Improvement of customs calculation model in a cross-border e-tail business

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Abstract

Every cross-border e-tail business faces difficulties in the definition, maintenance and optimization of a landed cost model and, more specifically, of the customs' calculation model, due to the several barriers felt in international trade and intensified by the high frequency and small volume of the deliveries. Farfetch, a very recently created e-tail business of luxurious fashion items for customers around the world that has been growing exponentially over the last years, is no exception. With a model already created, discrepancies in the customs charges were detected and the company was faced with the need to restructure its model.

The project held had the purpose to fully understand the complex process that leads to the customs value of each item ordered in the website and to detect the main flaws responsible for the discrepancies. Considering those flaws, four main solutions were studied through their implications, results and barriers for implementation, leading to a correctional approach that allows the reduction of inconsistencies while still adapting to the company's business model and internal restrictions. The control of the customs charges and correction of the information stored were also two aspects explored for the optimization of the model.

Although the duration of the project did not allow the implementation of the solution, the results obtained in two priority countries allowed to conclude the most viable approach. The two tools developed during the project also give the possibility to simplify and automatize future tasks related to control and update of the data.

Melhoria do modelo de cálculo dos direitos aduaneiros num negócio *online* de retalho transfronteiriço

Resumo

Qualquer negócio *online* de retalho transfronteiriço enfrenta dificuldades na criação, manutenção e otimização de um modelo de custos final de importação e mais especificamente, de um modelo de cálculo dos direitos aduaneiros, graças às várias barreiras sentidas no comércio internacional e intensificadas pela alta frequência e baixo volume de entregas. A Farfetch, um negócio *online* recentemente criado de retalho de artigos de moda de luxo para clientes de todo o mundo e que tem vindo a sentir um crescimento exponencial nos últimos anos, não é exceção. Com um modelo já criado e detetadas discrepâncias nas cobranças de direitos aduaneiros, a empresa foi enfrentada com a necessidade de reestruturar o seu modelo.

O projeto realizado tem o objetivo de compreender ao detalhe o processo complexo que leva ao cálculo do valor dos direitos aduaneiros de cada item encomendado pelo *website* e de detetar as principais falhas responsáveis pelas discrepâncias. Através dessas falhas, quatro soluções foram estudadas pelas suas implicações, resultados e barreiras para implementação, conduzindo a uma abordagem corretiva que permite a redução das inconsistências enquanto se adapta ao modelo de negócio da empresa e às suas restrições internas. O controlo dos custos aduaneiros e a correção da informação armazenada foram também dois aspetos explorados para a optimização do modelo.

Apesar de a duração do projeto não ter permitido a implementação da solução, os resultados obtidos nos dois países prioritários levaram à possibilidade de concluir a abordagem mais viável. As duas ferramentas desenvolvidas ao longo do projeto também fornecem a possibilidade de simplificar e automatizar tarefas relacionadas com o controlo e atualização da informação.

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Acronyms

AUD – Australian Dollar

AWB – Air waybill

CAD – Canadian Dollar

CEM – Customer Experience Management

CHF – Swiss Franc

CIF – Cost, Insurance and Freight

CFR – Cost and Freight

CIP – Carriage and Insurance Paid To

CPT – Carriage Paid To

DAP – Delivered At Place

DAT – Delivered at Terminal

DDP – Delivered Duty Paid

EDI – Electronic Data Interchange

EU – European Union

EUR – Euro

EXW – Ex Works

FAS – Free Along Ship

FCA – Free Carrier

FF – Farfetch

FOB – Free On Board

GATT - General Agreement on Tariffs and Trade

GBP – British Pound

GTV – Gross Transaction Value

HS – Harmonized System

Incoterms – International Commerce Terms

JPY – Japanese Yen

KRW – South Korean Won

KWD – Kuwaiti Dinar

RUB – Russian Ruble

SQL – Structured Query Language

USD – US Dollar

WCO – World Customs Organization

WTO – World Trade Organization

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1 Introduction

The emergence of the Internet brought a new potential to international trade and to e-tail businesses, expanding markets and reformulating the business models of any company that desired to stay competitive. International trade, however, presents several barriers that need to be carefully surpassed through know-how and information transparency. The intensification of deliveries consequent of the e-commerce escalation, increases the need for an accurate landed cost model that not only increases the customer experience but also works as a management control tool. Moreover, being customs pointed by literature as one of the most difficult barriers of international trade, cross-border e-tail businesses have failed deeply in the definition of a balanced and optimized customs calculation model. Given all the conditions that influence a single item's customs value, any e-tail business needs to have access to a high volume of information and detain control and optimization techniques to keep the estimates as precise as possible.

1.1 Customs calculation at Farfetch

Farfetch, launched in 2008, is an online high-end fashion platform that provides access to a variety of more than 130,000 items from over 300 boutiques around the world, connecting an average of 2,500 brands to customers from more than 170 countries. The Business Model of the company is based on the revolutionary concept of funneling luxurious products from internationally spread and independent boutiques to fashion-driven people through one single online channel. Therefore, both boutiques and end-consumers are customers of the company, as the main goal is to simultaneously establish partnerships with exclusive boutiques to include their products in the platform and the respective purchase by the end-users. Farfetch operates a drop shipping method in its Business Model, as an item ordered *online* by a customer is directly delivered from the boutique to either the home address or a collect point indicated by the customer.

The company's offices can be divided into two types: Operational and Production. Although the business model does not include actual production nor stock-keeping of items, it is considered as production the entire process that a boutique's item goes through in order to be inputted into the website. The process is initialized by the receipt of the items from the boutiques by the production offices, passing through quality control and photography, being finalized with the resend of the items to the respective boutiques. This process is held in three different offices: in Los Angeles for the United States territory, in São Paulo, responsible for the items from Brazil's stores; in Hong Kong producing for the boutiques in Japan, Australia and Singapore; and in Guimarães holding the production process for the boutiques in the remaining countries.

Regarding the operational offices, besides the headquarters in London, they are located in Los Angeles, Porto, São Paulo, Tokyo, Hong Kong, New York, Shanghai and Moscow, each presenting differences in the structure, departments and number of employees. Due to the fact

that Brazil's operations are managed independently, the country's activities are not considered along the present dissertation.

Besides the Operations Department, where the project was carried and in which the entire process and derive activities are managed and controlled, Farfetch' office in Porto has eight other departments: Account Management; Customer Service; Finance; Human Resources; Merchandising; Office Management; Partner Services and Technology, the last one being divided into several teams to cover all the activities related to the website, internal systems management and IT support. Within the Operations Department, the division is made into five teams: Fraud, Delivery Support, Payments, Supply, Continuous Improvement and Delivery Development. The last one, very recently composed and with the purpose of improving, controlling and expanding the supply chain and international territories, is where the project was carried.

From the moment Farfetch's website was launched, the company has presented an exponential yearly growth of sales and number of customers (about 90% from 2014 to 2015). This year on year growth was accompanied by the increase of boutiques incorporated in the network, the dimension of human resources and the frequency of deliveries with a worldwide coverage. Consequently, the performance of the operational activities has an increasing weight in key factors: customer satisfaction, financial performance and company's competitiveness.

The delivery of the item purchased by the customer, part of the core activity of Farfetch, is the process managed by the Delivery Support and Delivery Development teams. As any other e-tail business, the deliveries are frequent, in small quantities and must be fast to meet the customers' expectations. Taking into account the international context of both the boutiques and customers, the import regulations of each country and the associated customs have to be considered prior to the delivery.

The delivery costs are paid by the customer upon purchase, only shipping or shipping and customs in case the country is operated in Delivered Duty Paid – i.e. the item is delivered with all the components of the landed cost already paid. Posteriorly, the courier services send monthly invoices regarding the respective delivery costs, to be paid by Farfetch. As recent internally developed courier costs control tools detected discrepancies between the customs charges to the customers and the monthly invoices received from the international courier service to countries operating in DDP, it rose need to perceive the causes of the discrepancies and to restructure the customs calculation model carried by the company.

Some of the long-term goals of Farfetch in keeping up with the exponential growth of sales is to implement all the most important routes in DDP to simplify the process of delivery, improve customer experience and eliminate the cases of rejection of goods by the customer upon the receipt of the item and payment of customs. However, in order to accomplish these objective, it is still required to assure a higher accuracy of the customs charged to the customer in the moment of purchase, as well as of all the related information stored in the back office.

As all the information regarding customs stored in the back office of Farfetch, in the Structured Query Language (SQL) Server Databases, was provided by an out-sourced service provider whose partnership terminated at the end of September 2015, the necessity for the model's improvement increased. While a new partnership was initiated immediately afterwards, the renewal of the information regarding customs is still on hold, opening the possibility to investigate the causes in the actual calculation model that led to the differences in the charges, as it is not intended to lose nor gain with this component of the business.

1.2 Project's objectives and methodology

This dissertation originated from the need to reduce the margins, whether negative or positive, between the customs charged to the customer and the actual costs charged by the courier services. Due to the high complexity, variety of the data and duration of the project, it was not its intention to find the perfect approach that would provide a zero margin but to improve the process and the data used to charge end-users, targeting the highest discrepancies and providing the solution that allowed the lowest total margin, within the restrictions imposed by the company's business model and internal activities.

The current density of the company's database and calculation processes, allied with other priority issues and future projects imply that the implementation of the best solution is not achievable in a short term period and that this process has to be made gradually, respecting the external factors that concern directly the company's core activities. Adding the fact that the update of all customs' related data is still pending on the new partner, the model restructuring is to be conducted from mid-2016.

As a consequence of the beginning date of the model's restructuring, the project is based on investigating the causes for the customs' charges differences, all the possibilities and alternatives of corrections in the model, as well as exploring the results to the company and the conditions that restrict the implementation of specific corrections. Moreover, as important as to improve the model is to control the process and the parameters used in the calculation for all the countries operating in DDP, in order to avoid future losses in this component of delivery. In order to achieve the desired objectives, the project tasks can be divided into the following five main steps:

- **Analysis of the current customs' calculation model:** The complexity of the customs calculation model leads to the need to fully comprehend all factors that influence the customs' final value, how it is calculated and the procedure carried in the back office to obtain the relevant data. This task can be accomplished through the extraction of information from the Database with SQL queries.
- **Investigation of the sources of the discrepancies:** Through the investigation of the two priority countries with lower customs margins and distinct customs' regulations, it is aimed the assessment of the causes of the losses and the study of possible solutions.
- **Study of the possible solutions:** After the assessment of the sources of the customs discrepancies, possible corrections are suggested through four main methods, each aiming one or more correctional points. The viability of each method is studied in terms of results, implications for the company's back office organization and for the internal activities.
- **Development of customs' control tool:** The need to evaluate the accuracy of the customs' components relative to the courier's charges for all countries operating in DDP, to guarantee not only the coordination and minimization of the losses, but also an independence in customs' information collection led to the creation of an internal tool. Through the comparison of the past data stored from the courier's invoices and from the actual charges to the customers, it is possible to optimize the estimates of the customs' values.
- **Automation of data upload:** The volume of the data to be received by the new partner required a tool for ramification and normalization of the data to be uploaded in the SQL Server Databases;

Through the five tasks mentioned it is intended to provide the most viable solutions in a long term period, maintaining the competitiveness in all countries operated in DDP, a number

aimed to increase over time. The five main tasks are illustrated in Figure 1 with the respective timelines, according to the project duration and complexity of each task.

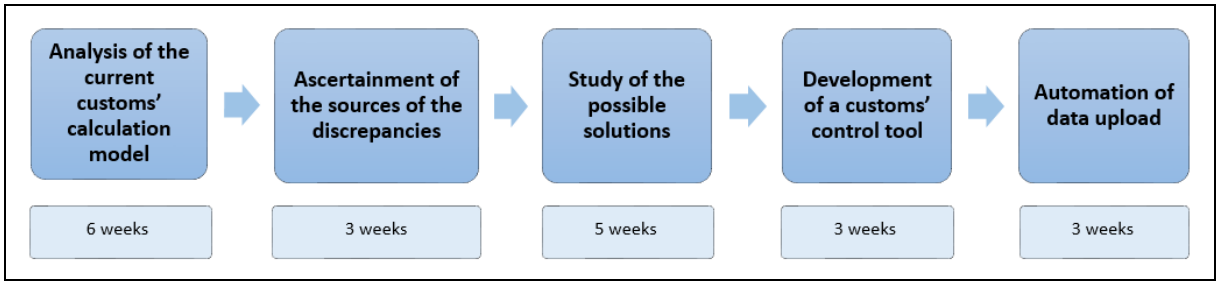

Figure 1 - Project tasks and respective timelines

1.3 Dissertation's Structure

The content of the present document is divided into five more chapters.

Firstly, Chapter 2 presents a literature review for the assessment of the subjects relevant for the project, namely international trade regulations, the relation between international trade and e-commerce, the dependence between price and customer experience and the landed costs models as management control tools.

Secondly, in Chapter 3 the customs' calculation model is clarified, from the process operated within the company to all the variables that need to be considered to obtain the customs' value.

Thirdly, in Chapter 4, the two priority countries are analyzed, its customs' regulations, analysis approaches and problems detected are described in detail, exposing beforehand the methodology of the study and the assumptions made. It is finalized with a clarification of the main points required to address in the solutions study.

Fourthly, in Chapter 5 the four methods for improvement of the model are explored, as well as their impact and the respective conditions for implementations. Both the customs control tool and the *Excel* macro-enabled file for normalized update of information are exposed.

Finally, Chapter 6 concludes the project developed and the solutions explored, also providing future alterations and suggestions, not only within Farfetch but also in any e-tail business faced with the need to define or improve its customs calculation model.

2 Literature Review of Customs calculation in an E-tail business

The current chapter has the aim to explore the literature related with the main subjects approached along the project. It starts with the specification of the current international regulations and the barriers faced in any cross-border retail business, relating the intensification of the difficulties felt with e-commerce. The inclusion of the customs costs in the final price is then studied considering customer experience and satisfaction when purchasing *online*. Finally, the estimation of the customs charges as part of a landed cost model is recognized as a management control tool, exposing the main challenges and requirements for an accurate model definition.

2.1 Regulations in International Trade

International trade, defined by Rugman and Collinson (2006) as "the exchange of goods and services across international borders" has been the target of an exponentional growth, resulting in a trend of and liberalization, with the creation of the General Agreement on Tariffs and Trade (GATT) in 1947 that gradually promoted the commitment of firms in foreign trades through the reduction and removal of tariffs (Kerr and Gaisford, 2007). This tendency was supported with the creation of the World Trade Organization (WTO) in 1995 (United Nations Conference on Trade and Development, 2008), providing an official outline for international trades between its country-members and being considered the center of the current multilateral trade system (Kerr and Gaisford, 2007).

The different approaches required by each import country are originated from the variations of external environmental forces, such as the controls and risks of currency exchange, taxations, tariffs, inflation and import restrictions (Seyoum, 2009). Customs regulations and procedures, however, are considered by Zhang (2002) as one of the biggest barriers to international trade that, even though they might not obstruct directly, its "simplification and harmonization have become a major issue for companies that find their operations and profits severely affected by administrative delays at borders".

Customs are one of the responsabilities of the buyer in the total landed cost, defined by the "total cost of a product once it has arrived at the purchaser's door" (Cook, 2015). Besides the cost of the goods and of the total freight, the author points the following charges as components of the total landed cost:

- Duty (Majorly over the CIF or FOB Value);
- Sales Tax (goods and services tax or value-added tax over the value of the item with Duty Rate already applied);
- Customs-clearance fees;
- Other charges including document fees, wharfage, etc.

The application of the Duty Rate and the posterior application of the Sales Tax over the CIF – Cost, Insurance and Freight – or over the FOB – Free on Board – value is made by the national government and is distinguished by the addition or not of the costs of freight

(transportation and other associated charges) and insurance to the price of the goods, respectively (Barry, 2015). All components of the landed cost must be paid for an imported item to be delivered to the client (Branch, 2007).

An additional variant of the landed cost calculation regarding customs is the *de minimis* value (or *minimis* value) of the export country, the government's imposed shipment value above which the duty rate and the sales tax are applied (Cook, 2015), possibly having a different value for each component (Pope et al., 2013). As stated in the publication, the conducted research led to no conclusion that supported the connection between the *minimis* value and the undervaluation of exported goods to the European Union (EU), in order to avoid the payment of customs. Nevertheless, one of the primary deductions was the lack of information from both the seller and the buyer regarding international trade regulations.

Tariffs, classified by Dutta (2010) as a trade barrier that restrict international trades, are defined by the author as duties applied over items when crossing a political boundary, usually imposed by a country on imported goods. As exposed by Branch (2007), the payment of tariffs is subjected to the classification according to the Harmonized Commodity Description and Coding System, also known as Harmonized System (HS), by the export country. This nomenclature is used worldwide to categorize items through a 6-digit standardized numerical method for the application of duty rates and sales taxes in international trades (Cherukonda, 2014). The System is managed by World Customs Organization (WCO) and follows the structure exemplified on Figure 2. Figure 3 shows the respective section from the Hs Nomenclature Edition 2012 (n.d.).

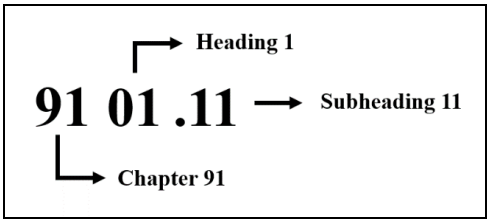

Figure 2 - Structure of an HS Code. Source: International Monetary Fund, (2007)

Heading	H.S. Code	
91.01		**Wrist-watches, pocket-watches and other watches, including stop-watches, with case of precious metal or of metal clad with precious metal.**
		- Wrist-watches, electrically operated, whether or not incorporating a stop-watch facility :
	9101.11	-- With mechanical display only
	9101.19	-- Other
		- Other wrist-watches, whether or not incorporating a stop-watch facility :
	9101.21	-- With automatic winding
	9101.29	-- Other
		- Other :
	9101.91	-- Electrically operated
	9101.99	-- Other

Figure 3 - Section of the heading 1 of the Chapter 91 of the HS Nomenclature Edition. Source: HS Nomenclature Edition 2012 (n.d.).

To the standard HS Codes, national governments can or not attribute additional digits to specify the product type, and to which they associate the import charges and other regulations. Thus, the item's classification has to be approved and it is again classified by the import country customs office (Branch, 2007). However, according to Johnson and Bade (2010),

these classifications are not always a simple procedure and there are situations that can lead to double coding and incorrect customs charges.

The complexion of international trades led to the uniformization of certain procedures by the International Chamber of Commerce through the creation of the Incoterms – International Commerce Terms – a set of rules for the interpretation of commercial terms in international commercial transactions (Caparroz, 2011). As stated by the author, the Incoterms 2010's main goal was to adapt the regulations to the technology evolution, with special focus on the usage of Electronic Data Interchange (EDI), defined by the electronic exchange of documents and Business Information. The Incoterms 2010 can be divided in four groups, according to the local of delivery and the responsibility of the seller (Chikwava, 2012). The division, the respective Incoterms and their implications are shown in Table 1. A scheme of the risks and costs carried by the buyer and the seller per Incoterm is represented in Figure 4.

Table 1 - Groups of the Incoterms 2010, respective Incoterms and their implications. Source: Caparroz (2011)

Group	**Incoterm**	**Implications**
Group E – Departure	EXW - Ex Works	The Buyer is in charge of all the processes in the exportation
Group F – Main Carriage Unpaid	FCA – Free Carrier	The Seller delivers the goods to the carrier responsible for the transport until the export port
	FAS – Free Along Ship	The Seller delivers the goods to the port of export
	FOB – Free on Board	The Seller delivers the goods at the port of export and is responsible for the carriage of the goods into the ship
Group C – Main Carriage Paid ***(The seller only assumes risks until carrier)***	CFR – Cost and Freight	Equal to FOB, except international freight costs are already paid
	CIF – Cost, Insurance and Freight	The seller is responsible for all the costs until the destination port
	CPT – Carriage Paid To	The seller is responsible for delivering the goods to its own designated carrier and for the respective transportation costs
	CIP – Carriage and Insurance Paid To	Equal to CPT but with insurance required also included
Group D – Arrival ***(The seller assumes all risks of the process)***	DAT – Delivered at Terminal	The seller delivers the goods to a designated terminal
	DAP – Delivered At Place	The seller delivers the goods to the carrier in a designated place with customs not included
	DDP – Delivered Duty Paid	The seller delivers the goods to the destination place with all customs paid

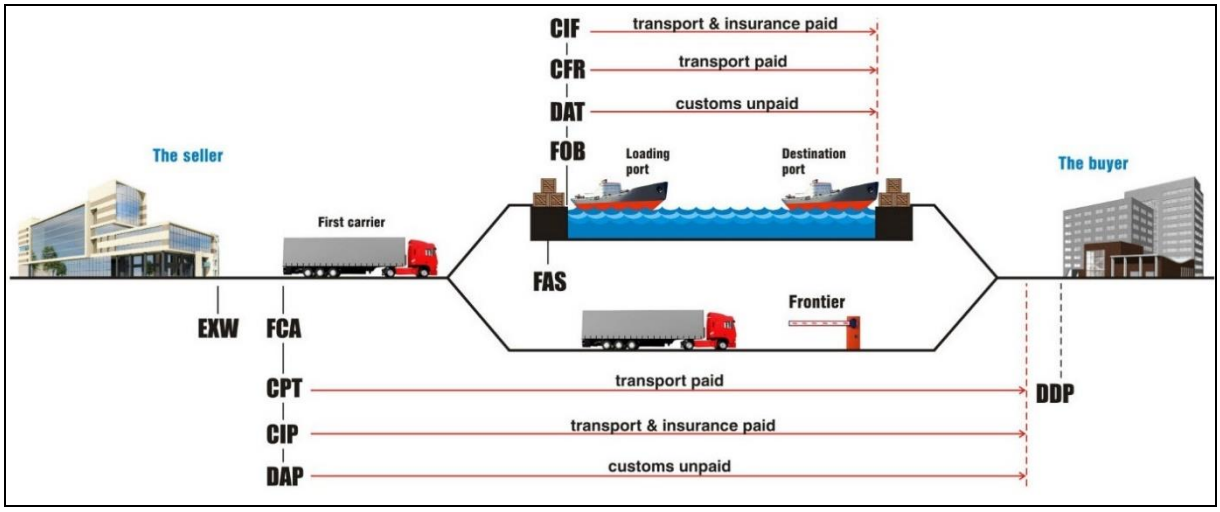

Figure 4 - Scheme of the implications of each Incoterm 2010. Source: Ghana Shipping Guide (2014)

When it comes to the definition of the Incoterm by a merchant, it is essential to make a careful analysis from the perspectives of both the seller and the buyer, considering the type of the goods traded, the means of transportation, the risk involved, the most convenient point of delivery that provides the best customer's experience, the conditions of payment, the documents of exportation required and the knowledge of both parties to perform competently the process. Due to the fact that having the carriage arranged by the seller is the option that provides the highest efficiency and the lowest cost, the Group D Incoterms are majorly adopted in international trade, as they can be used in any mode of transport, including multimodal (Malfliet, 2011).

Exchange rate is defined by Caparroz (2011) as the means to evaluate the value of goods and services in the currency of different countries, subject to several macroeconomic factors and established by the Currency Market. Exchange rates fluctuations and inflation rates can influence deeply international trades, as exposing the company to currency appreciation or depreciation results in the risk of under or overvaluation of a good or service's established price. When it comes to sales of goods whose prices are implemented in a foreign currency, this vulnerability is even higher (Seyoum, 2009).

2.2 E-Commerce and International Trade

The emerging trend of online businesses and more specifically, of e-commerce businesses, is a consequence of the exponential growth of the Internet and of the consequential changes in consumers' behavior (Gray and Zappalà, 2006). E-commerce, "the purchase and sale of goods and services by using e-networks", presents two peculiarities that turn it more efficient than the traditional trade methods: the possibility for a customer to purchase worldwide and the lower expenditures, aside from the growing costs components of the technologies' maintenance and the goods delivery (Burinskienè, 2011).

The success felt in well-known online businesses can be supported by the accomplishment of most or all of the internal and external Critical Success Factors for E-commerce businesses (Manzoor, 2010), of which Quality Assurance, an Increased Security and Trust, an Efficient Customer Information Handling and an Innovative Organization get a special highlight when it comes to luxury fashion-oriented end-users.

The existence of internationally spread end-users turns an e-commerce business dedicated to goods' sale into an interactive cross-border e-tail business and thus, the obligation of facing the consequential barriers of this type of business (Jonströmer et al., 2012). According to the

publication, exporting to countries outside of the EU, a Free-Trade Region, constitute one of the greater challenges of the retail sector, traditional or *online*. Thus, in both cases, for a company to stay competitive in a global market, it was early established the requirement of a "regulatory and customs-handling expertise to ship internationally" (Quelch and Klein, 1996). Since e-commerce has the tendency to stimulate international trades, as internet serves as a door to markets not possible to reach previously (Terzi, 2011), this type of know-how has to be integrated in the company's activities. Considering that e-tail consists in a large number of deliveries of small quantities worldwide, customs can also diminish the competitiveness of the company, as it can increase considerably the landed cost or limit the target countries (National Board of Trade, 2012).

When operating internationally, minimizing export operating costs is mentioned as an extent to which e-tail strategic goals are achieved (Karavdic and Gregory, 2005). However, the integration of e-commerce in international trade of goods has been presenting a high failure rate, mainly due to export logistics, as goods still have to be physically delivered and customers lack of knowledge about Incoterms (Cook et al., 2012). Thus, the author suggests automated options such as freight forwarders and customs brokers to be responsible for the delivery to the customer. Furthermore, the integration of distributors in the e-commerce supply chain is one of the solutions for the challenge of order fullfillment in e-tail, as "establishing a sustainable e-commerce position is as much about using the right order-fulfillment strategies as it is about having the right product at the right price" (Ricker and Kalakota, 1999).

Besides the e-shopper and the e-retailer, i.e. the electronic consumer and the provider of goods and services, respectively, the e-tail delivery value chain exposed by Okholm, et al. (2013) is composed by the delivery operators and the logistics intermediaries, both stakeholders responsible for the delivery process and being the latter ones responsible for operating in the intersections of the path between e-shoppers, e-retailers and delivery operators. According to the report, the delivery model chosen by the e-retailer depends deeply on its geographical focus, as a business that does not export directly with a cross-border agenda requires a delivery operator present worldwide.

Furthermore, in order to obtain success in the integration of e-commerce in international trade of goods mentioned by Cook et al. (2012), opting for delivery operators such as National postal operators (NPOs), integrators and courier companies that provide partial or full end-to-end services to e-retailers, both domestic and cross-border is a solution for the problematic export logistics felt by several interactive cross-border e-commerce businesses (Okholm et al., 2013).

2.3 Price and Customer Experience

Although Price constitutes one of the "Four P's" of the Marketing Mix, along with Product, Place and Promotion, many companies are wrongly mislead that a customer buys a product because of its low price instead of the value proposition offered (Johnson, 2002). In fact, in a study mentioned by Goi (2009), it was found that not only does the Marketing Mix disregard the experiences bought by the customer, but the need to consider the new consequent marketing elements of the emergence of the Internet is pointed.

Customer Experience, on the other hand, has been named by several scholars as vital to a company's success, despite the discordance of its actual definition (Seligman, 2012). Nevertheless, according to the literature, Customer Experience Management (CEM) can be defined as "a revolutionary approach to interfacing with customers" that can be integrated into three categories: phenomenon, related to the emotions and attitudes felt by the customer in the contact made; processes, i.e. the tangible and intangible internal resources to support the CEM; and outcomes, characterized by the value obtained by both parties in the exchange of

the service. The minimization of the exportation costs mentioned by Karavdic and Gregory (2005) as an achievement of an e-commerce strategic goal can be input not only as an outcome of the CEM, but as a phenomenon as well, as customers tend to feel positive about a service or a brand when their expectations and needs are met.

With the exponential growth of the range of choices of products and services offered online, the expectations and needs of an e-shopper tend to also accompany this growth, reaching high demands in the the delivery of the products bought (Okholm et al., 2013). According to the publication, the delivery conditions such as the price, home delivery and tracking of the order, are imperative in the decision of the customer to buy a certain good online, being given the highest importance to the cost of delivery in the survey conducted. Moreover, due to this factor, many e-commerce businesses already include the delivery price in the product price or even offer free delivery, as a marketing strategy to attract and retain customers.

The inclusion of the delivery price, both freight and customs, in the product price when an e-commerce business operates with the DDP Incoterm provides the information to the customer about the landed cost of a product, avoiding surprises in cost increments (Singh, 2012). This transparency allied to the availability of a product's price in the customer's currency are two factors referred by the author that facilitate international trade. Simultaneously, both can be considered as part of the customer buying experience that goes beyond the product itself and that consequently improves the ultimate goal of an online business: the conversion (Ruiz et al., 2012). Conversion, defined by the authors as the process from the access to the purchase or extraction of data in the website, is only possible when the customer has a positive and satisfying experience when interacting with the company.

2.4 Management Control and landed cost models

The increase of the complexity in the costs structure of the modern companies, with growing expensenses in support operations and processes, marketing, distribution and technology, results in the necessity of a full consideration of all the components in the product costs. With the intense gobal competitition caused by the globalization and rise of the Internet, costs knowledge and information gain an essential role in the competitive strategy of a company (Cooper and Kaplan, 1988).

Regarding international trade, Cook (2015) imposes as essential a model for the calculation of the landed cost, limiting all the variants to obtain a stable and manageable cost structure. However, defining this model is a complicated task that involves intense technological support and data analysis, as it is subject to barriers such as lack of data to populate a model, uncontinuous monitoring and updating of the data, and a company's insufficient cross-functional efforts to create and sustain the model (Supply Chain Digest Editorial Staff, 2008). According to the 2007 research of the Penn State by Evelyn Thomchick studied in the article, six categories of variants compose a model for the landed cost: The Purchase Price; Transportation and Logistics; Customs and Imports; Inventory Costs, Overhead and Administration; and Risk and Compliance. Moreover, the research conducted in six big companies established that not only none of the targets considered the six categories in their models, but about half of the companies also utilized insufficient and incapable technologic support.The result of the study thus led to the conclusion that the definition of a landed cost model is still an area open to improvement and commitment.

The fact that e-commerce trade implies higher demand for fast and efficient delivery than the traditional international trade, and that the goods exchanged require customs clearence, the application of e-technology in customs' related processes is vital for the companies in order to optimize the supply chain (Zhang, 2002). As customs can have a great weight in the landed cost when the DDP Incoterm is chosen, Cook (2015) states that, even though no calculation is necessary after the customer's purchase, there are several components to consider in the

determination of the customs, which are hard to predict. The uncoordination between the different governments, the lack of transparency regarding customs' regulations as well as the storage of insufficient information on customs' regulations and procedures, are some of the contributors to the difficulty in automatizing the associated costs (Zhang, 2002) and consequently, in developing a sustainable and precise landed cost model.

Basic tools, commercially-developed calculation softwares, online calculators or even an internal algorithm are engines suggested by World Industrial Reporter (2014) to provide correct estimates of the landed cost. Furthermore, it is suggested a comparison between the model's predictions and the actual invoices as a tool to optimize the accuracy of the estimates. However, it is given special emphasis to experience, information and knowledge for the process of the model's development, subject to the barriers mentioned by Zhang (2002).

3 Farfetch Customs' Calculation Model

This chapter aims to be a detailed description of the current customs' calculation model followed by Farfetch when operating with the DDP Incoterm to selected countries, grouping different factors that have to be considered to achieve the final customs value: each country's customs regulations, the parameters used in the calculation and other conditions that influence the process, such as the number of items per order, the type of order and the geo pricing regime of the item.

3.1 Incoterms

Farfetch operates only over the Group D of the Incoterms 2010 when it comes to the orders made through the website, assuming all the risks of the delivery process. While there are routes that function with the Incoterms DDP, others operate with either DAT or DAP, depending on the choice of the customer upon arrival of the order to the customs. Besides orders made domestically in the EU, i.e. from a boutique to a customer inside EU, a free-trade region in which no customs are charged, the countries operated with the DDP Incoterm are: Australia; Canada; China; India; Japan; Kuwait; Mexico; Puerto Rico; Qatar; Saudi Arabia; Singapore; South Korea; Switzerland; Taiwan; Thailand; United Arab Emirates; and United States. Due to the fact that both Hong Kong and Macau are Duty and Sales Tax free, they can also be considered as countries operated with the DDP Incoterm, as the customer pays the full landed cost in the moment of purchase in the *website*.

Orders from boutiques of one of these countries to a customer in the EU or from a boutique within the EU to a customer in one of the mentioned countries are also operated in DDP. This translates in the need to estimate the landed cost and more specifically, the customs to be paid for each order made to each country, according to the specifications of importation. When operating in DDP, the courier, mainly DHL in international orders, pays the customs value and sends the respective invoices every month, to be paid by Farfetch. Consequently, the balance between the customs charged to the customer and the actual customs paid is not only important to stay competitive in the mentioned countries, but also not to result in monetary losses.

3.2 Calculation Method

As the total customs to be paid by a customer when ordering from the Farfetch's platform are already included in the items' price, the back office follows an automatic calculation procedure, standard to every country of expedition, where the DDP incoterm is applied. After selecting the shipping destination, the prices of the items presented in the website are automatically updated, according to the information stored in the SQL Server Database, regarding the country of the boutique, the shipping country, the item's price and geo pricing regime, the respective tariff code and the type of order made. The steps of the general procedure for the customs' calculation are mapped in Figure 5.

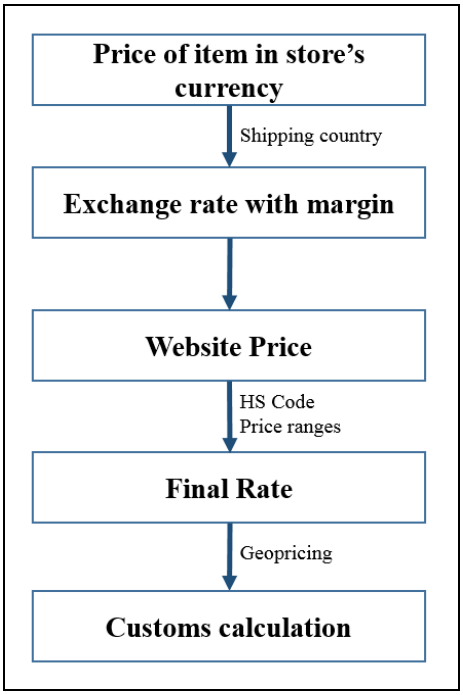

Figure 5 - Steps of the process of the customs' calculation model

While the exchange rate with margin depends on the shipping country to obtain the Website Price, the Final Rate is determined through the HS Code attributed to the item and the price range in which the Website Price fits into. Finally, the formula to obtain the customs value varies according the geo pricing regime, i.e. if it is a fixed price or a non-fixed price item.

Although these steps are applied to every item shown in the website of Farfetch when selecting a country that operates in DDP, there are several factors to consider in order to entirely comprehend the differentiation in the price presented. These are clustered and described in the next sections as: Countries' customs regulations; Number of items per order; Parameters of calculation; Types of orders; and geo pricing regime.

3.3 Countries' customs regulations

The singularity of each country's customs regulations require a strict conduct in the international orders operated with the Incoterm DDP. Although the system of HS Codes for the different categories of items is standardized worldwide, the individual nomenclatures and the Duty Rate and Sales Tax associated have to be considered when exporting. The national rules may also specify duty free or sales tax free items, the existence of one or more *minimis* values or different base value for customs' calculation. Since these variables influence the final price of the item, its accuracy in the company's database is vital to its core-business and to the customer's experience when buying from the website. The following categories are to be discussed in the next subsections: HS codes; base value of calculation; and existence of one or more minimis values.

3.3.1 HS Codes

The type, composition, function and weight of a product are some of the characteristics that influence the tariff code attributed to each item according to the import country. The items offered in Farfetch's platform are currently divided into 822 categories, to each it is stored a corresponding tariff identifier. To this tariff identifier, the tariff ID, a respective Hs code is

attributed depending on the country of destination's nomenclature. Although there are similar nomenclatures for a group of countries, as for example within EU, the individual storage of the HS Codes is required, as specific rates are applied, as well as different customs clearance stipulations. Each HS Code and shipping country have associated a Duty Rate, a Sales Tax and eventual extra or fixed costs that can be imposed by its national customs' regulations.

3.3.2 Base value of calculation

The base value of calculation varies with the import country, influencing the total customs to be charged. Currently, Farfetch's system considers the CIF value in the calculation process of the majority of the countries, excluding Canada, Puerto Rico and United States, in which it is assumed the FOB value. The imposition of the CIF value as base value of calculation is made through the extraction of the average shipping to the limits of each price range, as exposed in subsection 3.5.2. The Website Price, introduced in Figure 5, is therefore the price of the item in customer's currency with margin applied, excluding shipping and to be compared with the price ranges to obtain the Final Rate that determines the customs to be paid by item purchased.

3.3.3 Existence of minimis values

The definition of one or more *minimis* values for each or all components of a country's customs influences extremely the database structure. Price ranges are required in order to apply a null rate to the items whose Website Price is lower than the limits. The different countries' *minimis* values, as well as the possibility to be defined differently to the Sales tax, Duty Rate or even fixed costs and extra taxes, lead to the necessity to impose several price ranges, as exposed in subsection 3.5.2.

3.4 Number of Items per order

Integrating the customs value in the price of each item shown to the customer from a country operating with the DDP Incoterm is one of the techniques to improve the buying experience. However, the technique implicates that the calculation of the customs is processed individually, by item and not by order. When a customer purchases more than one item and the destination country's customs regulations does not impose constant rates, the total order's customs are wrongly calculated, consisting on the sum of each item's customs instead of the total order's value. In case there are *minimis* values imposed to a specific country, it is possible that while none of the items' Website Price surpasses the value, its sum does, resulting in a non-charge of customs to the client when the order's customs are actually charged by the courier in their monthly invoices.

3.5 Parameters of calculation

The price of the item from the Boutique's currency to the final price paid by the customer goes through a process of calculation that, while still dependent on the country and the item's characteristics, is directly dependent on the following parameters:

- Exchange rate and margin;
- Price ranges.
- Aggregate Rate;
- Duties Management and Final Rate;

3.5.1 Exchange rate and margin

As an item's price is first defined in its boutique's country currency, it still has to be converted to the customer's one. Exchange rates are obtained through an outsourced service provider and updated fortnightly. They are stored and updated in the SQL Server Database from and to all the currencies available in the website, namely: the US Dollar (USD); the British Pound (GBP); the Euro (EUR); the Australian Dollar (AUD); the Canadian Dollar (CAD); the Japanese Yen (JPY); the South Korean Won (KRW); the Swiss Franc (CHF); and the Russian Ruble (RUB). It is important to mention that to the majority of the remaining countries, the purchases are made in either USD or EUR. In order to cover the exchange rates' fluctuation over time due to the period of update and to the different days of order and shipping, a margin is applied over the rate. This margin has the goal to cover the risk of the fluctuations to which Farfetch is exposed to.

3.5.2 Price ranges

The conditions of the existence of *minimis* values and the base value of calculation led to a normalization of the price ranges to obtain the Final Rate to be applied over the Website Price in order to calculate the customs' value. The limits of the price ranges, the *minimis* values and the average shipping costs – extracted from the limits when a country's customs operate over the CIF value – are firstly defined in USD and only afterwards converted to the import country's currency. With this procedure, the *minimis* values are subjected to conversion fluctuations, causing the possibility of an incorrect definition and thus, wrong customs' charges. The current division of the price ranges is presented in Table 2, where X represents a country's average shipping in USD and Y the exchange rate from USD to the country's currency.

Table 2 - Definition of the price ranges used for customs calculation

Theoretical Price Ranges (USD)	**Actual Price Ranges (USD)**	**Actual price ranges (Customer Currency)**
[0 ; 50[	[0 ; 50-X [	Y × [0 ; 50-X [
[50 ; 100[	[50-X ; 100-X [	Y × [50-X ; 100-X [
[100 ; 150[	[100-X ; 150-X [	Y × [100-X ; 150-X [
[150 ; 200[	[150-X ; 200-X [	Y × [150-X ; 200-X [
[200 ; 250[	[200-X ; 250-X [	Y × [200-X ; 250-X [
[250 ; 300[	[250-X ; 300-X [	Y × [250-X ; 300-X [
[300 ; 350[	[300-X ; 350-X [	Y × [300-X ; 350-X [
[350 ; 425[	[350-X ; 425-X [	Y × [350-X ; 425-X [
[425 ; 550[	[425-X ; 550-X [	Y × [425-X ; 550-X [
[550 ; 700[	[550-X ; 7 00-X [	Y × [550-X ; 700-X [
[700 ; 1000[	[700-X ; 1000-X [	Y × [700-X ; 1000-X [
[1000 ; 1500[	[1000-X ; 1500-X [	Y × [1000-X ; 1500-X [
[1500 ; 2000[	[1500-X ; 2000-X [	Y × [1500-X ; 2000-X [
[2000 ; 3000[	[2000-X ; 3000-X [	Y × [2000-X ; 3000-X [
[3000 ; +∞ [	[3000-X ; +∞ [	Y × [3000-X ; +∞ [

3.5.3 Aggregate Rate

When exporting to an external country, the two main rates, i.e. the Duty Rate and the Sales Tax, are considered differently, with the Sales Tax being applied over the item's value with the duties already included, i.e. over the CIFD – Cost, Insurance, Freight and Duty – value, as exemplified in Table 3, for a country operating over the CIF value.

Table 3 - Exemplification of customs calculation with Duty Rate and Sales Tax

CIF value of the item	1000
Duty Rate	5%
Duties	1000 × 0,05 = 50
CIF value with duties (CIFD)	1050
Sales Tax	10%
Sales Tax charge	1050 × 0,1 = 105
Total Customs	105 + 50 = 155

In order to facilitate the customs' calculation and assure this condition, Farfetch uses the Aggregate Rate, whose formula is shown in Equation (3.1).

$$AggR = [(1 + S) \times (1 + D)] - 1 \quad (3.1)$$

In which:

AggR. is the Aggregate Rate
S. is the Sales Tax
D. is the Duty Rate

All the rates currently considered were provided by the previous partner and thus, the Aggregate Rates stored in the SQL Server Database are the calculated value through the formula. However, in countries with particularities in the customs' regulations, such as fixed costs, an average of those charges is added to the rate. This means that the table in which the Duty Rate and Sales Tax are stored for each tariff and country is independent from the Table in which aggregate Rates are stored. This Aggregate Rate is also not the actual final one used by Farfetch to obtain an order's customs. Specific situations that result in direct costs for the company have to be covered in the customs paid by the customer, subjecting the Aggregate Rate to the components of the Duties Management, discussed in subsection 3.5.4.

3.5.4 Duties Management and Final Rate

As certain countries oblige fixed costs or extra taxes besides the duty and sales rates, there is the need to cover these expenses in a unanimous formula for all the operating countries. To this possibility, two other scenarios and corresponding rates are added. The formula of the Final Rate, the one actually used in the customs' calculation, is shown in Equation (3.2).

$$Fr = \left[\left(AggR + Ec + \frac{Fc}{Mid}\right) \times (1 + Md)\right] \times 100 \quad (3.2)$$

In which:

Fr. is the Final Rate
AggR. is the Aggregate Rate
Ec. is the Extra Charges
Fc. is the Fixed Charges
Mid. is the mid value of the respective price range
Md. is the Margin on Duties

The three additional components of the formula are defined for each operating country and are available for consultation in an internal platform of Farfetch, the Retail platform. The components are also displayed by price ranges, as many countries detain one or more *minimis* values and thus, the parameters have to be fitted for the price ranges below the values.

Fixed Charges

There are countries that impose fixed costs that also compose the customs of a certain order. Since Farfetch currently operates with the Aggregate Rates provided by the previous partner, that already include an average of the component, the parameter is null for all countries. However, according to the formula fixed by the company, the fixed costs are approximated through a proportion of the value on the price ranges considered. The Mid Value that composes the denominator of the division is the mid-range of each price range.

Extra Charges

Due to the current method of customs calculation of an order, in which the items are considered individually, the Extra Charges parameter has the purpose of covering the possibility of the total order's value being higher than a *minimis* value while none of items' value is actually higher. Thus, customs might not be charged to the customer but, since the charges in the shipping country's customs clearance is made according to the order's invoice value, these orders are included in the courier's monthly invoices. This margin does not exist in countries without *minimis* values and was determined through an analysis of the orders made in 2014, through the proportion of the sum of the values of the orders of more than one item in which customs were not charged and the sum of the values of the total orders.

Margin on Duties

The free return service offered by Farfetch translates in the need to cover full delivery costs of the reverse path, in case the item is returned by the customer. Furthermore, since the customs paid in a delivery are not reimbursed when one or more items are returned by a client, a Margin on Duties is included in the final price of an order. This component was also determined through the analysis of the orders in 2014, through the quotient of the total customs paid in returns divided by the total customs paid by the customer in orders actually sent, per country.

3.6 Types of orders

Similar to any retail business, there are periods of sales and other promotions available in Farfetch's platform, in order to retain existent customers and to attract new ones. Despite the fact that all types of promotions reduce the final price paid by the customer, they have a

different impact in the customs' calculation process. The current customs' calculation method per type of order can thus be separated as follows:

- Normal;
- Sales;
- Promo codes;
- Sales with promo codes.

Normal

When an order is made in normal circumstances, the path followed to obtain the import duties cost is not altered and the customs are calculated as shown in Figure 5.

Sales

The period of sales results in an immediate reduction of the item's price of the boutique. Consequently, the discount is applied to the price in the customer's currency before obtaining the Website Price and Final Rate associated to the item. This type of promotion does not result in losses to the company, as the invoice used in customs clearance already contains the reduced price.

Promo codes

There are codes provided by Farfetch to its customers that generate a discount over the order's final price or over the shipping cost, whether on periods of promotions (for example, a Free Shipping weekend or Black Friday), whether through private emails to existing customers. Since the freight cost is made separately and is not included in the Website Price, the only promo codes that influence the customs value are the ones used over the order's value without shipping: the X discount promo codes. These are X% discount codes that the customer can input before payment and that result in a reduction of the customs' value, as it is included in the item's price, and in induced costs for the company that pays the percentage over customs. Consequently, the process of the customs' calculation is made as in a normal order but with the percentage of discount applied over the final price.

Sales with Promo codes

It is also possible for a client to use a promo code in an order of items under sales. In these cases, the process of customs' calculation is a combination of the two types of promotions, with a reduction in the item's Website Price in the boutique's currency and with a reduction of the order's final price, with customs included.

3.7 Geo pricing regime

The demands of the brands of the items offered by the boutiques led to the implementation of geo pricing: prices imposed by the brands when selling to certain countries, to limit the minimum price to which an item can be purchased. The items started then to be divided into two types: Fixed and non-fixed price, each presenting the same method to obtain the corresponding Final Rate but presenting differences in the actual calculation of customs.

3.7.1 Non-Fixed Price

For the items with price not fixed, the Final Rate is applied over the Website Price to determine the customs associated with the item. The final price to be paid by the customer is the sum of the two components. Thus, the final price paid by the customer is shown in Equation (3.3).

$$P = Wp \times (1 + Fr) \tag{3.3}$$

In which:

P. is the price paid by the customer
Wp. is the Website Price
Fr. is the Final Rate

3.7.2 Fixed Price

Certain brands have requirements of a minimum, maximum or even exact prices of certain items if sold to customers from specific countries. In order to avoid losing their recognition with different prices available in Farfetch's *website*, the imposed prices are mainly higher. Although the process to obtain the corresponding Final Rate is the same for fixed price items, the Website Price of these items already includes the customs value, as it is the price to be paid by the customer. Thus, to obtain the customs' value of a specific fixed priced item, the expression (3.4) has to be used.

$$C = Wp - \frac{Wp}{1+Fr} \tag{3.4}$$

In which:

C. are the customs paid by the customer
Wp. is the Website Price
Fr. is the Final Rate

Since the Website Price of items with fixed price is usually higher relative to non-fixed price items, the corresponding customs are also superior.

4 Priority Countries

The vast information stored to satisfy the customs' calculation model led to the necessity of investigating the countries responsible for the biggest discrepancies between the charges made to the customers and the actual costs. In Chapter 4, the priority countries in customs' losses are identified, as well as the respective customs' characteristics. The methodology followed in the study, the analysis' approaches to each country and the main problems found are also raised. Finally, the main points to address in the customs' calculation model are exposed.

4.1 Definition of the priority countries

Taking into account the orders made between January 2015 and October 2015, the margin in percentage of the total customs paid by customers over the total courier charges (except shipping) was compared by customer country, considering all the orders operated in DDP. The analysis was made through Tableau, a software used by Farfetch that, through the extraction of information from the SQL Server Database, allows simpler analysis of the data. With the intention of establishing the priority countries for corrections of the customs' calculation process, the results were filtered to present the Top 15 countries by total orders made in the period of study. The countries were also sorted in descending order of importance. The resulting graphic is shown in Figure 6.

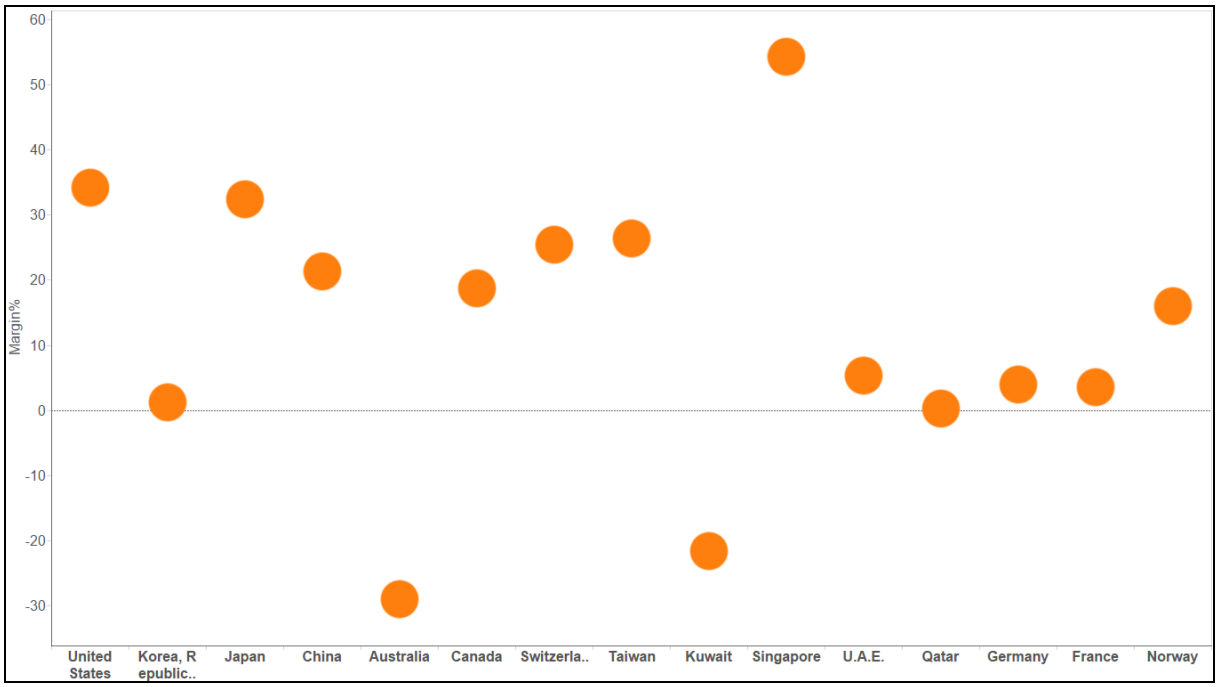

Figure 6 - Margins in percentage between customs charged to the customers and by the courier from January to October 2015

It was therefore concluded that the countries with highest negative differences between the two fields and with most significance in the company's orders operated in DDP were Australia and Kuwait, always operated in this Incoterm except in national orders. The two countries showed around 36% and 20%, respectively, of the total courier customs charges higher than the ones charged to the customer. Australia and Kuwait were thus imposed as targets of a deeper analysis with the goal of raising the main issues that lead to the margins observed.

It was also concluded that the losses in the customs' calculation of a group of countries was compensated with the gains in other group of countries, with special highlight to United States. United States is the number one country in sales (about 60% of all orders in DDP) and the customs paid by the customers were 34% higher than the actual courier charges in the period of analysis. As it is not a goal of Farfetch to obtain profit with this component of the supply chain and since Australia and Kuwait present very distinct characteristics in their customs' regulations, it was imposed that the solutions to be implemented to each one of them would also be implemented on a larger scale, to all the countries with similar procedures.

4.2 Countries' Customs Regulations

The main characteristics of the two countries in study are summarized in Table 4, according to the information stored provided by the previous partner regarding customs.

Table 4 - Main characteristics of the two countries' customs regulations in study

	Kuwait	**Australia**
Existence of a minimis value?	No	Yes
Base Value of calculation	CIF	FOB
Sales Tax?	No	Yes
Duty Rate?	Yes	Yes
Fixed Costs?	No	Yes
Constant Rates?	Yes	No

4.2.1 Kuwait's Customs Regulations

Kuwait, that represented about 2% of the total sales in GTV – Gross Transaction Value – from January to October 2015, is the country with second biggest losses in customs charges. It is also one of the countries that operates in USD as the Kuwaiti Dinar (KWD) is not yet available in the system.

According to the information provided by the previous partner, Kuwait's customs regulations do not impose a *minimis* value, meaning that all items imported into the country imply the payment of customs. However the payment is only due to duties, as the government does not enforce Sales Tax, fixed nor extra costs on imported products. As it is assumed a constant Duty Rate of 5% over the CIF value, the only component of the Duties Management that contributes to the Final Rate is the Margin on Duties to cover possible returns.

These characteristics result in a simplified process of the customs calculation and the best possible solution can be applied to the countries with no *minimis* value or/and with constant rates.

4.2.2 Australia's Customs Regulations

Australia is one of the countries in the Top 5 of Farfetch's sales, representing about 10% of the total sales in GTV from January to October 2015. Due to the importance to the company's business, the *website* is available in AUD. Being the country with highest losses in customs charges, it was targeted as the highest priority for the corrections in the customs calculation process.

The country's customs regulations impose a *minimis* value of 1000 AUD for both sales tax and duty rate, as well as for the fixed costs of the Export Declaration. Thus, customs are only charged if an order's FOB value is higher than 1000 AUD with duty rate and sales tax also varying with the type of item imported and the attributed HS Code. As the country imposes a *minimis* value, neither the Margin on Duties nor the Extra Charges are null.

While these specifications lead to a higher complexity in the data treatment, the best possible solution to be implemented can be applied to a vaster number of countries, as the majority of the destinies detain one or more *minimis* value and variable rates according to the product's tariff.

4.3 Analysis considerations

Due to the very different customs' clearance regulations of the two countries in study, different approaches were used to investigate the sources of the discrepancies between the customs charges made to the client and charged by the courier service. However in both cases, the following considerations were made:

- **Imposition of the period of analysis:** With the goal of the accordance between the study and the margins showed in Figure 6, only orders made between January and October 2015 were considered;
- **Division by geo pricing regime and by type of order:** The separation was made not only due to the different calculation procedures but also to account the categories in which the inconsistencies have a higher weight;
- **Comparison of the charges in GBP**: The customs charges to the client were either extracted from the SQL Server Database or converted to GBP to be compared to the values of the courier's invoices, always in GBP, through the common AWB – Air Waybill – number associated;
- **Analysis of items in orders of more than one item made separately:** While the study was made through the comparison of charges by total order through AWB number, in orders of more than one item, the items were considered individually, as each one might present different characteristics and thus, different customs charged;
- **Exclusion of *offline* orders:** Given the fact that some orders for very important clients are made *offline*, the respective items do not have a tariff code associated and thus, are not considered in the analysis, even though the orders are still stored in the SQL Server Database;
- **Exclusion of the freight costs from the courier invoices:** All charges related to shipping were excluded and only the remaining were considered, i.e. customs' related charges;
- **Definition of the margin FF-Courier:** The difference of the charges is always made by the subtraction of the charges made by the courier from the customs charged to the client by Farfetch (FF) ;

- **Inclusion of customs paid in returns in the total margin:** Since the total customs paid by the customer are calculated through the Final Rate, which contains the Margin on Duties to cover returns, the total charged by the courier includes the customs paid in returns;
- **Inclusion of extra costs in the total margin:** There are several categories of customs charged. Besides the Sales Tax, Duty Rate and fixed costs, all the others were considered as extra costs. Even though they are not included in the number of orders charged by the courier, their value is added in the margin of customs.

4.3.1 Kuwait's Study Approach

The existence of only a constant duty rate implies a simpler study and lower separation of the orders made, only requiring the division between fixed and non-fixed price items and by type of order, as shown in Figure 7. The nonexistence of a *minimis* value implies that there are neither orders not charged by Farfetch and charged by the courier nor inconsistencies in the charges of orders of more than one item.

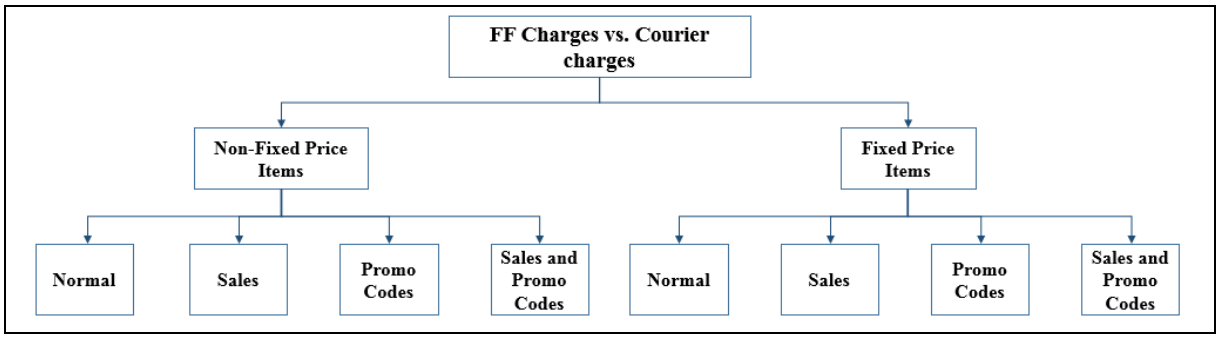

Figure 7 - Schematization of the division made in the analysis of Kuwait's orders

Since the orders of only one item represented 96% of the total orders in the period of analysis, they were set as a priority in the study. Thus, the proportions of the total singular orders according to the separation shown in Figure 7 are presented in Table 5.

Table 5 – Proportions of number of orders by geo pricing regime and by type within orders of one item made to Kuwait in the period of analysis

	Fixed Price Items	**Non-Fixed Price Items**	**Total**
Normal	4,8%	56,7%	***61,5%***
Sales	5,9%	21,1%	***27%***
Promo codes	0,4%	5,6%	***6%***
Sales and promo codes	0,9%	4,6%	***5,5%***
Total	***12%***	***88%***	

As expected, since a restrict number of brands impose prices of items to be sold to specific countries, the non-fixed price items represent the majority of the total orders and thus, of the incorrect customs charges. Simultaneously, the normal regime is also the one with the highest percentage of the total orders considered in the calculation of the margin FF-Courier in orders of one item to Kuwait.

4.3.2 Australia's Study Approach

The more complex customs regulations of Australia require a deeper division of the orders to be analyzed. As displayed in Figure 8, the orders of one item were separated from the orders of more than one item, due to the existence of a *minimis* value. The orders were also filtered in customs not charged and customs charged, to account the cases in which Farfetch does not charge orders due to the definition of currency described in subsection 3.5.2. Furthermore, the division by type of order was not made in orders of more than one item, as in these cases the items' characteristics were considered individually.

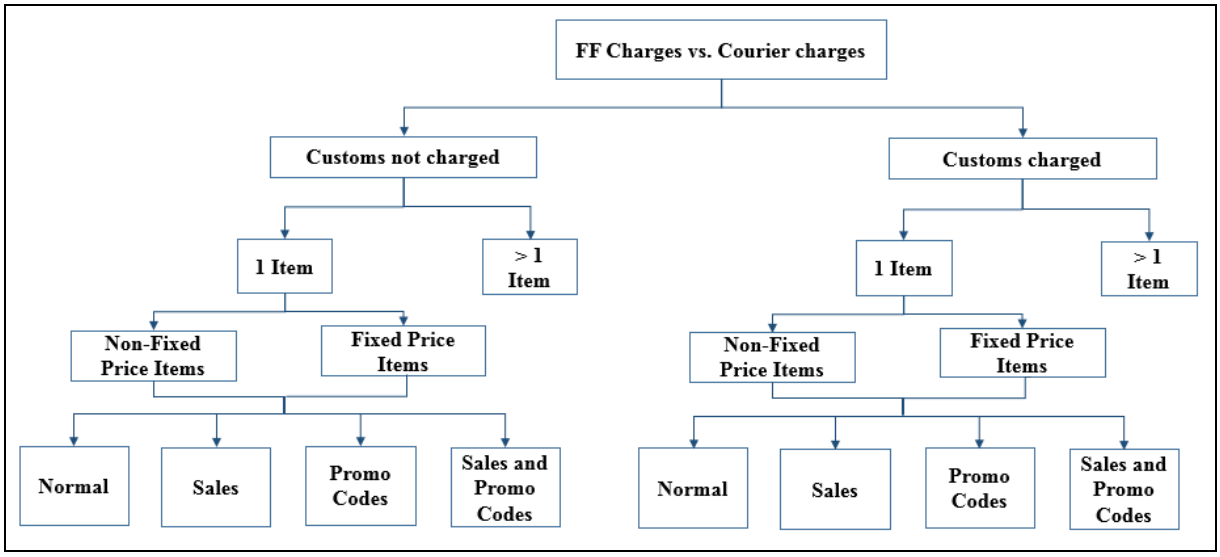

Figure 8 - Schematization of the division made in the analysis of Australia's orders

In the period of study, 85% of the orders were of one item only, with 46% of the grand total not being charged by Farfetch while being included in the courier invoices, as shown in Table 6. The orders of one item in which customs were not charged were thus a priority in the study.

Table 6 - Proportions of the total number of orders by customs charged and not charged by orders of one or of more than one items

	Customs not charged	**Customs charged**	**Total**
Orders of one item	46%	38%	***85%***
Orders of more than one item	14%	1%	***15%***
Total	*60%*	*40%*	

It was observed that while the margin FF-Courier in orders with customs actually charged to the customer is considerably high, i.e. Farfetch charges more to the customer than the actual courier's charges, the orders in which customs were not charged contribute considerably to the total margin, turning it negative. Moreover, in the period of study, only 40% of all orders charged by the courier were in fact charged to the customer by Farfetch. The proportions within orders of one item to Australia in the period of study according to the division shown in Figure 8 are summed in Table 7.

Table 7 - Proportions by customs charged or not, by geo pricing regime and by type of order within the orders of one item made to Australia in the period of analysis

	Customs not charged		**Subtotal**	**Customs charged**		**Subtotal**	**Total**
	Fixed Price Items	**Non-Fixed Price Items**		**Fixed Price Items**	**Non-Fixed Price Items**		
Normal	7,1%	33,2%	*40,3%*	12,1%	16,4%	*28,5%*	***68,7%***
Sales	2,9%	7,5%	*10,3%*	6,1%	2,4%	*8,5%*	***18,9%***
Promo codes	0,6%	2,9%	*3,5%*	1,1%	2,2%	*3,4%*	***6,9%***
Sales and promo codes	0,3%	1,1%	*1,5%*	2,5%	1,6%	*4,0%*	***5,5%***
Total	*10,9%*	*44,7%*	***55,6%***	*21,8%*	*22,6%*	***44,4%***	

From the division it is possible to find some patterns in the customs charges by type of order. Firstly, as it happens relatively to the total orders, the number of orders with customs not charged is higher than the ones in which the customer paid customs. Secondly, while the non-fixed prices represent the majority of the items sold, when customs are charged to the customer, the orders with fixed price items present a very similar proportion of the orders: the inflation of the price by the brands lead to a higher possibility of exceeding the *minimis* value. Finally, as expected, the orders with items in Normal purchase are the majority of the total orders, both for customs charged and not charged.

4.4 Main problems found

The current section has the aim of exposing the origins of the losses in customs of the two countries in study and of detecting the flaws that can be corrected. The same corrections can be applied to the remaining countries operating over the DDP Incoterm.

4.4.1 Main Problems found in Kuwait's customs determination

With the nonexistence of a *minimis* value and thus, of a simplified calculation method based on a duty rate of 5% over the CIF value, the discrepancy of the customs charged to the customer and the customs charged by the courier lies on two main problems. On the one hand, the incorrect information stored in the database provided by the previous partner leads to inaccurate customs charges. On the other hand, the assumption that the rates are applied over the CIF value by extracting the average shipping values from the limits of the price ranges as exposed in 3.5.2 is incorrect. In countries with equal rates in two or more price ranges the extraction does not have any influence.

After obtaining Kuwait's customs information directly from the national courier, it was observed that the customs paid are neither constant nor rate-based. Instead, there are fixed Duty charges in KWD associated with specific price ranges of CIF values. The duty rate of 5% is only applied when the CIF value is superior to 750 USD, to which extra fixed costs are also associated. The information provided is summed in Table 8.

Table 8 - Actual customs charges by price range according to the information provided by the main international courier

Price Range of CIF value (USD)	Duties (KWD)	Extra Charges for each AWB (KWD)	Duties (GBP)	Extra costs for each AWB (GBP)
[0 ; 100[	2	0	4,4	0
[100 ; 250[	7	0	15,3	0
[250 ; 500[	10	0	21,9	0
[500 ; 750[	12	0	26,2	0
[750 ; +∞[	5%	10 – Bayan Fee 1 – Stamp Fee	5%	21,9 – Bayan Fee 2,2 – Stamp Fee

From the analysis of the margin, it was observed that even though there are fixed costs associated with orders of CIF value higher than 750 USD, the courier does not charge them in the majority of those type of orders. As a result, 90% of the total negative margin is due to the orders of value lower than 750 USD, proving that the application of a constant rate does not suit the country's customs' regulations.

Besides the inaccurate data stored regarding Kuwait's customs, the price ranges to which different customs are applied also differs from the price ranges imposed in Farfetch's system and normalized to all countries. Furthermore, it can be concluded that, to all countries with the CIF value as base value of calculation, in which one or more price ranges present the same rate, the customs are actually applied over the FOB value.

The analysis supported the idea that not only the calculation process needed to be reformulated but also all the information stored needed to be reviewed and updated.

4.4.2 Main Problems found in Australia's customs determination

The losses in customs charges of Australia are explained with two main issues: by the currency of both *minimis* value and price ranges, and by the individual customs calculation process per item.

As orders of only one item represent the majority of the negative margin, with customs not being charged to the customer, it was concluded that correcting the structure of the tables containing the Final Rates per price range was the priority for the reduction of the margin. The primary definition of all the values in USD and only then converted to AUD creates a dependency on the exchange rate and leads to inaccurate customs charges. Only in 2015, the *minimis* value of 1000 USD introduced in the database fluctuated from 1185 AUD to 1400 AUD, meaning that all orders lower than these limits but still higher than the actual *minimis* value were not charged to the client while being charged by the courier. This variation of the *minimis* value is observable in all the countries whose currency is not USD and even more vulnerable in currencies with high exchange rates fluctuations, leading to the necessity to define all price ranges, average shipping and *minimis* values in the customer's currency.

Although there are gains with both the customs being applied over the CIF Value and approximating the fixed costs through a rate included in the aggregate rate stored in the Farfetch's system, it was determined that both are issues to be repaired in order to lead to the highest accuracy possible.

The individual customs calculation is pointed out as the second main cause for the negative margin FF-courier. While the invoice value is considered in the national customs clearance, Farfetch charges through each item's value, causing the non-charge of the majority of the

orders of more than one item. Nevertheless, the Extra charges of the Duties Management has the purpose to cover these scenarios.

4.5 Points to address

From the analysis of the two priority countries with the most discrepancies in the customs calculation, the following problems are addressed as the points to which corrections need to be applied:

- Definition of fixed charges as constants vs. fixed charges as approximate rates;
- Correct definition and application of the base value of calculation;
- Implementation of the currency of price ranges, average shipping and *minimis* values;
- Calculation of customs based on invoice's total value vs. by item;
- Usage of aggregate rates based on the formula vs. the rates provided;
- Improve the accuracy of the information stored.

5 Study of alternatives and correctional approaches

The present chapter aims at the description of the solutions found to correct the current customs calculation model. Due to company's circumstances, internal software and future projects, the chapter is divided into five sections: the Solutions Analysis, which describes the study of the four approaches of the customs' charges, through one or more interventions in the points mentioned in 4.5 and the respective implications; the Customs Control tool, developed to monitor and compare the current estimates with the previous invoices for all the countries in which Farfetch operates in DDP; the ideal solution that provides the corrections that would lead to the most accurate estimates and the respective barriers for implementation; the possible solution, given the conditions that restrict the implementation of some corrections and lead to the approach internally possible to implement that still reduces the customs' margins; and the Update of Information, which includes the tool developed in order to automatize the update of information provided by the new information partner. It is important to mention that while the methods in the first section had the intention of addressing the first five points for corrections, i.e. the ones related to the calculation process, the Update of Information and the Customs Control tool aim at the last point, i.e. the one related with the accuracy of the current stored information regarding customs.

5.1 Solutions Analysis

Based on the conclusions taken from the two priority countries and the points to which corrections are required, the margin of the customs charged was analyzed through four different perspectives, each addressing one or more problems pointed in Section 4.5. The perspectives' characteristics, in comparison to the current method can be found on Table 9.

Table 9 - Comparison of the four perspectives and current method's characteristics

Methods	Fixed costs as constants?	Correct base value of calculation	Currency of price ranges and *minimis* value	Customs in orders of more than one item	Aggregate Rate used
Current Method	No	No	USD	By item	Provided
Website Method 0	No	No	Customer Currency	By item	Provided
Website Method 1	No	No	Customer Currency	Total invoice's value	Provided
Real Method with Extra Charges	Yes	Yes	Customer Currency	By item	Formula
Real Method without Extra Charges	Yes	Yes	Customer Currency	Total invoice's value	Formula

The following sections will describe each of the perspectives in more detail and the ones that provide the minimum margin of Customs charges, while still covering the possibility of returns. Since all the perspectives include the margin on duties, this assumption is based on the addition of the customs paid in returns to the carrier's charges in the period considered.

5.1.1 Website Method 0

This method is very similar to the one currently used in Farfetch, with alterations only in the currency of the price ranges, *minimis* value and average shipping. The application of this perspective allowed the accounting of only this component's impact on the margin of customs charges, with its Final Rate including both Extra Charges and Margin on Duties. Since it follows the same procedure as the current method, its changes do not have any consequence in countries with constant rates or/and without *minimis* value, such as Kuwait. However, only for Australia in the period of study from January to October 2015, the definition of the components in AUD would allow a variation of approximatively -118% in the margin, turning it from negative to positive. Nevertheless, due to the goal of Farfetch of obtaining the maximum equilibrium between the customs charged to the client and the customs costs, the now positive margin represents unwanted gains to the company.

Due to the big impact of this alteration in the company's business and due to the restrictions in alterations of the database's organization, a temporary solution that would provide a similar result was implemented. Since the main losses rely on the orders of one item superior to the *minimis* value of 1000 AUD in which customs were not charged to the customer, the rates were "pushed up" one level, attributing to the price range of 700 – 1000 USD the rate of the posterior price range. The alteration made is illustrated by an example on Table 10, with the price ranges in AUD generated from the conversion rate of the first fortnight of January 2016 and the rate attributed to the Hs Code 6202120014, respective to clothing and accessories of cotton.

Table 10 – Price Ranges and rates associated before and after the alteration made in Farfetch

Before alteration			**After alteration**		
Price Range		**Rate (%)**	**Price Range**		**Rate (%)**
USD	**AUD**		**USD**	**AUD**	
[675,05 ; 975,05[	[1004,45 ; 1450,84[	0	[675,05 ; 975,05[	[1004,45 ; 1450,84[	29,68
[975,05 ; 1475,05[	[1450,84 ; 2194,82[	29,68	[975,05 ; 1475,05[	[1450,84 ; 2194,82[	29,16
[1475,05 ; 1975,05[	[2194,82 ; 2938,81[	29,16	[1475,05 ; 1975,05[	[2194,82 ; 2938,81[	28,12
[1975,05 ; 2975,05[	[2938,81 ; 4426,77[	28,12	[1975,05 ; 2975,05[	[2938,81 ; 4426,77[	27,59
[2975,05 ; +∞[	[4426,77 ; +∞[	27,59	[2975,05 ; +∞[	[4426,77 ; +∞[	27,07

Since the Aggregate Rates include an average of the fixed costs, as provided by the previous partner, the calculation of the rate for the last price range was based on the difference between rates of the previous price ranges.

The alteration made for Australia, in mid-October 2015, revealed its results in November 2015, with a reduction of the negative percentage of the courier's customs charges covered by the clients' charges to -3%. Figure 9 illustrates the evolution of the negative margin in orders made to Australia from January to November 2015.

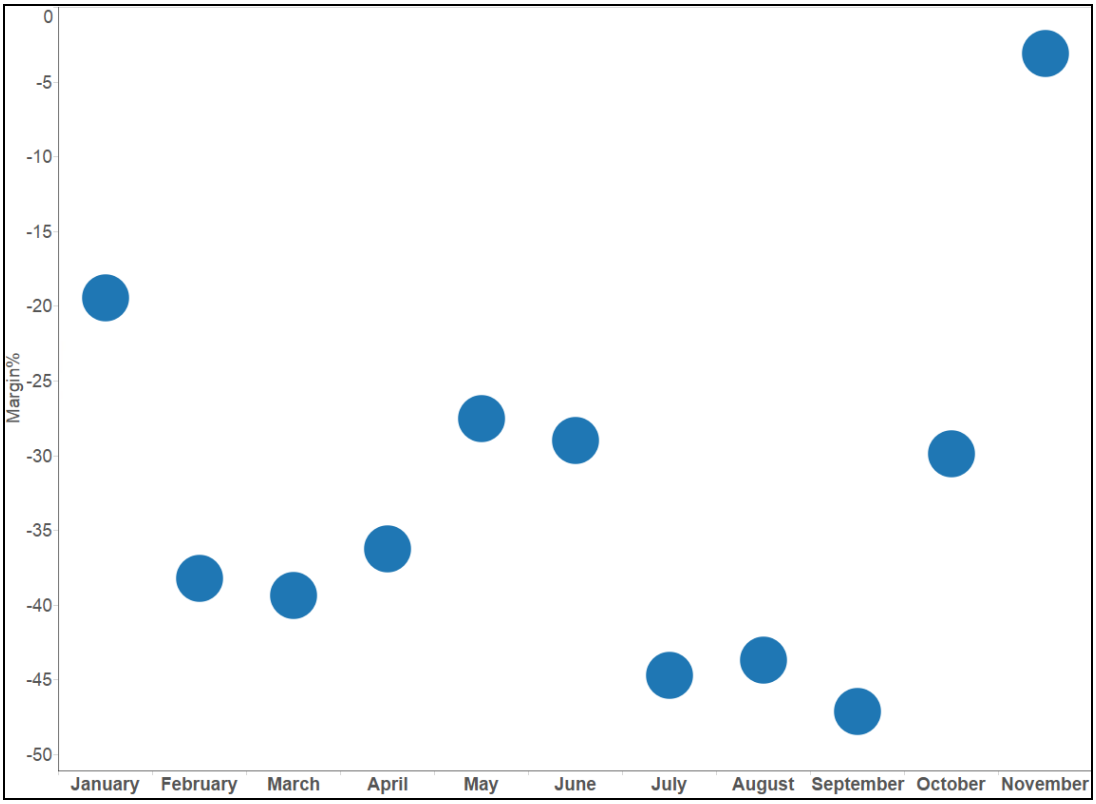

Figure 9- Evolution of the margin in percentage between customs charged to the customers and by the courier of the orders made to Australia from January to November 2015

While the charges of customs to the customers still do not cover all the courier charges, the losses were highly decreased from the temporary solution from any other month in 2015. However, due to the exchange rates' fluctuations to which every e-tail business is exposed to, this solution might not be viable in the future and will require further measures.

5.1.2 Website Method 1

The Website Method 1 rose from the losses felt by Farfetch from the process of calculation by item, translating in orders of more than one item in which, even though the individual value did not surpass the *minimis* value, the sum of the items' value did. While the invoice of the order implicated the payment of customs and thus, the respective charge was made by the carrier, the customer did not have any customs implicated. Although following a process very similar to the Website Method 0, the analysis of the customs' charges margin through the Website Method 1 involved a different approach in the customs' calculation in orders of more than one item.

This perspective implies the existence of an auxiliary table in the database, which would store the sum of each item's value as a customer adds one product to its basket while making an order. Each item's characteristics would be accessed separately as in the current process, with its geo pricing condition (Fixed vs. non fixed price), HS Code and rate associated, and type of order (normal vs. sales) that influences the item's customs calculation. On one hand, if a not fixed price item was added, the sum of the items' values of the order would be used as reference to obtain the respective final rate and the total customs paid by the customer would be the sum of each item's customs. On the other hand, if a fixed price item was added, it would simply add its value to the total value in the auxiliary table. Since it considers the total value of an order for the customs' calculation, the final rate used in the process does not include the parameter of the Extra Charges.

The Website Method 1 provides more accuracy in the customs charges with an increase of the number of orders charged, allowing a variation of -107% of the customs charges margin of the orders to Australia in the period of study, turning it positive. Once again, the usage of this perspective would not influence the customs' charged to countries without a *minimus* value or/and with a constant final rate.

5.1.3 Real Method with Extra Charges

There are two main tables in the back office containing the information provided by the previous partner. The first one contains the Duty Rate, Sales Tax and extra/fixed costs associated to each HS Code and each country, to be named [Customs Information] in the present dissertation . The second one contains the Aggregate Rates provided per HS Code, country and price range, to be named [Aggregate] along the document. Since the rates in [Aggregate] already include approximations of fixed or extra costs, there are some discrepancies in the customs' charges margin caused by this approximation. Furthermore, it was detected nonconformities between the components of [Customs Information] and the rates of [Aggregate] for the same HS Code and country.

The non-correspondence between [Customs Information] and [Aggregate] in the SQL Server database led to the creation of the Real Method with Extra Charges, in which the Aggregate Rate used is a direct result of the formula 3.2, using the two components of [Customs Information]. In order to better address the issue of the accuracy of the Final Rate stored in the system regarding a country's actual customs regulations, it was imposed that the calculation of the charges was made by item, maintaining the current process. Through this imposition, it was possible to better perceive the actual variation of the margin through the alteration of the rate used. To the resulting Aggregate Rate were added the two parameters of the Duties Management, to obtain the theoretical Final Rate. Simultaneously, the fixed charges are added separately and as the third parameter of the Duties Management.

The Real Method with Extra Charges also addressed the correct input of the base value for calculation, thus altering the calculation from CIF to FOB value in Australia. Moreover, since the model of calculation of customs to Kuwait was completely altered, attributing fixed charges to each price range, the problem of charging over FOB value instead of CIF value in countries with constant rate was temporarily solved. Although this translated in a small increase of the negative margin, it was possible to observe a decrease of about 93% in the customs charges margin of orders to Australia in the period of analysis. When it comes to orders to Kuwait, the alterations led to a variation of about -258% in the customs' margin in the same period of analysis, with 158 GBP generated for each 100 GBP lost previously. However, due to the non-charges of the fixed costs by the courier in orders higher than USD 750, it is not plausible to account for them in the customs charged the client. Thus, the exclusion of this component leads to a variation of the margin of about -181%. With the two countries allied, the method allowed a variation of -111% of the total margin, with 11 GBP generated for each 100 GBP lost previously.

5.1.4 Real Method without Extra Charges

The positive impact of both Website Method 1 and Real Method with Extra Charges led to a final perspective, the result of the combination of both methods' characteristics. Thus, while the Aggregate Rate is still calculated separately and the fixed costs added only in the Final Rate calculation with the correct base value of calculation, the customs are also calculated through the auxiliary table that would store the total items' price of the order. Although this perspective did not imply any change of the Kuwait's margin from the method with Extra Charges, it translated into a variation of about -103% in the margin of the orders to Australia, turning it slightly positive.

5.1.5 The four perspectives compared

In order to obtain a better understanding of the improvements brought by each method, the Table 11 compares the variation of the margin for both Australia and Kuwait, from the margin obtained in the period of analysis. The proportion of the orders charged by each method that were also charged by the courier are compared additionally. Furthermore, since Farfetch also carries a part of the costs of customs when promo codes are applied and since the courier charges extra costs in its invoices such as "Delivery to Remote Area", the capacity to cover these two parameters is also compared.

Table 11 - Comparison of the four perspectives in the solutions' analysis

Methods	Proportion of orders charged (%)	Variation of Margin (%)	Coverage of extra costs and promo codes (%)
Website Method 0	94,5	-118	115
Website Method 1	99,9	-107	90
Real Method with Extra Charges	94,0	-111	95
Real Method without Extra Charges	99,6	-102	87

From the results observed of the four methods implemented, one of the main conclusions is that all four methods not would only turn the margin FF-Courier positive but would also cover more than 90% of the orders charged by the courier service. Since in the period of study, only 38% of the total orders made to Australia and charged by the courier service were actually charged by Farfetch, the improvement is noticeable.

The differences between the Website Methods 0 and 1 and between the Real Methods with and without Extra Charges are also reflected in the proportion of orders charged and in the variation of the margin. Although the alteration of the process of customs calculation in orders of more than one item provides a higher coverage of the orders charged, the inclusion of Extra Charges contributes highly to the margin. From Table 6, as 85% of the orders made to Australia in the period of study were of one item only, the extra margin applied in both the Website Method 0 and the Real Method with Extra Charges allows an increase of the total customs charged relative to the Website Method 1 and the Real Method without Extra Charges, respectively.

Likewise, from the Website Methods to the Real Methods, it is visible that the usage of the CIF vs. the FOB as base value of calculation, as well as the provided Aggregate Rate vs. the calculated Aggregate Rate, results in a smaller variation of the margin, turning the real methods representative of the real customs charges. Nevertheless, besides the Website Method 0, none of the methods allow a sufficient margin to cover both the extra costs and the customs paid after the discount of the promo codes.

5.2 Customs Control Tool

In order to verify the accuracy of the data currently stored, the average customs charges in percentage by the courier were compared with the rates stored in the back office applied to the orders made from January to November 2015, for all countries in which Farfetch operates in DDP. Since the purpose of the study was to detect the rates which are not consistent with the rates calculated from customs' courier charges, the analysis was divided not only by country but also by Tariff identifier, the ID used in the database for each category of product.

All the information was extracted from the SQL Server Database. On the one hand, the product ID and the destination country ID of each order were crossed with the table [Aggregate] to obtain the respective tariff ID and charged rate. The rates of [Customs

Information] for the same Tariff ID and country ID were also extracted. On the other hand, the AWB of each order was used to cross information with the courier invoices, divided into the two main customs components and in Merchandising Process, i.e. the common denomination given to the fixed costs of importation. From the categorization of the customs charges, the respective rates were calculated for each order, depending on the base value of calculation used in each country. Finally, the average rates charged by the courier service were obtained for each Tariff ID and for each country.

It is important to mention that all values were extracted and studied in GBP, the currency used in the courier's monthly invoices. With the goal of getting the most accurate data possible, only the orders with the following characteristics were considered:

- Orders of one item;
- Orders in which customs were charged to the customer;
- Orders not in free shipping campaigns or with promo codes.

The first restriction allows a clear vision of the customs charged, disregarding the problem felt in the calculation of orders of more than one item. The second restriction permits the comparison of the actual rates applied – including orders in which customs were not charged would decrease the average charged to the customers and thus, provide incorrect analysis. Finally, the third restriction is for the accurate obtainment of the average rates calculated from the courier invoices – in countries in which customs are applied over the CIF value, the rate was calculated over invoice value with the paid freight added.

The analysis was made with a tool built with Tableau, and it was divided into two main comparisons in order to range the incoordination between [Customs Information] and [Aggregate]. On the one hand, the average rates charged by the courier per country and per tariff ID were compared with the respective components of [Customs Information]. This perspective was reinforced by the calculation of a theoretical Aggregate Rate through expression (3.1) and from the rates of [Customs Information] and by the calculation of the Aggregate Rate from the courier's charges. On the other hand, the two calculated Aggregate Rates were compared with the ones in [Aggregate]. Thus, none of the components of the Duties Management were considered in this study. The parameters compared are shown in Table 12, to which were attributed variable names to facilitate the study.

Table 12 - Parameters compared through the Customs Control Tool and respective variables names attributed

First parameter	**Variable name of first parameter**	**Second parameter**	**Variable name of first parameter**
Duty Rate of [Customs Information]	DR1	Average Duty Rate calculated from courier's invoices	DR2
Sales Tax of [Customs Information]	ST1	Average Sales Tax calculated from courier's invoices	ST2
Aggregate Rate calculated from [Customs Information]	AG1	Aggregate Rate calculated from the average rates charged by the courier service	AG2
Rate of [Aggregate]	AG0	Aggregate Rate calculated from [Customs Information]	AG1
Rate of [Aggregate]	AG0	Aggregate Rate calculated from the average rates charged by the courier service	AG2

Furthermore, the Tariff ID were sorted in a descending order by number of orders, with the goal of prioritizing the categories of products by country that require immediate alteration.

In Figure 10, it is shown a caption of the tool's interface, with the comparison between the AG2 and AG0. The example illustrated is for the main Tariff ID in number of orders made to United Kingdom, from January to November 2015.

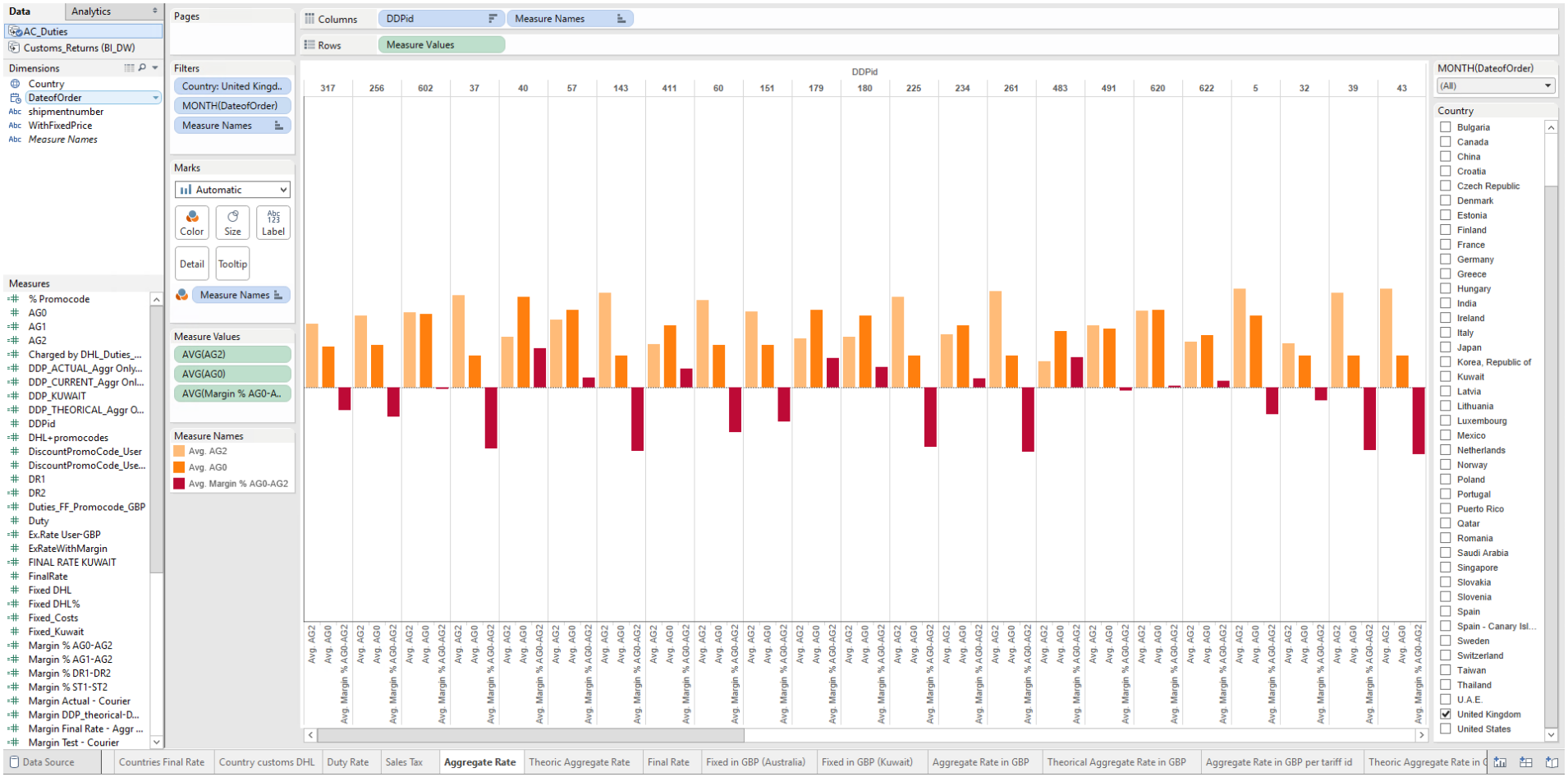

Figure 10 - Caption of the customs control tool's platform, comparing the AG2 and AG0, per Tariff ID in orders to United Kingdom from January to November 2015

From the results presented in the study, it was possible to take the following conclusions, regarding the top 8 countries by number of orders operated in DDP, besides Australia and Kuwait:

- **United States:** AG1 tends to be more similar to AG2 than AG0. The superiority of AG0 over AG2 in most Tariff ID, allied to the fact that 60% of orders in DDP are made to the United States, contribute deeply to the positive overall average margin. It can be concluded that the results in this country balance the negative margins of some of the other countries, calling for measurements;
- **Republic of Korea:** Presents a lower AG0 than AG2. The difference is especially felt in the two first Tariff ID by number of orders. AG1 is majorly similar to AG2, with few exceptions;
- **Japan:** It was observed a big variation of the margins, both between AG0 and AG2 and between AG1 and AG2. Even though the differences result in an equilibrium of the overall margin, it calls for an increase of accuracy of the information;
- **Canada:** One of the top countries with most accurate AG1, tending to equalize AG2, with only small differences to be pointed;
- **China:** Both AG0 and AG1 are majorly higher than AG2. However, it is observed a DR1 much lower than DR2 and a ST1 much higher than ST2;
- **Germany:** AG0 slightly lower than AG2 while AG1 slightly higher than the one charged in most Tariff ID;
- **France:** Although AG0 is lower than AG2, AG1 tends to be very similar;
- **United Kingdom:** AG0 usually lower than AG2. It was identified cases in which AG1 is lower than the Sales Tax after the *minimis* value of the Duty Rate. These cases were prioritized for correction.

It was thus confirmed the lack of coordination between [Aggregate] and [Customs Information]. Appendix A contains an example of this incoordination between the rates associated with orders to United States. Figure 1 of Appendix A illustrates the top 10 Tariff ID by number of orders with AG0 lower than AG2. Figure 2 of Appendix A shows the comparison between the DR1 and DR2 for the same Tariff ID. The comparison is only made by Duty Rate since the Sales Tax is always null in orders to United States, i.e. the Aggregate Rates are equal to the Duty Rates.

This fact rose the need to update the information and link the two tables, i.e. the AG0 should be a direct result of the formula with the DR1 and ST1. This independency would allow the immediate translation of the rates applied only with a small alteration of one of the components.

The control of the charges made to customers and the respective courier charges always implies a month of delay for corrections, as the courier invoices are received monthly. However, the tool developed, if run also monthly, allows a control system for the optimization of the estimates and of the information used. Consequently, in case there is a change in the rates of a certain country, it is possible to detect it one month after the alteration, reducing the time period in which customs are wrongly charged.

Moreover, the tool developed also provides an independence in the determination of customs' calculation components, as there is already enough past data. Subsequently, although the information is still going to be provided by the new partner, it is already possible to use an internally developed engine for the customs' calculation in countries with sufficient past records. Regarding new territories, i.e. countries in which Farfetch starts to operate in DDP in the future, the information still has to be provided by the partner.

It was an internal test for the orders to the United States, in which it attributed to each Tariff ID the AG2 resultant from the invoices from January to November 2015. The test was run for

all the orders made in the same period and the resultant margin of customs charged was compared with the actual margin obtained. The test resulted in a reduction of the margin of about 50%.

The remodeling of the customs' charges through the internally developed tool would thus lead to more approximate customs charges, if excluding the margins of the Duties Management. The existence of fixed price items automatically increases the margin, as the margin obtained in the test was almost null for non-fixed price items.

It is possible to conclude that the usage of the tool would provide an independence of the Farfetch's model that actually minimizes the margin. Although it is predicted the provision of the customs' related data by the new partner in mid-2016, the customs control tool will also permit the study of the accuracy of the respective information, leading to better decision-making regarding information partnerships.

5.3 The ideal solution

The comparison of the four perspectives in the two priority countries led to the conclusion that the solution that would better suit Farfetch's goal of maximizing the equilibrium of the margin FF-Courier is the Real Method without Extra Charges. With 99,6% of the total orders covered, with 11 GBP gained per each 100 GBP previously lost and with the capacity to cover 93% of all the extra costs (charged or from promo codes), the implementation of the solution implicates the following alterations in the company's customs calculation model:

- **Creation of an auxiliary table:** In order to allow the customs' calculation by order instead of by item, the implementation of the method requires the creation of an auxiliary table. This table would be directly connected to the current table that stores the characteristics of each item that is included in an order and that provides the total value of the same order. The new process of calculation is depicted on Figure 11 for an order made in the *website*, considering: [GLBOrderLines] as the current table that stores each item bought in the website; [GLBOrders] expressing the table that stores the sum of each item's parameters of a specific order; and [AuxiliarGLBOrders] the created table that stores the sum of the item's price. The path to obtain the rate applied to each item is maintained.

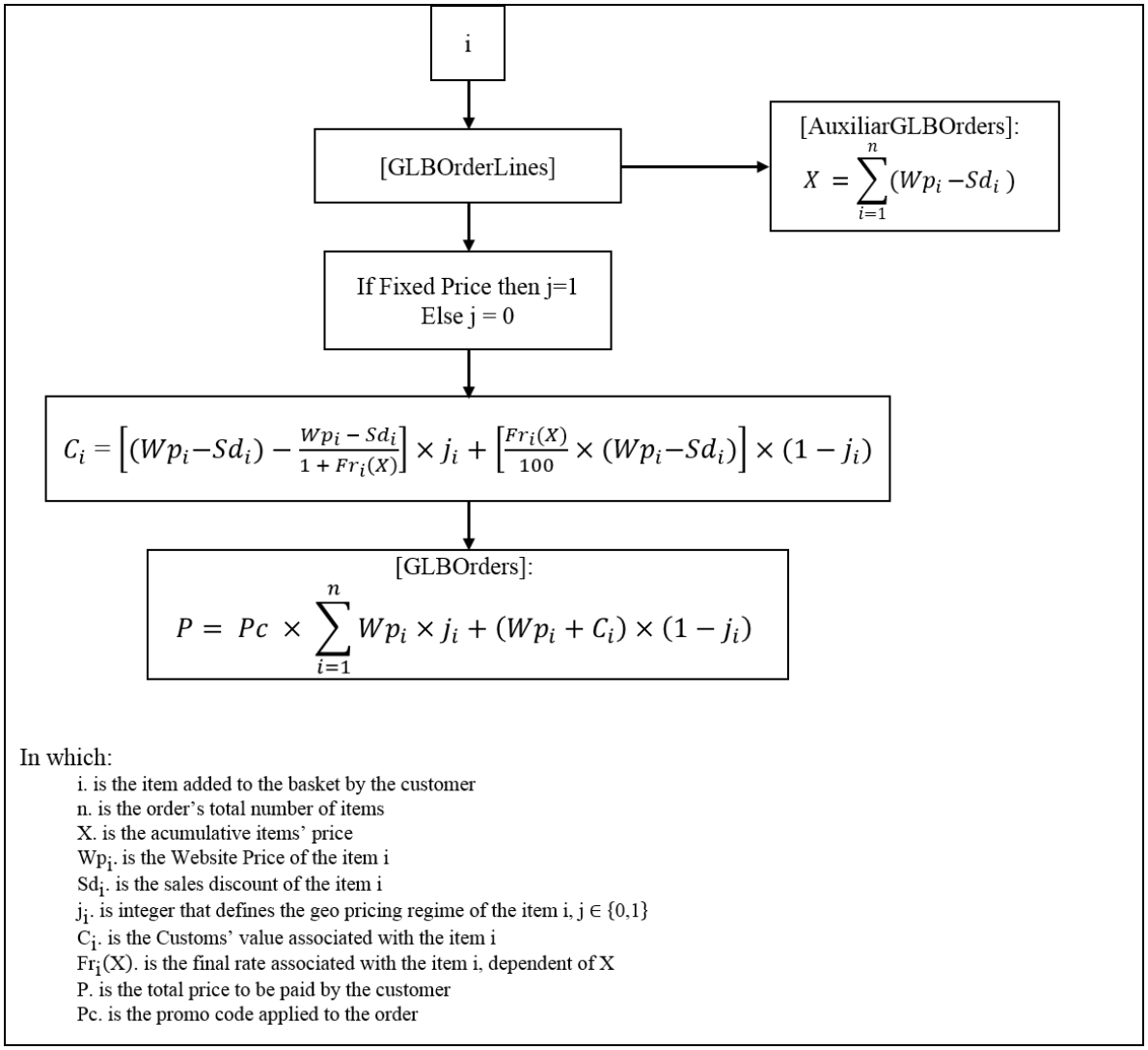

Figure 11 - Scheme of the new customs' calculation process of an order with the creation of an auxiliary table

- **Alteration of the database structure for conversion of values:** Since all price ranges and average shipping for each country are firstly defined in USD and only afterwards converted to the customer's currency, the imposition of all values in the SQL Server Database in the customer currency requires not only an update of information but also a redefinition of its structure. On the one hand, all the average shipping values must be converted and inserted in the currency of the country. On the other hand, the primary price ranges have to be replaced from USD to the customer currency. Simultaneously, in the process of obtaining the final rate of an order, the price ranges used are replaced from the converted ones to the now primary ones.
- **Calculation of the Aggregate Rate through formula:** The rates in [Aggregate] were immediately inserted into the system with averages of fixed costs or of other customs' charges. It was also proved for Australia that in the orders effectively charged to the client, the customer pays much more than the courier charges. Thus, higher accuracy and better customer experience is translated by the definition of the rates in [Aggregate] through the formula, using the components in [Customs Information].
- **Usage of the field "Fixed Charges" in Duties Management:** Although there is the variable "Fixed Charges" in the formula to obtain the Final Rate from the Aggregate Rate all the operating destination countries in DDP have this field empty. Countries

whose customs regulations imply the payment of these type of costs are no exception, as the value is included in the Aggregate Rate. Thus, with the implementation of a calculated Aggregate Rate, the field of the fixed charges must be updated and included in the calculation of the Final Rate;

- **Alteration of the Final Rate formula:** The implementation of the customs' calculation process by order implies that the parameter "Extra Charges" is no longer necessary. While a margin on the customs paid in returns is still required, as well as the fixed costs, the new formula for the Final Rate is present as follows:

$$Fr = \left[\left(AggrR + \frac{Fc}{Mid}\right) \times (1 + Md)\right] \times 100 \quad (4.1)$$

In which:

Fr. is the Final Rate
AggR. is the Aggregate Rate
Fc. is the Fixed Charges
Mid. is the mid value of the respective price range
Md. is the Margin on Duties

- **Correction and update of the base value of calculation:** The detection of the usage of the CIF value of the customs' calculation in orders to Australia led to the need to review the base value of calculation defined for each country. Since the information was provided by the previous partner, the data to be provided by the new partner and the respective correction in the database becomes vital;
- **Actual usage of the CIF value in the customs' calculation process:** Instead of extracting the average shipping value from the price ranges, the value should be added to the Website Price used to obtain the Final Rate. Even during free shipping campaigns or with promo codes applied over the shipping value, the customs would be charged over the correct base value of calculation.
- **Update of information:** The necessary measures for the implementation of the Real Method without Extra Charges, allied to the discrepancies observed through the Customs Control Tool, demand the update of the information stored in the database regarding each country customs' regulations, through the data provided by the new information partner.

5.4 The adapted solution

Although the Real Method without Extra Charges provides a great solution for the calculation in terms of minimization of the margin FF-Courier, some of its implications and required alterations are not viable neither on the Farfetch's business model nor on the system's restrictions. The corrections that are restricted and the respective conditions that impede their implementation are the following:

- **Calculation of the customs by order:** The creation of an auxiliary table generates the need to restructure the calculation process and thus, of an interruption of the system. Furthermore, the calculation of the customs by order also imply changing the platform visible to the customer and reducing his experience when purchasing in the *website*. Since customs are applied to the entire order, the price of each item shown in the website no longer has the component included in the price, requiring a separate field in the total price's components shown to the client. Instead of having the total price divided into "Subtotal", i.e. the items' total price and "Shipping", a field "Import Duties" would have to be added. The customer would then have access to the price of exportation, reducing his experience in the *website*. Moreover, in some countries, the high price of customs and its visibility could contribute to the non-purchase of the customer, reducing the conversion rate, considered one of the main indicators of an e-

business. Consequently, it was concluded this dimension of the method was not viable.

- **Currency of the price ranges, *minimis* value and average shipping:** Similar to the calculation of customs by order, the redefinition of the currency of the components in the process implies the interruption of the system and the restructuration of the SQL Server Database. Allied to the future project of providing a currency chosen by the customer independent of the shipping country, the implementation of this dimension is restricted.
- **Application of the Final Rate over the actual CIF Value:** Applying the Final Rate over the sum of average shipping and Website Price in countries operated over the CIF value would provide the highest accuracy in the customs' calculation. However, the existence of fixed priced items would lead to even higher customs than the ones charged by the courier. Applying the customs over the actual CIF value would consequently increase more the total margin, making this third dimension of the optimal solution not sustainable.

Since the mentioned dimensions of the Real Method without Extra Charges are not viable for implementation, the possible solution to be implemented is the Real Charge with Extra charges. Even though it is the solution that provides the lowest values in the three parameters of comparison, it is important to consider that the high margin of the Website Methods is due to the superior rates charged to the customer than the actual courier charges. Thus, implementing one of the Website Methods would imply weakening the competitiveness not only in Australia and Kuwait but in all the destination countries in which high discrepancies are observed.

In the roadmap of the implementation of the Real Charge with Extras Charges, it was suggested the reduction of the price ranges as a method to reduce the load of information in the back office, while providing the same results as with the current number of price ranges. The criteria of the reduction is schemed in Table 13, where X represents a country's average shipping and Y the exchange rate from USD to the country's currency.

Table 13 - Reduction of the number of price ranges for the determination of the aggregate rate

	Number of price ranges	**Base value of calculation**	**Price ranges**	**Rate**
No minimis value	1	N/A	[0 - + ∞[	Aggregate Rate
Equal minimis value for Sales Tax and Duty Rate	2	FOB	Y × [0 ; *minimis* value[	0
			Y × [*minimis* value ; + ∞[	Aggregate Rate
		CIF	Y × [0 ; *minimis* value – X[	0
			Y × [*minimis* value – X ; + ∞[	Aggregate Rate
Minimis value for Sales Tax > minimis Value Duty Rate	3	FOB	Y × [0 ; *minimis* value duty rate [	0
			Y × [*minimis* value duty rate ; *minimis* value sales tax [	Duty Rate
			Y × [*minimis* value sales tax ; + ∞[	Aggregate Rate
		CIF	Y × [0 ; *minimis* value duty rate – X [	0
			Y × [*minimis* value duty rate – X ; *minimis* value sales tax – X [	Duty Rate
			Y × [*minimis* value sales tax – X ; + ∞[	Aggregate Rate
Minimis value for Sales Tax < minimis Value Duty Rate	3	FOB	Y × [0 ; *minimis* value sales tax [	0
			Y × [*minimis* value sales tax ; *minimis* value duty rate [	Sales tax
			Y × [*minimis* value duty rate ; + ∞[	Aggregate Rate
		CIF	Y × [0 ; *minimis* value sales tax – X [	0
			Y × [*minimis* value sales tax – X ; *minimis* value duty rate – X [	Sales tax
			Y × [*minimis* value duty rate – X ; + ∞[	Aggregate Rate

The reduction of the number of price ranges maintains the method of extracting the average shipping to the price ranges' limits, keeping the application of the rates over the FOB value, especially noticeable in countries with constant rates.

With the implementation of the field "Fixed Charges", the reduction of the price ranges cannot be applied in countries with those costs associated, as the mid value would be considerably high and thus, the "Fixed Charges" inferior. As the Final Rate formula shown in expression (3.2) obligates an approximation of the fixed costs through the mid value of the price range. It is also impossible to apply the Extra Charges and the Margin on Duties using fixed charges as constants, except through the division of the value by the total order's price. This method would however involve the need for the auxiliary table mentioned in 5.3, as the fixed costs are associated to each order and not to each item.

The reduction of the price ranges allows a huge decrease of the data stored and could be applied in countries with similar and simple regulations. Cases such as Australia, Kuwait and Switzerland (whose customs are charged by weight) require a customized solution.

5.5 Update of Information

The new partnership with the customs' information provider, as well as the results found through the Customs Control Tool led to the need of updating all the information stored. The

existence of 15 price ranges per 822 tariff codes for all the countries in which Farfetch operates over the DDP Incoterm complicates the process of correction and update of data.

Due to budget restrictions and the need of inserting data in the SQL Server Database manually, the goal of the update of information can be divided into two main tasks: first, the ramification of the data provided by the new partner in order to fit the current database organization in [Aggregate]; secondly, the creation of a tab in the Retail Platform – internally used to consult information – that would allow the automatic update of information through the upload of *Excel* files. Although the second task is of full responsibility of the technical teams, only a restrict number of people of the Operations Department would have access to this functionality. The possibility of uploading information directly to the Retail platform extremely facilitates the entire process of correction of the information stored.

5.5.1 Ramification of the data

The extensive information required for a full correction of the data and the costs associated with the partnership led to the definition of a layout of the files to be provided by the partner, from which the data is extracted and decomposed to fit into the current database organization. Thus, it was asked to the new partner to provide two different files per country: one with the structure of [Customs Information], i.e. the HS Code, Duty Rate, Sales Tax, other customs costs and import restrictions per Tariff ID and respective description of the item's category, as exemplified in Figure 12 for two Tariff IDs for the United States; and another file with the *minimis* values of the Duty Rate, the Sales Tax and of the extra costs (if existent). This file also contains the information of whether the customs are applied over the CIF or over the FOB value. It is important to mention that the import restrictions do not influence the calculation of the Aggregate Rate – they are only used as indicatives for products prohibitions or similar restrictions.

Tariff ID	Description	HsCode	Import Restrictions	Duty Rate	Sales Tax	Additional Import Charges
11	Women - Clothing & Accessories - Suits/cotton - N/A	6204120040		15	0	
12	Women - Clothing & Accessories - Suits/synthetic fibres - N/A	6204192000		0	0	

Figure 12 - Example of one the Excel file's layout to be provided by the new partner

The ramification of the information is made through a macro in *Excel* that generates a new file per country with the Aggregate Rates for each Tariff ID and price range, based on the information of both files. Through the input of the Country ID, the *minimis* values and the base value of calculation in the platform illustrated in Figure 13, the macro extracts the relevant values of the first file and calculates the rate. The generate file has the exact same structure as [Aggregate]. Figure 14 exemplifies the result obtained through the macro, for the Tariff ID 11 and respective information shown in Figure 12. [BTDutyProductsCountryID] and [DutyCatID] represent secondary keys of the tables in the SQL Server Database that contain customs' related information.

Moreover, the macro permits the link between [Customs Information] and [Aggregate] mentioned in 5.2, as the rates to be inserted in [Aggregate] is a direct result of the components in [Customs Information].

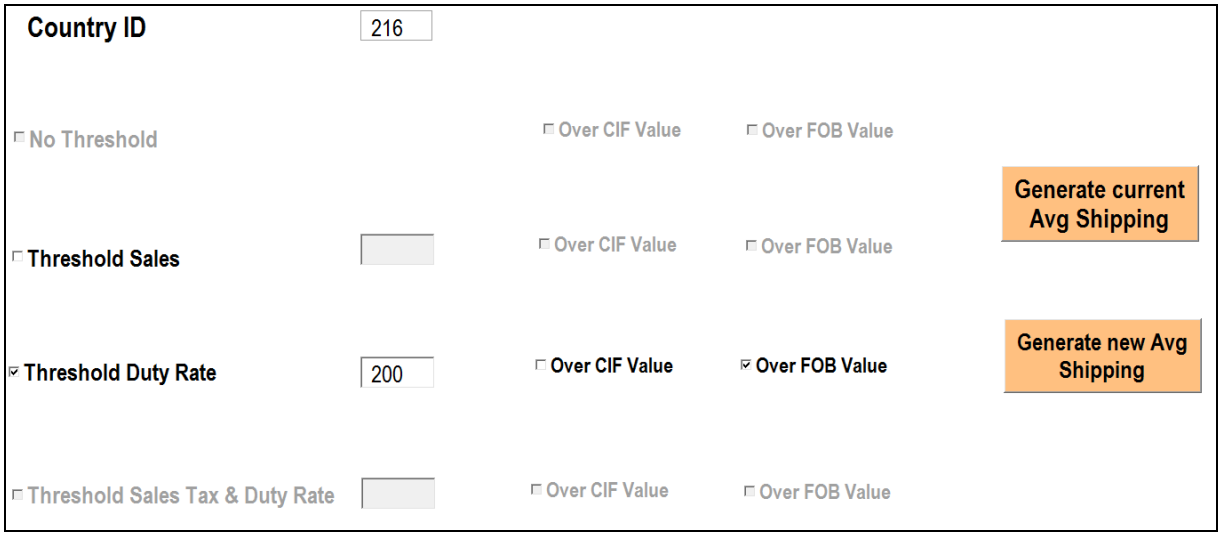

Figure 13 - Capture of the layout for input of data in the Excel file with the created macro

[Id]	[BTDutyProductsCountryId]	[DutyCatId]	[CountryId]	[Sku]	[Code2]	[HsCode]	[ProductValuePrice]	[PriceL]	[PriceH]	[AggrRate]	[UpdateDate]
	59601	420	216	11	US	6204120040	0-50	0	50	0,00	
	59601	420	216	11	US	6204120040	50-100	50	100	0,00	
	59601	420	216	11	US	6204120040	100-150	100	150	0,00	
	59601	420	216	11	US	6204120040	150-200	150	200	0,00	
	59601	420	216	11	US	6204120040	200-250	200	250	14,90	
	59601	420	216	11	US	6204120040	250-300	250	300	14,90	
	59601	420	216	11	US	6204120040	300-350	300	350	14,90	
	59601	420	216	11	US	6204120040	350-425	350	425	14,90	
	59601	420	216	11	US	6204120040	425-550	425	550	14,90	
	59601	420	216	11	US	6204120040	550-700	550	700	14,90	
	59601	420	216	11	US	6204120040	700-1000	700	1000	14,90	
	59601	420	216	11	US	6204120040	1000-1500	1000	1500	14,90	
	59601	420	216	11	US	6204120040	1500-2000	1500	2000	14,90	
	59601	420	216	11	US	6204120040	2000-3000	2000	3000	14,90	
	59601	420	216	11	US	6204120040	>3000	3000	999999999	14,90	

Figure 14 - Result of the generated file by the macro for the Tariff ID 11 in the United States

Firstly, as visible in Figure 13, the macro was developed with the current average shipping stored in the system and with a new average shipping calculated based on the courier invoices received from January to October 2015. The need to update the average shipping values rose from the outdated data stored, as the values were determined when Farfetch started operating by the DDP Incoterm to the selected countries.

Secondly, although the macro allows the automatization of the insertion of the new data in the back office, it presents two major limitations:

- **Obligation to input values in USD:** While the implementation of the price ranges, *minimis* value and average shipping in customer currency is defined in the roadmap of the customs' calculation model redefinition, the priority is the update of the information stored. Consequently, not only the current and the new average shipping values are defined in USD, but the *minimis* values must be converted and inserted into the fields in USD;
- **Unfitness for countries with particularities in customs' regulations:** The existence of countries with fixed charges and other particularities, such as Australia, Kuwait and Switzerland leads to the need to personalize the macro in order to fit its customs' regulations. Thus, although the macro can be used to the majority of the countries in which Farfetch operates over the DDP Incoterm, the created code has to be reformulated for those exclusive countries.

With the goal of reducing the number of price ranges, another macro was created, with exactly the same layout and structure, but generating the new file fewer price ranges. The resulting file for the same example of Figure 14 is shown on Figure 15.

[Id]	[BTDutyProductsCountryId]	[DutyCatId]	[CountryId]	[Sku]	[Code2]	[HsCode]	[ProductValuePrice]	[PriceL]	[PriceH]	[AggrRate]	[UpdateDate]
	59601	420	216	11	US	6204120040	0-200	0	200	0,00	
	59601	420	216	11	US	6204120040	>200	200	999999999	14,90	

Figure 15 - Result of the generated file by the macro with reduced price ranges for the Tariff ID 11 in the United States

As concluded in Section 5.4, the reduction of the number of price ranges cannot be used in countries with complex customs' regulations. This leads to the need to define unique solutions for the mentioned three countries. While for Switzerland – as customs are applied according to weight – the new information is still required to define a solution, the procedures for Australia and Kuwait involve adding the weight of the fixed costs to the Aggregate Rate, as demonstrated in Appendix B, in Tables 1 and 2 respectively.

The two macros developed are to be used when the new partner provides the requested information. The generated files are to be passed to the technical team to insert in the respective table, in case the functionality of direct upload in the Retail platform is not yet available.

6 Conclusions and future projects

Although the present dissertation is dedicated to the specific model analyzed at Farfetch, it is intended that the solutions explored give a guideline to any e-tail business in the process of creation or optimization of its customs calculation model. With special relevancy given to the accuracy of the information stored and to the careful consideration of all the variables that influence the final customs' value, the project encourages the frequent control of the estimates as a technique to maintain or even increase the competitiveness of a cross-border e-tail. The next subsections present the primary conclusions of the project held in Farfetch and suggestions for the future for further improvement of the model.

6.1 The solutions explored

The extent of information needed and the lack of transparency relative to certain countries' customs regulations, allied to the high frequency and small quantities delivered in a cross-border e-tail business are some of the barriers to the construction, maintenance and parametrization of a precise customs' calculation model. When it comes to countries operating over the DDP Incoterm, this precision gains even more relevancy as wrong estimations may lead to losses and decrease the company's competitiveness. To stay competitive and improve the customer experience in purchases through the website, it is believed that obtaining the most accurate estimates is a step forward regarding the goals.

The main objective of the project was not to decrease the total margin to avoid losses as it is currently positive due to the balance between the countries whose customs charges provide either profits or losses. Instead, the main goal was to fin the solution that would maximize fairness among the countries, i.e. the total margin through the maximum equilibrium of the customs charges in each country operated in DDP. Thus, although the outcomes of each method were only quantified for Australia and Kuwait, it is expected that a full implementation will lead to the desired equilibrium. From the observations of the results obtained in the customs control tool, a margin approximate to zero is possible just by decreasing the margins of countries with negative values and by decreasing the margin of the orders to United States, the number one country in sales and main contributor for the current positive margin.

From the four methods studied, each one aiming one or more points of correction from the two priority countries' analysis, different perspectives through which Farfetch can reduce the margin of customs charges are to be considered by the company. Whether maintaining the current calculation method, through the usage of the Aggregate Rates provided by the previous partner, whether calculating this field trough the Duty Rate, Sales Tax and fixed costs stored in the SQL Server Database, all the solutions result in improvements from the current model.

It was proved that one of the main contributors for the margin reduction is also one of the hardest to implement: the currencies of the components used in the calculation of the final rate, namely the limits of the price ranges, the average shipping and the *minimis* value. As

observed through the Website Method 0, the simple modification of the currency provides the highest variation of the margin, leading to the importance of this parameter in the model. Nevertheless, the results obtained through this method also led to the conclusion that the components used in the calculation are under inflation relatively to the actual customs charges of the courier, leading to the need of using a calculated Aggregate Rate instead of the one provided.

When it comes to the issue observed in orders of more than one item, even though the existence of an auxiliary table for the calculation of customs through the order's invoice value allows higher accuracy in the customs calculation in this type of orders, the option is not viable. Whether it is the restructuration of the SQL Server Database and of the procedure for calculation or the reduction of the customer experience while purchasing in the website, the small proportion of these type of orders does not justify the downsides of the methods with this parameter altered.

From these considerations, applying the Real Method with Extras is concluded as the most viable solution. Not only does it assume the customer currency of the components used in the determination of the Final Rate, but it considers the correct base value of calculation through the method already used in the company, as well as the usage of the calculated Aggregate Rate. It is however required the update of the variables in [Customs Information] before the implementation of the solution, as it was observed through the customs control tool an inconsistency between the rates in [Aggregate], the components of [Customs Information] and the average parameters charged by the courier service.

6.2 Potential usage for the tools developed

While the customs control tool and the macro for update of information were developed with specific goals, both can be used for other purposes that enhance the maintenance and the control of the customs calculation model.

On the one hand, the customs control tool can provide full independence in the definition of the Duty Rate, Sales Tax, fixed charges and even variable customs, such as in orders for Switzerland. The availability of sufficient past records through the courier invoices allows accurate estimates of the customs to be charged per country and per HS Code that makes Farfetch no longer requiring out-sourced information providers to update the data. On the other hand, the capacity to detect small alterations of specific components with only a month in advance gives the capacity to optimize the same estimates. While the partnership is still necessary when it comes to define customs to new territories, after performing deliveries during a period of time that allows sufficient past records, the customs control tool can be used once again for corrections and update of data.

Manual alterations in the database regarding customs are still required in order to be implemented. This fact led to the requirement of an extra tab in the Retail Platform that allows the automatic update of fata through an *Excel* file. Consequently, when it comes to the macros developed with the goal of updating all the information provided by the new partner, the tools can still be used when it is detected an alteration in a specific country's customs charges. Furthermore, in the case of an alteration of a single component in [Customs Information], the insertion has to be made manually. Through the macros, the generated files already contain the alterations and can be inputted automatically in the back office. Simultaneously, the macros can still be used upon the implementation in the customer currency of the components for determination of the final rate. As currently all the values have to be inserted in USD to satisfy the structure of the SQL Server Database, when this parameter is altered, the update of the vast volume data will be simplified and much faster, only requiring the insertion of the data in the customer currency and the conversion of the values of average shipping.

6.3 Future alterations for optimization

The implementation of the Real Method with extras charges is scheduled to be made over time, starting mid-2016, with the last step being the conversion of the parameters of determination of the final rate to the customer currency, as it faces obstacles such as the restructuration of the back office and the future project of several currencies available for the purchase. Furthermore, before the implementation it is still necessary the upload of all the information by the partner, in order to define the correct aggregate rates through the calculation formula. Even so, both components of the Duties Management, i.e. the Extra Charges and the Margin on Duties will require a redetermination. While the Extra Charges needs a review both to keep up with the increase of sales for each country and to account the reduction of customs paid, as it depends on the items' values with or without customs included, the Margin on Duties will need a total recalculation, as the customs paid in the returns and in the orders effectively sent will be reduced. Taking the method to obtain the Margin on Duties mentioned in 3.5.4, it is still necessary a considerable amount of past records to determine both proportions. The recalculation of the components will thus have to be made at least a year after the total implementation of the method, to allow sufficient data for each country operating in DDP.

Using the FOB value for countries operating over the CIF value due to the existence of two or more price ranges with the equal final rate is also one of the challenges in the optimization of the customs' calculation model. While the average shipping should not be extracted from the price ranges' limits but added to the Website Price instead, this small alteration implicates huge alterations in the company's back office. The average shipping values would have to converted and updated fortnightly and to the Website prices, defined for each item in each boutique and for each country of purchase would have to be added the same values. Due to the small contribution that it has on the total margin of the respective countries, it was not considered as viable solution in a short-term basis. However, it is believed that its implementation is viable for the future, after the stabilization of the alterations made in the customs' calculation model.

Although the correspondence between [Customs Information] and [Aggregate] in the SQL Server Database is mentioned along the project, the actual dependence the rates in [Aggregate] and the components in [Customs Information] is yet a suggestion for the future. While the update of data will be carried upon the receipt of the information by the new partner in both tables, the calculation of the Aggregate Rate through [Customs Information] is ideal. The implementation of the dependence allows that a small alteration of a rate in [Customs Information] would immediately be reflected on [Aggregate], instead of using the macro developed. However, altering the structure of the Database is still a complicated process, making this task not a priority.

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Appendix A: Comparison of the Aggregate Rates and respective duty rates charged by the courier and by Farfetch

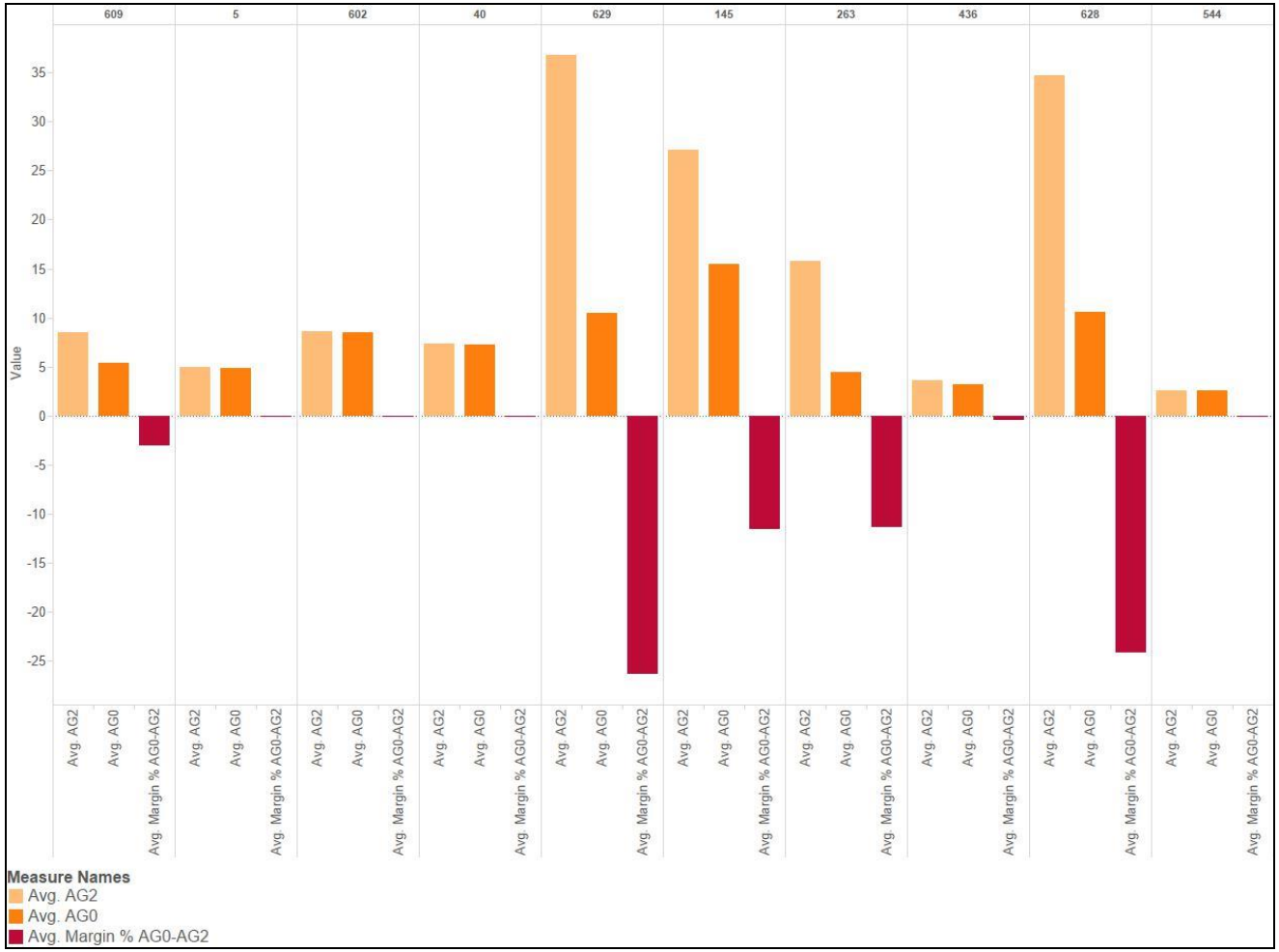

Figure 1 - Comparison between AG2 and AG0, for the top 10 Tariff IDs with negative rate, in orders to the United States from January to November 2015

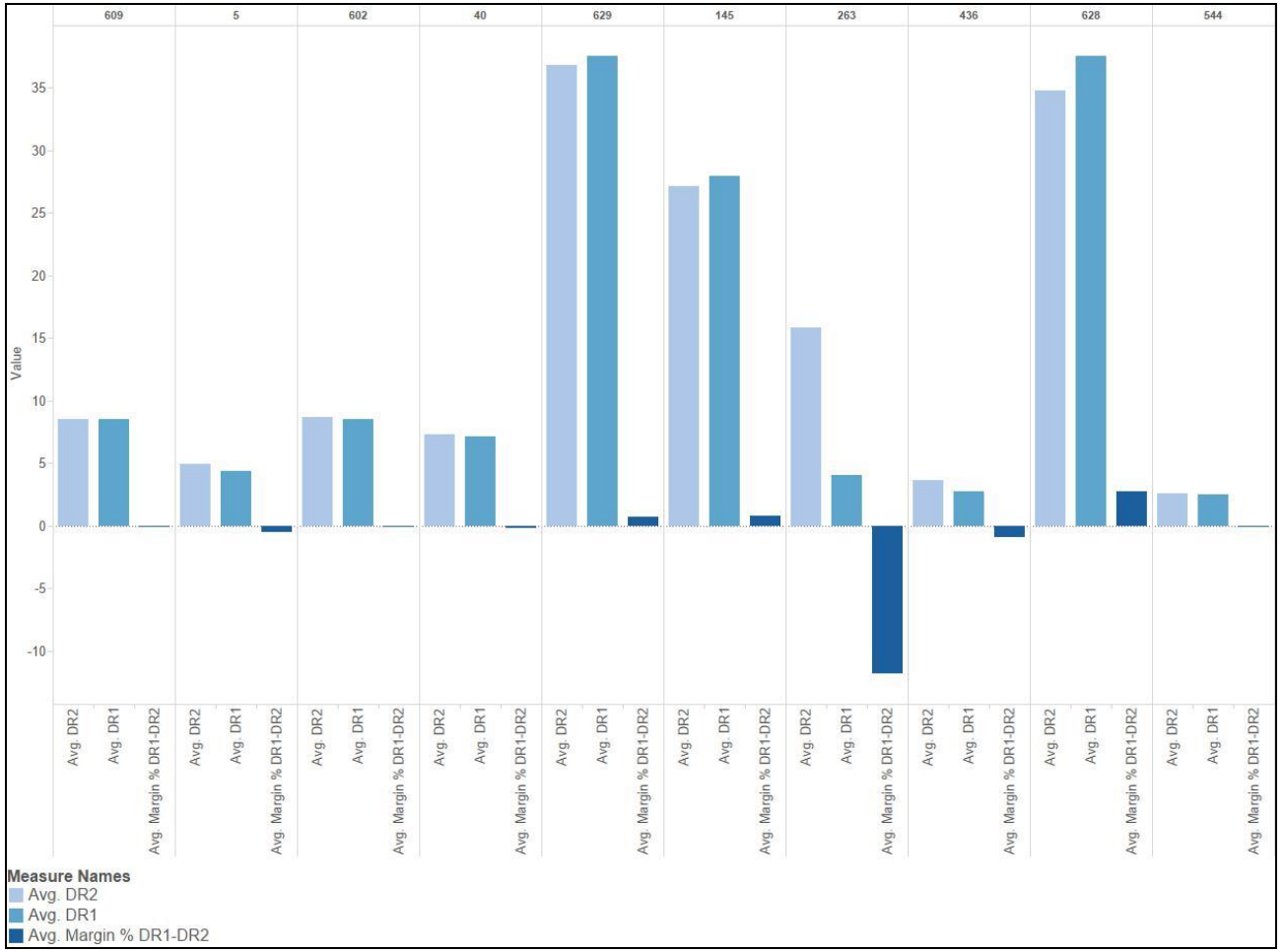

Figure 2 - Comparison between the DR2 and DR1, for the top 10 Tariff IDs with negative aggregate rate, in orders to the United States from January to November 2015

Appendix B: Unique solutions for Australia's and Kuwait's price ranges and Aggregate Rates with reduction of price ranges

Australia:

- ***Minimis* value for Sales Tax & Duty Rate (AUD)** = 1000
- ***Minimis* value (USD)** ≈ 700
- **Base value of calculation** = FOB
- **AggR** = Calculated Aggregate Rate for a specific tariff
- **Fixed cost (USD)** ≈ 33

Table 1 - Exemplification of the Fixed costs and aggregate rate with reduction of price ranges for Australia

Price Range (USD)	Mid Value	Fixed Cost (USD)	Weight of the fixed cost	Aggregate Rate
[0 ; 700[	625	0	0	0
[700 ; 1000[	850	33	0,03888	AggR + 0,03888
[1000 ; 1500[	1250	33	0,0264	AggR + 0,0264
[1500 ; 2000[	1750	33	0,01886	AggR + 0,01886
[2000 ; 3000[	2500	33	0,0132	AggR + 0,0132
[3000 ; +∞ [	3000	33	0,011	AggR + 0,011

Kuwait:

- ***Minimis* value:** No *minimis* value
- **Base value of calculation** = CIF
- **Stored average shipping (USD) =** 30,99
- **Fixed conversion rate GBP – USD** = 1,5

Table 2 - Exemplification of the Fixed costs and aggregate rate with reduction of price ranges for Kuwait

Price Range (USD)	Mid Value	Fixed Cost	Weight of the fixed cost	Aggregate Rate
[0 ; 69,01[	34,505	6,6	0,1913	0,1913
[69,01 ; 219,01[	144,01	22,95	0,1594	0,1594
[219,01 ; 469,01[	344,01	32,85	0,0955	0,0955
[469,01 ; 719,01[	594,01	39,2	0,0662	0,0662
[719,01 ; +∞[	719,01	0	0	0,05