# Comparing the service levels in the European spirits market: A model for evaluating the complexity of a country in the transportation of spirits and an empirical investigation of six different European countries

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## Summary

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| Research questions: | How can the performance of a logistic service level be measured in a consistent way, and how can the measured service level in one country be compared to another country? |
| Methods: | A three-stage mixed methods approach |
| Results: | The paper suggests a country complexity factor comparing the service levels of each investigated European country. |
| Structure of the article: | 1. Introduction; 2. Components of analysis; 3. Mixed methods research approach; 4. Research results; 5. About the authors; 6. References 7. Appendix |

**ABSTRACT**

*The European spirits market is determined by several big premium players which to a greater or lesser extent play a tantamount important role in each country. Distributives trades is the transnational connector between production and consumption. Logistics and especially transportation are key success factors in this market segment for all parties involved. Lately, logistic companies have taken over the function of an internal service provider. In every European country, they pursue the goal to efficiently fulfill the requested logistical performance without losing track of the required added values of the supplier companies. Europe-wide, the quality of a logistic service provider (LSP) or a logistics department is measured by a service level. To reach a constant high service level is one of the most challenging requirements for logistic managers and requires multifaceted strategic, structural and personnel resources. However, European countries can be differentiated by diverse, country-specific requirements, which can influence the service level. The aim of this study is to develop a complexity factor for a country which takes into account the relevant country-specific requirements, and thus allows to compare the service levels of each European country.*

**Keywords: Service level - transportation – complexity factor of a country – mixed methods**

## Introduction

Globalization, digitization and outsourcing are ongoing trends which have effects on our business life. The operationalization of these effects are the physical material flow of products which have to cover larger distances in a shorter period of time. Thus, logistics activities will gain in importance, and will be a very relevant area in order to remain competitive or to differentiate from the competitor (Göbl & Froschmayer, 2011). Logistic comprehends the corporate information and material supply chain, and thus guarantees that a certain product reaches the

customer company as follows: the *right* good has to be delivered in the *requested (right)* quantity, in the *expected (right)* quality, at the *correct (right)* condition, at the *required (right)* time, at the *required (right)* location and at a *minimum* of (right) transportation cost (Brumme, Schröter, & Schröter I., 2010). These requirements will be named as the 8 R's of logistics (Göbl & Froschmayer, 2011) and be the key influencing factors for the performance of logistics. In this way, logistics takes care of the management of all relevant flow of goods, information and services within a company towards the customer company. Cross-national, the performance of logistics is measured by a ratio which is internationally acknowledged, the service level. Hence, parameters for defining a service level comprehend an assignment of certain goals and therein advised key performance indicators (KPIs) of a service quality that a supplier wants to offer to the customer for ensuring a high competence level in the joint supply chain and thus reach a high customer satisfaction and a long-term customer loyalty (Kortus-Schultes & Ferfer, 2005). In principle, each service in every transaction phase should be verified by a defined KPI. Essentially, those phases with a high relevance for the customer and thus a high relevance for customer satisfaction are often the focus of individual service level definition (Kortus-Schultes & Ferfer, 2005). In this way, those KPIs enable a determination of advised service standards clearly represented in form of different KPIs.

However, nowadays high customer expectations require individually defined service levels whereas service in this context can be defined as "logistics and relying on the aims of logistics and corporate supply chain networks" (Tschandl, Brunner, & Wilfinger, 2014, p. 92). Logistics in the understanding of a service function often disposes of a certain strategic potential which can be represented in the reduction of logistic process costs as well as the cost reduction of warehousing, stock, handling, preparation, allocation, information, communication and transportation (Schulte, 2017; Tschandl et al., 2014). From a marketing perspective logistics could also be an area to be more effective and to gain a competitive advantage. However, whether logistics will be used to be more cost efficient or to differentiate, it has to be clear what kind of logistic output has to be achieved. This output of logistics can be defined as service level.

It can be assumed that an objective benchmarking of a service level makes just sense if there are no influencing factors between different benchmarking partners or markets. Hence, the purpose of this research is to analyze if there is a complexity factor for a country specific logistic service level which allows to compare different countries.

This study focuses on the European spirits market since it is a manageable market with a clear number of important premium supplier companies. The empirical analysis is a three-stage mixed methods approach focusing on the following countries: Germany, France, Italy, Poland, Spain, and UK.

The first part comprehends 6 expert interviews with European Key Account Managers (KA managers) of a reputable German Logistic Service Provider (LSP) operating in different European countries to get the first insides of the countries, the market and the measured service level. The second part encompasses 10 in-depth interviews with logistic managers and directors of different European premium supplier companies to understand the countries in more detail and to see how they differentiate with each other. The third part of the study is an expert panel with the logistic directors of the largest European suppliers who are responsible for the chosen markets resulting in a quantitative approach comparing the service level of the investigated different European countries.

The structure is as follows: first the key domains of a logistic service level are defined. Subsequently different academic definitions of the service level are given. In the next step the three-stage mixed methods research approach is introduced – methodology, sample and findings. The findings are recapped and illustrate the knowledge gained for defining the country specific factors. At the same time, the different country-specific conditions in transportations are represented. Then followed a discussion, some theoretical implications and managerial suggestions. The paper closes with some avenues for further research.

## Components of analysis

### Performance of logistics

The academic literature provides several approaches to measure the performance of a company or

department. In order to decide precisely what has to be measured with the term "performance", it is perhaps useful to consider some of its synonyms. These include "operation", "execution", "implementation", "accomplishment" or "fulfilment". However, performance is also frequently used to define several different dimensions – each to be measured individually – such as effectiveness, efficiency, productivity, sustainability or profitability (Wickinghoff, 2001). Although applying a number of dimensions, the measurement of performance can be viewed critically due to the lack of standardization. However, the standardization would be frequently necessary in order to adequately measure the performance of a company or a logistics system. Performance is understood in this context as the result of an economic activity. Thus, definitions of "performance measurement" reveal a number of common features.

They attempt to operationalize an output in such a way that it can be measured with the help of quantifiable variables. Therefore, suitable criteria and characteristics have to be used. These variables can then be seen as an indication for the performance.

Since performance has or can have several dimensions, the appropriate performance indicators need to be selected from an almost infinite number.

Selecting these indicators therefore depends on the experiences, value concepts and convictions of the individuals involved. So, they are consequently subjective. "Thus, performance measurement does not lead to an objective depiction of reality in neutral, factual figures; rather it is characterized by the subjective construction of reality (Wickinghoff, 2001, p. 31).

The task of performance measurement is to establish an information base and a communication medium that is intended to create transparency regarding certain data and situations and to serve as an orientation guide for decisions.

So, practitioners struggle with the attempt to measure the organizational performance of the company as a whole or department wise. Within one organization the focuses are quite different: the production department usually evaluates the efficiency of internal production processes, while finance and accounting get to grips with the management of internal and external cost reports and corresponding performance indicators. Furthermore, many departments often have separate disciplines that deal with the topic of controlling and are subsumed under marketing controlling, purchasing controlling, production controlling or logistics controlling within the company.

Considering the definition of controlling as support of decisions, its control and coordination and as a discipline that paves the way for analyzing operational data largely through the provision of accounting-relevant information (Reichmann, 2017), then the intention behind such positions within individual departments becomes clear. However, it remains a challenge how Controlling can be distinguished from the concept of "performance measurement". The purpose of performance measurement is to measure the output of the considered department whereas most controlling activities focus more on measuring the input side like costs or efforts. In the case of logistics, Controlling and its input and output measurements are transposed to the field of logistics. However, this is usually restricted to the cost issue. Thus, in most cases companies state controlling logistics costs, performances and budget – followed by their capture and planning – as the most important task of logistics controlling (Weber & Wallenburg, 2010).

When it comes to logistics performance, the difficulty lies in finding a more precise definition, since its service-specific features are often highly individual and hard to differentiate. In practice for example, one customer may be clearly specifying that the waiting period prior to unloading at the ramp is included in the transport time, while another customer may see this as the LSP's own fault and record it as idle time. Invoicing or measuring transport or storage costs vary in the same way. While one customer or service provider calculates according to distance in km and tonnage in kg, another uses postcode regions and $m^3$. Similarly, some warehouse operators include placing pallets from the incoming goods zone into storage as part of warehousing costs, while other providers allocate this activity to the costs for receiving a pallet. Again, the different load carriers, types of load and supplementary services mean that the actual warehousing performance is highly diversified and difficult to measure and compare. This leads to a

strong assumption that a comparison or benchmarking of logistics costs or performances is just possible if a company is able to focus on a clearly standardized process which is similar for all considered benchmarking partners.

Nevertheless, it can be inferred that logistics performance is the result of a logistics activity, i.e. the output of a logistics system through transformation of appropriate input goods. Traditionally, the output of logistics performance refers to the delivery service, which according to Pfohl (2016) can be subdivided into the components delivery time, delivery reliability, delivery quality and delivery flexibility. Even if the focus is on the transport dimension of logistics and does not include inventory, warehousing, processing, environmental issues or any other kind of value added services which help to differentiate, it is useful to measure the result of the physical flow of logistics.

The range of the content of logistics is widespread. Thus, in this study, the complexity is kept in a manageable way in order to focus on the transport activity of logistics with a clear relation for the source to the sink. Any task like ordering, picking, information management, customer-buying behavior can hardly be taken into account as these processes vary extremely within different companies. Furthermore, they can also be seen as enabler for the final transportation task which has to meet a desired service level.

## The service level of logistics

The academic literature defines a service level of the ratio between the satisfied and the ordered transportation volume (Tschandl et al., 2014). It distinguishes the most relevant logistic aims – the allocation of products and services, as well as the optimization of logistic costs – in a service and a cost component (Tschandl et al., 2014). As a matter of consequence two different terms exist: logistic service and logistic performance, as well as the KPI for measuring those two terms: the logistic service level. The academic literature deduces this KPI from six individual KPIs: (1) delivery time, (2) delivery capacity, (3) readiness for delivery, (4) delivery reliability, especially desired deadline reliability (5) delivery flexibility, and (6) delivery quality (Schulte, 2017).

The Anglo-American literature points on a superordinate KPI of delivery reliability, defining the aggregate achievement level for a completely correct delivery on schedule: OTIF (on time in full) (Schulte, 2017). Based thereupon another KPI is defined in the academic literature: OTIFIC (on time in full invoiced correctly (Tschandl et al., 2014). This KPI includes “all mistakes as e.g. damage, volume mistakes, transportation mistakes, as well as quality issues put in relation to the total product number of the contract order” (Schulte, 2017). In practice, the most popular KPI for measuring a service level is in the international business community is OTIF.

However, country-specific factors and distributive trades influence this reference number. This results in some existing challenges measuring and comparing a service level. It leads to the question how the performance of a service can be measured in a consistent way, and if the measured service level in one country can be compared to another country. However, the means of managing the physical flow of logistics is transportation. More than 70% of transportation is outsourced to Third Party Logistics (3PL) providers (Capgemini, 2017). It can be assumed that these spirit producers use their logistics service providers to achieve their internal logistical service level. Hence, their logistical service level will be forwarded to their chosen LSP.

## Spirit business

For the purpose of this study it was essential to focus on a very structured market. It was assumed that an analysis of the retailer business would be more potential than the one of the industrial business. Hence the focus of this research approach was the spirit market since it can be considered a very manageable market with a limited number of certain key players. However, even within the retailer business it can be considered a necessity not to have too many source-sink relations for maintaining an overview about the business. In the first step the most important countries in terms of spirit consumption were analyzed. (see table 1).

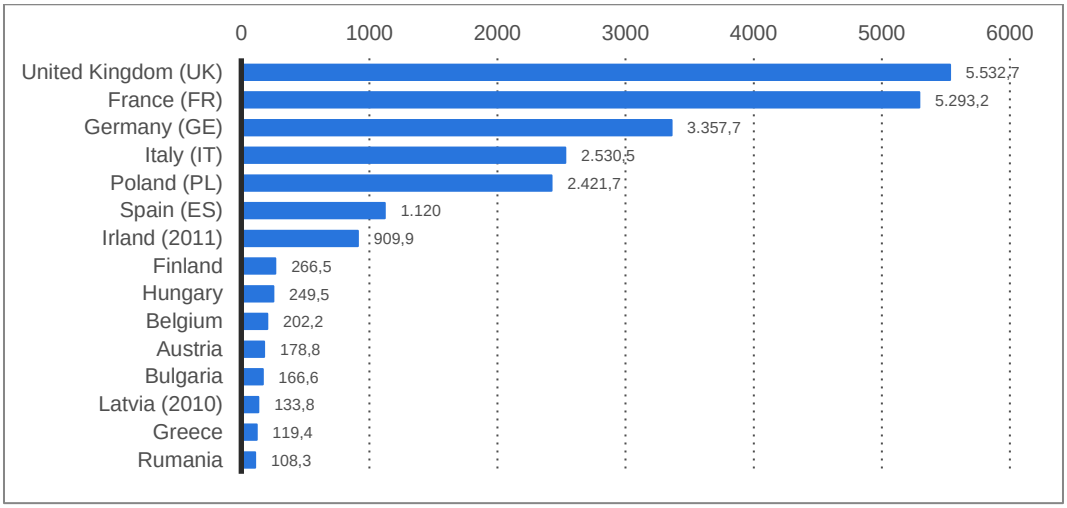



Table 1:

Revenue of the spirit industry in the European Union in 2014 (in MEUR) (Eurostat, 2017)

In the next step, all countries above 1 billion euro of spirit consumption were selected as these 6 countries seem to be a controllable size for analyzing the benchmarking of logistics service level in different countries. For these chosen countries, an abbreviation was added. Table 2 shows the classification of the different distribution channels. The main channels are Supermarket and Hypermarkets (also dubbed 'off-trade') The third important distribution channel are small groceries stores and discounters (also dubbed 'on-trade' or 'HORECA (hotels, restaurants, clubs and animation)). As table 2 indicates the individual classification is different in every country.

| | Total | France | Germany | Italy | Poland | Spain | United Kingdom |
|---|---|---|---|---|---|---|---|
| Discounters | 14.5% | 10.00 | 27.50 | 14.60 | 20.60 | 9.80 | 4.60 |
| Drugstores/ parapharmacies | 0.0% | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Food/drink/tobacco specialists | 7.9% | 4.20 | 7.50 | 4.60 | 9.30 | 4.40 | 17.50 |
| Hypermarkets | 25.9% | 41.90 | 17.70 | 30.20 | 12.40 | 15.90 | 37.20 |
| Mixed Retailers | 0.6% | 0.00 | 0.00 | 0.00 | 0.00 | 3.50 | 0.00 |
| Other Grocery Retailers | 0.8% | 0.10 | 2.60 | 0.00 | 0.70 | 1.00 | 0.30 |
| Other Non-Grocery Alcoholic Drinks Specialists | 0.5% | 0.00 | 0.00 | 0.00 | 0.00 | 3.20 | 0.00 |
| Small Grocery Retailers | 16.9% | 11.60 | 17.90 | 6.90 | 38.80 | 8.90 | 17.20 |
| Supermarkets | 31.0% | 30.80 | 23.80 | 42.90 | 18.10 | 52.10 | 18.10 |
| Direct Selling | 0.0% | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Homeshopping | 0.0% | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Internet Retailing | 2.0% | 1.40 | 3.10 | 0.80 | 0.10 | 1.20 | 5.20 |
| Vending | 0.0% | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 100.0% | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Table 2:

Classification of distribution of spirit in the top European countries in 2015 (Euromonitor 2016)

Despite this heterogeneous distribution structure, the focus on retailers sets the precondition that a product is available for the end customer. In practice, the retailers are highly interested to achieve a high service level. Also, the pressure of retailers is rising constantly.

When comparing the distribution of alcoholic drinks in the top 6 European countries, the 'on trade' distribution is significantly higher in Southern European countries like Spain and Italy (see table 3). In most of these countries 10-15 retailers get 50% of the distribution. In the countries with a high 'on trade' relation it is around 30%. The table also shows that the top retailers are not the same which is an indication that the distribution structures of different countries are difficult to compare

| | Germany | France | Poland | UK | Spain | Italy |
|---|---|---|---|---|---|---|
| Total distribution in litre | 475.822,10 | 381.429,80 | 337.652,70 | 319.666,30 | 206.212,40 | 131.861,60 |
| Retailers > 1% | 11 (44.4%) | 10 (45.6%) | 17 (48.9%) | 16 (52.5%) | 10 (35.4%) | 13 (27.5%) |
| Retailers >0,1% | 91 (64.6%) | 74 (62.4%) | 73 (66.4%) | 96 (73.8%) | 50 (46.4%) | 67 (42.5%) |
| Top 1 | Edeka Zentrale AG & Co KG (11.7%) | Carrefour SA (10.10%) | Jerónimo Martins SGPS SA (11.7%) | Tesco Plc (12.0%) | Mercadona SA (10.5%) | Coop Italia scarl (4.7%) |
| Top 2 | Schwarz Beteiligungs GmbH (7.8%) | ITM Entreprises SA (7.6%) | Schwarz Beteiligungs GmbH (6.8%) | J Sainsbury Plc (7.1%) | El Corte Inglés SA (6.2%) | CONAD - Consorzio Nazionale Dettaglianti Scrl (4.3%) |
| Top 3 | Aldi Group (6.5%) | E Leclerc (7.5%) | Eurocash SA (3.6%) | Wal-Mart Stores Inc (6.9%) | Carrefour SA (4.1%) | Selex Gruppo Commerciale SpA .3.2%) |
| Off-trade | 79.9% | 78.4% | 91.9% | 78.0% | 44.1% | 48.0% |
| On-trade | 20.1% | 21.6%. | 8.1% | 22.0% | 55.9% | 52.0% |

Table 3:

Retailing situation in the top European countries of spirit distribution (based on Euromonitor 2016)

| | |
|---|---|
| Pernod Ricard Groupe | 17.1% |
| Diageo Plc | 13.0% |
| Russian Standard Corp | 8.6% |
| Marie Brizard & Roger International SAS | 6.7% |
| Stock Spirits Group | 5.4% |
| La Martiniquaise SVS | 5.1% |
| Bacardi & Co Ltd | 4.3% |
| Campari Milano SpA, Davide | 4.1% |
| Suntory Holdings Ltd | 3.8% |
| Brown-Forman Corp | 3.3% |
| William Grant & Sons Ltd | 2.6% |
| Mast-Jägermeister SE | 1.8% |
| Edrington Group | 1.8% |
| Rotkäppchen-Mumm Sektkellereien GmbH | 1.7% |
| Oetker-Gruppe | 1.6% |
| Gräflich von Hardenberg'sche Kornbrennerei GmbH & Co KG | 1.6% |
| Loch Lomond Distillery Co Ltd | 1.6% |
| Berentzen-Gruppe AG | 1.5% |

Table 4:

Largest spirit producers in the 6 top European countries (Euromonitor 2016)

Despite this diversified distribution structure, the number of producers is quite transparent and the logistics flows are clearly represented (see table 4).

**Hypothesis**

Based on the above-mentioned market environment, the study considers two hypotheses developed below.

*H1: The logistics service level of the distribution of spirits in the retailer business is different in European Countries.*

To answer this hypothesis, it can be assumed that the research object must be clearly defined and standardized. Logistical service level in this research means “just” the transport component of logistics. All additional logistics activities like warehousing or picking will be seen as enabler for this transport function. This means that different order or picking structures as well as other value-added services like promotion or confection activities will not be considered directly. Also, the higher complexity to prepare this shipment is not part of the service level. It will just indirectly be considered as it has an influence for the shipment structure since the amount of shipments per receiver will get changed. This simplification will also exclude the order processes and cut off times (e.g. the time a shipper or LSP has from receiving the order to prepare the shipment and make it ready to send (ship)) as well as how the individual retailer structures his logistics. Moreover, it will not be relevant if the shipment is shipped directly from the shipper to the central warehouse of the retailer or to the retailer store directly. One distinguishing factor is the shipment structure.

Another research focus is to analyze the most important drivers for the service level. So, the assumption is that it is possible to make a service level more comparable if the degree of complexity in each country is well-known. Consequently, the following hypothesis is formulated as follows:

*H2: If the influence factors of a logistic service level is known, it can be adjusted in that way that county specific service levels are more comparable.*

**Sample**

Table 5 gives an overview of the sample

## Mixed methods research approach

In this section, the three-stage mixed-methods research approach is illustrated. It comprehends a pre-study representing the evaluation of 6 experienced KA managers of LSPs working for many years in the spirits market. This follows 10 in-depth interviews with international logistic experts of the spirit business. The continuative analysis and third part of the qualitative research approach is a focus group approach for consolidating the findings of the in-depths-interview. The academic literature recommends this advanced approach when certain facts of a research question have been corroborated and should be specified (Yin, 1994/2009). . It is based on mixed methods on the premise that a research approach can be done by using either qualitative or quantitative evidence (Yin, 1981). It results in a country factor comparing service levels of the investigated European countries.

**Pre-study**

**Methodology and approach**

For the purpose of this study it was helpful to conduct a first qualitative research approach by analyzing the targets which LSPs have to achieve in these markets. In many cases, these targets are given by the customers who are the suppliers of spirits in these countries. In this pre-study 6 expert interviews with international KA managers of LSPs were conducted during a one-day workshop in summer 2015. The face-to face interviews lasted between 30 minutes and 2 hours, were recorded and transcribed using simple transcription rules. The aim was to analyze what kind of different LSPs are supposed to be achieved or what KPIs are named to be achieved from their spirit customer.

| Country | Position in leading LSP company |
|---|---|
| Germany | KA manager |
| France | KA manager |
| Hungary | KA manager |
| Spain | KA manager |
| UK | Warehouse manager |

Table 5:
Overview of sample

## Findings

*Definition of Service Level*

It was found that all customers are measuring a service level, even though the way of measuring the service level is very distinct. Mostly, it is meeting the promised delivery time and the reliability of shipments, which means 'complete shipment without damages'. However, some interviewees described that they are measuring two separate KPIs. Other interviewees explained that they multiplied two different KPIs. Most of the experts described that they are combining different KPIs and measure a ratio which is called OTIF. It means that the delivery meets the given delivery date and contains all items. There were a few differences if the delivery time is measured in days or time frames or if the number of articles, items or units leads to a reduction. E.g. how bad is the shipment performance if this shipment contained 5 different articles with a quantity of 1000 units and 1 unit of 1 article was damaged? Is the complete shipment wrong (in full 0%), just one out of 5 articles (80%) or just one item out of 5000 (99.99%)?

*Market complexity*

The pre-study also confirmed that logistics is defined and structured differently at different customers. Moreover, the KAs mentioned a risen complexity of logistics and IT requirements, which have to be fulfilled. As a matter of consequence, the experts specified more standardized EDI connections and booking of time windows, a stronger focus on barcode labels, other packaging and safety requirements.

It also became clear that KAs from different countries named different distribution challenges. In some countries like the UK, there are dedicated spirit retailers and discounters next to the traditional retailers. In countries, like Italy or Spain, the KAs even face the requirements to deliver the products directly to hotel, bars and restaurants.

The findings of the pre-study were used to build up categories for the in-depth interview guideline, as shown in table 6.

## In-depths interviews

### Methodology and approach

In this section, the results of the qualitative second-stage investigation are illustrated.

The target of research interest was logistic managers of relevant European premium spirit supplier companies. The aim of this research stage was to get a deeper understanding of country specific differences influencing the measurement of the service level. The 10 in-depths interviews were conducted face-to-face or via telephone. They lasted between 60 minutes and two and a half hours. All of them were recorded and transcribed verbatim using simple transcription rules.

Before conducting the in-depth interviews, an interview guideline was developed. Hence a clear structure of the research interest was secured for getting as much inside knowledge as possible about the different markets. It was also of importance to consider all factors which could influence the service level in different countries. Table 6 illustrates the topics of interest in the interview guideline.

| | Topic | Motivation |
|---|---|---|
| 1 | Market overview | To understand the current market situation. |
| 2 | Country specific spirit requirements | How is the spirit business implemented in this country? Are there unknown logistic flows |
| 3 | Business development and trends | To get new insides and to know state of the art regarding volumes, customer behavior, products |
| 4 | Distribution channels and retailer power | Understanding how distribution works and which party steers the logistics flow. Is there a ranking? |
| 5 | Requirements of retailers | Logistics requirements in terms of shipping the products. Are there different requirements within the retailers? Which one is more complex and why. |
| 6 | Definition of logistics complexity | To understand which factors lead to a higher perceived logistics complexity for the shipper. To analyze new logistics requirements like IT tools, time windows, scanning, goods will be collected by retailer |
| 7 | Order process | How and in what time slots will the goods orders. Are there noticeable buying behaviors |
| 8 | Logistics requirements regarding the product | Does the product need special treatment as it will mostly be delivered in glass bottles and is sensible (special security, temperature control…)? |
| 9 | Service level | Make sure that OTIF is the relevant KPI or get to know further ratios which will be used. How will it be measured and what influences are there. What happens if service level is not achieved? |
| 10 | Complexity of country | What are the logistics challenges in this country (distances, street conditions, equipment, capacity)? What makes the spirit distribution of one country more complex than another country. |
| 11 | IT influence | Are there different IT standards which will be used and which affect the transportation process |

Table 6:

Analyzed topics to get more market insight

3.2.2 **Sample**

The following table gives an overview of the interview partners, where they were situated and to which supplier company they belong to.

| Country | Company | Position |
|---|---|---|
| Germany | Bacardi | Director Logisitcs and SCM |
| Germany | Beam Germany | Logistic manager |
| Hungary | United Brands | Logistic manager |
| Hungary | Zwack Unicum | Logistic manager |
| Italy | Bacardi | Logistic manager |
| Poland | Bacardi | Logistic manager |
| Spain | Bacardi | Logistic manager |
| UK | Bacardi | Logistic manager |
| UK | Moet Henessy | Logistic manager |
| Middle/East Europe | Brown Forman | Director of logistic |

Table 7:

Overview of in-depths interview partners

**Findings**

In terms of the 11 topics of the interview guideline, the interviewees confirmed different assumptions and intensified the existing market knowledge. The main results of these topics were that

(1) Spirits are a premium product which will mostly be supplied in a higher quantity. The inventory turnover is lower than with other retailer products. There is a limited temperature control necessary to make sure that the products do not get too hot or too cold which are mostly extreme situations. Another important aspect is that the products are mostly out of glass bottles which leads to a more careful handling.

(2) The ordering behavior of retailers and the geographical complexity of a country have an influence on the amount of retailer locations and the expected lead time.

(3) It is clear that e-commerce will get a higher share within the distribution structure within the next years. Also, there are more and more shipments which have to be delivered directly to the retailer store instead to the central warehouse of a retailer.

(4) There are different distribution channels with different requirements. The big retailer with supermarkets and hypermarkets are one group. Smaller dedicated retailers and discounters can be considered the second group. The third group are direct deliveries to hotel, restaurants and bar (named HORECA) if there is no dedicated LSP handling this channel. Smaller receivers are not well equipped or are located in city centers where the distribution needs special transport equipment like small trucks or lorries or a small fork lift has to be taken to the receiver.

(5) The logistical requirements of the retailer are changing. There are a few retailers which collect the shipments at the shipper site and do not get them delivered. This lowers the flexibility of the transportation process of the shipper, as the prepared shipments have to be organized to get them collected. Furthermore, there are more IT requirements as the transportation process has to be more transparent and there are some retailers where the shipper has to book a time window to be able to deliver the goods. This time window has an influence on the lead time if the shipper is not able to get one at the preferred or planned delivery time. Some receivers even expect the driver of the truck to do additional tasks like unloading, remove the foils of the shipments, scan the barcodes of the parcels, put the shipments on conveyer belts.

(6) Due to a higher variety of products in different sizes or variances diverse smaller shipments will be ordered which influences the shipment or pallet structure. There are also higher requirements to pack the pallet or shipment and to transport it safely.

(7) As already described in (5), shippers assess the time window management as big challenge as it increases the complexity to meet the given lead time.

(8) The effect of the specialty of the product (see (1)) and the order structure (6) leads to more “sandwich pallets” where 2-5 pallets with 1-2 layers are stacked on each other. Some customer would also lower the risk of theft and ask the shipper to use a black foil to make sure that the products cannot be seen and be attractive for thefts.

(9) Almost all shippers measure and evaluate in terms of the KPI “OTIF”. The target which has to be achieved ranges from 95% to 99%. The time component will mostly be measured in days and the full component in articles.

(10) Even if there are differences in the distribution structure of a county (see 2), the shippers see their country to be the most complex one. The reason is not the retailer requirement but the distribution structure and the distances due to the geographical situation.

(11) There are different IT requirements within the countries, which in some cases are considered as being very challenging.

The following part combines the knowledge of special experts having expertise and insights in all

investigated countries. The purpose of the third stage research approach is making out a complexity country factor in a quantitative scoring model.

**Focus group**

The academic literature recommends the advanced approach of a focus group when certain facts of a research question have been corroborated and should be specified (Yin (1994/2009). Hence a focus group interview should last for a short period (ranging from one hour to a one-day workshop). Yin (2009) points out that a focus group interview with different members of a team can be an efficient approach even though the researcher has to exercise caution and must allow time for the different perspectives of the interviewees to develop. Hence the environment for interviewing a focus group, which concerns topics that may be provocative, must be pleasant and comfortable (Yin, 1994/2009).

For the purpose of this study, a focus group approach is considered an efficient tool for validating the findings of the prevenient two qualitative stages. The advantage of the qualitative approach results in the definition of the influencing factors whereas the advantage of the quantitative approach leads to the evaluation of the factors leading to a country specific influence. The aim of the focus group workshop was to agree on the weighting of each distribution channels within the 6 investigated countries given a certain complexity of the criteria which influence the complexity in each country.

**Methodology and approach**

The approach of this research stage was organized as follows: first, the determination of relevant factors is elucidated. Then a market analysis gives an overview of the most relevant companies occupying the market. This step was necessary for including managers of the relevant companies in the focus group approach. Finally, the methodology of the focus group workshop is explained.

*Determination of relevant factors*

An in-depth analysis of the preceding qualitative results made it possible to identify different factors which are responsible for the perceived logistics complexity that will influence the logistics service level. The authors divided the factors into “directly measurable” and “non-measurable” factors. “Measurable” means that there are shipment data available which can be used for this analysis. This is not the case for “non-measurable” factors as these have to be evaluated by the shippers.

*Measurable factors*

The “measurable” factors leading to a country specific influence on the service level are:

*Factor A:* the distribution structure of shipments to the 3 different distribution clusters (C1: traditional retailers, C2: dedicated retailers and discounters, C3: HORECA). Table 2 can be used to measure this (see 2 and 10).

*Factor B:* the complexity is lower if more shipments (which means a lot of loading units (pallets) are shipped to one destination. If there are more destinations or receivers, the complexity increases as there are always new requirements to fulfil (time window, special efforts.). The more shipments per receiver, the higher is the transport complexity within a distribution channel of a country (see 2 and 3).

*Factor C:* the amount of shipments being collected by the receiver have to be considered. As the collection of shipments are not seen as a reduction of complexity but vice versa, it has to be taken into account for analyzing the transportation complexity of a country (see 5).

The analyses of these shipment data have to be combined with the perceived complexity evaluation in each country.

*Non-measurable factors*

The “non-measurable” factors leading to a country specific influence on the service level are as follows:

*Factor 1:* the demanded lead time which has to be fulfilled from the customer (retailer) which is the driver for different tasks (see 2)

*Factor 2:* the IT requirements like tracking and tracing, special labelling (see 11)

*Factor 3:* the additional activities the driver is forced to do at the receiving side (see 5)

*Factor 4:* this factor is again relevant for the perceived complexity and comprises the time windows management. Shippers see this as a huge effort to get a good time slot and a main challenge to meet this afterwards (see 7).

*Factor 5:* this factor comprises the different shipment structure as it makes the transportation

process more complex (the loading units have to be additionally secured to get transported) (see 6 and 8).

*Factor 6:* the necessity of special transport equipment due to the receiver location (see 4).

*Market analysis*

In the first step, the analyses of the shipment data were combined with the perceived transport complexity evaluation in each country. Due to the special market situation in the spirit business with a few larger shippers - mostly using LSPs to execute the transportation - and many receivers (different retailers or customers in different distribution channels), the focus lied on the main shippers for reasons of efficiency.

In the second step, it was analyzed how many shippers lead to more than 85% of the distribution volume in the top European countries. Table 8 gives an overview of the top shippers in the European countries in 2015 and confirmed the secondary data of table 4.

| | Total | Germany | France | Poland | Italy | Spain | UK | Countries |
|---|---|---|---|---|---|---|---|---|
| Pernod Ricard Groupe | 17.1% | 5.8% | 22.7% | 8.8% | 8.0% | 22.4% | 6.5% | 6 |
| Diageo Plc | 13.0% | 5.4% | 5.4% | 2.4% | 7.0% | 12.3% | 26.4% | 6 |
| Russian Standard Corp | 8.6% | | | 29.2% | | | 3.0% | 2 |
| Marie Brizard & Roger International SAS | 6.7% | | 8.3% | 15.6% | | | | 2 |
| Stock Spirits Group | 5.4% | | | 18.9% | 4.4% | | | 2 |
| La Martiniquaise SVS | 5.1% | | 16.2% | | | | | 1 |
| Bacardi & Co Ltd | 4.3% | 1.4% | 4.8% | | 3.7% | 6.1% | 4.0% | 5 |
| Campari Milano SpA, Davide | 4.1% | 4.0% | | | 19.5% | | 1.1% | 3 |
| Suntory Holdings Ltd | 3.8% | 2.0% | | | | 11.9% | 3.8% | 3 |
| Brown-Forman Corp | 3.3% | 1.4% | 2.0% | 3.1% | 1.1% | | 4.7% | 5 |
| William Grant & Sons Ltd | 2.6% | | 3.3% | 1.0% | | | 4.0% | 3 |
| Mast-Jägermeister SE | 1.8% | 2.8% | | | 1.6% | 1.1% | 1.4% | 4 |
| Edrington Group | 1.8% | | | | | 3.6% | 4.5% | 2 |
| Rotkäppchen-Mumm Sektkellereien GmbH | 1.7% | 4.5% | | | | | | 1 |
| Oetker-Gruppe | 1.6% | 3.9% | | | | | | 1 |
| Gräflich von Hardenberg'sche Kornbrennerei GmbH & Co KG | 1.6% | 4.4% | | | | | | 1 |
| Loch Lomond Distillery Co Ltd | 1.6% | | | | | | 6.5% | 1 |
| Berentzen-Gruppe AG | 1.5% | 4.1% | | | | | | 1 |
| Total | 85.7% | 39.7% | 62.7% | 79.0% | 45.3% | 57.4% | 65.9% | |

Table 8:

Overview of the top shippers in the European countries in 2015

The lower total percentage in Italy and Germany was due to the high amount of private label distribution or other very small shippers in the spirit business. Adding these percentages to the findings in the table, the approach is quite satisfying. Table 9 gives an overview of the private label and other distributors in the top European countries.

| Companies | Germany | France | Poland | Italy | Spain | United Kingdom |
|---|---|---|---|---|---|---|
| Total (table 8) | 39.7% | 62.7% | 79.0% | 45.3% | 57.4% | 65.9% |
| Others | 29.5% | 17.2% | 9.5% | 28.7% | 13.3% | 9.4% |
| Private label | 18.6% | 12.7% | 5.9% | 2.9% | 8.6% | 15.6% |
| Total coverage | 87.8% | 92.6% | 94.4% | 76.9% | 79.3% | 90.9% |

Table 9:

Private label and other distributors in the top European countries.

In order to compare the different service levels, it was also necessary that the shippers have a comprehensive experience with the distribution situation within the different countries. Hence, it was postulated that the shippers have to deliver at least in 3 out of the 6 countries. It indicates that 7 companies occupy 47.5 % market share in 2016 (in liters, without Private Labels), see table 10.

| | Total | Germany | France | Poland | Italy | Spain | UK |
|---|---|---|---|---|---|---|---|
| Pernod Ricard Groupe | 17.1% | 5.8% | 22.7% | 8.8% | 8.0% | 22.4% | 6.5% |
| Diageo Plc | 13.0% | 5.4% | 5.4% | 2.4% | 7.0% | 12.3% | 26.4% |
| Bacardi & Co Ltd | 4.3% | 1.4% | 4.8% | | 3.7% | 6.1% | 4.0% |
| Campari Milano SpA, Davide | 4.1% | 4.0% | | | 19.5% | | 1.1% |
| Suntory Holdings Ltd | 3.8% | 2.0% | | | | 11.9% | 3.8% |
| Brown-Forman Corp | 3.3% | 1.4% | 2.0% | 3.1% | 1.1% | | 4.7% |
| Mast-Jägermeister SE | 1.8% | 2.8% | | | 1.6% | 1.1% | 1.4% |
| | 47.5% | 22.8% | 34.9% | 14.3% | 40.9% | 53.8% | 47.9% |

Table 10:

Top shippers with experience in the distribution in almost all European top countries

Due to this oligopoly situation, the responsible logistics mangers who manage the distribution of these countries were invited for a focus group workshop.

*Methodology*

The focus group discussion was organized in a one-day workshop in December 2017. The atmosphere was open and frank making it possible to brainstorm all relevant factors and gaining the necessary information for defining a complexity factor.

In preparation of the workshop the expert hat to provide quantitative figures. In the expert panel, these figures were verified and adjusted. Also, the model was model and all items were discussed and adopted. In a follow-up meeting the agreed figured and the results of the model were presented and discussed.

**Sample**

For getting a realistic assessment of the criteria,

the following requirements concerning the focus group sample should be fulfilled:

(1) The experts should belong to the leading players of the premium spirits market (supplier and LSP).

(2) The experts should have a knowledge about all involved countries to achieve a more objective and comparable information.

All 5 invited European logistic experts have the relevant experience in these markets to evaluate the complexity and to be able to rank and compare them with each other. Table 11 gives an overview of the sample. As table 10 indicates, the experts are in charge of almost 50% of the spirit distribution in these 6 countries.

| Company | Position |
|---|---|
| Bacardi | Director Logistics and SCM |
| Pernot Ricard | Operations Director |
| Diageo | Supplier Performance Manager |
| Campari | Distribution manager |
| Dachser | Wine and Spirits Competence Center Manager and KA manager |

Table 11:

Overview of the focus group members

**Model for evaluating the complexity of a country**

This section introduces the model for evaluating the complexity of a country factor. The proceeding was as follows: the perceived logistics complexity index – measured with the 6 factors – has to be measured for each distribution channel in each country. Considering 3 distribution clusters in 6 countries, there are 18 indices in total. This perceived logistics complexity index which is the common agreement of the top managers of the 7 top shippers is then multiplied with the amount of shipments that will not be picked up and the receiver / shipment relation of this distribution cluster. Finally, this product is weighted with the percentage of shipments within this distribution cluster in each country to get the country specific transport complexity factor in the retailer business for spirits. Figure 1 gives an overview of the model for calculating the perceived complexity of each distribution cluster in each country.

| | | |
|---|---|---|
| Perceived complexity of one distribution cluster in one country | = | Weighting Importance Factor 1 x Common Evaluation Factor 1<br>Weighting Importance Factor 2 x Common Evaluation Factor 2<br>Weighting Importance Factor 3 x Common Evaluation Factor 3<br>Weighting Importance Factor 4 x Common Evaluation Factor 4<br>Weighting Importance Factor 5 x Common Evaluation Factor 5<br>Weighting Importance Factor 6 x Common Evaluation Factor 6 |

Figure 1:

Model for calculating the perceived complexity of each distribution cluster in each country

Figure 2 illustrates the model for calculating the complexity factor of each country.

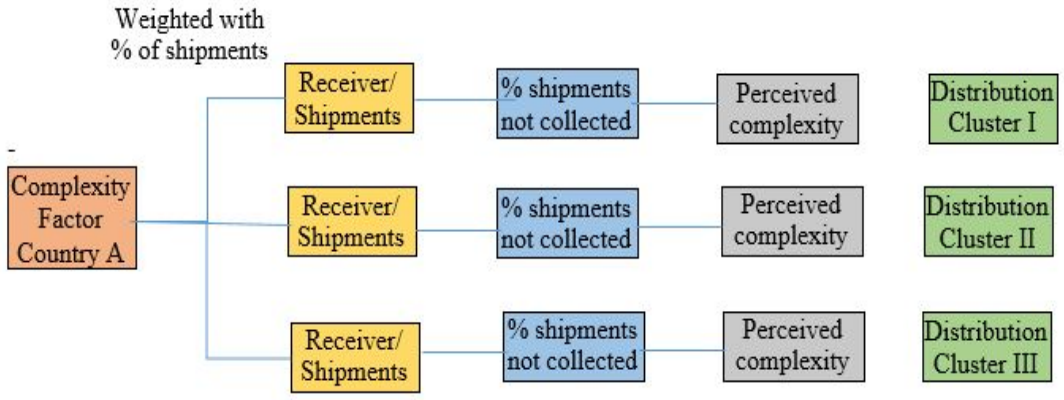



Figure 2:

Model for calculating the complexity factor of each county

The model only includes transportation, and no warehousing activities. This means that only a complexity factor of transportation, not of logistics can be considered in the model (commissioning & warehousing are not respected). Moreover, differences in commissioning in a shipment are irrelevant. It is also irrelevant whether the shipment includes a complete, mixed or sandwich pallet (irrelevant for the transportation, however relevant for the structure of shipment). Likewise, additional services such as packing are irrelevant. Also, Cut-off times are irrelevant since commissioning is irrelevant. Last but not least, it does not make a difference if the destination of the transportation is the center of distribution or the retail store (procurement logistics), since the complexity of the transportation does not change.

**Findings**

The results of the expert group workshop can be summarized as follows:

(1) The 6 non-measurable factors were verified in a uniform manner by all group experts.

(2) Also, there has been an agreement of the different weighting of the 6 non-measurable factors (Figure 3):

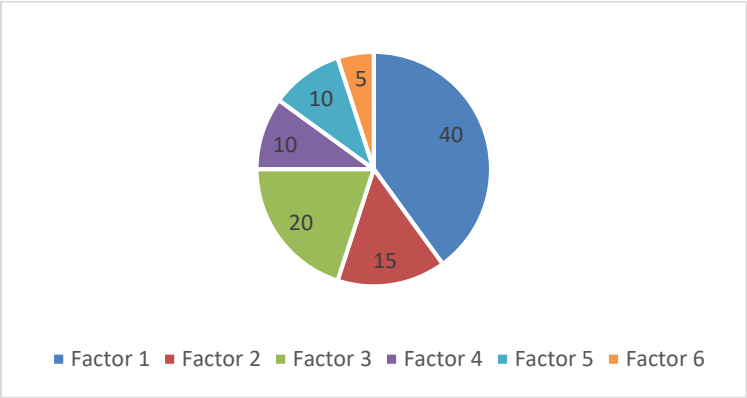



Figure 3:

Weighting of the 6 non-measurable factors.

During the workshop an insight could be gained of different evaluation levels of different spirit companies within the distribution channels of different countries. The reason was mainly a different understanding. All misinterpretations were verified, so that everyone could provide the evaluation of the 6 items for the third step of this mixed methodology approach. Hence it was clearly defined that meeting the time frame which includes the street network and conditions as well as the consequences if you do not deliver to the customer within the promised time slot will be considered in factor 1 whereas factor 4 just considers the process of booking the time frames in the different software tools

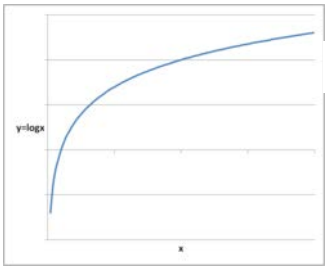
(3) All experts agreed upon the volume which are responsible to weight the three main distribution clusters (not shipment) as the shipments are already considers in the factor (receiver / shipments). Furthermore, they agreed that the official market research spirit distribution data of each distribution cluster are not valid from a logistics point of view as the distribution within HORECA will mostly be delivered from logistics service providers out of the second distribution clusters or bought in cash & carry supermarkets. So, the delivered volume of the top spirit companies will be considered to weight the complexity of the three distribution clusters.

(4) It was uniformly recognized that the collection of goods does not have to be considered as the complexity factor just focusing on transportation. So, collected shipments have to be conducted when the allocation of the shipments within the 3 distribution clusters will be made.

(5) The receiver/shipment ratio was uniformly verified as good indicator to consider the complexity for OTIF as one shipment could lead to one mistake and most of the OTIFs are measured in orders (=shipments) and not in volume. This ratio could also be names as order behavior as it describes in the end how often one customer in this distribution cluster orders on average.

(6) All experts agreed on the calculation of the complexity factor of each country.

(7) The comparison of the service level should consider a Service level e level achievement as the last percentages of a service level are very hard to achieve (Minner, 2007). It is almost the same effort to increase the service level from 50 to 90% than from 95 to 98% which has a similar structure than a logarithm function.




Effort

Figure 4:
Logarithm function of service level

Linking this to the complexity factor, the higher the complexity factor of one country, the higher the effort to achieve the same service level. However, one must consider that this relationship is not linear, but exponential.

$$Service\ level = e^{-complexity\ factor}$$

To compare the service level of each country, the logarithm complexity factor of one country has to be considered. This by definition is a factor between 0 and 1 which in a second step has to be multiplied with the existing service level of one country.

$$Service\ level\ comparable = \log(complexity\ factor) \times existing\ service\ level.$$

## Research results

### Results of complexity factor

All experts assessed the complexity of the 6 non-measurable factors in each distribution cluster of each country. Afterwards they received the mean, standard deviation and the anonymous individual evaluations and had to agree on the right figure. The weighting (figure 3) was used to calculate a perceived complexity per distribution cluster per country.

The experts also had the task to calculate the order behavior within each distribution cluster which means the number of annual reviewers divided by the number of annual shipments in this distribution channel. This factor was than transformed to an order behavior factor between 1 and 10. Multiplying these two factors (Order behavior and perceived complexity) with the same weight of 50% lead to the shipment effort of each distribution cluster in each country (see table 12). The order behavior of Horeca in Germany and Poland are not valid figures as there is no Horeca business in these countries form a logistics point of view.

| | 0.5 | 0.5 | | |
|---|---|---|---|---|
| | Order behavior | Perceived complexity | | Shipment effort |
| GE Retailer | 9.43 | 6.79 | | 8.111 |
| GE Spec Ret | 9.35 | 6.04 | | 7.694 |
| GE Horeca | 10.00 | 7.45 | | 7.450 |
| | | | | |
| FR Retailer | 9.55 | 5.65 | | 7.600 |
| FR Spec Ret | 9.60 | 5.40 | | 7.500 |
| FR Horeca | 7.20 | 3.25 | | 5.225 |
| | | | | |
| IT Retailer | 9.48 | 5.79 | | 7.631 |
| IT Spec Ret | 8.78 | 6.10 | | 7.438 |
| IT Horeca | 7.10 | 6.89 | | 6.996 |
| | | | | |
| UK Retailer | 9.55 | 6.66 | | 8.106 |
| UK Spec Ret | 9.53 | 5.45 | | 7.488 |
| UK Horeca | 9.00 | 5.85 | | 7.425 |
| | | | | |
| ES Retailer | 9.50 | 6.11 | | 7.808 |
| ES Spec Ret | 9.41 | 5.30 | | 7.354 |
| ES Horeca | 9.27 | 4.63 | | 6.945 |
| | | | | |
| PL Retailer | 9.49 | 5.58 | | 7.537 |
| PL Spec Ret | 9.22 | 5.72 | | 7.470 |
| PL Horeca | 10.00 | 7.00 | | 7.000 |

Table 12:

Shipment effort in each distribution channel in each country

In the second step, the distribution of the average volume in each distribution cluster was used to calculate the complexity factor of each country (see figure 2). The only difference was that the volume of all non-collected shipments was used instead of the shipments even if the differences of the percentages were not very large. This calculated complexity factor was then logarithmized. The order behavior for Horeca in Germany and Poland is not valid due to missing data.

| | Complexity factor | Log(x) |
|---|---|---|
| Germany | 8.01 | 0,904 |
| France | 7.21 | 0.858 |
| Italy | 7.53 | 0.877 |
| UK | 7.95 | 0.900 |
| Spain | 7.55 | 0.878 |
| Poland | 7.50 | 0.875 |

Table 13:

Complexity factor of spirit distribution within the top 6 European countries.

This logarithm complexity factor can be used to modify the service levels in each country and to make them comparable.

In table 14 and column 1, some service levels of the countries are assumed and listed. Hence the complexity factor can be used to calculate the comparable service factor.

| Example of existing service level | | Log (complexity factor) | Comparable Service level |
|---|---|---|---|
| 98.5 | Germany | 0.904 | 89.01 |
| 97.9 | France | 0.858 | 82.67 |
| 96.5 | Italy | 0.877 | 84.59 |
| 97.8 | UK | 0.900 | 88.06 |
| 98.1 | Spain | 0.878 | 86.13 |
| 99.0 | Poland | 0.875 | 86.65 |

Table 14:

Example of analyzing a comparable service level

These calculated complexity factors of the different countries could also be used to calculate a factor that makes two countries comparable. This factor was called complexity adjustment factor.

$$\boldsymbol{CAF_{AB}} = \frac{\boldsymbol{LOG}\ (\boldsymbol{Complexity\ factor_{country\ A}})}{\boldsymbol{LOG}\ (\boldsymbol{Complexity\ factor_{country\ B}})}$$

The calculated CAF between all six countries are listed in appendix 1. The examples of table 14 were also used to see what one service level of one country would be in another country. A modified service level of 88.1 in UK (originally 97.8) would be 89.3 in Germany as the complexity is a little bit higher there. Or in other words the effort of UK would lead to a service level of 87.7 in Germany (see appendix 2).

**Answering hypothesis**

The results of the three-stage mixed methods approach confirm the hypothesis of the study as follows:

*H1:* is perceived to be right due to the fact that complexity is evaluated differently in each country (see table 14).

*H2:* is perceived to be right. The approach was respected by the main spirit distributors of the top 6 countries which are responsible for almost 50% of the spirit volume.

The empirical result shows that the model lead to comparable service level factors which can be used for a benchmark.

Finally. the empiric results were shown to the experts which are responsible for the logistic distribution within the selected top European countries for spirit distribution. They agreed that this model is useful to modify the existing service level and to make them more comparable. They wished that the empirical data are based on a higher sample size or that more experts will take part in the expert panel.

## Discussion, theoretical and managerial implications

The purpose of this three-stage study was to develop a model for evaluating the complexity of a country in the transportation of spirits by empirically investigating six different European countries. In this paper, a first step has been taken by defining a complexity country factor allowing the comparison of the service level for the countries of investigation. This section discusses the findings, as well as some theoretical and managerial implications.

### Discussion

First of all, this study is a first step in defining a complexity country factor. It has no claim of a universal validity. Too many restrictions in the model, as described above or in chapter 4.4, impede this claim. However, it serves as an orientation for practitioners in order to establish a European comparison. It might also be applied to different branches as a basic model with potential to branch individual adaptation. The model applied here, in the consumer industry, could also be applied to industrial business with some modifications, as e.g. concerning the distribution channels.

### Theoretical implications

First of all, this study may promote the topic of measuring and comparing service levels in an international environment and encourage academic researchers to take up this approach with an alternative theoretical framework. However, for the first time in academic literature, an approach has been undertaken to develop a complexity factor for comparing different European service levels. Hence, this study enriches the existing academic literature.

### Managerial implications

The qualitative and quantitative material presented here gives a general guidance for logistic and sales managers regarding the comparability of the service level within the 6 investigated European countries. The determined country factor enables managers of the involved countries to compare their individual service level in a European context, and thus to better understand those country specific differences. It may also help managers as a support in customer related discussions demonstrating that a service level of e.g. 99% in country A corresponds to a service level of e.g. 95% in country B. Moreover, it serves as a good indicator for a company in benchmarking its services. The model developed in this study can be used by LSPs as well as carriers.

### Limitations and further research

As in the case with most research the current study has several limitations. At the same time, of course, some of these limitations may serve as sources of future research design.

First of all, some of the findings result from a qualitative research approach. Even though the parts of a qualitative research approach remain appropriate for an issue like the one at hand, this study might be transformed to a complete quantitative approach with a much higher sample size to ensure that the here developed model takes the same effect.

Secondly, this study stems from a certain branch – the market of spirits. It might be productive for academic researchers to empirically investigate this approach in another market environment.

Thirdly, the selection of the right factors and the weight of the factors are a subjective group opinion. Of course, it could be that other factors not considered here could play an important role. Other researchers could be encouraged to investigate additional or other factors influencing the comparability of service levels. Moreover, the weight could be interrogated. Some experts may consider it differently which would lead to a different result. Hence academic researchers could be encouraged to take proof of the results in this study.

Fourthly, this study includes only several European countries. Hence an extension to a broader European

country base or even global country base might be an interesting field for future research.

Fifthly, interpersonal relationship between truck drivers and customers are not considered and sure have an impact on the service level as this relationship has definitely an impact at the receiving site. Some truck drivers are automated providing additional tasks whereas others are not willing to do this or are not able due to language or physical restrictions. Researchers might be encouraged to investigate interpersonal factors influencing KPIs.

Sixthly, this study just focuses on the transportation process which does not include the order processing, internal processes and warehouse activities. However, including those processes in a model would improve the accuracy of a complexity factor.

Seventhly, the low sample size in the quantitative approach is certainly a factor of limitation even if the answers are linked to a volume of almost 50% of the spirit market in the analyzed countries.

Eighthly, the model itself implicates several restrictions as shown above.

Ninthly, the factors of the complexity and the distribution of the volume within the distribution clusters will not be stable, so the factor has to be renewed regularly.

## About the authors

Prof. Dr. Martin Göbl has been lecturing in logistics and business management at the University of Applied Sciences in Kempten, Germany since 2006. After graduating as an industrial engineer, he worked in different areas and positions in the area of logistics management. While working he graduated as a PHD. His research interests are the evaluation of services, strategic logistics management and logistics service providers.

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In 2003, she graduated in business administration at Passau University. She then worked several years at Lidl as an area manager before changing to a B2B company for technical ceramics being responsible for strategic and operational marketing affairs. In 2016 she successfully completed her doctoral thesis at Bamberg University investigating internal KAM activities of supplier firms.

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## 7 Appendix:

| | Germany | France | Italy | UK | Spain | Poland |
|---|---|---|---|---|---|---|
| Germany | 1.000 | 1.053 | 0.970 | 1.004 | 0.972 | 0.969 |
| France | 0.949 | 1.000 | 1.022 | 1.050 | 1.023 | 1.020 |
| Italy | 0.970 | 0.979 | 1.000 | 1.027 | 1.002 | 0.999 |
| UK | 0.996 | 0.953 | 1.027 | 1.000 | 0.975 | 0.972 |
| Spain | 0.972 | 0.977 | 1.002 | 1.026 | 1.000 | 0.997 |
| Poland | 0.969 | 0.980 | 0.999 | 1.003 | 1.003 | 1.000 |

Appendix 1:
Complexity Adjustment Factors between countries

| Existing Service level | Comparable Service level | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Example | Example | | Germany | France | Italy | UK | Spain | Poland |
| 98.5 | 89.01 | Germany | 89.0 | 93.8 | 86.3 | 89.3 | 86.5 | 86.2 |
| 97.9 | 82.67 | France | 79.7 | 84.0 | 85.8 | 88.2 | 86.0 | 85.7 |
| 96.5 | 84.59 | Italy | 82.1 | 82.8 | 84.6 | 86.9 | 84.7 | 84.5 |
| 97.8 | 88.06 | UK | 87.7 | 83.9 | 90.5 | 88.1 | 85.9 | 85.6 |
| 98.1 | 86.13 | Spain | 83.7 | 84.2 | 86.3 | 88.3 | 86.1 | 85.9 |
| 99.0 | 86.65 | Poland | 83.9 | 84.9 | 86.5 | 86.9 | 86.9 | 86.7 |

Appendix 2:
Example of a Calculation Modell to benchmark Service levels