

SUMMARY OF THE PHD THESIS

THE ECONOMIC IMPACT OF PÁLINKA DISTILLATION (Analyses and recommendations in Business Economics and Organizational Studies)

Imre Milan Harcsa

Supervisor

Prof. Dr. András
Nábrádi

Professor



**DEBRECENI
EGYETEM**

UNIVERSITY OF
DEBRECEN

Károly Ihrig Doctoral School in Business Economics
and Organizational Studies.

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1. Background research, objectives and the presentation of research hypotheses

Personal background

My personal ties to the chosen topic go back to my university career. My dissertation focused on the development of a business plan for Hun-Dest Drink kft pálinka distillery, where I have held the post of the managing director since 2011. I pursued my studies in the Pálinka master expert training course at Corvinus University, Budapest in 2012-2014, where I could gain in-depth theoretical and practical knowledge and was awarded a pálinka judge certificate. I was admitted to Károly Ihrig Doctoral School in Business Economics and Organizational Studies in 2012, where I was forced to take several semesters off for family reasons and health problems. I resumed my research activity in autumn, 2016.

Technical background

Regarding the **technical background of research**, to my knowledge, this topic has not yet been subject to comprehensive, scientific investigations to structure the technological, economic, legal and qualification areas of pálinka distillation. Various authors have analyzed certain elements separately, and numerous books have been published on pálinka distillation recently; however, none of them investigated the complexity of the issue endorsed by evidence-based economic calculations and in-depth interviews.

The primary goal of my Ph.D. thesis is the following: The exploration of the economic, legal and qualification issues of the production of pálinka, our Hungaricum; science-based answers to related questions, the quantitative assessment of byproducts from distillation and a proposal for their recovery.

Against this background, I seek to present the historical traditions of pálinka distillation, its technological development, changes in its social judgement and legal regulations.

The main objective involves the following targets:

1. The comparative economic assessment of pálinka distillation technologies, cost-analysis of subcontract distillation using simulation.
2. Proposals for the reasonable recovery of byproducts from pálinka preparation.
3. Effects of changes in the excise tax law; its impact on pálinka distillation and the state budget.
4. Development of a procedure for establishing objective pálinka qualification standards.

Based upon the objectives, my research hypotheses will be formulated as follows:

H₁ The single-step technology provides lower operation costs and a faster payback period as opposed to the two-step Kisüsti procedure, and the average cost of subcontract distillation is primarily influenced by energy costs.

H₂ The recovery of byproducts from pálinka distillation has been resolved.

H₃ Excise tax on pálinka distillation has exerted an influence on commercial, subcontract and private distillation differently, and has a similar impact on public finances.

H₄ The system for pálinka judgement is based on outdated views; it is incapable of providing an in-depth evaluation and pointing out differences between the distillates.

2. Introduction of the database and the applied methodology

My research has drawn on secondary and primary data collection. The obtained secondary data and the related information enabled the identification, characteristic definition and resolution of problems. Secondary data also had the potential to develop the research plan, test the hypotheses and address the research questions. Appropriate secondary research is a prerequisite for carrying out primary research, therefore, in the light of adequate professional materials, my data collection implied both qualitative and qualitative methods. Individual in-depth interview was one of the applied qualitative methods with the managers of renowned pálinka distilleries in Hungary. The aim of my work was to demonstrate/reject the hypotheses drawn up earlier, using the opinion of experienced professionals. To achieve the above, I conducted in-depth interviews at 10 commercial pálinka distilleries. In addition, I visited a subcontract distillery and a well-known private distillery where the staff were open to my questions. Based on secondary research findings, I presented the historical and ethnographic traditions of pálinka in the literature review.

Related to each hypothesis, I summarised the available databases, investigation methods and expected results in Table 1.

Table 1: Hypotheses, database, investigation methods and expected results of the thesis

Hypothesis	Database	Method of investigation	Expected results
H ₁ The single-step technology provides lower operation costs and a faster payback period, as opposed to the two-step Kisüsti procedure. The average cost of subcontract distillation is primarily affected by energy costs.	technical books, international research papers, on-site surveys, technological data	Development and testing of models, investment-viability studies, NPV, IRR, DPP, PI, in-depth interviews, break- even calculations/ cost-contribution accounting.	Verification of the hypothesis. Proposal for the reduction of operation costs.
H ₂ The recovery of byproducts from pálinka distillation has been resolved.	data from our subcontract distillery and 10 decisive distilleries	Critical analysis of literature, in-depth interviews.	Partial justification of the hypothesis, or its refusal. Proposal for the recycling of byproducts and waste.
H ₃ Excise tax changes on pálinka distillation has exerted an influence on commercial, subcontract and private distillation differently, and has a similar impact on public finances.	data from public finances, NAV (National Tax and Customs Administration) database, assessment on data from specific subcontract and commercial distilleries	Calculations and in-depth interviews on the basis of the NAV (NTCA) sources.	Verification of the hypothesis. Factual assertions related to the impact of taxation.
H ₄ The system for pálinka judgement is based on outdated views; it is incapable of providing an in-depth evaluation and pointing out differences between the distillates.	Processing data from national and international criteria sets, data from ten commercial distilleries and participation in pálinka competitions.	Comparison of international and national standards. Development of a new approach to improve troubleshooting. In-depth interviews.	Partial or full verification of the hypothesis. Opportunities for the introduction of “aroma wheel”, a novel method. Proposals for the introduction of a set of new criteria.

Source: Author’s development

In case of Hypothesis H₁, secondary research was carried out to explore the location and volume of energy demand over the technological phases of pálinka distillation. After this, a model was developed to show the energy demand of the two possible methods of distillation, the Kisüsti and the single-step one, for the purpose of comparison. The profitability indicators of investments (NPV, IRR, DPP, PI) enabled the examination of the volume of payback, using the single-step technology, in case of investments with the purpose of increasing production capacity or replacing investment. As Hungary has approximately 600 subcontract distilleries, I carried out static and dynamic break-even point calculations using the example of a concrete pálinka subcontract distillery, an average enterprise. I broke down the production costs into two groups: constant and variable. The volume of distillate to be produced was determined on the basis of revenues, where the distillery reaches the break-even level, i.e. costs and revenues will be equal.

Hypothesis H₂ presented the rules and legislations governing the reuse of byproducts from pálinka distillation based on secondary analysis. Then I gave an account on the possibilities of their reuse related to the technological process by byproducts, using national and international practice as examples. Data provided by NAV for 17 years allowed the assessment of the annual byproduct quantity from subcontract and private distilleries, based on the distillate volume, moving backwards on the technological phases.

Hypothesis H₃ was similarly examined by secondary research methods to present the modifications of the related regulatory environment from the period of political reconstruction to 2017. The system of subcontract distillation is an unknown right in the area of the European Union, and can be regarded as a Hungarian specialty. Furthermore, I introduced the infringement procedure stemming from the abolishment of the excise tax. Data provided by the NAV

enabled the calculation of incoming state budget revenues from alcohol tax and also revenue losses from the abolishment of the tax.

As for **Hypothesis H₄**, I applied secondary research methods to describe standards in the national and international qualification systems. Using the example of the aroma wheel, widely known in international practice, I developed the aroma wheel of pálinka “flaws”, deviating from previous practice and offering a new approach in revealing potential pálinka “flaws” in pálinka types. Aroma wheel is getting increasingly widespread in the case of coffee, fruits, wines, beers, cheese, and even food products. People’s culinary enjoyment is primarily based on memories, their evocation and description often prove to be unspeakable. The application of aroma wheel seeks to resolve this problem. Aroma wheel is a multilevel ring chart consisting of a set of concentric rings for the visual representation of taste in food and beverages; aroma names, the differentiation of products and the identification of their unique nature.

The presently applied qualification system was developed in the previous socialist era, and has become outdated from various aspects. Its major weakness is that it is based on a “troubleshooting” approach and applies a 20 point scale, which is not suitable to reveal the differences between the items on the list. Given the national and international qualification systems, I drew up a proposal for a more nuanced set of criteria suitable to better highlight the difference between the items, and offers 100 points for pálinka judgement based on the OIV 332A/2009 international standard.

3. Major conclusions

The major conclusions will be drawn by supporting or rejecting the hypotheses.

The first part of Hypothesis H₁, maintaining that the single-step technology provides lower operation costs and a faster payback period as opposed to the two-step Kisüsti procedure, has been confirmed. The second part of Hypothesis H₁, asserting that the average cost of subcontract distillation is primarily influenced by energy costs, has been rejected.

Comparison between the two technologies used in Hungary, i.e. Kisüsti and the single-step one has revealed considerable energy efficiency in favour of the latter. The findings of the calculations suggest that savings approximate 25%. Economic efficiency indicators were used to investigate over what period of time the installation of a single-step system would pay off for enterprises applying the Kisüsti technology. Research findings revealed that investments into technological development would pay off in 6 years merely under the optimistic case scenario. On condition the old equipment and the single-step one were put on sale, the investment would pay off quickly under all the three scenarios. This is demonstrated on Table 2.

Table 2: Economic efficiency indicators of investments in the event of the sale of the “Kisüsti” system and the single step equipment, after depreciation.

Name	NPV (thHUF)	IRR (%)	PI	DPP (year)
optimistic	4484.002	40.53	2.495	2.78
realistic	1126.6	20.44	1.376	4.97
pessimistic	948.842	16.69	1.316	6.02

Source: Author’s development

Independently of the technology applied, subcontractors may find essential information on what measure of production is worth implementing for their revenues to match their expenses. The resulting findings of a static calculation for an average subcontract distillery indicate a break-even volume of about 8 thousand litres, i.e. this is the distillate volume to be produced for the enterprise to reach the break-even level. A model applicable for any subcontract distilleries was developed by dynamic break-even analysis, where the minimum and maximum values were determined, and this model can be used for cost-benefit calculations by stochastic simulations and the @Risk program. Setting out a tolerance margin of 1% by simulation, the cost-benefit analysis on possible deviations revealed 29 cases of production volumes that can be considered as break-even points in the course of 1000 simulations. It was finally determined by a heuristic approach. Based on the definition of the simple mathematical average of the production volumes in the 29 cases mentioned above (cost-benefit~0) I can conclude that the break-even volume will be approximately 13 thousand litres. The multiple approaches resulted in the difference of about 5 thousand litres between calculations by the dynamic and the static calculations. The dynamic approach takes the results of one thousand simulations into considerations, therefore it should be accepted. According to NAV records, 610 distilleries were registered in 2013, which produced altogether 18.3 million litres of distillate, i.e. the average distillery production was approximately 30 thousand litres. Therefore it can be postulated that subcontract distilleries were profitable in 2013. Sensitivity analysis demonstrated that average costs are mainly increased by unit labour costs, whereas the effect of changes in energy and general costs is merely one sixth or one tenth of the impact of labour costs (Figure1.) In-depth interviews confirmed that the single-step technology provides lower operation costs and a faster payback period as opposed to the two-step Kisüsti procedure, and its application is much more likely to meet product requirements of present day consumers.

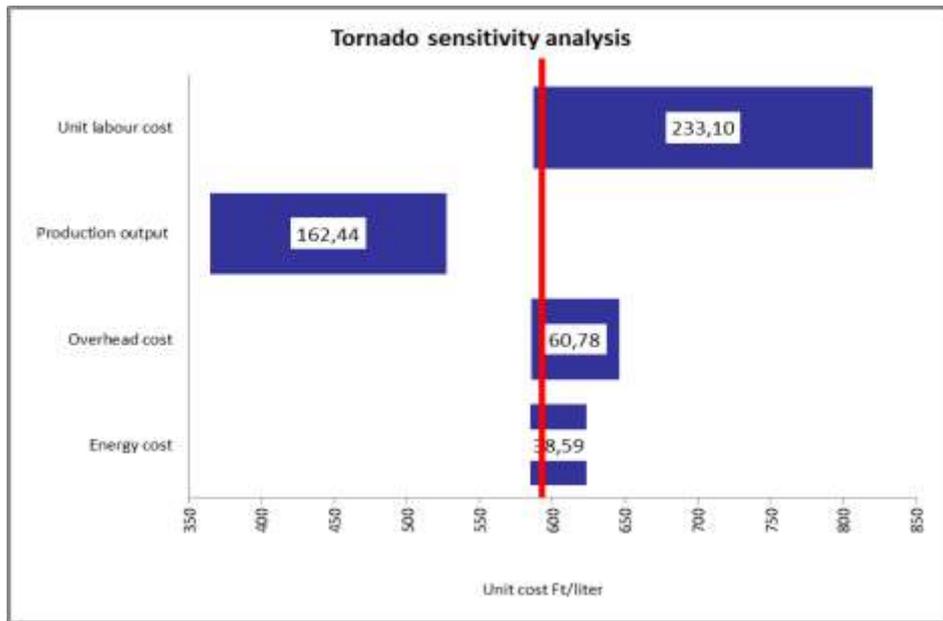


Figure 1: “Tornádó” diagram: the most significant factors with an impact on average cost in order of priority.

Source: Author’s development

Hypothesis H₂, which asserts that recovery of byproducts from pálinka distillation has been resolved, is rejected.

At the beginning, moreover, a couple of decades ago, pálinka distillation was an economical industrial activity for the recovery of waste. Based on technical books written before the political transformation, pálinka distillation had the main task of salvage, the processing of fruits not usable for other purposes. The professional merit of pálinka, and “fortune” for customers is that this perspective has radically changed.

The legislative framework specifies what should be regarded as a byproduct or waste. In the process of pálinka distillation byproducts are created that are suitable for further utilisation. Mash (swill) is produced in the highest quantity, and also cooling water used during the distillation process. Although mash (swill) could be used for animal feed and biogas production, it is practically applied in soil management. Heated water is primarily used for the extraction of the heat content.

The only exception in further utilisation includes pre-and post-distillates, i.e. wastes referred to as excise goods, and they must be destroyed.

The present study calculated the quantity of byproducts and wastes from distilleries by using NAV data (Table 5.), in a period of 18 years, and their magnitude is between 200 and 500 thousand m³. Taking account of the hypothetical production of private distillation, this quantity is approaching 50 thousand m³.

Table 5: Average annual quantity of potential byproducts and wastes in the case of subcontract and private distilleries.

	Subcontract distilleries (1998-2016)	Private distilleries (2017, estimated quantity)
Mash	50.9-127.9 thousand m ³	12.04 thousand m ³
Pre-and post-distillate	6.9-17.5 thousand m ³	1.63 thousand m ³
Cooling water	145.5-365.4 thousand m ³	34.4 thousand m ³

Source: Author’s development, based on data provided by NAV 2016-2017

The utilization of mash for animal feed is hindered by a number of problems. One key issue is seasonality, as fruits ripen in summer and autumn, and their processing takes place in these periods. This poses a problem, as they cannot provide continuous feed supply for animals. Moreover, the main characteristic of the geographical locations of distilleries is they are physically dispersed, and the transport of fruits would incur unrealistically high costs. The same problem emerges in relation to reuse in biogas-plants.

In-depth interview findings reveal that continuous operation is not typical even in commercial distilleries, they tend to finish mash processing in December. It can

be seen that they never use any technological solutions to cut their costs (e.g. pre-heating of mash or heating their premises with warmed cooling water).

In-depth interview findings and the literature survey lead the author to postulate that there are no distilleries in Hungary at present that could solve the full, professional and correct treatment or reuse of wastes.

Hypothesis H₃, stating that excise tax on pálinka distillation exerts an influence on willingness for subcontract distillation, the revenues of enterprises and public finances, has been confirmed.

It can be concluded that excise tax is a critical revenue source for public finances. The measure of this tax is specified by EU regulations, and in the event of their violation, infringement proceedings may be started against the given country. The legislative environment has seen continuous changes, and adaptation to them has put significant extra burdens on enterprises.

The authorization of private distillation and the introduction of the 0 HUF tax rate for subcontract distillation came at the expense of commercial distilleries, but subcontract distilleries profited from these measures. The distillate quantity produced by subcontract distillation increased from 4526 thousand hld in 2010 to 9221 hld in 2014. This tendency has started to go in the opposite direction, demand for subcontract distillation plunged, whereas traded items started to attract high interest. From 2015 onwards, the volume of subcontract distillates dropped to appr. 4-5 million hld repeatedly (Figure 2.).

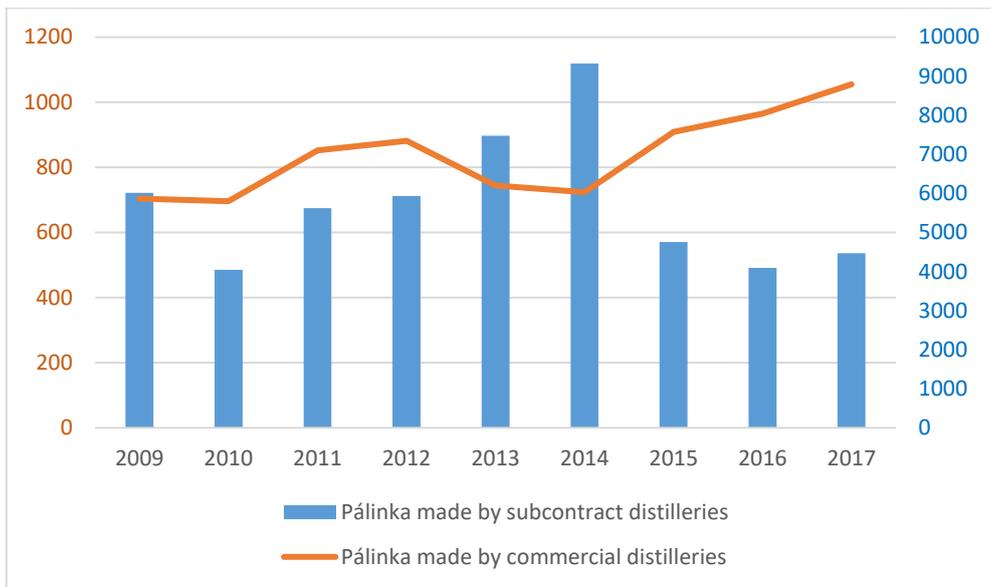


Figure2: Distillate volumes produced in commercial and subcontract distilleries in 2009-2017. Quantity: 1000 hld

Source: Author’s development based on data from Halász, 2016 and free-circulation NAV data on excise goods.

Government deficit in the full period of tax-free pálinka distillation exceeded 52 billion HUF. However, private distillation is still not a strictly controlled area, it may be considered as a “black hole”.

Table 3: Government deficit in the years of tax-free pálinka distillation

Period	Government deficit (million HUF)
27 September - 31 December 2010	3 457.075
2011	8 520.244
2012	9 475.949
2013	15 255.383
2014	15 399.237
Total	52 107.889

Source: Author’s development, based on data provided by NAV 2017

The memory of tax-free pálinka distillation is still a nostalgic possibility for rural population. Some hope for the return of this beneficial practice. As a result of the

infringement procedure between the EU and Hungary over the abolishment of the excise tax in 2010-2014, the repeated introduction of the OHUF tax rate for subcontract distillation is highly unlikely.

Hypothesis H₄, which holds that the qualification of pálinka types/distillates is not objective and cannot be clearly supported, has been confirmed only partially, as the section of the qualification criteria concerning the removal of faulty products can be regarded objective.

The legal framework is the first step in the qualification process, which makes distinction between pálinka and a distillate. As far as private and subcontract distillation activities are concerned, the end product will be a distillate and in commercial distilleries, pálinka. Fermented and distilled products manufactured with added sugar shall not be named either pálinka or a distillate, not even alcoholic drinks as declared in Hungarian regulations.

Regard taken of potential faults will be essential for both pálinka producers and consumers. I have developed the aroma wheel of pálinka flaws, which might come useful for subcontract and private distillers in the identification of unpleasant component sources in pálinka (Figure 3.). Aroma wheel is a useful tool in gaining information on tastes and fragrances while pálinka is being tasted and qualified. What is even more important, is that the judge can easily recall and remember concrete pálinka details and can identify the faults in the samples. Pálinka faults showed in the aroma wheel have already been well-known, but they were presented in tables or in simple lists. My research has applied a new approach, breaking down the faults in four main groups according to their technological origins; 1. Separable by low-alcohol in pálinka distillation, 2. Separable by post-alcohol in pálinka distillation, 3. Non-separable and 4. Into other categories. Its taste and odour is also indicated next to the fault.



Figure 3: Aroma wheel of flaws in plinka.

Source: Author’s development

Organoleptic qualification methods are rather broad and at first they might seem to be simple; however, they are not sure to provide appropriate information to consumers. In the practice of plinka qualification in Hungary, the application of the 20-point based procedure focusing on troubleshooting has become the standard. The disadvantage of the 20 point plinka judgement is that aroma and taste, the vital benchmarks, cannot be broken down to ingredients, thus suitably nuanced evaluation is not possible. The adaptation of a positive (not focusing on flaws) 100 point system based on the international OIV 332A/2009 standard

would ensure a more objective judgement. My proposal is demonstrated on Table 4.

Table 4: Proposal for the 100 point pálinka judgement system

Name		Qualification					Notes
		Excellent	Very good	Good	Satisfactory	Inadequate	
Appearance	cleanness	10	8	6	4	2	
	colour	5	4	3	2	1	
Aroma	Technology	9	8	7	6	5	
	cleanness						
	intensity	11	10	9	7	5	
	quality	10	8	6	4	2	
Flavour	Technology	9	8	7	6	5	
	cleanness						
	intensity	11	10	9	7	5	
	durability	11	10	9	8	7	
	quality	13	10	7	4	1	
Harmony		11	10	9	8	7	
Total		87-100	73-86	57-72	41-56	40 ≥	
Excluded due to analytical testing							

Source: Author's development

The benchmarks on the table (appearance, aroma, flavour, harmony and their sub-categories) will be discussed in detail in the thesis.

Organoleptic judgement can merely be regarded exclusively objective during the process of “troubleshooting”. Judges are able to select product flaws simply, however, when they find a product that is free of characteristic flaws, they will look for similarities with their memories settled earlier, thus the judgement becomes subjective. Being a certified pálinka judge, I can confirm the above based on my experience.

Concerning the ingredients of pálinka, there are several standard limit values in force, and compliance with them is only measurable by instrumental analytical tools. On the other hand, mandatory examinations with regard to products on the market are not stipulated by law. To ensure objectivity and quality, my proposal suggests the introduction of obligatory instrumental and analytical examinations for pálinka products placed on the market.

To provide better information services for customers, the application of marketing tools, e.g. trademarks, logos is indispensable. Pálinka trademarks refer to a quality category, which are merely granted to products that will win minimum a second place (silver medal) from the issuer of the given trademark, similarly to the example of judgements equal to national competitions; furthermore, they will meet all the requirements measured by instrumental analytical tools. One or two labels might give consumers confidence, but only temporarily, if they see too many of them on the market. This finding was confirmed by the heads of commercial distilleries in the in-depth interviews, based on consumer feedback. Consumers have been able to seek help in finding quality products in the yearly published book of “Pálinkakiválóságok” (Excellent Pálinkas) since 2014, which has been available in a printed version and online since spring, 2018. It helps those who are less knowledgeable about pálinka to collect satisfactory information on the competition results or manufacturers of products.

4. New and novel findings

1. I have confirmed that the operation costs of the single-step system of pálinka preparation are lower. The application of the single-step technology - regarding only the costs of heating - can give rise to 25% cost savings, and, assuming the prices in 2016, the pay-back period might be shorter than 7 years.

2. I have developed a simulation model applicable to any subcontract distilling plants, which lends itself to cost-benefit calculations. Based on the empirical distribution obtained from the simulations it can be suggested that the probability of average cost under a 550 HUF break-even level is 61.1%, therefore distilling can be regarded profitable. As for subcontract distilleries, average costs are mainly increased by unit labour costs, whereas the effect of changes in energy and general costs is merely one sixth or one tenth of the impact of labour costs.

3. Byproducts and the potential reuse of wastes generated in distilleries have also been investigated. Our findings indicate that with the exception of “EUP” (which must be destroyed due to regulations), all of them would be suitable for reuse in some form or other, although in practice they are merely utilized in soil management. My qualitative survey on their generated volume in subcontract or private distilleries leads to conclude that the full re(use) of approximately 250-560 thousand m³ has not been resolved at national level over the past 16 years.

4. Excise tax on pálinka distillation has exerted an influence on subcontract and private distillers alike. 0% excise tax boosted the willingness of subcontract distillers, but had a partial negative influence on commercial distillers. Tax-free private distillation also lead to massively increasing the number of private distillers, now their legal number is up to 20 thousand. Tax exemption also exerted a negative influence on public finances, resulting in a total revenue loss of 52 billion HUF.

5. The qualification of pálinka/distillates employs an outdated methodology from an inductive perspective. Pálinka can be considered good, if the number of flaws are low, and it possesses excellent, unique (measurable and sensible) characteristics. I have made a deductive, approach-based proposal for the construction of a new judgement system. I have constructed the aroma wheel describing the potential flaws emerging during the technological process, and I proposed the development of a 100 point pálinka evaluation system. I still maintain that the qualification of pálinka is objective as long as troubleshooting is ongoing, after this, subjective elements in evaluations come to the fore.

5. Options for the theoretical and practical application of results

In pálinka production, distillation can be carried out by the Kisüsti and the single-step technology. The majority of exclusive subcontractors still use the Kisüsti equipment. Our investigations used economic efficiency indicators to identify the payback time of the purchase of the single-step equipment. I have concluded that if a replacement investment is made, and the equipment is sold at the end of the amortization period, payback is guaranteed even in the case of the pessimistic scenario. In the case of replacement investments, calculations showed that the application of the single-step technology is appropriate.

The energy demands of various types of the Kisüsti and single-step technologies for distillation purposes are different. I constructed heating energy models to present the approximately 25% energy-savings provided by the single-step equipment, which offer considerable economic advantages for operators in the longer term. Regarding subcontract distilleries, the presented economic efficiency model calls attention to the fact that technological innovations are worth implementing. On one hand, they reduce operation costs, on the other hand, they enable the improvement of investment indicators.

I also performed economic analyses for pálinka subcontract distilleries by simulation modelling. Prior to my examinations I provided definitions as to which subcontract distilleries could be regarded as average ones, and then I used the obtained results as boundary conditions in the analyses. A model applicable for any subcontract distilleries was developed by determining minimum and maximum values, and this model can be used for cost-benefit calculations.

Analysis on the specific elements with an impact on average cost suggests that four decisive factors exert an influence on subcontract distillation costs. Output (distillate) reduces, whereas unit labour cost, energy costs and general costs increase them. Average costs are mainly increased by unit labour costs, whereas the effect of changes in energy and general costs is merely one sixth or one tenth of the impact of labour costs.

1 litre of pálinka contains 5-10 kg fruits, however, it may not be ignored that the volume of byproducts is almost nine times more than that of the finished product, which should be reused for different purposes. A strictly regulated legislative framework disposes, what is to be considered as waste and a byproduct in pálinka distillation. Mash (swill) and cooling water are byproducts produced in very high quantities. The former is typically reused in soil management, whereas the latter is a source of heat gain. Only pre- and post distillates are regarded as waste, which are to be destroyed in accordance with the applicable rules on excise tax. In volume, it contains 10 thousand m³ i.e. 10 million litres, including approximately 20% alcohol. Its destruction is considered economically unjustified. These byproducts and wastes have been quantitatively measured in subcontract and private distilleries. Their total quantity exceeds 500 thousand m³, which should be reused in the framework of a centrally-imposed directive.

The quality of pálinka products/distillates shows a permanently increasing trend. The Hungarian qualification practice is based on troubleshooting in compliance with the Hungarian Standards. The main disadvantage of the majority of organoleptic standards is the same as that of the Hungarian language: they are merely known and understood in Hungary. Further problems are raised by the practical application of various kinds of 20 point evaluation scales. The points reached in the 20 item scale make it difficult to distinguish between certain items. The recast of an international standard for our national drink would be advisable. With regard this, I proposed the adaptation of a 100-point, positive wine judgement. The first step of pálinka judgement will be the screening of faulty batches. The aroma wheel developed in my research might provide assistance in the identification of the types and origins of flaws. Pálinka manufacturers must comply with several limit values. Their compliance is certified by instrumental analytical methods. However, before being placed on the market, it is not obligatory for pálinka to go through such mandatory testing. Making the above

mentioned process mandatory is in the interest of consumers and producers as well.

The author submits the regulations and rules presented in the thesis to all new subcontract distilleries for consideration.

6. List of thesis-related publications



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Candidate: Imre Milán Harcsa
Neptun ID: ATP7K2
Doctoral School: Károly Ihrig Doctoral School of Management and Business
MTMT ID: 10055461

List of publications related to the dissertation

Articles, studies (9)

1. **Harcsa, I. M.:** A pálinka minősítése a XXI. Században.
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DOI: <http://dx.doi.org/10.19041/APSTRACT/2016/4-5/18>



Address: 1 Egyetem tér, Debrecen 4032, Hungary Postal address: Pf. 39, Debrecen 4010, Hungary
Tel.: +36 52 410 443 Fax: +36 52 512 900/63847 E-mail: publikaciok@lib.unideb.hu, Web: www.lib.unideb.hu



8. **Harcza, I. M.**: Pálinkabérfőzdek fejlesztési lehetőségeinek vizsgálata.
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