore cookery books and product tasting events can influence its image and motivate its purchase. The first step in the marketing of mutton is to familiarize the general public with the product, to dispel false beliefs and to build up its positive image. Mutton is typically consumed at conferences, exhibitions or parties; in the Great Hungarian Plain, e.g. in the form of stew. Nobody buys mutton in shops customarily. One person accounted of consuming a processed mutton product, salami at an exhibition.

The image of lamb is much more favourable than that of mutton. The word "tallowy" is not associated with lamb at all, which is very important from the viewpoint of establishing

new market opportunities. However, lamb is rarely consumed, typically in foreign countries in the south, where this product category looks back on rich traditions. Festivities, especially Easter are also of key significance, but lamb is difficult to purchase in this period as well.

Ewe's cheese and cottage cheese are available in retail trade; their sale is continuous in some shops. Apart from this, respondents conjure up retail trade/market relations and exhibitions of food industry (e.g. OMÉK – National Agriculture and Food Exhibition). The dietary-physiological effects of sheep milk are distinctly beneficial, and should become the starting point of a popularizing campaign. This move would foster the role of nutrition marketing. If the health care effects of these products were confirmed, they could provide safe markets for diabetics and those involved in prevention.

Tasting of mutton and sheep milk products

The following step was to offer lamb dishes, such as rosemary and garlic roast of lamb and a dairy product, ewe's cheese. The palpability value of garlic roast of lamb is presented in Table 4.

The overall impression of garlic roast of lamb was awarded with grade 5 from assessors. The assessment of substance was especially positive and indicated the unique character of lamb. Appearance was also preferred by consumers, similarly to smell and taste.

The analysis how the studied (tasted) preparation differed from other meat products proved to be very important. This is a key factor in view of market positioning, as this serves as a basis for product differentiation. The most essential comments were the following:

- It is more aromatic, tastes richer than other meat products, especially as compared to poultry. It is not greasy and its texture is considerably more melting.
- Different texture and taste. Characteristic, distinctive flavour.
- Soft flesh, melting texture, pleasant taste, free of earlier prejudices with a high gastronomic value.

Summing it up, the conclusion is that fatness in customers' preconceived notions was not perceptible when the product was tasted, i.e. earlier biases were built on false beliefs, especially as pertains to lamb. The characteristic, unique taste of lamb was fully reflected by tasting experience. Consumers showed enthusiasm when the products were assessed, one of them said: "I did not expect such extra quality". From among meat products they found veal similar and they appreciated lamb much higher than beef. At the same time it was clear that women perceive tastes differently from men. The majority of participants would definitely buy garlic roast of lamb if it was marketed in retail trade, either in the form of unprocessed or pre-prepared food.

The consumer rating of rosemary roast of lamb is presented on Table 5.

Findings have revealed that the rosemary version received better scores for appearance and texture than the garlic one. However, its taste and general impression somewhat lagged behind the previous product. Consumers found rosemary a bit extravagant with roast, some claimed that this spice did not fit in with Hungarian cuisine and found the taste unusual.

As compared to other types of meat, the studied product was softer with melting texture, rich in taste; moreover, some claimed it was of unsurpassed quality. Its special flavour is a rarity and it is a perfect product for gourmets.

In conclusion, rosemary roast of lamb divided consumers more than the garlic one. The reason lies in the fact that rosemary is not a typically used spice in Hungarian cuisine and its taste is rather unusual. Gourmets, especially women welcomed it, whereas men tended to remain faithful to traditional Hungarian dishes. The target group for this product differed from that of garlic roast of lamb. Several customers compared mutton with poultry meat, the primary competitor. Lamb competed with mutton in its equal character as a comparative product for poultry. The two scores revealed that lamb with its specific (attractive) appearance and with its melting, soft and still fibrous texture stood out of other meat products. Secondarily, it is true that its taste is rather unique, special and highly characteristic.

Due to the divisive nature of the products, consumers would buy it definitely less decidedly than the garlic product. Criticism referred primarily to taste, indicating that taste was determinant in consumers' order of preferences.

Following the evaluation of meat, the palatability value of ewe's cheese available in retail trade was tested. (Table 6.).

As compared to roasts, scores were more restrained for ewe's cheese. Appearance received the best judgement, whereas the smell of this dairy product came last. It suggested that the characteristic, slightly pungent smell of sheep milk was not accepted by every consumer. As an interesting paradox, negative bias (tallowness) was linked with mutton and not with sheep milk. Following the evaluation this fact changed significantly. As opposed to curd, its texture is smoother, creamy, with characteristic odour and pleasant taste.

Table 4. Consumer testing on the palatability value of garlic roast of lamb on a 1–5

Product profile	Average
Appearance	4.67
Texture	4.78
Smell	4.44
Taste	4.33
General impression	4.67

Table 5. Testing on the palatability value of rosemary roast of lamb on a scale of 1–5.

Product profile	Average
Appearance	4.89
Texture	4.89
Smell	4.44
Taste	4.22
General impression	4.56

Table 6. Consumer rating on the palatability traits of ewe's cheese on a scale of 1–5

Product profile	Average
Appearance	4.44
Texture	4.17
Smell	4.11
Taste	4.33
General impression	4.22

In reflection of the findings it can be concluded that mutton and lamb both possess characteristic, incomparable individual traits, which prove to be their specific marketing values.

Their characteristic taste and smell did not generate repugnance from customers which is positive and created opportunities for positioning.

Improvement of domestic markets according to customers

To encourage the development of purchasing intentions regarding sheep products, first of all more products should be needed in food retail trade. Mutton and lamb meat are simply impossible to purchase, which hinders marketing activity massively. As long as the range of products is limited, advertisements, incentives for purchase or community marketing are meaningless. First and foremost, comprehensive market research is needed which could clearly determine the position of the sector and would systematize consumer opinions. A chain of shops selling exclusively mutton and sheep milk products would not be supported as the category is too small and supply would not be sufficient. At the same time, the products of this category should be represented in hyper and supermarkets. Shops would primarily need carcase and pre-prepared pickled meat on plates, later followed by processed meat products. However, customer demand will bring the final decision in terms of development paths. As for sheep milk products, they could merely mention cheese and sheep cheese, they could not recall kefir and yoghurt at all, which highlights the insufficiency of related information.

Consumers claim that effective communication, product tasting, recipes and reference persons who recommend mutton and sheep milk could dissolve biases against these products. This means that the category should be "psychologically re-positioned", mostly in the case of meat.

For mutton, the image of tallowness needs to be changed and customers should be convinced that careful preparation will provide excellent products of high palatability value without fat cover.

This fact has been duly justified by product tasting. This benefit should be indicated on packaging with "tallow-free" tagging. Mutton should be positioned together and associated with groups of friends, recreation, relaxation, community life with especial regard to the popularization of enjoyable consumption. Sheep milk is a different category where health should be in the focus, typically of the market position of dairy products.

Costumers usually have no information on consumer prices, so they can merely rely on their own beliefs. When the moderator revealed the prices, they found them high especially that of lamb spine. Mutton and lamb are clearly special products, linked to certain festivities (Easter, Christmas) or family, friendly gatherings.

"This is not an everyday commodity" said one of them. In contrast, ewe's cheese and cottage cheese might become more frequently bought products, but it necessitates the exact identification of its target group and effective market positioning.

Interview-based market strategy elements

Mutton and sheep milk feature characteristic, special and unique traits which lend themselves for market positioning. The question arises: is the category capable of exploiting this unique nature, may Hungarian sheep products be involved in Hungarian cultural dietary choices? Theoretically, the category is a so-called "blue ocean" product without competitors; it may enter into a new market niche and can rely on word-of-mouth marketing, achieving high profits and considerable differentiation at low marketing costs. The product is highly unique; it has no substitute products whatsoever. Markets are on scattered demand without consumer groups and comprehensive customer information, so target groups should be formed, products should be positioned and a marketing mix should be developed.

The next step is the implementation of the blue ocean-type marketing strategy. Mutton is a genuine rarity, an excellent treat for friendly and family gatherings. A kind of special feeling, enjoyment, emotion, recreation and relaxation are associated with it. As for sheep milk, the key proposition is health (unique selling proposition USP). From this viewpoint, functional dairy products represent a separate category.

The two different positions also determine the prospects of product developments. For mutton, the main direction is demand-oriented improvement for carcase and pre-prepared, pickled or oven-ready products. Shops need to maintain their wide product range, but it primarily requires the development of a consumer culture. Consumers should be encouraged to choose mutton for grilling and outdoor cooking instead of pig or beef. The association of the product with social life is verified by its high price. If several people share the price of mutton, purchase price is divided and the strategy proves viable. The market of functional dairy products sees a fierce market competition, branded products dominate the shelves. Exclusive, highly special preparations with unique traits can break into the market. Tasting has proved that ewe's cheese is a special product with characteristic traits, and its reception was very positive. The question is whether there will be a producer to assume the task of overall market building and to ensure a large-scale marketing budget.

Community marketing may assist this process. First of all, in-depth market research is needed to identify characteristic market traits from both demand and supply sides. Consumers would welcome a periodical, e.g. a month-long advertising

campaign with a wide product range to encourage the consumption of the products of this category.

Educational articles would also be needed, primarily in women's newspapers, cookery books, sweepstakes; sales, tasting events and cookery shows should be organized. Judit Stahl, Lázár Kovács and perhaps László Benke are acceptable reference persons for customers together with leading sportsmen and sportswomen who appear as trustworthy and recognized people for customers. Based on the above mentioned, the following steps are to be taken in favour of successful market participation:

- Comprehensive market research
- Production of culture through tasting, knowledge transfer and recipes
- Supply development in line with demand
- Identification of target markets, positioning of products
- Diversification of the product range
- Community trademark to guarantee excellent quality and Hungarian origin
- Selection of authentic poster people, advertisement campaigns to popularize products

If this process is implemented far-reachingly, sheep products may appear on domestic markets under realistic demand conditions.

Conclusions

It is clear so far that genetic basis should primarily be evolved in the industry, as it is the factor that mainly contributes to profitability and price-type factors come only following it.As mentioned earlier, genetic modification can be achieved by changing breeds or cross-breeding. The findings of product cycle level sensitivity analysis suggest that value added in the sector is determined during slaughter sheep production. The critical point for productional stocks is feed conversion and the price of closely-related lamb feed, influencing value added by 2.7–2.9%. The remaining factors affect added value through ewes' feed costs, but not considerably.

The findings of sensitivity analysis have confirmed that on-farm fodder production can cut costs massively, which is observed in the effects of fodders on value added.

Qualitative market research has unveiled that consumers have a large number of false beliefs and prejudices against mutton, but these were not verified by product tasting. Lamb has is a real rarity, an excellent gourmet product with a unique nature, without any substitute products. Ewe's cheese and cottage cheese are welcomed significantly more positively, even if the characteristic, slightly pungent taste and smell of sheep milk is not accepted by everyone. The image of the product includes its positive health effects and the fact that it is very difficult to purchase. Encouraging customers to buy mutton products more frequently requires more available products in retail-trade.

Markets of sheep products are on scattered lacking consumer groups and comprehensive customer information, so target groups should be formed, products should be positioned and a marketing mix should be developed. Mutton is a real rarity, an excellent treat for friendly and family gatherings. A kind of special feeling, enjoyment, emotion, recreation and relaxation are associated with it. As for sheep milk, the key proposition is health (unique selling proposition, USP). The two different positions define the directions of product development. For market building, community marketing tools should be used. It should be pointed out that mutton and lamb are not to be converted into commodity products and their exclusive nature is to be maintained.

As for sheep products, the following activities can foster their marketability

- Comprehensive market research
- Production of culture through tasting, knowledge transfer and recipes
- Supply development in line with demand
- Identification of target markets, positioning of products
- Diversification of product range
- Community trademark to guarantee excellent quality and Hungarian origin
- Selection of authentic poster people, advertisement campaigns to popularize products

If this process is implemented far-reachingly, sheep products may appear in domestic markets under realistic demand conditions.

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