The Analysis of Single Malt Whisky's Supply Chain

The ISP- Mobilising Agro-Food Expertise *Report*

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Abstract

This document is the report for the project prepared for Mobilising Agro-Food Expertise Erasmus + Intensive Study Programme organised at Technical University of Munich. The report covers the project of Group 4 (consisting of Elsa Bez, Nazli Koseoglu, Jakob Boetsch) which looked into Question 4 (below) discussing the dynamics and synergies in food supply chains as a response to rising consumer awareness in EU and beyond.

The agri-food supply chain that we focused is that of single malt Scotch whisky. By the choice of this specific product we hope to have further explored the links with food quality, consumer perception and branding, food and drink manufacturing in EU and environmental concerns in the European supply chains. In the scope of this report, further information in how the consumer concerns and response of policymakers affected different stakeholders of Scotch malt whisky supply chains is provided.

Question 4 "In the last few decades, the European agri-food sector has undergone several changes, from the growth in concentration and consolidation of both input suppliers and food retailers, to the increased consumer awareness for safety, healthy eating, environment impact, quality, and food provenance. In the meanwhile, new, more stringent, policies have reshaped the regulatory landscape of food production and commerce, mostly to protect consumers' interests. Focusing on a food supply chain to your choosing, illustrate the points above for all the agents in the supply chains, presenting also an outlook for the years to come".

Contents

Introduction to Whisky Industry and Market

Scotch whisky is a high-end and iconic product from Scotland. It has several categories distinguished by the distilling or grain input. Figure 1 below demonstrates the categories of the Scotch whisky.

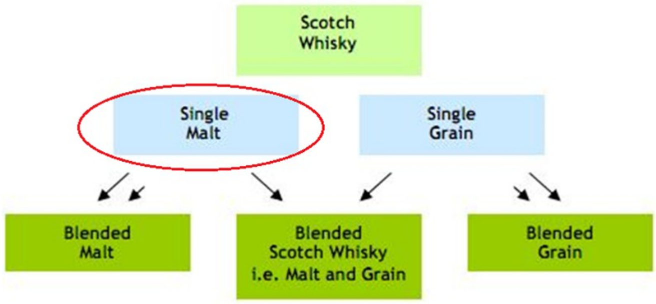

Fig. 1 Categories of Scotch whisky (Scotch Whisky Association, 2009)

Single malt whisky is classified as whisky produced at a single distillery, though not necessarily product of a single batch or in a single barrel, but of a single distillery and is not mixed with the produce of the other distilleries. On the other hand single grain is whisky made from grains other than malted barley, such using maize, wheat or rye. In Scotland single malt whisky can only be distilled from the malting barley and single grain whisky must also contain malting barley (Scotch Whisky Act, 2009).

Whisky industry has a lot of importance to the Scottish and British economy[1]. After oil and gas and finance sectors, whisky industry is the third biggest in Scotland (Figure 2), being the most valuable export of Scotland, providing employment all around UK (Scotch Whisky Association[2], 2015).

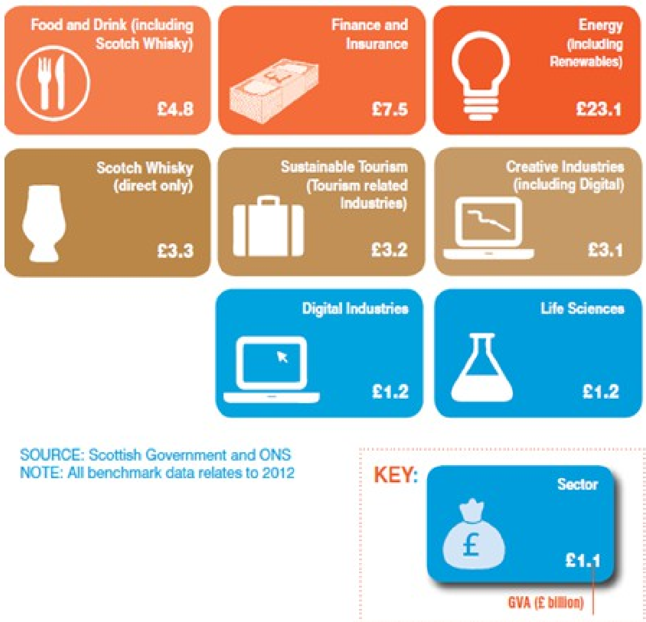

Fig 2 Scale of growth among Scottish industries (Scotch Whisky Association, 2015)

The demand for Scotch whisky is increasing (SWA, 2015) and thus the Scotch whisky industry. Even though main export markets of whisky are still in developed countries such as the United States, EU and high-income Asian countries (Figure 3), there is also potent and yet-growing demand from

1 http://www.bbc.com/news/uk-scotland-26047755

2 From here on we will refer to Scottish Whisky Association as “SWA”. It is important to note that though they are being annually checked by SWI lab, not all the distilleries, especially small ones, are member of SWA.

developing countries such as South Africa, Brazil and Mexico. As the GDP arises, the interest in luxury and export commodities increase and the case of whisky is no exception.

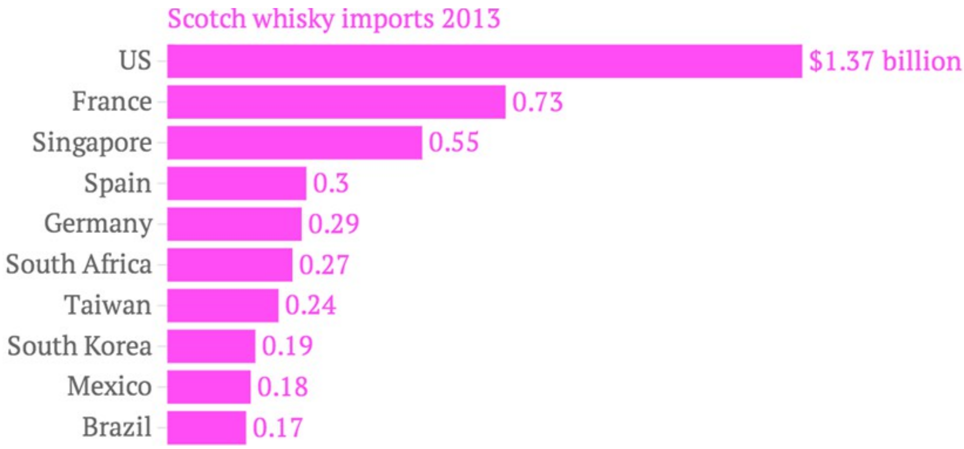

Fig. 3 The major export markets of Scotch whisky in 2013 (SWA, 2015)

Moreover the structure of market changes through high consolidation, 60% percent of Scotch market shares belong to cooperate companies such as Diageo and Pernod Ricard while 20% belongs to other international companies and only 20% currently is run by local Scottish companies (Figure 4). Expanding of markets requires increased production and supply chains adaptable to different markets[3].

Fig. 4 Shares in the Scotch Market (BBC Scotland, 2013)[4]

Dynamics of consumer, producer, retailer and policy maker relations in EU and in the rest of the world evolve, reshape the structure of whisky industry like any other agri food (beverage) industry. Within the scope this report we aim to capture these synergies.

The Supply Chain of Single Malt Scotch whisky

The main input of single malt Scotch whisky is malting barley (or additionally cereals and corn for single grain whisky) therefore supply chain of whisky has an agricultural origin and starts from malting barley farmers. Malting barley of certain standard (as set in the Scotch Whisky Act published

3 Many Scotch whisky distilleries look to earn a kosher certification to explore expanding demand of Jewish communities worldwide (http://www.scotsman.com/lifestyle/food-drink/scotch-whisky-distillers-seek-kosher-status-1-3149000)

4 http://www.bbc.com/news/uk-scotland-26047755

in 2009 and earlier legislations) is delivered to malting plant where it is prepared for malting and grains are malted to a mash and fermented. It is important to mention here that the malting barley does not necessarily be harvested in Scotland[5]. The mash is brought to the distillery for pot still distillation process where final product of whisky distilled. Figure 5 summarises the production process of Scotch at malting plant and distillery.

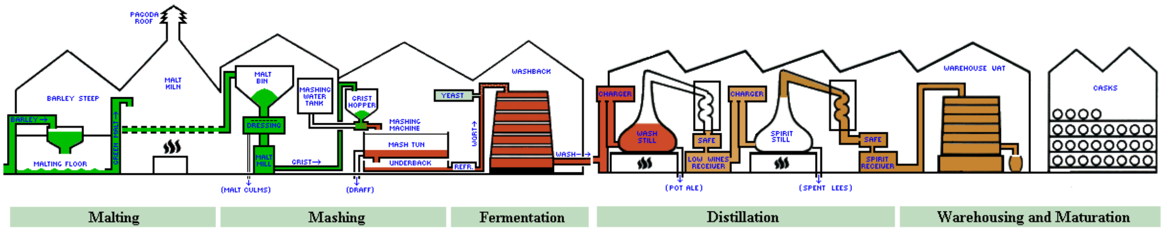

Fig. 5 Production process of Scotch whisky[6]
(The University of Edinburgh, 2008)

After the production, the whisky in cask is put to age (minimum for 3 years and better if more for single malt Scotch) before it is ready to be bottled in a warehouse. Logistic agents take casks from production site and bring to warehouses, where the bottles[7] will be transported by truck and trains to rest of EU or shipped worldwide. Importing wholesaler takes it from the logistic providers and makes the required adjustments to meet labelling/repacking legislation of the importing country. The bottles then are delivered to retailers of various type and size (ranging from supermarkets to small niche stores) and through various retailers the product is communicated to the consumer. Figure 6 shows the simplified supply chain of whisky.

Fig. 6 Physical supply chain of single malt Scotch whisky

Recently there is a trend in the direction of third party logistic providers such as companies dedicated to international beverage logistics that takes up the role of logistic agent as well as wholesaler. For example distilleries associated with William Grant & Sons have recently started cooperating with DB Schenker-Beverages for logistic services of warehousing and distribution as well as further local labelling and repacking services for its premium whisky spirits[8]. The reduction in the number of stakeholders in the conventional whisky supply chain is comparatively demonstrated in the supply chain Figure 7 below.

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5 The high content of moisture in the Scottish harvest and additional cost of drying up required before malting. Therefore it is a common to outsource malting barley fir for whisky production. http://www.eyeforspirits.com/2010/11/08/kommerzielle-malzereien-outsourcing-in-der-whiskyherstellung/

6 www.dcs.ed.ac.uk/home/jhb/whisky/glossary.html and www.dcs.ed.ac.uk/home/jhb/whisky/index.html

7 With Scotch Whisky Act published in 2009 by British Government, for a whisky to be classified as single malt whisky it is not only sufficient to be produced in Scotland but it has be bottled in Scotland as well. This does not apply to other whisky categories though.

8 http://www.dbschenker.com/ho-en/news_media/press/news/6898190/20140513_dbs_whisky.html and http://lokster.deutschebahn.com/artikel-pool/erleben/whisky-logistik-vom-moor-ins-glas.html

Fig.7 Comparative changes in the supply chain stakeholders'
(Data complied from SWA, 2006)

Rising Consumers Awareness Issues related to Scotch whisky

In European Union safety, healthy eating, food quality, environmental impact of food systems and food provenance have been rising concerns consumer which has also received response from policy makers side. In case of whisky, quality, environment impact and food provenance has been main point of focus due to the nature and image of the product which highly depends on the pristine Scottish landscape (citation).

Quality of whisky beyond certification highly depends on the consumers' perception and their choices in different attributes such as taste, brand image and status quo. Most of the time the image of a whisky is entwined with its locality (provenance) and its taste. According to PGI definition Scotch whisky cannot be sweetened or flavoured apart from the addition of plain caramel for the purpose of colouring (UK Sprit Drinks Verification Scheme, 2014). The water and peat[9] used in the distillation therefore are the main input materials in creating the authentic taste.

9 http://www.whisky.com/index.php?id=327&utm_expid=83228277-29.160vBl4IQxuN4ytEAgP5Og.1&utm_referrer=http%3A%2F%2Fwww.google.co.uk%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3D%26esrc%3Ds%26frm%3D1%26source%3Dweb%26cd%3D4%26ved%3D0CDMQFjAD%26url%3Dhttp%253A%252F%252Fwww.whisky.com%252Finformation%252Fknowledge%252Ftasting%252Fflavour%252Fpeat-and-its-significance-in-whisky.html%26ei%3DoMAWVen3AsHqyQOPy4DwCw%26usg%3DAFQjCNFB54zpgcypc2aOpFt9UlzkAgxuTg%26bvm%3Dbv.89381419%2Cd.bGQ

The chart of whisky flavours (Figure 8) in the book of Whisky Classified by Wishart (2009)[10] demonstrates within which nuance ranges of taste the Scotch whisky brands are concentrated. According to the chart, two principal taste components from analysis of 185 malts accounts for 46% of the total variance on 12 cardinal flavour dimensions (Wishart, 2009).

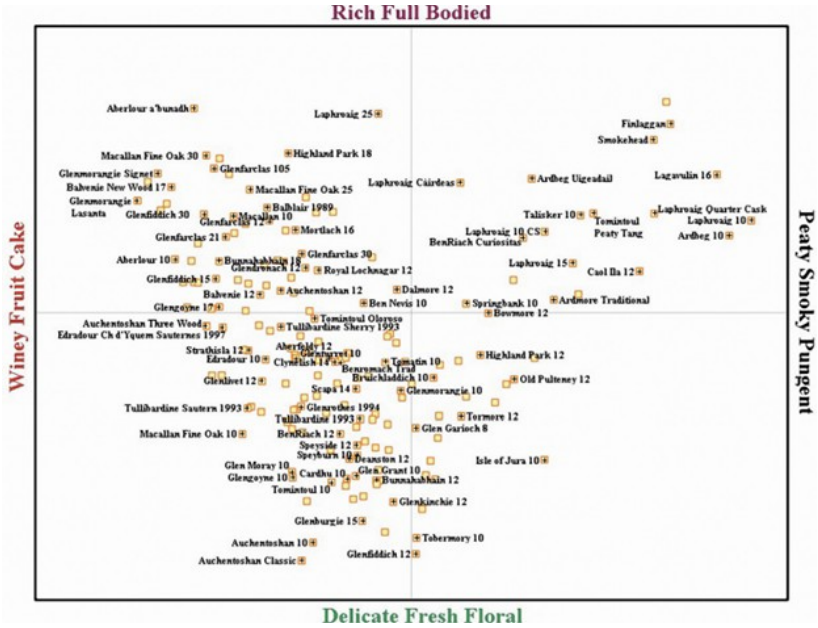

Fig. 8 Distribution of whisky brands among distinct whisky flavours (Wishart, 2009).

Such publications are an example of tools that help consumers choose a representative range of malt through guiding suggestions. This also facilitates product segmentation used in marketing which aims product differentiation and niche segment for different groups.

Status quo is another attribute to quality of whisky in the consumers' perception as it is a premium product and a sophisticated status symbol that goes beyond an alcoholic beverage, an aspect which is usually underlined in the commercials that whisky is not a budget drink for partying for individuals but sophisticated adults.

Perception of brand is the engine of growth in a specific whisky category. Most distilleries in the market are currently owned by Diego by or other international companies, strive to keep their historical brand images that dates back more than a century. Most brands positions themselves with an authentic Scottish heritage and historical local business. This is carried out with iconographic bottle and label designs, brand names that links with a certain locality such as Edrodour or a (family) name such Glenfiddich: William Grant & sons, Johnnie Walker[11]. Illustrations in Benromach single malt brand advertorials (Figure 9) are some of those that underline that artisanal and local business image.

10 The reference flavour compounds for Scotch whisky were tested by Lee et al., (1999) through quantitative descriptive analysis method.

11 http://www.scotchwhisky.net is an online database that complies comparable information of various Scotch whisky brands.

Fig. 9 Benromach commercials in press[12]

Indeed provenance plays an important role in choices and contributes not only direct sales and has spill over to other local industries. Thousands of tourists come to Scotland each year to follow the malt whiskey trail and trace the provenance of their preferred malt (SWA, 2015).

As product provenance is very important for Scotch whisky how the increasing demand is reflected on the local resources and how well the environment is kept becomes even more important. However different elements of sustainability receives different amount of attention from the consumer. A recent publication by Glenk et al., (2012) looks into the willingness to pay of whisky consumers' through a choice modelling experiment for better environment reports that while only one third of consumers are willing to pay for reduction of pesticide as a measure of sustainable production, almost all consumer demand barley of Scottish provenance to be used in the Scotch production.

Regulative Responses to Consumers' Concerns

United Kingdom and European Union have reshaped existing regulations as well as making new ones to respond to evolving consumer concerns as well as other changes in the food and beverage supply chains. The main issues addressed in these regulations are in line with quality, provenance and food safety/health concerns. The timeline of EU and UK regulations that are relevant to Scotch whisky industry can be listed as:

- UK Scotch Whisky Act (1988)
- EU Council Regulation No 1576 (1989)
- UK Scotch Whisky Order (1990)
- EU Council Regulation- Annex II for sprit drinks (2008)
- UK Scotch Whisky Regulation (2009)
- UK Sprit Drinks Verification Scheme- Notice (2014)

The main regulation which is specifically dedicated to Scotch whisky is the UK Scotch Whisky Regulation (SWR) that came into practice in 2009. It defines and enforces rules for classifying a whisky as a Scotch. The regulation till 2009 was only relating to malting and distilling part of the process, SWR sets further rules on other steps such as labelling, marketing, storage and bottling and includes all in the legal Scotch certification process.

12 http://drink-brands.com/drinks/alcoholic-drink/benromach-distillery-create-new-illustrations-for-ad-concept/

SWR (2009) states that each food authority and port authority that receives whisky export has to make sure of enforcement of its local regulations. It might be interpreted as a response to expanding supply chains and increasing trade capacity.

Moreover through the Alcohol Pricing Act (2012) the Scottish Government aims to tax alcoholic beverages by minimum 50 pence per unit to discourage alcohol consumption in country where there is a high per capita consumption of alcohol[13]. The highest tax per bottle through this legislation is expected to be on whisky (Figure 10).

Fig. 10 Calculation methodology of tax per alcohol unit proposed by the Alcohol Pricing Act (Scottish Government, 2015)

However this act has never gone into practice due to the legal objection of the SWA, an organisation of whisky producers and retailers that work to protect and promote Scotch whisky, on the grounds that the Act contravenes EU law.

Certificates of Age and Origin which are issued by HMRC[14] to support exporters and producers of UK manufactured spirits and facilitate entry of Scotch whisky into overseas markets by attesting to the authenticity of UK produced spirits. The majority of certificates are issued in respect of Scotch whisky exports. Scotch whisky is a product of protection geographic indication (PGI) registering it as a strictly Scottish produce under EU Council Regulation- Annex II for sprit drinks (2008) and SWR (2009).

To check compliance with SWR, each year the SWA collects samples from each producer that claim to produce Scotch whisky and attest that the contents are indeed genuine Scotch whisky and claimed age of the product is accurate. This authenticity analysis is carried out by the accredited lab at the Scotch Whisky Research Institute (SWRI).

However unlike most spirit drink of geographical indication, which are bottled in the area where they are produced such as French Champagne or Italian Prosecco, Scotch whisky is sometimes exported in bulk for bottling abroad with exception of the single malt whisky which can only exported in the bottles of maximum 2 litres according to SWR (2009).

13 http://www.gov.scot/Topics/Health/Services/Alcohol/minimum-pricing

14 Her Majesty's Revenue and Customs

Recapping, Conclusions and Future Outlook:

Scotch whisky production is getting intensified to keep up with the increasing demand from already existing and emerging markets which requires adapting to different local regulations and cultures. Single malt whiskey is the strongest growing and most regulated category among other classes of Scotch whiskey. Increasing need for whisky input is expected to lead to more extended contracts for malting barley farmers (as also mentioned in the presentation at the end of Baywa visit) as distilleries would be willing to secure their raw material supply at less fluctuating prices. On the other hand the farmers also have to produce malting barley at a certain content, defined as fit for malting and there is no restriction to malting barley export from abroad. With the SWR in 2009, not only manufacturing but all the levels in the supply chain such storage, labelling, marking have been regulated. Logistic agents, distributors and retailers also have to operate as set in the regulation[15]. The prohibition of bottling single malt outside of Scotland after 2012 (SWR, 2009) requires innovative approaches to offset additional logistic costs. On the overall strict regulation aiming to protect both supply and demand side by certifying quality might have caused a rise in cost through the supply chain. It is a complex sectorial challenge to manage a continuously growing market and meeting an increasing demand while protecting sustainability of local natural resources and environment which provides whisky its authenticity through a mix of flavour, heritage and provincial character.

After all whisky is a very complex industry, the issues are highly associated with the size of distillery and region, also in terms of environmental or resource constraints (while it is the water resource that might be limiting in Speyside, it might be the peat in Isle) as well as management and market strategy. It is not just an industry of sprit beverage and has massive spill-over effects on local tourism and rural development in whisky regions. The growth in the Scotch whisky business makes it more appealing for international food and beverage companies and further consolidation is expected in the future. As the market became more competitive due to above mentioned attributes of both vertical and horizontal product differentiation will be more important in distinguishing a brands among its competitors and targeting a specific customer group. In this regard entrepreneurial dynamics and brand marketing will also gain more significance (Russell and Stewar, 2014).

Additional Sources used in the construction of the Figures 5, 6 and 7:

15 For instance SWR (2009) prohibits the use “pure malt” on any Scotch label, package, and bottle or in marketing, advertisement etc. material to prevent consumer confusion.

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Additional sources used in the construction of Figure 6 and 7:

For the whole supply chain scheme:
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