

Operational Reporting Model in Luxury Fashion E-tail: An in-house outsourcing case

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“Quanto faças, supremamente faze.”

Ricardo Reis

Abstract

Providing a prosperous e-commerce solution transcends the act of releasing a website, especially in highly demanding industries. It requires operational expertise, which may only be accomplished if measured.

Farfetch Black&White (B&W) is a full-service agency that provides multichannel e-commerce white-label solutions to luxury fashion brands. It leverages the core systems and services of Farfetch, an online marketplace of luxury goods.

As a recently born business unit, B&W blindly trusts the service level of the in-house outsourced activities. The aim of this project is to develop a reporting model that brings visibility over the operational performance delivered by the parent company. Specifically, the current dissertation focuses on the Farfetch areas that directly impact the order fulfilment process: Payments, Fraud and Delivery.

For such purpose, the operational processes were firstly mapped, followed by the selection of the most relevant KPIs and reference points of each area. The objective was not only to replicate the current parent company's metrics, but also to introduce complementary ones. Both Farfetch managers and the B&W Operations Team were involved in this exploratory phase.

Afterwards, Fry (2007)'s data visualization process steered the development of storytelling dashboards, integrated in the whole reporting model. Firstly, data was prepared and filtered via SQL. Secondly, KPIs calculation was sustained by mining techniques within the *Tableau* software environment. Lastly, the engaging data representation arose. Additional interactive features were included, enabling the final user to manipulate data and controlling what is visible.

Through the new fully-fledge reporting model it was concluded that the service level agreements are not being respected. The Fraud Team is delivering a service up to 25 pp below the SLA, while the Delivery Team results are 5 pp below the agreement. Regarding the payment system, it was demonstrated that the B&W authorisation rate is 15 pp lower than Farfetch's. Such discrepancy is explained by a vulnerable payments value chain and the inexistence of important features.

In the aftermath of this dissertation, several solutions are suggested. A complete redesign of the payment system architecture and the allocation of a B&W dedicated fraud agent are the most prominent examples.

The developed reporting model proved to be sufficiently reactive, enabling the identification of problems. Moreover, it revealed to be a good communication tool, encouraging cooperation between the Farfetch teams. Such virtuosity eased the day-to-day work of the B&W Operations Team and enlightened other stakeholders.

Modelo de Relatório Operacional no Comércio Eletrônico de Moda de Luxo: Um caso de terceirização interna

Resumo

A prosperidade de uma solução de comércio eletrônico transcende o lançamento de uma página *web*, especialmente em indústrias altamente exigentes. Requer perícia operacional, a qual apenas pode ser alcançada quando monitorizada.

Farfetch Black&White (B&W) é uma agência de serviços que cria soluções de marca branca, para marcas de moda de luxo que pretendam estabelecer uma via de comércio eletrônico. Esta unidade de negócio utiliza os principais sistemas e serviços da Farfetch, uma plataforma *online* de produtos de luxo.

Como recente unidade de negócios, B&W confia cegamente no nível de serviço das atividades internamente terceirizadas. O objetivo deste projeto é desenvolver um modelo de relatório que proporcione visibilidade sobre o desempenho operacional entregue pela empresa-mãe. Especificamente, esta dissertação foca-se nas áreas que afetam o processamento de encomendas: Pagamentos, Fraude e Distribuição.

Inicialmente, os processos operacionais foram mapeados, seguindo-se a seleção dos KPIs e dos pontos de referência mais relevantes de cada área. O objetivo não passou apenas por replicar as métricas da empresa-mãe, mas também pela introdução de soluções complementares. Os gerentes da equipa de Operações da Farfetch e a equipa de Operações de B&W participaram nesta fase exploratória.

Posteriormente, o processo de visualização de dados de Fry (2007) conduziu ao desenvolvimento dos painéis de controlo integrados no modelo de relatório. Em primeiro lugar, os dados foram preparados e filtrados via SQL. Em segundo lugar, o cálculo de KPIs foi sustentado por técnicas de *data mining* no ambiente do *software Tableau*. Por fim, procedeu-se à representação dos dados. Foram ainda incluídos recursos interativos que permitem ao utilizador final manipular os dados e controlar a visualização.

Através do modelo desenvolvido, concluiu-se que os níveis de serviço acordados não estão a ser respeitados. A Equipa de Fraude entrega um serviço até 25 pp abaixo do SLA, enquanto os resultados da Equipa de Entrega são 5 pp abaixo do compromisso estabelecido. Em relação ao sistema de pagamentos, demonstrou-se que a taxa de autorização de B&W é 15 pp inferior à da Farfetch. Esta discrepância deve-se à existência de um sistema de pagamentos vulnerável.

No final desta dissertação, várias soluções são sugeridas. A reestruturação da arquitetura do sistema de pagamentos e a alocação de um agente de fraude especializado a B&W são os exemplos mais proeminentes.

O modelo desenvolvido provou ser suficientemente reativo, possibilitando a identificação de problemas. Além disso, revelou ser uma boa ferramenta de comunicação, incentivando a cooperação entre as várias equipas. Tal vicissitude facilitou o trabalho do dia-a-dia da equipa de operações de B&W e esclareceu as restantes partes interessadas.

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Contents

1	Introduction.....	1
1.1	Farfetch Black&White.....	1
1.2	Project Motivation and Goals	3
1.3	Methodology.....	4
1.4	Dissertation's Structure	5
2	Literature Review	6
2.1	Luxury Fashion Brands Meet E-business.....	6
2.2	Non-Financial Performance Measurement.....	7
2.3	From Business Processes to Dashboards	8
2.4	Storytelling Data Visualization.....	10
3	As-is Analysis	12
3.1	Order Fulfilment Process.....	12
3.2	Payments	13
3.3	Fraud.....	16
3.4	Delivery: Create Shipping Label.....	21
3.5	Key Ideas	23
4	A fully-fledge Operational Reporting Model	24
4.1	Requirements.....	24
4.2	Key Performance Indicators Re-design and Design.....	25
4.3	Data Collection and Preparation	32
4.4	The Prototype.....	33
4.5	Data Representation and Interaction.....	36
4.5.1	Two distinct reporting branches	36
4.5.2	The Executive Overview	36
4.5.3	The Operational Overview	40
5	Data-Driven Insights and Opportunities to Improve	42
5.1	Payment System	42
5.2	Fraud Prevention.....	45
5.3	Shipping label creation	47
6	Conclusions and Future Work	49
	References	51
APPENDIX A:	Farfetch Fraud Dashboards	54
APPENDIX B:	Farfetch Step 4 Dashboards.....	55
APPENDIX C:	Prototype.....	57
APPENDIX D:	Executive Overview	58
APPENDIX E:	Payments Operational Overview	61
APPENDIX F:	Fraud Operational Overview.....	65
APPENDIX G:	Create Shipping Label Operational Overview.....	68

Acronyms

AWB – Air Waybill

B&W – Farfetch Black&White

BPM – Business process management

CNP – Card-not-Present

EU&RoW – Europe and Rest of the World

KPI – Key Performance Indicator

MTD – Month To Date

PM – Performance Measurement

PoB – Proof of Billing

PSP – Payment Service Provider

SLA – Service Level Agreement

SQL – Structured Query Language

SDD – Same Day Delivery

US – United States of America

WTD – Week To Date

YTD – Year To Date

List of Figures

Figure 1 - Farfetch Black&White organizational structure.....	2
Figure 2 - Farfetch Black&White dependencies.....	3
Figure 3 - B&W representation within Farfetch. Order volume and value perspective.	4
Figure 4 - Methodology.	5
Figure 5 - Order fulfilment process.....	12
Figure 6 - Credit card payment system value chain.....	13
Figure 7 - Step 2: Approve payment process for B&W orders.	17
Figure 8 - Step 4: Create shipping label process.	21
Figure 9 - Third-party influence.	29
Figure 10 - Prototype: Date filtering options and functionalities.....	34
Figure 11 - Prototype: Data results for the last 4 weeks aggregated by week.	35
Figure 12 - Prototype header: References.....	35
Figure 13 - Payments Executive Overview.	37
Figure 14 - Fraud Executive Overview.	38
Figure 15 - Delivery Executive Overview.	39
Figure 16 - Authorisation rate analysis.....	42
Figure 17 - Fallback usage and success.....	44
Figure 18 - Fraud SLA assessment since the first B&W website launch.	46
Figure 19 - Fraud SLA assessment w/o third-party since the first B&W website launch.	46
Figure 20 - Manually Created Shipping Label: An abnormal case.....	47
Figure 21 - Stock point x stop rate for the ground shipping service.	48

List of Tables

Table 1 - Payments KPIs and references.	25
Table 2 - Payments information storage KPIs and references.	26
Table 3 - Fraud check time KPIs and references.	27
Table 4 - Farfetch Service Level Agreement for B&W.	27
Table 5 - Payment approval time intervals.	27
Table 6 - Payment refusal KPIs and references.	28
Table 7 - Third-Party performance KPIs.	30
Table 8 - Chargebacks KPIs and references.	30
Table 9 - Create Shipping Label KPIs and References.	31
Table 10 - Time intervals for the manually created shipping labels.	31
Table 11 - B&W payment requests per region since launch.	43
Table 12 - 3-D Secure advantages vs disadvantages.	44

1 Introduction

The digital revolution has prompted behavioural changes in luxury fashion consumers, who are now technology-driven. However, most brands are still struggling to understand the scope of cyberspace positioning and how to integrate it within the internal organization. (Okonkwo 2010)

Aware of this opportunity, Farfetch, a global luxury fashion online marketplace, launched Farfetch Black&White (B&W). This type of diversification strategy gave birth to a new business unit which powers multichannel e-commerce solutions to brands, while leveraging Farfetch's core competencies.

Providing e-commerce service transcends the act of building a website; it requires operational expertise, which can only be achieved when measured. Bearing this in mind, the present dissertation, developed at the B&W Operations Team, focuses on creating an internal reporting model to assess order processing operational performance. Afterwards, only by monitoring performance may this recently created business be fuelled by proactive actions, enabling continuous improvement.

To fully understand the motivation of this dissertation, it is crucial to recognise B&W's Operations structure and its dependencies on the parent company, topics that will be addressed in the following subchapter.

1.1 Farfetch Black&White

Farfetch *creates revolutionary technology for the love of fashion*. Back in 2008, the company created farfetch.com, an e-commerce marketplace that now showcases the finest selection of luxury fashion. It gathers over 500 boutiques and more than 150 000 items in only one address. This London based company has experienced a fast-paced growth, ripping a \$1 billion valuation in early 2015.

Such successful journey is the result of an innovative commission based business model, characterized by a drop shipping strategy that allows the company not to keep in stock the products it sells. Instead, Farfetch connects boutiques to the final customers through its portal, being the shipping made directly from the boutique. However, supply and stock availability may be problematic in this kind of business model. B&W, a new business unit, has risen as a strategic pillar to tighten relationships with brands and bring supply to Farfetch.

B&W is a full-service agency, providing multichannel e-commerce white-label solutions to luxury fashion brands, based on Farfetch's core systems and services. Today, brands can sell through Farfetch's main site or use the company's technology to power their own e-commerce service.

The objective of this API-based solution is to use Farfetch's platform to build other websites and then deploy in a modular way the services or infrastructures required by brands. This way, B&W can offer not only the set-up of a website but also online content creation, fraud-protection, outbound logistics, different shipping options, a wide range of payment methods

and multilingual customer service, providing a truly global service. Furthermore, brands can link inventory in their retail stores to their websites, leveraging the Farfetch platform. This business model boosts the opportunity to comprise capabilities like click-and-collect and in-store returns. Additionally, by including their metropolitan flagship stores in the process, brands can take advantage of their localization and offer same-day delivery in some cities.

Above all, the parent company extensive and distinct know-how on e-tailing highlights the value proposition of this business unit. Farfetch has gathered not only intellectual competencies, but also important partnerships, economies of scale and a remarkable position on luxury fashion e-commerce. Thus, brands can benefit from operational excellence since the first day.

The release of the first B&W e-commerce website occurred on early 2016 and, since then, the business unit is experiencing a fast-paced growth, presently counting with six projects on its portfolio and a few more in progress.

Offering a full omnichannel experience has never been made so easy, which may be the trigger to tighten Farfetch's relation with brands. In fact, the foundation of B&W was a strategic move to instigate connections with big fashion groups and to overcome some of the parent company current problems, such as stock availability. Brands under B&W's services may agree to start selling on Farfetch online marketplace at any moment, benefiting from global exposure and a huge amount of traffic. This win-win situation allows brands to easily establish a truly multichannel e-commerce service, while Farfetch is increasing stock availability levels and the variety on its platform.

Concerning B&W's organizational structure, it is divided in three departments – Technology/Product, Operations and Commercial – with distinct functions that report to a managing director, as exhibited in Figure 1. Though simple at first sight, B&W's business model relies on a broader set of functions shared with Farfetch, which are not exposed on Figure 1. This is a good example of the shared synergies, but also one of the greater challenges when it comes to communication.

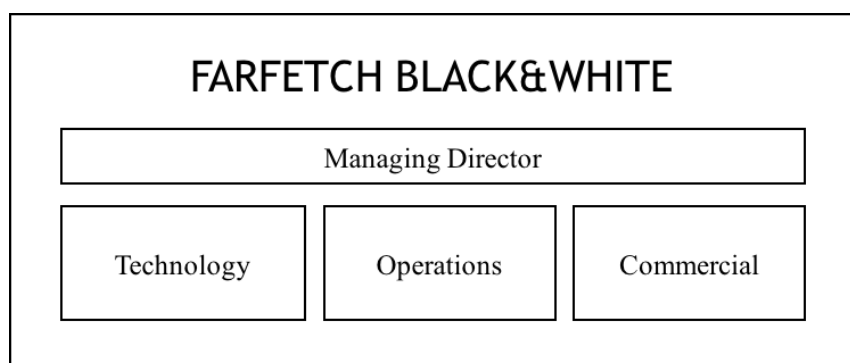


Figure 1 - Farfetch Black&White organizational structure.

Regarding B&W dedicated departments, Technology is responsible for websites development, user interfaces and other tasks that directly interfere with client-oriented tools. Less customized technology, such as order processing software is the same used by Farfetch. The Commercial department is responsible for closing contracts with brands as well as digital marketing operations. Lastly, Operations, where this project was developed, is responsible for the set-up of all the operational matters and to ensure a successful order fulfilment process. A detailed description of this department may be further assessed in this chapter.

Farfetch Black&White Operations

B&W operational functions are held by a dedicated team, supported by Farfetch Operations global team, as presented on Figure 2.

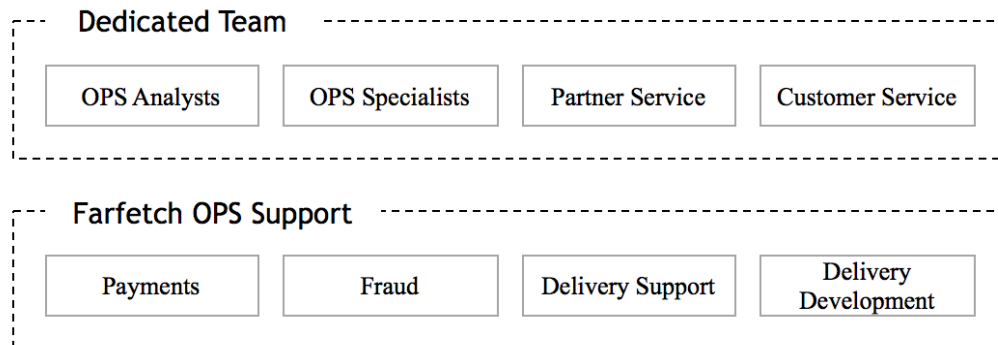


Figure 2 - Farfetch Black&White dependencies.

The dedicated team is composed by Operations Analysts, Operations Specialists, Partner Service and Customer service.

Operations Specialists work on defining the specifications of the service that the brand intends to provide. Order processing tests and helping the brand with operation set-up is also a full responsibility of the Specialists, so as supporting and encouraging good practices.

Business analysts develop financial and operational reports to share with clients after launch. Data analysis supports answers to clients' uncertainties and may be the means to encourage good practices.

Partner Service focuses on assisting the stores. Order processing trainings, answering order processing queries and support on a daily basis are some of the main activities. Concerning final customer misgivings, Customer Service aims to answer to any queries concerning products, delivery service, and returns, amongst others.

Although a wide range of activities are covered by the above dedicated team, many operational functions, prompted by an order placement, are still to be assured. These remaining tasks are guaranteed by Farfetch global teams. Fraud check is certified by the Fraud team, payments and returns by the Payments team, logistics and shipping by the Delivery team, and so forth.

Farfetch global team support is a living proof of the synergies between Farfetch and B&W, but it also reveals how brand's order fulfilment performance depends on Farfetch activities. This dissertation addresses this issue and its motivation may be followed in chapter 1.2.

1.2 Project Motivation and Goals

As an agency that delivers world class client service through e-commerce consultancy, B&W needs to ensure that its stakeholders have access to insightful analytics across all areas of the e-commerce side of their business.

Order processing is directly linked to the quality of the online shopping experience, since it is triggered by a customer who expects to receive an order within a specific time frame and place. As described on the previous chapter, B&W operational performance is highly influenced by Farfetch global team, a relationship that may be compared to an in-house outsourcing.

The present dissertation addresses the following fields: Payments, Fraud and Delivery. Within this scope, goals of this project may be summarised in the following topics:

- Developing an internal reporting model that will give visibility on the service level of each of these three areas that serve the B&W business unit;
- Not only to replicate Farfetch's KPIs, but also to introduce new complementary KPIs;
- To highlight internal references and SLAs based on the service level B&W wants to deliver;
- Identify and analysing deviations. Generating data-driven insights may be the inducement to highpoint opportunities to improve the current process. Thus, identifying deviations and analysing reasons are also objectives of this project.

Although performance is already being measured by Farfetch, it is important to consider that B&W's orders volume and value only represent approximately 3% within the whole company's traffic, as exhibited on Figure 3. As a result, measuring overall performance of the shared activities may hide crucial pain points. Moreover, B&W business model is not the same of Farfetch's, which imposes the necessity of creating new metrics. Thus, the purpose of this project is not only to replicate the current parent company's KPIs, but also to introduce complementary ones that may be crucial to evaluate order processing performance.

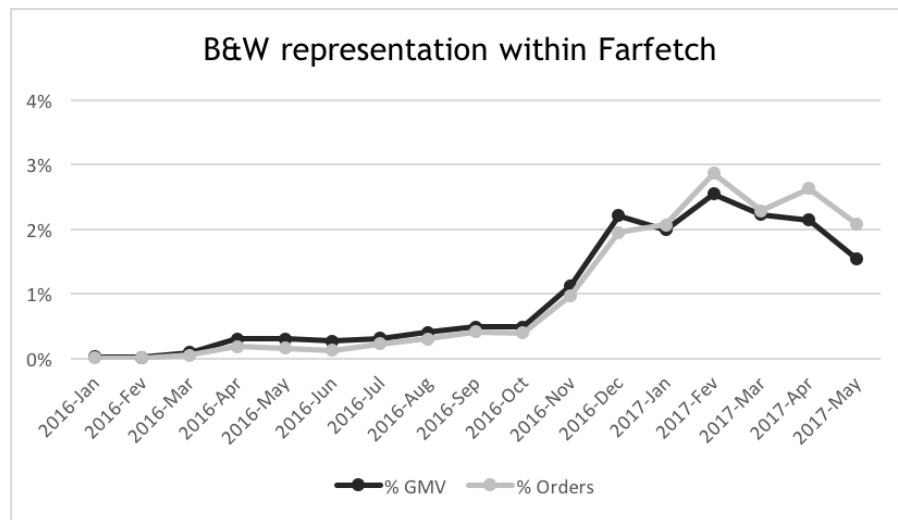


Figure 3 - B&W representation within Farfetch. Order volume and value perspective.

The development of any reporting model must consider its final users. Although the main goal of this project is to provide an insightful internal tool for the B&W Operations team, the possibility of usage by other stakeholders shall not be excluded. Hence, targets, SLAs or other references are to be included in every dashboard. Thereby stakeholders who are not entirely acquainted with operational matters may have a point of reference that clarifies the objectives of each metric.

Last, but not least, a critical analysis may be performed to identify deficiencies and the reasons why SLAs are not being met. At this point, interface with the Operations Specialists and the Head of Operations must take place, so that opportunities to improve may be highlighted.

1.3 Methodology

Considering the goals presented in the previous subchapter, a methodical approach was implemented, as exhibited in Figure 4. The objective of this methodology is to create the opportunity to identify the process problematic areas and the chance to improve.

Since this project covers divergent areas – Payments, Fraud and Delivery –, this four-step methodology was separately implemented in each of them, so that a focus on the specifications of each field should be achieved.

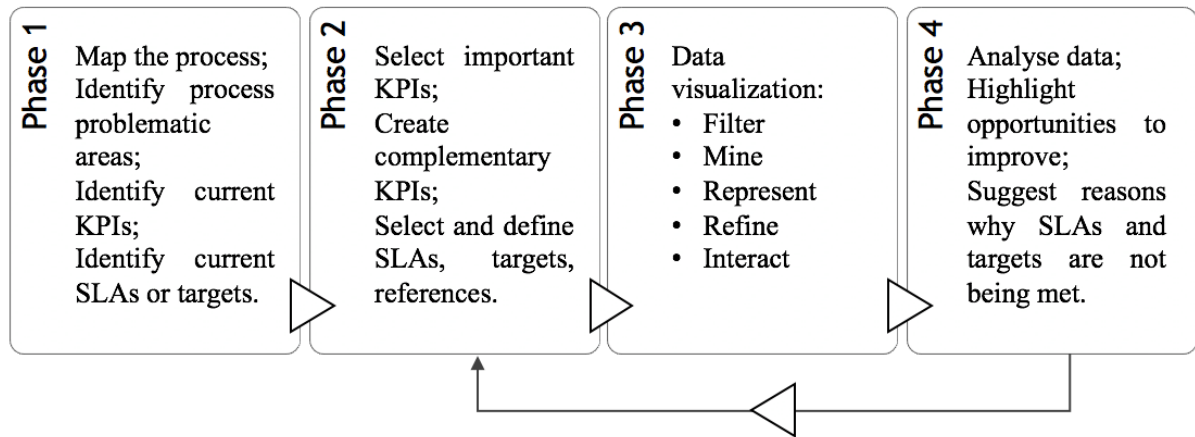


Figure 4 - Methodology.

The first step of any project is to clearly understand its context. Accordingly, phase 1 involves the interpretation of each area addressed in this dissertation. Defining the processes, using process mapping techniques, is a good way to get a clearer view of the crucial activities. However, it is important to emphasise that the objective is to get the big picture of the workflow, not redesigning the processes. Also, having a representation of the main activities eases communication with specialists and managers of a certain area and enables the identification of problematic nodes. Assessing and analysing current Farfetch KPIs, SLAs, targets and other points of reference is also a task to be addressed in this first phase.

After absorbing the context and metrics of a certain area, phase 2 takes place. At this point, it is important to attend the B&W business model and to select the current KPIs that are relevant within its scope. Moreover, it is crucial to pinpoint problematic areas that are not being fully covered by the existing metrics and create complementary KPIs, as the means to assess them.

Phase 3 gives life to the reporting model, succeeding the definitions outlined in the previous phases. Inspired on the process proposed by Fry (2007) data visualization techniques are introduced. Firstly, data preparation (filter and mine) occurs. Then, the selection of the best representation for each KPI, SLA and other points of reference takes place. In these phase, dynamic dashboards, the soul of this project, are built.

Lastly, an analysis on the developed data-driven report is performed. It is vital to suggest reasons why SLAs or targets are not being met and to highlight opportunities to improve.

Although this is a four-step methodology, it does not have a specific end; there is always room for improvement. The last step must have interface with the final users of the developed reporting model, so that constructive feedback may be gathered and a continuous improved reporting model can be achieved.

1.4 Dissertation's Structure

The remainder content of this dissertation is defined as follows. Chapter 2 encompasses a literature review on how luxury fashion brands are meeting e-business and the importance of non-financial performance measurement. The significance of business processes for developing an operational reporting model is also studied. Lastly, the power of a storytelling data visualization is addressed. Chapter 3, as-is analysis, describes the most relevant processes within each area in study. The current KPIs and SLAs are explained and its limitations are pointed out. Chapter 4 presents the definition of new metrics and the proposed reporting model is detailed. Chapter 5 gathers an analysis phase, enabling the identification of opportunities to improve. Chapter 6 concludes this dissertation reviewing the most relevant verdicts and reinforcing opportunities to improve. Future developments are also suggested.

2 Literature Review

The present chapter aims to provide a literature review on relevant topics within the scope of this dissertation. Firstly, the current position of luxury fashion industry towards e-business is explored. Secondly, the importance of non-financial measurement is addressed, followed by a section that outlines the interdependencies between business processes and dashboards, corroborating the methodology of this project. Finally, the importance of data visualization is addressed, so as its storytelling potential.

2.1 Luxury Fashion Brands Meet E-business

Luxury has always had unique intricacies comprising elements that speak more to passion than reason. It is built on the foundation of values such as creativity and exclusivity, which make its *raison d'être* significantly different from other types of goods or services. Quoting Okonkwo (2009), “luxury is neither a product, an object, a service nor is it a concept or a lifestyle. It is an identity, a philosophy and a culture.”

Given these characteristics, a big paradox lies on whether e-commerce is a blessing or a threat, since the mass classless internet may compromise the retention of such principles (Kapferer and Valette-Florence 2016; Okonkwo 2009). Due to this ongoing debate, most brands still have a negative vision towards e-commerce and adopting e-business is not on their top priority list (Kim, Choi, and Lee 2015).

However, a disruptive digital revolution is increasing competition in every business sector and luxury is no exception. Brands have been forced to go online to engage with a demanding digital-savvy public whose existence is no longer in question. This trend has enabled individuals to communicate, access multiple information and make numerous transactions without boundaries of time or place (Parrott, Danbury, and Kanthavanich 2015; Straker and Wrigley 2016).

Anyhow, for luxury brands, going online is not only a matter of creating a website through which it will provide content on the internet. It is about generating an outstanding online shopping experience for each visitor. Such task may be challenging, since e-business is not only about e-retail or e-commerce, which merely uses the internet as a buying or selling application to process transactions. Instead, e-business also integrates multiple operations such as online communications, client relationship management, consumer monitoring, marketing, branding, retail, logistics, merchandizing and after-sales support (Okonkwo 2010). Also, going digital enables supporting operations management with information systems. Thus, operations efficiency is enhanced with the provision of real-time information meeting market conditions in terms of flexibility, delivery performance and quality (Yang, Humphreys, and McIvor 2006).

Combining the above-mentioned areas requires interdisciplinary skills to integrate the technical level with the operational level and corporate goals. Most enterprises do not possess that expertise, which leads to the need of outsourcing electronic business activities. In this case, by partnering with an e-commerce service provider, companies may shorten the time of

implementation, reduce operational costs and concentrate on their core business (Sun et al. 2013). Most luxury companies partner with web agencies to develop their e-business. However, developing a luxury website requires understanding the world of luxury while clearly getting the matchless DNA of each brand and its corporate goals, a task that is not the interest of most web agency (Okonkwo 2010).

2.2 Non-Financial Performance Measurement

Performance measurement (PM) is essential for effectively managing today's global competitive economy, which comprises global operations, especially in e-commerce and virtual enterprise environments (Gunasekaran and Kobu 2007).

Neely, Gregory, and Platts (1995) defined PM as the process of quantifying action, where measurement is the process of quantification and action correlates with performance. It is the process of quantifying the efficiency and effectiveness of action. Hence, PM facilitates transparent communication, which improves organizational performance and is automatically embedded with politics and several behavioural issues (Gunasekaran and Kobu 2007).

Several authors acknowledge that over the years, performance measurement approaches and beliefs have been through tremendous reformulations. In his manifesto, Eccles (1991) describes as revolutionary the decision to shift from focusing on financial evidences to treating them as one among a broader set of measures. Although financial measures have the advantage of being precise and objective, they tend to be very inward-looking and focused in the past, failing to address the less tangible assets such as service level and quality (Parker 2000). Also, measures focused on profit tend to encourage a reactive management style, which sub-optimize certain areas in isolation. On the other hand, non-financial measures inspire a proactive management style, emboldening continuous improvement (Bititci 1994). In the so-called knowledge economy, measuring intangibles and non-financial performance measures is critical for the success of operations in this environment (Gunasekaran and Kobu 2007). For these reasons, the traditional financial performance measures were on step with the industrial era, but they are not with the skills companies are trying to master today (Kaplan and Norton 1992).

Today's business world is highly competitive and change is constant. Globalization, fast technological advances, unceasing changing client demands, economic and political structures changes are some of the reasons for such state. Consequently, companies need to clearly define their strategies to develop competitive advantage (Marr, Schiuma, and Neely 2004). It is pivotal to recognize that a brilliant strategy will not produce its intended results if it is not translated into operational terms. All in all, organizations rely on operational processes to deploy their business model (Russell 2009).

Thus, it is vital that performance is not solely seen from a financial point of view. A balance between the various performance measures, upon various perspectives, focusing on short- and long-term results, must be achieved (Tangen 2004).

However, measuring is not as self-explanatory as it seems. Over the years, several frameworks were designed to support the decision of what performance measures to select. The most popular is, undoubtedly, The Balanced Scorecard (Neely, Adams, and Crowe 2001). Kaplan and Norton (1992), authors of this distinguished framework, compare it to the dials and indicators in an airplane cockpit, since for the complex task of flying a plane pilots need detailed information about many aspects. Likewise, the complexity of managing the organizations of today requires managers to focus on innumerable measures, putting strategy and vision, not control, at the centre.

The Balanced Scorecard enables looking at the business from four different perspectives: financial, customer, internal and innovation and learning. This way, business managers are

forced to look at a broad set of critical measures, avoiding sub optimization while balancing financial and non-financial measures. Furthermore, unlike traditional measurement systems, the scorecard focuses not only in the past, but also in the future, indicating how performance can be improved in the upcoming periods (Kaplan and Norton 1993).

Nowadays, being customer oriented is part of most company's competitive agenda (Kaplan and Norton 1992). So, in order to execute a successful strategy, organizations need to know what their core activities are and what capabilities they need to grow and maintain this advantage (Marr, Schiuma, and Neely 2004). In Kaplan and Norton (1992) words, a company shall outline what must be internally excelled to meet customers' expectations. Internal performance measures should be underpinned by business processes that have the greatest impact on customer satisfaction. Afterwards, excellent customer performance is highlighted by processes, decisions, and actions occurring throughout an organization.

The same authors enhance that, although customer and internal perspectives are the most important variables for competitive advantage, targets for success are constantly changing. Accordingly, to keep on track, companies need to make continuous improvements to their products and processes, an issue that is addressed by the innovation and learning perspective. Last, but not the least, the financial perspective needs to be present to guarantee survival and prosperity.

Despite being famous, recent literature believes that the Balanced Scorecard does not address the business priorities of today's companies. Neely, Adams, and Crowe (2001) believe that there is the need for a new generation of performance measurement frameworks. As a result, they suggested the Performance Prism, which consists of five interrelated facets: Stakeholder satisfaction, strategies, processes, capabilities and stakeholder contribution.

While the Balanced Scorecard only addresses shareholders and customers, this new framework firstly focuses on a broader set of stakeholders, including employees, suppliers and partners. Secondly, after identifying the stakeholders and their needs, strategies to achieve requirements should be explored. Thirdly, processes should be identified, so that measures can be defined to raise questions about performance. It is important to mention that the execution of business processes is only possible with capabilities, which include people, practices, technology and infrastructure. Last, but not the least, the fifth facet of the Prism emphasises the bidirectional relationship with stakeholders: not only organizations have to deliver value to them, but also should the inverse occur. This way, Performance Prism clearly links measures, encouraging managers to ask critical questions that are the roots for selecting the right measures (Neely, Adams, and Crowe 2001).

2.3 From Business Processes to Dashboards

The heart of any enterprise's value creation lies on business processes. Thus, instead of the traditional functional viewpoint, today's companies adopt a process oriented vision, allowing a superior integration of operations (Hammer and Champy 1993).

A process has a defined beginning and end, comprising a sequence of activities by which an organization achieves its goals (Bal 1998). Business process management (BPM) provides a set of methods and tools for modelling and analysing processes of an organization (Weske 2010). Given the wide range of approaches, vaguely described, selecting the right techniques may be complex (Aguilar-Saven 2004). Anyway, modelling methodologies allow a structural representation of processes' activities and workflow, easing performance evaluation (Lin, Yang, and Pai 2002).

Monitoring a business process is an important phase in its lifecycle, since it supports organizations awareness about progress towards their goals (Weske 2010; Wetzstein et al.

2011). At this stage, Key Performance Indicators (KPI) of business processes are specified, so as their target values.

KPIs are quantitative information, defined to evaluate the performance of an organization towards its objectives. Thus, they must derive from organizational goals and strategy, since perceiving deviations supports decision making and enables the implementation of corrective actions. (Enoma and Allen 2007; Matéa, Trujilloa, and Mylopoulosb 2017).

The definition of KPIs should be done bearing in mind the desirable outcome of the processes. Accordingly, the SMART criteria have been proposed to support the selection of metrics. It states that a good KPIs should be Specific, Measurable, Achievable, Relevant and Time-bounded. However, this criterion does not address cause-effect relationships between KPIs, treating them as single metrics. The best way to address this issue is in stages, starting by clearing the corporate goals and assessing the adequacy of the already established KPIs. Organizing metrics and suggesting new KPIs are important steps to identify ineffective performance strategies and enable continuous improvement by establishing relationships between metrics and corporate goals (McNeeney 2005).

Target values for KPIs are usually specified in Service Level Agreements (SLAs) where provider and consumer arrange the expected service behaviour and its quality (del Río-Ortega, Resinas, and Ruiz-Cortés 2009).

An SLA pinpoints the responsibilities and service commitments of both service supplier and service buyer (Larson 1998). SLAs are informal contracts between the service provider and its user, having as a purpose the definition of the performance required. Thus, while defining SLAs, it is crucial to focus on performance targets to meet the business. This kind of responsibility contract has been widely adopted, both between internal functions within an organization and between third party suppliers and their customers. When agreements involve third party suppliers, the terms of the SLA may be contractual and, when failing to meet performance targets, penalties may be applied. Last, but not the least, there must be a balance between the costs and benefits of providing a certain service level (Parish 1997). Availability, reliability, serviceability, response and user satisfaction are the metrics to focus on when measuring the performance of the service delivered, and therefore, its compliance with the SLAs (Larson 1998).

Another good method to define targets and clarify objectives is benchmarking, which can also help to identify poor performing areas by establishing comparisons with the best in the industry and different organizations. Benchmarking can be either external or internal, depending if comparison is made between similar activities within a company or between competitors. Anyway, the principle is to have a point of reference in order to identify opportunities to improve (Enoma and Allen 2007).

To sum up, after identifying KPIs, target values and references, improvement may be achieved, through continuous planning, monitoring and execution. It is possible to put up measurement mechanisms where performance can be monitored in accordance to its accurately defined goals (Cai et al. 2009; Parish 1997).

For this matter, reporting models are developed to display aggregated data providing high-level summaries with clear and intuitive information, often in real-time. Generally, dashboards are the preferred tools across organizations for monitoring business performance and processes. Including KPIs in dashboards facilitates quick and precise information by comparing current performance against a target required to achieve business goals (Janiesch, Matzner, and Müller 2012; Peral, Mate, and Marco 2017).

Few (2006) described dashboards as “a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance”. This definition was later refined by Yigitbasioglu

and Velcu (2012) who also addressed the interactivity of dashboards as a performance management tool, allowing individuals not only to identify problems, but also to explore and communicate areas that need corrective action. This way, there must be several purposes for dashboards, such as enabling consistency, monitoring, planning, and communication.

Once dashboards support business decision-makers by spotting trends, patterns and anomalies, visual information design becomes very important. Yigitbasioglu and Velcu (2012) also distinguished between two types of design features: functional and visual. While functional features describe what dashboards can do and must fit with its purpose, visual features refer to how efficiently and effectively information is presented to the user. It is important to achieve a good balance between visual complexity and information utility, so that complete decision clues are delivered without confusing and distracting the user with a poor visualization. The prominence of visual design is further discussed in section 2.4 of this literature review, where data visualization is addressed.

2.4 Storytelling Data Visualization

The human brain processes visual information in several different ways and speeds; while some images are immediately processed, others are not (Archambault et al. 2015). Cultural factors, such as reading order, may also bias where people look first and how eyes visit elements in the scene (Segel and Heer 2010). Taking advantage of these innate capabilities, data visualization eases the communication of complex messages, streamlining the recognition of patterns in an interesting way. Accordingly, proper data visualization comprises simple elements that are undeniably necessary to ensure efficient and effective interaction (Archambault et al. 2015).

Politicians, activists and television reports have already understood the power of data visualization and are integrating interactive data in their speeches as a common practice. Also, data visualization is generally promoted for its storytelling potential. Several authors address storytelling and visual expression as one of the world's oldest professions, making part of the human culture. Stories with data diverge from traditional storytelling where there is an author-driven approach characterized by heavy messaging and a strictly controlled progression of events. Although tours with data also have a linear and organized presentation, they present a reader-driven approach. This way, with integrated interactivity, the audience is invited to manipulate the display, which may lead to new discoveries. Filtering, drilling-down options are some of the navigation available options that enable the reader to explore data. In short, there must be a balance between what the author intends to display and story discovery by the reader (Hullman et al. 2013; Segel and Heer 2010).

Data Visualisation requires interdisciplinary. Due to the complexity of data, a good solution may only be achieved if insights from diverse fields are taken into consideration (Fry 2007). However, most of the times there is lack of communication between these different areas and the end solution may not be the best. According to Fry (2007), reconciling these fields as parts of a major process may lead to less isolation within individual fields. The same author proposes a seven-step process: *Acquire*, *Parse*, *Filter*, *Mine*, *Represent*, *Refine*, *Interact*. In the first step, *acquire*, data is obtained; then *parse* is responsible for providing some structure for the data's meaning, ordering it into categories. The third step, *filter*, ensures that only the data of interest is considered and in the fourth, *mine*, methods from statistics or data mining are applied to discern patterns or place the data into mathematical context. The fifth step, *represent*, consists of choosing basic visual models, followed by the sixth step, *refine*, which improves the basic representation to make it more visually engaging. Lastly, step seven, *interact*, comprises adding methods for manipulating the data or controlling what features are visible.

Proper data visualization normally supports the understanding of existing relationships in data. Methods like nominal comparison, time series evolution, ranking, part of a whole, deviation, distributions and correlation are normally used to display relations present in data. In brief, there are two types of charts used to create data visualizations: tables and graphs (Archambault et al. 2015).

Graphical representations communicate patterns, historical trends and outliers more quickly than tables, which are normally used when precision is required. Through visualization, the areas in need of attention are unveiled, so that appropriate actions can be taken. On the other hand, in text-based reports trends and issues remain hidden (Eckerson and Hammond 2011). To design good charts a three-step process should be followed. Firstly, questions shall be done to increase contextual awareness; secondly, it is important to sketch graphs and ideas. Lastly, a prototype should be built through data visualization tools (Berinato 2016).

Data visualization comprises two main categories: visual reporting and visual analysis. Visual reporting uses charts to display business performance through dashboards or scorecards. These structures enable users to access detailed information by drill-downing and filtering options. In short, a dashboard is a visual exception report capable of spotting anomalies, trends and patterns. While reporting structures the navigation of data and predefines metrics, visual analysis provides a much higher level of data interactivity, enabling the users to freely explore data and discover new insights (Eckerson and Hammond 2011).

As a matter of fact, due to its power to communicate, advanced analytics and data visualization tools are already being used in most business environments. The root cause of this effect is the opportunities for businesses to achieve deeper, faster insights that can strengthen decision-making, improve customer satisfaction and accelerate the pace of innovation. More than just storing data, businesses must analyse, interpret and present it in meaningful ways so that gathering data may add value (HBR 2016; Intel 2013).

3 As-is Analysis

Despite B&W's authentic business model, many operational processes are alike Farfetch's, revealing the unavoidable existence of synergies and dependencies. Of all the Farfetch areas that serve B&W, Payments, Fraud and Delivery are the ones that directly influence order processing and, consequently, the overall operational performance. To get clearer grasp of the current situation, processes were mapped, as exhibited along in this chapter.

3.1 Order Fulfilment Process

Order processing is triggered by the placement of an order, through any B&W's powered website. During the checkout, customers choose the items they aim to buy and select the desired shipping option and payment method. Once the customer confirms the intention to buy those products, a portal order is created and stored in Farfetch's database.

Some of the B&W brands own more than a stock point, which may be a warehouse or flagship stores in several locations around the world. This way, when a portal order is created, it may comprise several boutique orders that correspond to different stock points from which they are shipped. Each of these boutique orders are individually treated through the order fulfilment process. Figure 5 exhibits a brief map of this process developed in this project.

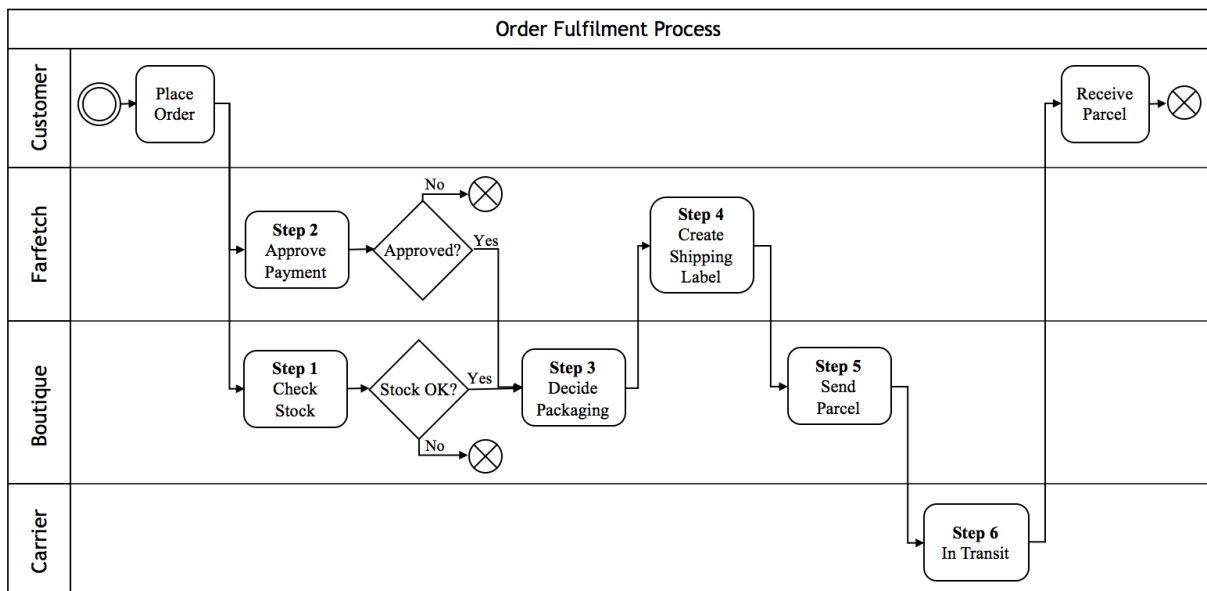


Figure 5 - Order fulfilment process.

Although the stock level of each stock point should be integrated with Farfetch's back-office, the system is not completely reliable, since an in-store and online sale may overlap in time. Thus, to avoid selling an item that is not available, the first step, *Check Stock*, ensures stock verification and is a store's responsibility. In case of *no stock*, *item swap* takes place, transferring the order to other stock point. If the item swap algorithm does not solve the unavailable stock issue, a cancellation by *no stock* takes place.

In parallel with this stock check activity, fraud prevention occurs. Step 2 – *Approve Payment* – is a Farfetch Fraud Team’s responsibility, which serves the B&W business unit. Although this process is partially automated, a big proportion of orders are still manually approved. In case of fraud suspiciousness order cancellation occurs, otherwise, the payment is captured and the order proceeds to step 3.

Once stock check and payment approval are both finished, the store is responsible to decide in which package the item will be shipped and print the documentation that must go along with it. Also, stores may include personalized gifts in the package to improve the online shopping experience.

Afterwards, an Air Waybill (AWB), issued by the courier, is generated. This document is mostly automatically created in step 4 – *Create Shipping Label* – and serves as parcel identification. However, it may require manual intervention in case of address misspelling or for several other reasons. Also, orders may be held in this step while legal verifications take place. Like fraud detection, step 4 is a responsibility of a Farfetch area that serves B&W, in this case, the Delivery Support Team.

As the AWB is correctly created, the order is ready to be sent and proceeds to step 5, waiting for courier pickup. Once the order is scanned by one of the integrated third-parties the order moves on to the step 6 and the customer is informed that the order is *In Transit*. This last step is courier’s responsibility and finishes when the order is delivered to the customer.

Due to the various players on order processing flow, operational performance may be easily compromised. Of all the Farfetch Operations areas, Fraud and Delivery are the ones that directly impact order processing. Moreover, the Fraud team is intrinsically linked with the Payments team, which, in its turn, indirectly impacts order placement. For these reasons, Payments, Fraud and Delivery are the focus of this study and are detailed in the following subchapters of this section.

3.2 Payments

By deploying the Farfetch platform, several payment methods may be offered by B&W brand’s websites. Credit card and Paypal are the main ones. However, some of the brands intend to focus in some markets by offering local payments options to the final consumer.

Before any order is placed, an external authorisation is needed to successfully proceed to the order fulfilment process. Whenever a customer attempts to finish the checkout process, an authorisation request is sent. This type of financial approval verifies several factors, such as payment information legitimacy, existence of funds and others. It is normally processed in seconds and its complexity depends on the payment method which triggered it.

The process behind credit card payment authorisation is complex and it involves multiple external agents. Thus, to avoid the complexity of establishing relationships with a wide range of financial institutions, Farfetch has integration with a Payment Service Provider (PSP). As exhibited in Figure 6, it works as a gateway, sending the payment automatically to the Processor. Then, the Acquirer (also PSP in this case) is responsible to interact with the Issuer (the customer bank) to proceed with the Customer details verification.

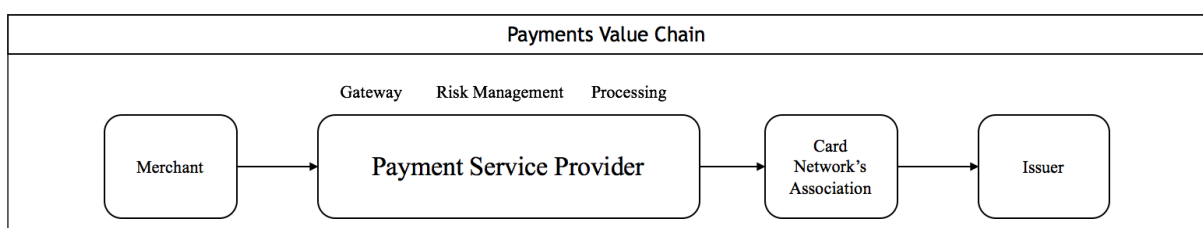


Figure 6 - Credit card payment system value chain.

Through this PSP integration, the merchant is easily connected to a wide range of payment networks and card issuers. Moreover, this eases the provision of a broader set of payment methods, enabling a worldwide e-commerce experience.

Regarding PayPal, the process of payment authorisation is much simpler. PayPal operates as a third-party payment processor, working as an intermediate between the merchant and the customer.

However, in any of the payment methods, this type of authorisation does not ensure that the transaction is being made by the cardholder or that a legitimate card is involved. Hence, Farfetch also subjects all the orders to a fraud prevention process which is carefully detailed in 3.3.

Additionally, tokenization is an available payment feature in both Farfetch and B&W websites. When checking out, customers may decide to save their payment details in the system, avoiding the insertion of the same information in future occasions. This service is called billing agreement when a PayPal account is involved, or credit card tokenization when it comes to credit card as a payment method. It is important to reinforce that Farfetch does not store clients' card details in its system. Instead, a unique number, designated token, is created and saved in the company. This number is provided by the PSP, which is the entity that stores customer information and only transmits partial details to Farfetch. So, the next time the same customer is checking out, a token will be internally sent to request the transaction.

The Current Farfetch Payments Metrics

Despite being an external process, the Farfetch Payments Team monitors the authorisation level because it directly influences order placement. It is important to rely on data-driven analysis to expose issues and fluctuations to the integrated PSP. Being alert may be the key to take proactive actions and maintain a smooth payment value chain.

Authorisation Rate

Authorisation rate is the most important metric to monitor the payment system performance. Although it is represented by a simple math equation, it may be calculated through several perspectives. Farfetch Payments Team has four different ways of calculating this metric; the most general one, divides the number of authorised requests by the total number of requests.

$$\text{Authorisation Rate (1)} = \frac{\sum \text{Authorised Requests}}{\sum \text{Requests}}$$

Every time a customer attempts to pay, an authorisation request is registered, whether there is a dropout in the end, or not. A dropout occurs when a customer gives up the intention of finishing a purchase at the very end of the checkout process, i.e., after being redirected to the payment verification platform. Bearing this in mind, one of Farfetch's variations for Authorisation Rate, excludes requests that resulted in a dropout. This alternative, presented below, only takes under consideration the actual number of times customers had a truly intention of to finish a purchase.

$$\text{Authorisation Rate (2)} = \frac{\sum \text{Authorised Requests}}{\sum \text{Requests} - \sum \text{Dropouts}}$$

Authorisation requests may be refused for numerous reasons, such as invalid card details, fraud, expired card and unavailable funds. To ease analysis, Farfetch groups refusals according to their reason description.

- **Customer issues:** These matters are directly related to the customer mistakes. They may be linked to insufficient funds, wrong CVC, invalid card number, etc.
- **Fraud issues:** Along the value chain, fraud detection is performed. Transactions may be then refused for the following motives: restricted card, lost card, stolen card, suspected fraud;
- **Farfetch issues:** Such refusals are connected to internal system failures or incompatibilities, as follows: currency not supported, payment details are not supported, invalid amount, duplicated transmission detected;
- **Issuer response:** It is the most relevant group. These rejections are given by the customer bank. They may be associated with lack of system integration or banks' system failure. Lack of trust on the transaction or on the entities involved is also sometimes pointed out;
- **Unknown issues:** Includes all the system malfunction, errors and unknown reasons.

The proportion of refusals between the above-mentioned groups is also monitored and compared to one another.

Monitoring the payment system performance requires a careful evaluation of the refusal reasons. The most relevant are directly connected to issuer rejections. Thus, to truly monitor the payments system performance it is important to complement metrics with information's regarding refusal reasons. Thus, a third variation of the authorisation rate is analysed by Farfetch. It is based on the same ratio, but it only takes under consideration all the transactions which are directly linked to an issuer refusal. Therefore, refusals related with customer or fraud issues are not included. The objective is to exclude all the reasonable refusals (i.e. usage of a stolen card, funds unavailable, expired card) and study data related with system performance where there is room for improvement.

$$Authorisation Rate (3) = \frac{\sum Authorised Requests}{\sum Requests - \sum Dropouts - \sum Refusals(Customer, Fraud)}$$

Dropouts

According to Smith (2013), as consumers are shifting online, e-commerce retailers are increasingly losing potential customers at the payment phase. However, retailers should be considering this as an opportunity, instead of a lost sale.

Thus, Farfetch monitors these events through a KPI named Dropout Rate. Being attentive to dropout rate is crucial to understand customers' expectations regarding the checkout process and available payment methods. Evaluating such event may be the trigger to proactively introduce a local payment in a certain country, for example. Also, a high dropout rate may be the reason for a low authorisation rate when considering the most global metric.

$$Dropout Rate = \frac{\sum Dropouts}{\sum Requests}$$

Attempts

The average number of attempts by a customer to get an authorised request is also an important KPI to address. An increase in this metric may explain a decrease in authorisation rate.

Although an increase in average number of attempts is generally associated with fraud, it may not always be the case. Occasionally, there may be issues in the payments chain, which leads to a wicked shopping experience. In such a demanding industry, any legitimate customer awaits immediate authorisation. Accordingly, not meeting these expectations may be the reason for an increase in dropout rate.

$$\text{Average Number of Attempts by Customer} = \frac{\sum \text{Requests by customer purchase}}{\sum \text{Customers}}$$

Billing Agreement Usage

This PayPal feature usage is evaluated by Farfetch, since it may be indirectly responsible for a higher authorisation rate. Payment information with history, may be related with a higher authorisation rate.

$$\text{Billing Agreement Usage} = \frac{\sum \text{PayPal Requests with Billing Agreement}}{\sum \text{Paypal Requests}}$$

Farfetch Payments Reports

The Farfetch Payments Team has recently launched a new reporting model. This monitoring tool gathers different dashboards which assess the diverse payment methods. In any of these analyses, the focus is authorisation rate measurement through a flexible range of perspectives.

Authorisation rate may be compromised in several stages of the payment value chain. Thus, more than just monitoring the overall metric in a daily, weekly or monthly basis, it is important to establish various detailed drill-down options on reporting models. Accordingly, the Payments Team dashboards include a detailed drill-downed view by issuing association, card type and provider. Moreover, authorisation rate may oscillate between regions and countries, so, drill-downs on these substances are also included.

Regarding date options, these dashboards allow analysis on daily, weekly, monthly and quarterly basis. However, when it comes to date ranges selections, it turns out to be not so flexible since it only enables selecting static date ranges, such as, *this week, last week, last 2 weeks, last month, this month, last year, this year*, etc.

Despite being an extremely complete reporting model, only payment requests made through Farfetch marketplace are being monitored and studied, which puts B&W in a sightless situation. Moreover, since B&W orders are made through different websites and each brand has its own PSP account, payments performance may vary depending on brand.

3.3 Fraud

Being acknowledged as a trustworthy merchant is crucial, whether it is by customers or card issuers. The ambition is to rapidly approve the higher possible orders volume, while keeping fraud level low.

However, according to Riskified (2016), “as e-commerce market grows, so does fraud”. Identifying card-not-present (CNP) fraud is complex, since it relies on rapidly changing

patterns and methods. Fashion merchants may even face more complexity, due to ever changing fashion trends. Thus, in this industry, fraud prevention strategy requires a complex, multi-faceted approach (Riskified 2016).

Fraud detection is part of the service provided to any B&W client and is part of payments processing. This examination is a responsibility of the Fraud Team, a Farfetch area that serves the B&W business unit.

After payment authorisation by an external process, which was described in 3.2, an order is placed. However, payment authorisation does not ensure that the customer is trustworthy and fraud verification still needs to occur. For a clearer view over this activity, the process was mapped, as exhibited in Figure 7. It may be categorised in two main parts: automatic approval and manual approval.

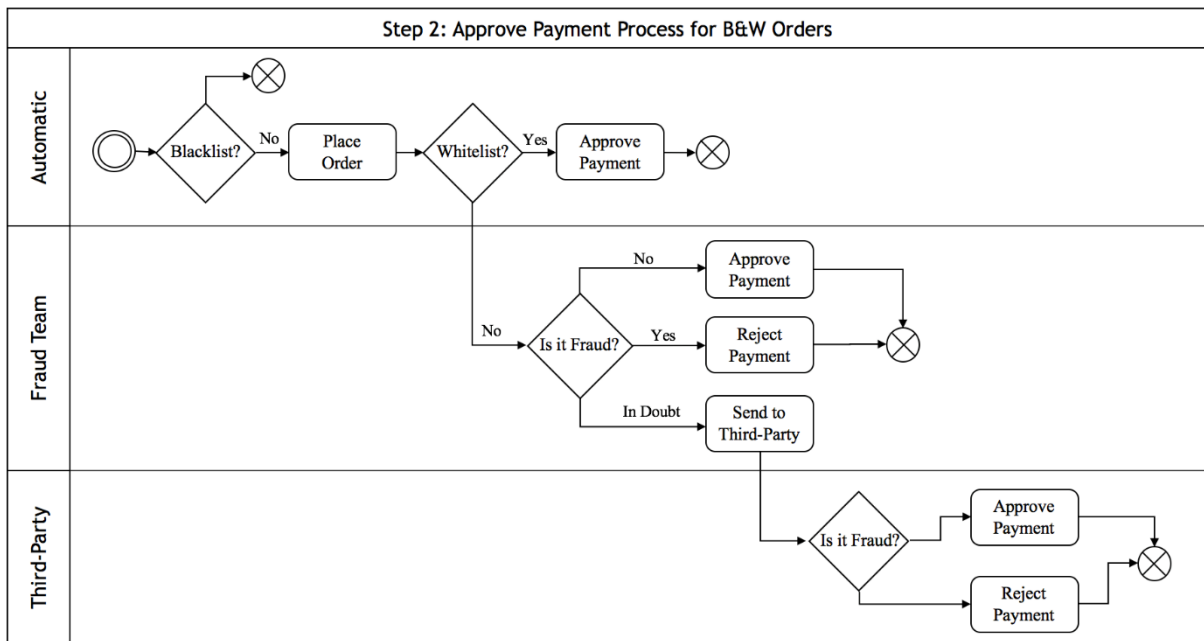


Figure 7 - Step 2: Approve payment process for B&W orders.

Automation

Automation is conceivable by an algorithm that relies on relevant customer history. According to their actions and historical purchasing value, customers may be added to one of two lists, known as Blacklist and Whitelist. Presence in one of these lists guarantees automatically cancelled or approved orders, respectively. In case of a purchasing attempt by a blacklist customers, the order is not even placed by default.

Manual Fraud Prevention

When no relevant customer history is stored, manual fraud detection is performed. This task requires human intervention and is a Fraud Team's responsibility. At this point, to identify fraudsters, several signs are analysed. Shipping and billing addresses conformance, fraud history of the customer, number of different cards used, category and brand of the items, shipping address history and publicly information about the customer are some of the hints to look at when fraud prevention is manual. All global Farfetch and B&W orders are analysed by agents in different Farfetch offices, Portugal and United States, enabling the provision of an almost 24/7 service.

B&W orders fraud manual prevention is slightly different from Farfetch orders. When revising Farfetch orders, if there are doubts about its legitimacy, the Fraud Team may either cancel the order or call the customer for further details. This last option is known as proof of

billing (PoB). However, B&W is a white-label solution, which means that, when a customer buys through one of its websites, a direct interaction with Farfetch should never occur. Thus, as exhibited in Figure 7, in case of doubtful trustworthiness of a B&W order, the Fraud Team may request the evaluation of a third-party. Such provider offers a fraud prevention solution to online merchants. The deal goes as follows: if an order is approved, a share is collected and, in case of chargeback, the cost will be covered by the third-party.

Including a third-party in the process means higher review time and additional costs so, recently, B&W has established a new process to approach customers – the Fraud Team must ask B&W brands' own Customer Service to put them in line with the client, so that PoB may occur. However, this is still an experimental process and its success is still doubtful. Such workflow may also happen backwards when a customer calls to the customer service claiming that an order was cancelled for no reason. In this case, customer service notifies the Fraud Team and, if necessary, puts the customer in contact with it.

Summing up, the output of this process is the approval or refusal of a payment. Depending on the final decision, the order may be cancelled or it may proceed to step 3, *Decide Packaging*.

Chargeback Process

Chargebacks are filed by customers with their card issuer to reverse the charge. Such events may befall for several reasons, such as item not received, unauthorized transaction or significantly different item from customer expectations.

In case of such event, chargebacks may be disputed by the merchant though documentation provision on the order. In case of success, the merchant will be able to reverse chargeback value. Otherwise, the customer is refunded, the sale is lost and, in case of fraud, so are the items allocated to it.

Additionally, merchants may be penalized by card networks' associations if the chargeback transaction rate is above a defined threshold. This limit is differently determined by each card association. Penalisation do not only comprise fines and fees, authorisation rate may decrease if chargeback ratio is above the established threshold.

The Current Farfetch Fraud Metrics

Farfetch monitors the fraud prevention process through several KPIs. Automation, refusal rate, reviewing time, proof of billing and chargeback level are some of the topics addressed through fraud performance measurement.

Automation

Farfetch automatically approves a portion of all the orders placed through its online marketplace. However, as exhibited in Figure 7, whenever a blacklist customer attempts to buy on Farfetch, orders are not even placed. As a result, the outcome of the following metric is based on whitelist customers' order placement.

$$\text{Automation Rate} = \frac{\sum \text{Orders Automatically Approved}}{\sum \text{Orders}}$$

Review Time

Fraud manual review time impacts order processing and, consequently, it may instigate shipping delays. Such incident is one of the causes for a poor online shopping experience. Thus, Farfetch evaluates fraud prevention performance through the following KPI.

Due to order processing workflow, it is important that payments are approved before the store checks stock, meaning before step 1 is completed. Otherwise, the store may be keeping stock on hold for an order that was later cancelled by fraud, compromising stock availability and sales. Given the importance of such event, Farfetch sets an ambitious target of 95% of orders approved in step 1.

$$\text{Payment Approval on Step 1 Rate} = \frac{\sum \text{Payment Approval Before Check Stock}}{\sum \text{Orders}}$$

Despite being an important KPI, it only compares check stock instant with payment approval moment, resulting on an incomplete metric. As long as fraud prevention occurs before stock check, the KPI will present good outcomes, even if fraud prevention is a slow process. So, good results on this metric may be achieved with a time-consuming review process. Therefore, Farfetch has a confidential service level agreement with the B&W business unit, which goes as follows:

- 60% of orders with fraud check in less than x minutes;
- 75% of all orders with fraud check in less than y minutes;
- 95% of orders with fraud check in less than z minutes.

Since this is an internal agreement, the time frames will be specified as x, y and z in this dissertation.

Such agreements are a good way to guarantee commitment and a good service provision through in-house outsourcing. However, since B&W currently does not possess a sustainable reporting model on this area, uncertainty remains on whether SLAs are being met or not.

Refusals

Avoiding fraud and chargebacks is important. Nevertheless, the refusal of legitimate orders may result in customer insult and lead to significant losses. Thus, it is crucial to maintain balance between these considerations (Riskified 2016). To keep this equilibrium, fraud refusal rate must be below the industry reference, which, according to Riskified (2016), is 5%.

Farfetch calculates fraud refusal rate as the ratio between the total value in GBP of refused orders and the total value of all the placed orders.

$$\text{Refusal Rate} = \frac{\sum \text{Order Value Refused by Fraud (GBP)}}{\sum \text{Order Value (GBP)}}$$

Proof of Billing

Contacting customers for further information, such as credit card number verification, may be grasped as an insult and be the roots of a bad customer experience. Thus, Farfetch monitors this process by measuring PoB rate. The objective is to keep it below 5%.

$$PoB\ Rate = \frac{\sum Orders\ under\ PoB}{\sum Orders}$$

Since this is a risky process in terms of customer satisfaction, its results shall also be carefully monitored. Therefore, Farfetch monitors PoB success by determining its payment acceptance rate. The goal is to have at least 65% of the orders under PoB accepted.

$$PoB\ Acceptance\ Rate = \frac{\sum Orders\ under\ PoB\ Accepted}{\sum Orders\ under\ PoB}$$

Chargebacks

Although card network's associations calculate chargeback ratio in a similar way, they take different considerations. For instance, while one may divide the number of chargebacks from a certain month by the number of transactions of that same month, other may divide the number of chargebacks of a certain month by the number of transactions of the previous month.

The same occurs with defined thresholds, which can vary from one card association to another. All in all, the maximum benchmarked threshold is around 1%.

Given the wide range of possibilities, Farfetch has defined its own way to display a business view of chargeback ratios. Both the number and value of transactions are considered.

$$Chargeback\ Rate\ (over\ qty) = \frac{\sum Chargebacks\ of\ a\ Certain\ Month}{\sum Transactions\ of\ that\ Month}$$

$$Chargeback\ Rate\ (over\ value) = \frac{\sum Chargeback\ Value\ of\ a\ Certain\ Month}{\sum Transactions\ Value\ of\ that\ Month}$$

Farfetch Fraud Reports

The set of above mentioned KPIs are monitored by the Fraud Team through a dashboard which is exhibited in [Appendix A](#). This dynamic dashboard enables the observation payment approval performance on a daily, weekly and monthly basis. Also, filtering options allow studying performance on this area for a certain boutique or shipping country.

However, this dashboard is far from being a reliable tool to monitor performance related with B&W orders. The collected data excludes all the B&W brands from the sample used to calculate metrics. Also, some of the metrics do not make sense in B&W business model and others are quite incomplete. Consequently, this reporting model clearly does not serve the new business unit needs.

3.4 Delivery: Create Shipping Label

Due to integration with carriers the creation of a shipping label is mostly automatic. However, some adversities may restrain automation and require manual intervention. Most of the times, these errors are related with the way customers fill shipping data during the checkout process. Misspell of the country name or inserting wrong zip codes are some of the examples of errors that stop the automatic creation of an AWB. Figure 8 exhibits a process map that briefly describes this activity.

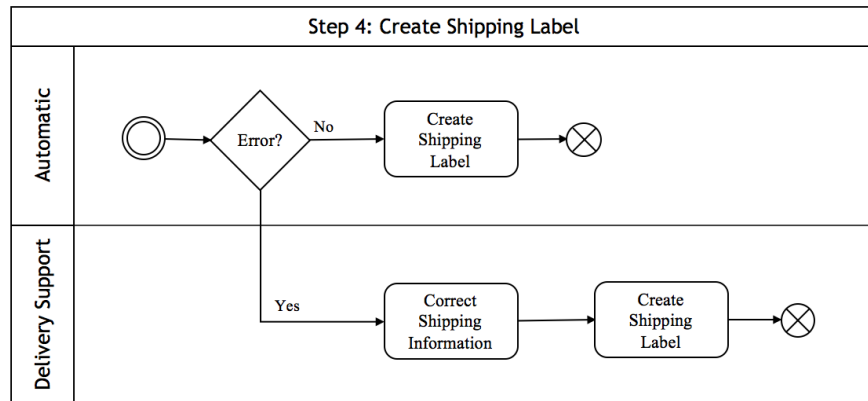


Figure 8 - Step 4: Create shipping label process.

Certain characteristics are related with an explicit stop in step 4. For instance, requesting same day delivery always requires manual intervention, because couriers providing these services do not have full integration with the Farfetch system. Also, orders may be held in this step for legal reasons, since there are countries that impose a maximum daily value on importations. Depending on the situation, further information may have to be requested to the customer to go along with the AWB or orders may require to be deliberately delayed.

Lastly, orders may also be held in this step due to store or customer delay request.

This task is currently a responsibility of the delivery support team which is now present in three offices: Portugal, Japan and United States of America. The different time zones strategically enable a continuous workflow in this step, preventing long stops in this step 24/7.

Same Day Delivery

Same Day Delivery (SDD) is a shipping service offered by Farfetch in the following cities: London, Paris, Los Angeles, New York, Miami, Milan, Rome, Barcelona, and Madrid. This service blocks the possibility of shopping from boutiques all over the world, since the boutique must be nearby the destination address.

By leveraging the Farfetch platform, B&W can offer such service to its clients. However, the provision of SDD service is a decision of each brand and depends on each stock point location.

All the SDD orders shipping labels are manually created and the process may vary from carrier to carrier. To provide this service, Farfetch partners with local carriers. The amount of orders allocated to each of these carriers is insignificant within the overall Farfetch business. Consequently, integration with these partners does not occur, explaining the fully manual creation of SDD shipping labels.

These conclusions were gathered after observing the work of a delivery support agent who is fully responsible for the SDD placed orders. This task involves dealing with several systems, since each carrier has its own. The process may even turn up more complicated if the customer misses a delivery. In these cases, Farfetch needs to contact the customer to arrange another suitable delivery date, which is then communicated to the carrier.

Orders placed after 11 am local time are considered “Next Day” orders and its delivery is only effectuated on the following business day. On the other hand, SDD orders placed before 11 am local time are delivered to the customer by 7pm that same day. The provision of such service is only guaranteed from Monday to Friday, excluding public holidays.

The Current Farfetch Create Shipping Label Metrics

These stops impact the velocity of order processing and, consequently, the overall shopping experience. Thus, not only the percentage in need of manual intervention is assessed, but also the time spent in such process.

Orders Stopped in Step 4

Although most of shipping labels are automatically created, it is important to monitor the percentage of manual intervention. According to the Delivery support team, normally, the AWB is not automatically generated for around 4% of all orders.

$$\text{Step 4 Stops Rate} = \frac{\sum \text{Orders Stopping in Step 4}}{\sum \text{Orders}}$$

Time Spent in Step 4

The need of manual intervention to create a shipping label impacts order processing and may prompt shipping delays. Thus, a demanding SLA imposes that 95% of the orders that require manual intervention should be addressed in less than 2 hours. Such SLA is not only a Farfetch service level definition but also an internal agreement between the parent company and B&W.

To evaluate if this SLA is being met the number of manually created shipping labels in less than 2 hours is divided by the total number of manual shipping labels created. This KPI does not consider orders on hold, since in those cases the delay was requested by the customer or the store. In such situations, the order may remain on hold in step 4 for several days.

$$\begin{aligned} \text{Manually created AWB in less than 2 hours rate} &= \\ &= \frac{\sum \text{Manually created AWB in less than 2 hours}}{\sum \text{Manually created AWB}} \end{aligned}$$

As a complement to the above-mentioned KPI, the average time to manually create a shipping label is evaluated.

$$\text{Average time to manually create an AWB} = \frac{\sum \text{Time to create an AWB}}{\sum \text{Manually created AWB}}$$

Farfetch Shipping Label Reports

Monitoring occurs daily in the Delivery Support Team’s Kaizen meeting. KPIs and SLAs are accessible in a dashboard that presents the previous day performance. Also, a weekly dashboard may be assessed to perceive the performance of the previous seven days ([Appendix B](#)). Both dashboards are not dynamic, since they do not enable the selection of different date ranges, countries, regions, etc. However, a detailed view by courier and office is included, enabling a complete observation.

For Farfetch, monitoring delivery support agents’ performance is also a purpose of these reports. Consequently, not only a detailed view by office is available, but also a complete

outlook by individuals. However, such exhaustive analysis is not within the scope of the developed reporting model for B&W. Instead, an overall view on the creating shipping label performance is required.

Despite not excluding B&W orders in these reports, the volume of Farfetch orders is much higher. Consequently, this overall step 4 performance analysis is irrelevant for the new business unit, since performance regarding its orders is not visible.

Regarding SDD service, its performance is not currently monitored by the Farfetch delivery team. The minor proportion of orders comprising this process makes this analysis not a priority for Farfetch Delivery Team analysts' workload.

3.5 Key Ideas

This as-is analysis on each of the areas covered by this project evidences that the current Farfetch internal reporting models do not support B&W's Operations decisions. Instead, they keep this new business unit on dark side with no visibility over the in-house outsourced activities. In summary, some of the reasons for such verdict are stated below.

- Some of the current Farfetch operational reports are only Farfetch centred, excluding all the data linked to orders made through B&W powered websites. However, although the creation of shipping label reports do not comprise this exclusion, B&W orders' volume is irrelevant when compared to Farfetch's. Thus, the analysis of such reports does not bring visibility for the new business unit, since results are highly influenced by the parent company much larger order volume;
- Brands are not Farfetch's main focus. Notwithstanding, to act like a consultancy agency for brands, tenant filtering options are indispensable functionalities for the new B&W reporting model;
- B&W related order processing activities sometimes clearly diverge from the processes for Farfetch's orders. Consequently, some of the Farfetch KPIs do not meet the needs for evaluating B&W orders, imposing the need of creating new indicators. This point was especially highlighted on through the Fraud prevention process;
- Since the Farfetch operational reports were built in different moments, for different purposes and by different people, their appearance is very diverse. This lack of standardization may not be a problem for Farfetch, since the operational reports are analysed by specialized players who know how to navigate them. However, this could be confusing when various stakeholders are to be addressed;
- Most of Farfetch reports are to monitor daily and weekly performance. Consequently, the filtering functionalities related to date ranges is not fully flexible. More high-level comparisons between different quarters, months and years would be difficult or even impossible to do while navigating the current Farfetch reports.

4 A fully-fledge Operational Reporting Model

Mastering operational processes requires continuously evaluation. Such reality is reinforced when performance depends on several entities. As stated before, B&W operationally relies on Farfetch teams' activities, blindly trusting their performance.

However, visibility over these activities performance may be the trigger to identify anomalies and to suggest alternative solutions, while *changing for the better*. Some B&W related processes differ from Farfetch's and its definition is still very recent. Thus, only a new exclusive and adapted reporting model can address such matters.

Having operational perceptibility and recognising weaknesses would empower B&W Operations Specialists to clearly answer brands concerns. Additionally, the developed reporting model is also to be accessed by stakeholders who seek a high-level sight over the operational themes.

4.1 Requirements

In any project, it is essential to understand its requirements, especially when producing content for a final user. Accordingly, in an early stage, the main requirements and functionalities were listed.

Such task was supported by meetings with some of the future users of the developed reporting model. Moreover, while listing requirements, opinions of Farfetch analysts and managers of the areas in study were collected.

Regarding functionality, interactivity and flexibility of the reporting model, the requirements are listed below:

- Automatic daily data refreshment;
- Data security and integrity;
- Drill-down capability;
- Filtering Capability;
- Conditional formatting;
- Online publishing.

Taking under consideration these requirements and the software platforms used at Farfetch, *Tableau* was the chosen solution. It allows fully integration with SQL server, enabling automatic scheduled data refreshment. Moreover, this business intelligence analytics solution comprises powerful data visualization capabilities that can be published online.

Summarizing, *Tableau* capabilities cover all the requirements above-listed, a preponderant variable for its selection.

4.2 Key Performance Indicators Re-design and Design

As previously described, B&W order processing comprises its own characteristics in some areas. Consequently, to simply replicate Farfetch metrics does not guarantee the existence of a widespread reporting model. This motivated not only the selection of relevant existing KPIs, but also the definition of new ones to contemplate these processes' intricacies.

Considering the processes mapped in chapter 3, KPIs to address the critical nodes were selected and defined. The current chapter aims to present and describe those metrics, reinforcing its importance for the B&W business model.

Payment System

According to the Payments Team, the most important metric in this area is *authorisation rate*. Thus, all the current Farfetch point of views for this KPI, clarified in chapter 3.2, were replicated. Accordingly, as exhibited in Table 1, the same occurred with metrics related to events that influence *authorisation rate*, such as *dropout rate* and *average number of attempts by customer*.

Table 1 - Payments KPIs and references.

Authorisation Rate			
KPI	Formula	Type	Reference
Authorisation Rate (1)	$\frac{\sum \text{Authorised requests}}{\sum \text{Requests}}$	Replicated	farfetch.com average (2016)
Authorisation Rate (2)	$\frac{\sum \text{Authorised requests}}{\sum \text{Requests} - \sum \text{Dropouts}}$	Replicated	farfetch.com average (2016)
Authorisation Rate (3)	$\frac{\sum \text{Authorised requests}}{\sum \text{Requests} - \sum \text{Dropouts} - \sum \text{Refusals}}$	Replicated	farfetch.com average (2016)
Dropout Rate	$\frac{\sum \text{Dropouts}}{\sum \text{Requests}}$	Replicated	--
Average Number of Attempts by Customer	$\frac{\sum \text{Attempts}}{\sum \text{Customers}}$	Replicated	--

Authorisation rate relies on numerous variables, such as type of industry and card country. As a matter of fact, this metric is subjected to high fluctuations. Consequently, defining a target was a challenging task. Thus, regarding this area, the great innovation is the existence of an orientation which was defined in accordance with the Farfetch history. More than just operating in the same industry, the parent company experiences a high number of transactions requests. Thus, Farfetch historical data has been considered a suitable sample to create a reference for *authorisation rate* results.

Accordingly, all the payment requests made through the Farfetch marketplace on 2016 have been pondered. Furthermore, this point of reference has been settled for each specific payment method, so that a reliable positioning could be displayed, even when a filtering option is used.

Although this is a very unrefined point of reference, according to the B&W Operations Team, its implementation is crucial. Such necessity was reinforced by the fact that some of the future users are not specialized in the payments area.

Regarding PayPal billing agreement and credit card tokenization, they are both services included in all the B&W websites. Thus, the usage of these features shall be measured. The KPI already used by Farfetch to evaluate PayPal *billing agreement usage* was replicated. As for credit card tokenization, although Farfetch is not measuring such matter, a KPI was designed to evaluate its usage, as exhibited in Table 2.

Table 2 - Payments information storage KPIs and references.

Information Storage Usage			
KPI	Formula	Type	Reference
Tokenization Usage	$\frac{\sum \text{Requests with tokens}}{\sum \text{Credit Card Requests}}$	New	--
Billing Agreement Usage	$\frac{\sum \text{Requests with billing agreement}}{\sum \text{Paypal Requests}}$	Replicated	40% Farfetch

Fraud Prevention

Of all the in-house outsourced activities in study, fraud prevention is the one that most differs from the Farfetch approach, as discussed in chapter 3.3. For the B&W orders, third-party intervention may be requested when there is hesitation about the legitimacy of a customer.

Reinforcing the goal of the Fraud Team, the ambition is to approve a high volume of orders in the shortest time-period, while keeping a low fraud level and preventing chargebacks. Thus, efficiency and efficacy is needed. To evaluate the commitment to reach these goals, in this project, fraud KPIs were divided in four different areas: time, refusals, third-party performance and chargebacks.

- **Time**

The existing Farfetch KPIs prioritize information regarding approval moment. There is a focus on whether fraud intervention is faster than the stock check processed by the boutiques or not. However, it is possible to approve or reject payments faster than boutiques stock check and still be slow at doing it. To have a clearer view on this critical point a new KPI, entitled *average fraud check time*, was defined.

Although this KPI gives visibility on what is the usual time-frame to complete payment approval, it may be deceitful. Average does not highlight the existence of outliers. Further details on this metric may be assessed in Table 3.

On the other hand, the established SLA, could balance this drawback. As described in chapter 3.3 this SLA does not focus on an average measure. Instead, it oversees the relation of time to approve with orders volume. However, since there is still uncertainty on whether this SLA is being met or not, new metrics to address this concern have been defined and designed, as exhibited in Table 4.

Table 3 - Fraud check time KPIs and references.

Payment Approval Time			
KPI	Formula	Type	Reference
Approved on Step 1 Rate	$\frac{\sum \text{Orders Approved before Stock Check}}{\sum \text{Orders}}$	Replicated	95%
Auto Approval Rate	$\frac{\sum \text{Orders Automatically Approved}}{\sum \text{Orders}}$	Replicated	Farfetch reference
Average Payment Approval Time	$\frac{\sum \text{Payment Approval Time}}{\sum \text{Orders}}$	New	--
Average Time Blocked on Step 2	$\frac{\sum \text{Time to Approve after Stock Check}}{\sum \text{Orders Approved after Stock Check}}$	New	--

Table 4 - Farfetch Service Level Agreement for B&W.

B&W Service Level Agreement			
KPI	Formula	Type	Reference
%Orders with fraud check in less than x minutes	$\frac{\sum \text{Orders Approved } (<x \text{ min})}{\sum \text{Orders}}$	New	60% SLA
%Orders with fraud check in less than y minutes	$\frac{\sum \text{Orders Approved } (<y \text{ min})}{\sum \text{Orders}}$	New	75% SLA
%Orders with fraud check in less than z minutes	$\frac{\sum \text{Orders Approved } (<z \text{ min})}{\sum \text{Orders}}$	New	95% SLA

Nevertheless, uncertainty remained about the power of these defined ranges to identify outliers. To overcome this setback, an extended range of intervals was defined to get a clearer view of the distribution of time to approve. These intervals, exhibited in Table 5, are a complement to the previous metrics, since they do not rely only on an average and give a widespread visibility of fraud check time frame.

Table 5 - Payment approval time intervals.

Payment Approval Time Ranges
% Orders with payment approval in less than 30 minutes
% Orders with payment approval between 30 minutes and 2 hours
% Orders with payment approval between 2 hours and 6 hours
% Orders with payment approval between 6 hours and 24 hours
% Orders with payment approval between 24 hours and 42 hours
% Orders with payment approval over 42 hours

Lastly, a metric to evaluate the cases when payment approval occurs after check stock was designed. The importance of this new KPI relies on understanding how seriously payment approval may influence the whole order fulfilment process. Also, stock availability can be compromised, since items may be on hold for orders that will later be cancelled by fraud. *Average time blocked on step 2* was defined to evaluate how serious this stopover may turn out. To calculate this new metric, all the orders that had its fraud prevention completed after stock check were considered. Further details on this new KPI are exposed in Table 3.

- **Refusals**

One of the Fraud Team goals is to ensure that only fraudulent orders are rejected. Thus, *refusal rate* turns up being an essential KPI to be monitored. By keeping *refusal rate* under control, it is possible to guarantee that legitimate customers are not being declined. So, a replication of this metric, already existent in Farfetch, occurred.

Regarding the Farfetch KPIs for the PoB process, its replication does not make sense within the B&W business model. As described in chapter 3.3, contacts between the final customer and the Fraud Team shall not be established. Therefore, PoB does not occur in B&W. Instead, new KPIs were defined to evaluate the process followed for B&W orders (Table 6).

In doubt rate brings visibility on the portion of orders which legitimacy was uncertain for the Fraud Team. Also, it shall be compared with another new KPI, named *third-party usage rate*. The aim of these new metrics is to monitor if the B&W fraud prevention process is correctly being taken. In these terms, the *in doubt rate* results should be approximately equal to the *third-party usage rate*.

Moreover, a whole new perspective over these metrics was brought to the B&W business unit. Although understanding these metrics representation over order value (GBP) is crucial, a viewpoint in terms of orders quantity may be valuable. Thus, all the metrics specified within Table 6, present these two perceptions.

Table 6 - Payment refusal KPIs and references.

Payment Refusals			
KPI	Formula	Type	Reference
Refusal Rate	$\frac{\sum \text{Orders Value Refused by Fraud (GBP)}}{\sum \text{Order Value (GBP)}}$	Replicated	5% Riskified
	$\frac{\sum \text{Orders Refused}}{\sum \text{Orders}}$	New	
In Doubt Rate	$\frac{\sum \text{Suspicious Order Value (GBP)}}{\sum \text{Order Value (GBP)}}$	New	--
	$\frac{\sum \text{Suspicious Orders}}{\sum \text{Orders}}$	New	--
Third-Party Usage Rate	$\frac{\sum \text{Orders Sent to Third-Party}}{\sum \text{Order Value (GBP)}}$	New	--
	$\frac{\sum \text{Orders Sent to Third-Party}}{\sum \text{Orders}}$	New	--

• Third-Party Performance

Relying on a third-party may comprise the whole process, especially when time is a crucial variable and asset. This fact is reinforced by real data on Figure 9, which exhibits the influence of the third-party on global fraud prevention time.

Due to confidentiality reasons, the real values of total time and the time spent on the third-party are not exhibited in Figure 9. Instead, representative time scale axis, in which time varies from t_0 hours to t_6 hours, are used.

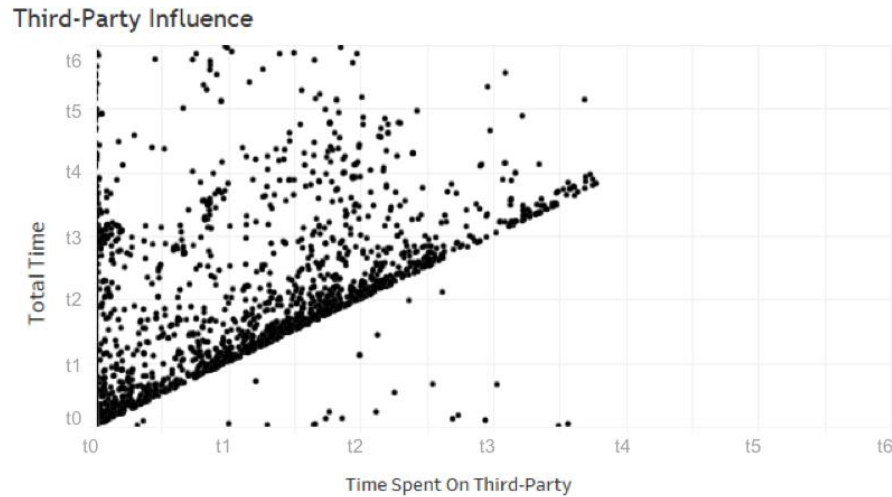


Figure 9 - Third-party influence.

Given these data-driven conclusions, new KPIs were defined to monitor the third-party performance. These new metrics will bring visibility on how outsourcing part of this activity may affect the overall fraud prevention process. Also, it may be the key to identify issues in the third-party service provision.

The new designed KPIs, exhibited in Table 7, are similar to the previously defined metrics. However, only orders that required third-party intervention are considered. With this new focus, the following KPIs have been settled:

- *Average total time to approve*: The total time to approve represents the time to complete fraud prevention when third-party intervention occurred. The average is calculated as the ratio between the sum of the full approval time and the total of orders that required third-party intervention;
- *Average Third-party Time to Approve*: It measures the average time the third-party takes to accept or reject a payment when its intervention is required;
- *Third-party Refusal Rate*: It may be compared to the PoB results Farfetch KPI, since it evaluates the results of suspicious orders for which a third-party evaluation was requested. Also, it assesses the efficacy of this third-party to approve orders that Farfetch could not identify as trustworthy. It is calculated by the ratio between the number of orders refused by the third-party and the total number of orders that required its intervention
- *Third-party Chargeback Rate*: When a payment is approved by the fraud third-party, in case of chargeback, the cost will be covered by it. However, any chargeback may compromise merchants' credibility and authorisation rate. Therefore, this rate evaluates the third-party proficiency in avoiding chargebacks.

Table 7 - Third-Party performance KPIs.

Third-Party Performance		
KPI	Formula	Type
Average Total Time to Approve	$\frac{\sum \text{Time to Approve} \text{Sent to Third-party}}{\sum \text{Orders Sent to Third-Party}}$	New
Average Third-Party Time to Approve	$\frac{\sum \text{Time to Third-party Approval}}{\sum \text{Orders Sent to Third-Party}}$	New
Third-Party Refusal Rate	$\frac{\sum \text{Orders Refused by Third-party}}{\sum \text{Orders Sent to Third-Party}}$	New
Third-Party Chargeback Rate	$\frac{\sum \text{Chargebacks} \text{Third-party approval}}{\sum \text{Orders Sent to Third-Party}}$	New

- **Chargebacks**

Regarding chargebacks, as exhibited on Table 8, the Farfetch KPIs were replicated, since they show two points of view on this issue, covering a broad set of cases. According to Chargebacks911 (2014), each card network has its own strategy and thresholds for evaluating chargebacks. After revising VISA and Mastercard thresholds, it was established that the chargeback ratio should always be below 1%.

Table 8 - Chargebacks KPIs and references.

Chargebacks			
KPI	Formula	Type	Reference
Chargeback Rate (over qty)	$\frac{\sum \text{Orders with Chargebacks}}{\sum \text{Orders}}$	Replicated	1%
Chargeback Rate (over value)	$\frac{\sum \text{Orders Value with Chargeback}}{\sum \text{Orders Value}}$	Replicated	1%

Shipping Label Creation

The creation of a shipping label should always be an automatic process. However, as described in chapter 3.4, human intervention may be required. While waiting for the AWB creation, value is not being added, thereby a demanding SLA is set: 95% of all the orders that require a manually AWB creation should have it done in less than 2 hours. Nevertheless, B&W does not have visibility on whether this SLA is being met or not. Therefore, the most relevant KPIs were replicated for B&W, as exhibited in Table 9.

Table 9 - Create Shipping Label KPIs and References.

Create Shipping Label			
KPI	Formula	Type	Reference
Step 4 Stops Rate	$\frac{\sum \text{Orders stopping in step 4}}{\sum \text{Orders}}$	Replicated	4%
Manually created AWB in less than 2 hours	$\frac{\sum \text{Manually created AWB (<2 h)}}{\sum \text{Manually Created AWB}}$	Replicated	95% SLA
Average time to manually create an AWB	$\frac{\sum \text{Time to Create an AWB}}{\sum \text{Manually Created AWB}}$	Replicated	--
Number of Backstep	$\sum \text{Orders with Backsteps}$	New	--
Backstep Rate	$\frac{\sum \text{Orders with Backsteps}}{\sum \text{Manually Created AWB}}$	New	--

Investigating if most of the orders are having its shipping label created in less than 2 hours is important, but it is not the only topic to be monitored. It is vital to measure the ratio of orders which are stopping in step 4 – *Step 4 Stops Rate*. As a matter of fact, an increase in this activity backlog may trigger a decrease in the SLA.

Average time to manually create an AWB was also replicated to bring a more insightful observation on the time an order is blocked in step 4. However, this metric does not bring visibility over outliers. To complement this drawback, new time frames were defined, as shown in Table 10.

Table 10 - Time intervals for the manually created shipping labels.

Manually Created AWB			
KPI	Formula	Type	Reference
Manually created AWB in less than 2 hours	$\frac{\sum \text{Manually created AWB (<2h)}}{\sum \text{Manually Created AWB}}$	Replicated	95% SLA
Manually created AWB between 2 hours and 4 hours	$\frac{\sum \text{Manually created AWB (2h-4h)}}{\sum \text{Manually Created AWB}}$	New	--
Manually created AWB in more than 4 hours	$\frac{\sum \text{Manually created AWB (>4h)}}{\sum \text{Manually Created AWB}}$	New	--

While analysing data, it was noticed that, for some orders that required human intervention, time spent on step 4 was not being registered. Such abnormal event was later rationalised

while observing the work done by a delivery support agent. According to that agent, sometimes, no visible reasons are identified for a failure of the automatic AWB creation. When that happens, the Delivery Support agents may perform proactive actions to prevent these stops in the future. However, to understand if the implemented procedures solved the problem, orders need to be moved back to step 3 – Decide Packaging – and all the registers are deleted. By doing this, the delivery support agent is now able to log step 3 and perceive if the AWB is automatically created this time. If the order moves straight away to step 5, the proactive action has been correctly implemented. An example is detailed below.

Sometimes, the pick-up schedule registered in the Farfetch systems is not compatible with the carriers' integration requirements. For example, having a very short pick-up schedule may be a reason for not enabling the automatic creation of an AWB. When a delivery agent suspects of such reasons, he may proactively change the store pick-up schedule.

Although the above-mentioned proactive actions aim improvement, records are deleted and it is impossible to understand through data why orders are being moved back on the order fulfilment value chain. Thus, this type of events was named *backsteps* and a new KPI was created to measure the frequency of these actions, as exhibited in Table 9. Since this is a process that has never been studied, a counter was implemented to understand how many orders are having its logged information deleted – *Number of Backsteps*. Also, a KPI to compare that result with the volume of manually created AWBs was set – *Backstep Rate*.

4.3 Data Collection and Preparation

After defining the KPIs to be displayed in the developed reporting model, data acquisition took place. This was the early stage of the third phase stated in the methodology of this project (Chapter 1.3). It has its basis on the seven-step process proposed by Fry (2007), which was addressed in the literature review.

This process must be taken as a group of unified steps (Fry 2007), but not all of them were within the scope of this dissertation. However, such fact did not compromise the overall integration of these steps. Instead, it revealed the importance of interdisciplinary in data visualization.

The first and second steps, *acquire* and *parse*, were a responsibility of the Business Intelligence team, which not only obtains, but also structures data, ordering it into categories. Accordingly, data was made available for the implementation of the following steps which led to the final reporting models.

However, when developing a specific dashboard, not all the available data was of interest. Thus, the third step, *filter* took place, ensuring that only the crucial information was considered. The previously selected and defined KPIs support the delineation of the scope of the necessary data. Also, after filtering data, statistic and data mining methods were implemented to give a mathematical context to data. This step, nominated *mine*, sustained the calculation of some KPIs. These two data preparation steps (*filter* and *mine*) were part of the methodology of this project.

Farfetch and B&W share the same database, which presents a multi-tenant architecture. This means that, although the database and structure is shared, Farfetch and each of the B&W brands correspond to unique tenants. This tenant architecture is not completely transversal yet. Nevertheless, as new requirements arise with the growth of the business unit, it is continuously improving so that a stable structure may be achieved. As an example, the existence of information regarding each tenant description, such as name and launch date is very recent. Firstly, each tenant would only be identified by an identification number along the database. Other information that characterise a certain tenant was not directly available. However, as the company grows, specifically defining each tenant has revealed to be crucial.

Considering the briefly described database structure, data preparation occurred through the design and re-design of queries using Structured Query Language (SQL) Server. Queries enabled manipulation of the data and selecting only the necessary information, such as excluding Farfetch tenant.

For each area in study – Payments, Fraud and Delivery –, the existing Farfetch queries were reviewed. However, of all the areas covered by this project, Payments is the only one in which an existent Farfetch query was used. A recent Payments SQL view was built by a Payments analyst, including all the crucial information of that area. Thus, a basic query was designed to read that Payments SQL view while filtering only B&W tenant's information.

Regarding Fraud and Delivery, the existing SQL queries did not cover all the necessary matters for this project. Consequently, new queries were designed to filter the required data.

Both Farfetch and B&W use the same software for Business Intelligence and Analytics: *Tableau*. For this reason, and since it meets all the requirements of this project, *Tableau* was selected as the main tool for the development of this reporting model. Moreover, this software has integration with SQL Server, allowing data importation through SQL queries.

Regarding SQL Server integration, it is important to have in mind database stability and efficiency. One of the basic rules is to only make requests to the database when it is necessary. Accordingly, a *Tableau* data source for each area within this project was built. These data sources are data extractions made directly from SQL views available on the database, which store the designed queries. These extractions upload to *Tableau Server* may be live or scheduled. Considering this project requirements, daily refresh schedules were settled. For the desired periodicity, live extractions should be avoided, since they require constant connection and requests to the database. As a result, considering this project requirements, daily refresh schedules were settled. *Tableau* workbook communication with the data sources is established through B&W own *Tableau Server*. This way, efficiency is not compromised because there is only one scheduled daily connection to the database.

To sum up, *filter* was achieved through the development of SQL queries, while *Tableau* software allowed giving a mathematical context to data. Within *Tableau* environment, it was possible to *mine* data and calculate the previously defined KPIs.

After extracting all the necessary data and calculating the crucial metrics, the selection of the best representation for each KPI arose. The process regarding data representation and interaction is detailed in the following chapters.

4.4 The Prototype

According to Buxton (2007), “prototyping is like a spiral closing in along a single trajectory. Each prototype is a refinement of the previous one”. On the other hand, for the same author, “design is about exploring and comparing the relative merits of alternatives”.

Previously to the design phase, a prototype was built ([Appendix C](#)). This approach eased the communication and collaboration with the final users of the developed reporting model. While using the prototype, the B&W Operations Team could explore different possibilities to interact with data, identify limitations and suggest improvements. Also, this method supported the balance between several alternatives for the future design phase.

To shape this reporting model prototype, dummy data was used and the following principles and functionalities were considered:

- Consistency and standardization;
- Flexible date filtering and drill-down options;
- Highlighted points of reference (e.g. SLAs, Farfetch references);
- Smoothly engaging colours.

Consistency and standardization

Navigating the current Farfetch dashboards of different areas may be quite confusing ([Appendix A](#) and [Appendix B](#)). The lack of consistency through the several reports instigates a sense of disorientation. This is especially common when users are not acquainted with a certain area or dashboard.

Consequently, consistency and standardizations are two of the main pillars of the developed reporting model. Some measures to guarantee stability while navigating it, were implemented:

- Filtering options are always to be positioned near the upper-left corner of each dashboard. This ensures that users are always aware of the available filters in a certain dashboard. Also, the currently selection may be easily observed and filters are applied to the entire report;
- Highlighted references are always to be positioned near the right-upper corner of each dashboard;
- Charts alignment and colours shall not diverge from dashboard to dashboard.

Filtering options

Of all the available filtering option, due to their relevance, brand and date filters are shared by all the dashboards of the developed reporting model. Any other filters that suit a certain reporting area are also positioned nearby.

The brands filter comprises a multiple values dropdown, enabling the selection of several brands at the same time. The choice of this filtering option was quite intuitive, since this was the most flexible dropdown option in *Tableau*.

Regarding date filtering options, its selection was not that straightforward. The aim was not only to obtain a flexible date filter option, but also a solution that would group data in different date levels. The final decision was based on experimentation and gathered opinions.

The elected relative date filtering option, exhibited in Figure 10, enables the selection of several date ranges. For instance, when selecting *Weeks* it is possible to filter the following options:

- Previous week;
- This week;
- Last x weeks;
- Week to Date (WTD).

Such options are available for all the other time frames: Years, Quarters, Weeks and Days.

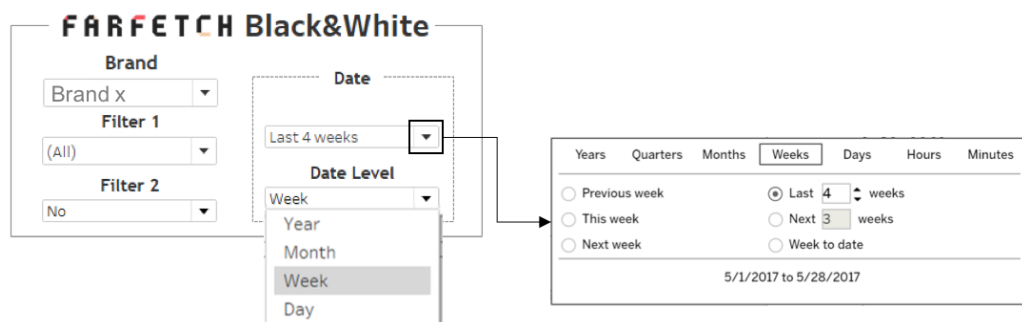


Figure 10 - Prototype: Date filtering options and functionalities.

The *Tableau* relative date filter enables limiting data within a selected range. However, it does not define how a chart axis is aggregated. Thus, to enable grouping data within different date levels (year, month, week and day) a date parameter was added. This parameter, entitled *Date Level* is exhibited in Figure 10.

For a clearer view on the results of these filtering and aggregating options, Figure 11 exhibits the result of selecting *Last 4 weeks* as date filter and *Week* as date level. The resulting graphic exhibits the data related to *each week of the last four weeks*.

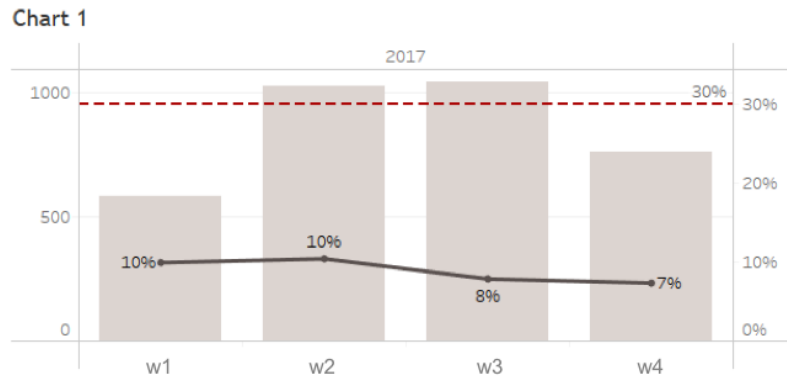


Figure 11 - Prototype: Data results for the last 4 weeks aggregated by week.

Farfetch teams measure performance on a daily basis. However, the purpose of the developed dashboards is to have a broader view on each of the areas that serve the B&W business unit. Thus, within this reporting model, data is aggregated in a weekly basis and the last 4 weeks are filtered by default. Anyhow, the date range and level of aggregation may be changed at any moment to meet every user's needs.

Reference Values

Visual salience attracts human's attention. It may be achieved through colour, size or orientation. This highlighting visual mechanisms direct the user's attention to particular elements in the display (Segel and Heer 2010).

Given the importance of enlightening data visualization, each dashboard of the developed reporting model highlights the most important results of that area. To ensure consistency and standardization, these results are always positioned near the upper-centre and upper-right corner.

The emphasised results refer to the period selected in the relative date filter. For instance, the outcomes displayed in Figure 12 refer to the *Last 4 weeks*. Presenting bigger numbers accompanied with points of reference was considered the preferable scheme. Moreover, the complementary colours strategically chosen, certify that these results stand out (Archambault et al. 2015). A traffic light colour scheme was preferred: green indicates a positive result, while red works as an alarming signal for negative performance.

SLAs and Farfetch references (FF) are also within this part of the dashboard. Also, short-term results, such as week to date (WTD), month to date (MTD) and year to date (YTD), are displayed in this area to enable short-term comparisons. Since a great majority of the B&W websites has been recently launched, the amount of historical data is still very scarce to implement long-term outcomes or comparisons.



Figure 12 - Prototype header: References.

4.5 Data Representation and Interaction

The last three steps – *represent*, *refine* and *interact* – within the phase 3 of this project's methodology were followed to build each of the dashboards. *Represent* consisted of choosing basic visuals, *refine* turned those visuals into more engaging ones and *interact* involved adding methods to manipulate data, such as filtering options (Fry 2007).

However, more than just creating individual appealing charts, it is vital to create organized storytelling dashboards. Thus, an engaging navigation was settled, inviting the reader to find patterns or outliers in data, while manipulating it.

4.5.1 Two distinct reporting branches

The aim of the developed reporting model is not only to be analysed by the B&W Operations Team, but also by other internal stakeholders who seek a more high-level outlook. Such requirement led to the development of two reporting branches:

1. Executive Overview;
2. Operational Overview.

The Executive Overview enlightens stakeholders with a very broad high-level understanding over operational performance. For each of the Farfetch areas that serve the B&W business unit, a dashboard with the most important metrics was built.

The Operational Overview is composed by several dashboards for each area, focusing on details and critical pain-points. Decision-making should be supported by this branch.

Linkage between these two branches was carefully conceived, so that a smooth and engaging navigation could be achieved. In this way, in the executive overview, each dashboard exhibits a magnifying glass icon which enables access to the Operational Overview of that area ([Appendix D](#)).

4.5.2 The Executive Overview

Payments Executive Overview

Payments performance may fluctuate depending not only on the payment method, but also on other particularities of the several players along the value chain. Region and country are within those characteristics that widely influence the final performance. Accordingly, three filtering options were added to this area's dashboards: brand, region and country.

The Payments Executive Overview presents a storytelling data visualization. Its opening section is exhibited in Figure 13, while the complete dashboard may be accessed in [Appendix D](#).

Payment methods usage and authorisation rate were considered the most important KPIs of this area. Accordingly, when opening this dashboard, a salient number presenting the authorisation rate for the filtered date range is exhibited. Along with this current outcome, short-term results are displayed, enabling comparisons. Also, the Farfetch average authorisation rate for 2016 is exhibited. Regarding payment method usage, the tabular form is used to display the percentage of requests for each of them. Due to the confidentiality reasons, authorisation rate results will not be exhibited in this dissertation.

After looking at the big picture, the user is now ready to start a tour through this dashboard. A chart exhibiting the evolution of payment methods usage over the time is firstly revealed, as shown in Figure 13. Authorisation rate may be influenced by the payment method; therefore, it is crucial to firstly be aware of what are the mostly used ones.

The authorisation rate chart is the second to be exhibited (Figure 13). This visualization displays not only an evolution on the rate, but also a vertical bar chart with total the number of

requests per period. It is essential to maintain both views in this chart, so that stakeholders can understand the significance of a certain rate. As a matter of fact, in some cases, a low authorisation rate may not be alarming if an insignificant amount of payment requests is associated.

This KPI was previously defined in three different ways. The one in which dropouts are excluded, is set by default in the payments dashboards. However, it is possible to manipulate filters, *Exclude Dropouts* and *Only Issuer Response*, which enable the calculation of authorisation rate using the other previously defined considerations.

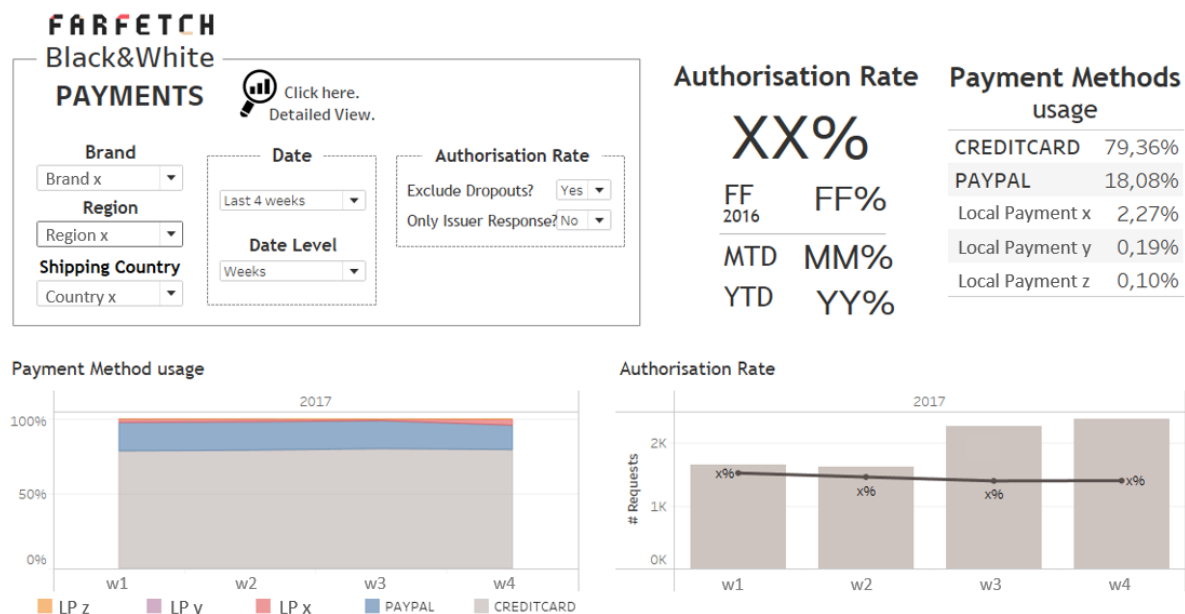


Figure 13 - Payments Executive Overview.

In this overview, authorisation rate is further specified by customer type (new or old). Also, the use of a choropleth map enables the calculation of this metric per country. Countries in the map fade from a dark shade of blue to a light shade of the same colour. The darkest hue represents the highest registered authorisation rate, while the lightest represents the least.

After exhibiting the main metrics of this area, other complementary KPIs are introduced, such as dropout rate and average number of attempts by customer.

Although dropouts are excluded by default for the calculation of authorisation rate, they may symbolize a lost sale. Consequently, it is important to monitor this metric. A high dropout rate in a certain country may be a warning for the necessity of introducing a new local payment method, for instance.

Lastly, a chart which exhibits refusal reasons percentage is displayed. Such perception may be decisive to identify abnormal reasons that sometimes could be extinct by proactive internal actions.

The Payments Executive Overview, enlightens stakeholders with a very broad, but also generalist understanding. For further details on each payment method, the Payments Operational Overview, described in 4.5.3, should be conferred ([Appendix E](#)).

Fraud Executive Overview

Fraud intensity is influenced by several variables, such as country, product category and brand. However, since the goal of this reporting model is to evaluate internal performance, studying the influence of such matters is not within the scope of this project. Consequently, filters regarding these effects were not included.

As previously discussed and proven, when a third-party evaluation is required, fraud performance may be compromised and highly influenced. Therefore, a filtering option which excludes all the orders sent to the third-party was included. By activating this filter, the data in analysis fully depends on the service level of the Farfetch Fraud Team.

Part of the Fraud Executive Overview is exhibited in Figure 14, while the complete dashboard may be accessed in [Appendix D](#).

Payment approval effectiveness and efficacy are B&W clients' concerns. The Fraud Executive Overview will firstly guide stakeholders through the most important KPIs to monitor these topics. Effectiveness may be evaluated by refusal rate, while efficacy is translated by the ability to meet the SLAs, previously defined in Table 4. Accordingly, the results of these metrics, are the most noticeable. Comparisons with MTD and YTD results are established, so as with the defined SLAs.

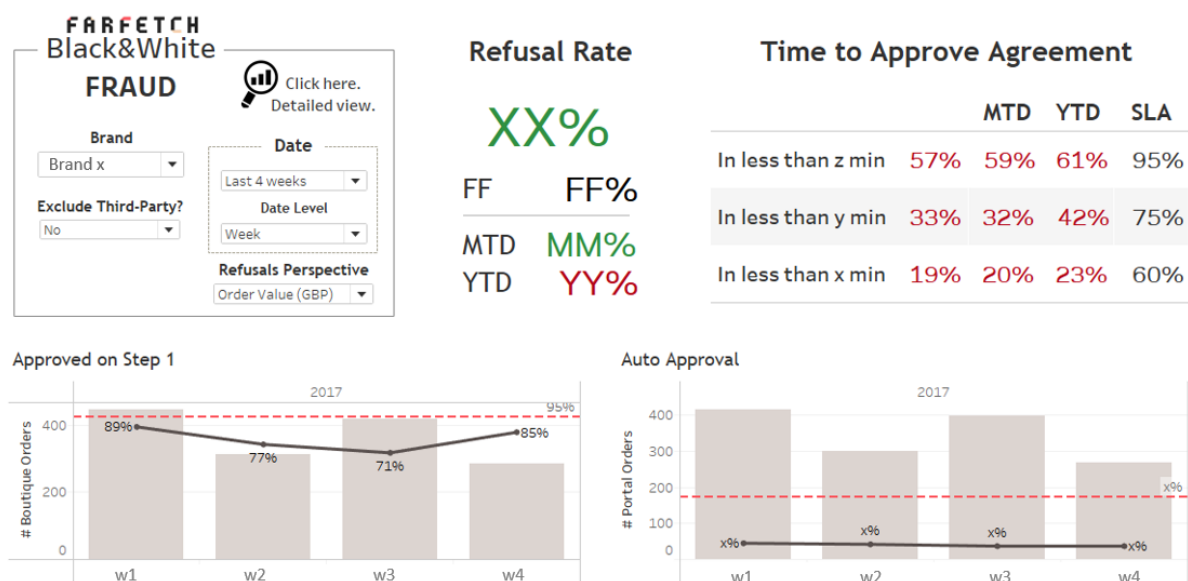


Figure 14 - Fraud Executive Overview.

After absorbing these key results, the reader is now able to get additional insights.

The firstly exhibited set of visuals aims the evaluation of payment approval time:

- Automatic approval rate influences the backlog of the Fraud Team and, consequently, approval time. The evolution of this metric over time is presented by a line chart;
- Payment Approval on Step 1 Rate indicates if the process is not compromising the available stock. Also, this KPI is as a good defence to prove that, even when fraud prevention is taking longer, for most of the orders, it is faster than stock check by the stores;
- Average Payment Approval Time allows observing how long it usually takes for payment approval;
- Visibility on whether the SLA and references are being met or not is also given by this first set of dashboards;
- Order volume is shown along the various charts, so that the perception of each rate is ensured.

After getting a grasp on the time related metrics, the evolution of refusal rate is the focus. A line chart displays the results of this KPI over time. Also, the third-party usage may be assessed.

Lastly, the previously defined chargeback metrics are revealed for a static period defined by default. Data visualizations regarding chargebacks are static and always displayed on a monthly basis. This wittingly inflexibility will further be discussed in 4.5.3.

For a further detailed view on the complexities of Fraud internal performance, the Operational Overview should be visited in [Appendix F](#).

Delivery Executive Overview

The aim of this whole reporting model is to bring visibility on the performance of the in-house outsourced activities. Thus, dashboards built for the delivery area focus on step 4 performance. However, it is also crucial for the B&W Operations Team to have visibility on other matters within this area. Given this, this set of dashboards enables analysis on shipping services usage and associated transit time.

The automation of shipping label creation is not only influenced by the way customers insert their shipping details. Legal matters, carrier integration characteristics and store set-up may also compromise this process. Given this, a store filter was included in every delivery dashboard. Regarding carriers, to ease specific assessments, a filtering option was not added. Instead, carriers may be further separately analysed in the detailed dashboards.

The Delivery Executive Overview provides a storytelling approach. Part of it is exposed in Figure 15 and the complete dashboard is available in [Appendix D](#).



Figure 15 - Delivery Executive Overview.

The user is firstly invited to look at the big picture in the beginning of the analysis. The main metrics regarding shipping label creation are exhibited with salient numbers conditionally

formatted. *Step 4 Stops Rate* and *Out of step 4 in less than 2 hours rate* current situation may be evaluated. Farfetch references and SLA for this KPIs are the first comparisons to be established. Moreover, WTD and MTD results are displayed.

Service type usage percentages is also one of the first impressions the reader will get.

After being acquainted with the current overall performance of this area, the evolution of these metrics over time may be analysed, so as the average time to create an AWB. Also, the identification of outliers by bringing visibility on the percentage of orders waiting more than 4 hours for shipping label creation. A choropleth map is available to flag *Step 4 Stops Rate* per shipping country.

Lastly, this executive overview exhibits a detailed chart on the shipping service usage by carrier and its associated average time in transit.

For further details in this area, the Operational Overview should be visited in [Appendix G](#).

4.5.3 The Operational Overview

Payments Operational Overview

The metrics within the Payments Operational Overview ([Appendix E](#)) are the same of the executive one. However, it focuses on a detailed analysis on diverse intricacies of the Payments value chain. Four dashboards were created, which goals are stated below.

- **Payment Method Comparison:** It enables comparison between the different payment methods. This is possible due to the inclusion of a multiple values dropdown. Each of the selected payments method will be associated with a different colour, so that it can be easily differentiated and compared when represented in the same chart.
- **Credit Card & PayPal:** Credit Card and PayPal are the most commonly used payment methods by any B&W brand's customer. Thus, a dedicated dashboard was also built. Analysing tokenization usage and its influence on authorisation rate is the great innovation of this dashboard.
- **Credit Card Value Chain:** Of all the payment methods, Credit Card partakes the highest usage rate. As previously described, its value chain is highly complex and the authorisation rate depends on several players along it. Bearing this in mind, a dedicated dashboard was built to assess the intricacies of this payment method. Authorisation rate by PSP account, acquirer and card type are displayed within this visualization. Also, since issuer response is one of the main reasons for refusals, authorisation rate by card issuer is also displayed.
Furthermore, the player with the highest volume of requests is flagged with a thicker bar in the chart.
- **Local Payments:** It supports a much more real and transparent analysis on local payments performance. Until now, when the *Payment Method Usage* metric was being investigated, all the countries were under analysis. Contrarily, the data collected for this dashboard only considers countries in which the selected local payment method is available. For instance, when selecting Payment Method "X", which is merely available in the China Region, only requests made by customers from countries within that region will be deliberated.

Fraud Operational Overview

While defining Fraud KPIs, four different groups of metrics were settled: Time, Refusals, Third-party performance and Chargebacks. Accordingly, the Fraud Operational Overview ([Appendix F](#)) comprises a set of four detailed dashboards to assess these topics.

- **Time:** The goal of this dashboard is to evaluate the Fraud team efficacy regarding payment approval. Outliers and abnormal behaviours may be easily identified while studying this dashboard.
- **Refusals:** Detailed information about suspicious and refused orders may be assessed. Several details to explain refusal rate results are included in this dashboard. Firstly, refusal rate by customer type is exhibited. This chart should be monitored to ensure that old customers are not being massively blocked. Secondly, refusal rate by agent is exhibited, enabling understanding if most of the orders were refused by a third-party or by the Fraud Team. Lastly, it is possible to monitor the process followed when there is uncertainty about the legitimacy of orders.
- **Third-Party Performance:** This is an innovative dashboard not only for B&W, but also within Farfetch. For the first time, Fraud third-party performance and influence may be analysed. Based on the new defined KPIs in 4.2, a set of charts were built. Third-party impact on fraud check time and on the refusal rate may be assessed.
- **Chargebacks:** Although card network's associations may have different considerations for the chargeback ratio calculation, usually they do it in a monthly basis. Thus, this dashboard exclusively aggregates data by month. Chargebacks may take up to six months to be filed. So, in to ensure the reliability of this report, a fixed date range is defined by default. When assessing this dashboard, the user would not be able to evaluate the last two months. The twelve months before that period are visible. Therefore, it is possible to evaluate the chargeback ratio evolution over the months. Chargebacks by reasons, by country and by card type are also assessable by this dashboard. Given the confidentiality of results regarding this topic, this dashboard is not exhibited in the appendixes of this dissertation.

Delivery Operational Overview

The Delivery Operational Overview ([Appendix G](#)) comprises two dashboards. The aim of these dashboards is to display detailed view on delivery matters, especially when it comes to carriers' analysis.

- **Step 4:** It focuses on the shipping label creation process. Identifying problems with carriers' integration is now possible through this dashboard.
- **Carriers:** This analysis is not within the scope of this project. Nonetheless, the B&W Operations Team revealed that having access to carriers lead time would be crucial. As a matter of fact, this variable may highly impact the overall customer experience. Thus, this dashboard brings visibility over the average time in transit by shipping service. More importantly, average total lead time is exhibited, i.e. from the moment a customer places an order until it is received. This metric is compared to an estimated delivery time window in accordance with used shipping method. Lastly, a detailed analysis on SDD may be performed. Not only time in transit is accessed, but also the whole order fulfilment process time.

5 Data-Driven Insights and Opportunities to Improve

The new fully-fledge internal reporting model empowers decision-makers with broad, but also detailed data-driven insights. Deviations may be instinctively identified and further analysed.

It has proven to be an extensively reactive model, allowing the identification of problems and the exploration of critical points. The phase 4 of this project, consisted on spotting opportunities to improve which are described along this chapter with suggested solutions.

5.1 Payment System

The developed reports focus on two crucial KPIs within the payments area: payment method usage and authorisation rate. Through these metrics, not only operational performance is assessed, but also customers' preferences regarding payment methods.

Credit card is the most commonly used payment method, representing 71% of all the transactions, since the first B&W website was launched. This preferred method is followed by PayPal, which is responsible for 28% of all the transactions. On the other hand, local payments only represent 1% of the overall transactions. However, they have proved to be relevant methods within their scope. While analysing the areas in which such payment methods are available, it was possible to conclude that some of them are favoured. Thus, offering local payments options may be a strategy to grow in some emergent markets.

Concerning payment methods, B&W final customers have the same preferences of Farfetch's. However, B&W authorisation rate is approximately 15 pp lower when compared to the parent company's results on this metric. Such discrepancy is obtained even when having different considerations, as exhibited in Figure 16. Due to the recent activity of the new business unit, the first two quarters of 2016 are irrelevant. Therefore, the last four quarters were the focus of this analysis.

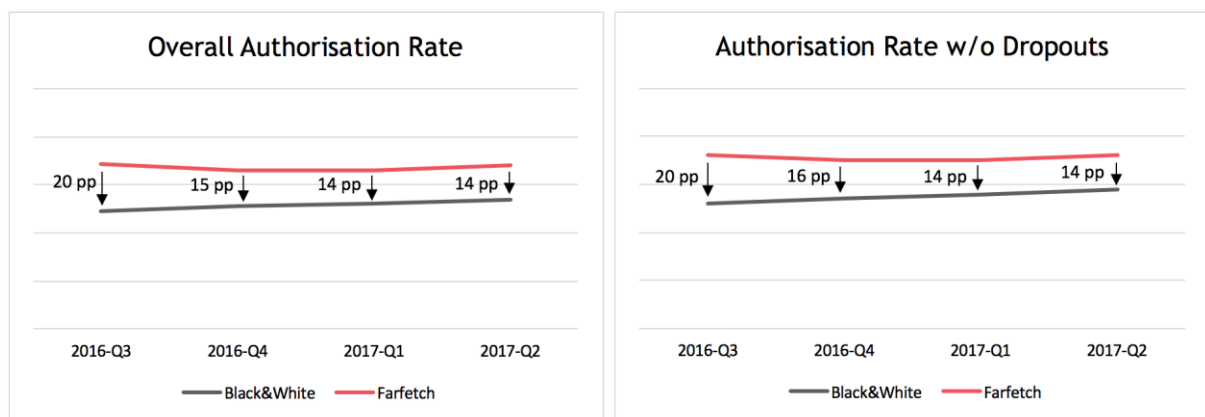


Figure 16 - Authorisation rate analysis.

The inexistence of a promising authorisation rate highly impacts customer experience. Failures in the payment system result in not authorising legitimate purchases, instigating customer frustration.

Summing up, there is still, undoubtedly, room for improvement in the B&W payment system performance. The following content of this chapter points out some solutions for this drawback.

Implementation of a divisional payment system architecture

Authorisation rate is a relevant metric to analyse the payment system performance. However, it is also crucial to map the main refusal reasons. The developed reporting model revealed that, issuer response is responsible for most of the registered refusals. To eliminate part of these systematic denials, the implementation of a divisional payment system architecture is suggested in this dissertation.

The current B&W credit card payment system workflow presents a universal structure. This leads to the existence of recurrent problems in some markets. As a matter of fact, in the cases that the shipping country differs from the acquiring bank country a lower efficiency of the flow is registered, impacting the authorisation rate. Thus, to improve efficiency, variations in the payment workflow should be implemented.

Considering the volume of payment requests per region, exhibited in Table 11, the suggestion is to introduce two main divisions: **United States (US)** and **Europe & Rest of the World (EU&RoW)**. Such division is made based on the currency and shipping address.

Table 11 - B&W payment requests per region since launch.

Regions	US	UK	EU/RoW	France	AUNZ	DACH	China	Canada
% Requests	36,41%	30,08%	12,57%	6,27%	2,92%	2,75%	2,64%	2,57%

EU&RoW

This region covers a wide geographic area, including the China Region. In this division the payment workflow would be identical to the current one. The main PSP, which also works as a provider and acquirer, would be responsible for all the payment requests within these regions. Moreover, orders with a shipping address referring to EU&RoW should be registered under Farfetch UK Limited as a merchant.

US

The American banking market is highly bureaucratic and selective. Currently, the US is one of the most important markets for the B&W business unit, representing circa 35% of all the payment requests. Considering its intricacies and importance, the introduction of a US division is suggested.

Normally, American banks are more comfortable when processing payment requests by American institutions. Thus, all the orders with a US shipping address will be associated to the farfetch.com US institution. Also, the introduction of an American acquirer, in accordance with the specific market rules, could ease communication with issuers and increase authorisation rate for this market.

However, the Farfetch marketplace is the living proof that even with an accurate implementation of a divisional structure, issuer refusals are the most common. This leads to the necessity of additional solutions, such as the implementation of 3-D Secure.

3-D Secure is an additional security layer to avoid the authorisation of fraudulent transactions. When a transaction is requested, the card issuer confirms the identity of the customer, usually by sending a code via SMS. Other methods may be used to confirm the legitimacy of a certain purchase. This layer increases issuers' trust and, consequently, less system failures are reported. Despite the advantages of this feature, several inconveniences may also be pointed out, as exposed in Table 12.

Table 12 - 3-D Secure advantages vs disadvantages.

3-D Secure	
Advantages	Disadvantages
• Chargebacks are covered by the card issuing bank; • Fraudulent transactions risk decreases; • Consumer confidence increases.	• The additional layer increases dropouts; • The checkout process complexity increases; • Customer experience is worse.

Summing up, 3-D secure increases trustworthiness and could eliminate several issuer refusals. However, for some of the customers it may be inconvenient and ruin their experience, increasing the dropout rate. The balance of these advantages and disadvantages should be carefully considered and the B&W brands should be involved in the final decision.

Implementation of a fallback in the credit card value chain

Since the first B&W website launch, credit card is the most commonly used payment method, representing 71% of all the transactions. As previously stated, its value chain is highly complex and involves multiple players.

Currently, the B&W credit card payment system extremely relies on the main PSP that manages all the relationships along the value chain. Despite the recognised reliability of the main provider, this dependency puts transactions workflow in a vulnerable position.

The implementation of a proper fallback could lead to a safer overall solution. This concept is characterised by the creation of a secondary transaction path using other providers and/or acquires. The new chain is used when the main one fails to process transactions.

B&W fallback structure is still very immaturely designed, which explains its insignificance in terms of successful transactions. However, a well-established fallback is available for any transactions made through Farfetch marketplace. This results in a more stable and stronger payments system, which explains the higher authorisation rate experienced by the parent company.

In 2016, 12% of all the Farfetch authorisation requests went through the fallback value chain. Afterwards, this secondary path was responsible for 2% of all the settled transactions, as exhibited in Figure 17. Considering the high transactions volume of Farfetch, 2% represents a considerable amount.



Figure 17 - Fallback usage and success.

The creation of synergies around the fallback structure owned by Farfetch could be an opportunity to improve B&W payments system performance. By accepting some of the transactions that were firstly rejected by the main chain, an increase in authorisation rate could be notable.

Despite these advantages, authorising a higher number of transactions increases fraud risk. In case the Fraud Team is not able to identify fraudulent authorised transactions, chargebacks are more likely to occur. Consequently, the merchant reputation may be compromised and result in a lower authorisation rate by certain banks.

Summing up, implementing a fallback path would mitigate the dependency on the main provider. A better performing payment system should be expected. However, the implementation of this second path requires an accurate balance between payments authorisation rate and fraud refusal rate. The acceptance of a higher volume of transactions presumes an increase in the fraud refusal rate, so that chargebacks are avoided.

PayPal Billing Agreement

As stated in the beginning of this chapter, PayPal is the second mostly used payment method. Its reliability is globally recognized. Essentially, such method is preferred by customers who do not trust the credit card system within an online atmosphere.

Considering the strategic importance of PayPal, its billing agreement, detailed in 3.2, is an important feature. It offers an option to save the payment details, improving the customer experience in future purchases.

Supposedly, this feature was available for all the B&W websites. However, the developed reporting model did not register the usage of billing agreement for any PayPal transaction.

Generally, PayPal usage is associated with highly trusting customers. In 2016, 40% of all the Farfetch customers that used PayPal chose to activate this feature. Considering this, the reported 0% of usage for B&W websites was considered abnormal. Thus, the topic was further investigated with the Payments Team and the involvement of the Tech Team was later required. As a matter of fact, the PayPal billing agreement feature was not implemented in any of the B&W brands' websites. However, all the payment accounts were correctly set up. The Tech Team is now to include this feature in all the B&W websites in a next sprint.

This finding exposes the capacity of the developed reporting model on the implementation of proactive actions to not only improve processes, but also websites available features.

With the implementation of PayPal billing agreement, it is predictable that a considerable part of customers accept using it. Thus, this measure may also be a trigger for a better performance of the payment system and an increase in the conversion rate.

5.2 Fraud Prevention

Fraud prevention performance is characterized by the capacity of rapidly approving the higher legitimate order volume, while avoiding chargebacks. The developed reporting model brings visibility over the performance of this operation. The most relevant findings and opportunities to improve are related with payment approval time, as below described.

Fraud Approval Time

Until the development of this model, B&W Operations blindly trusted the agreement settled with the Fraud Team. This agreement states that 60% of the orders should go through fraud prevention in less than x minutes, 75% in less than y minutes and 95% in less than z minutes. However, now that there is visibility over this operation, it is possible to conclude that the

commitment with this SLA is far from being accomplished. Figure 18 exposes the discrepancy between the service delivered and what has been settled.

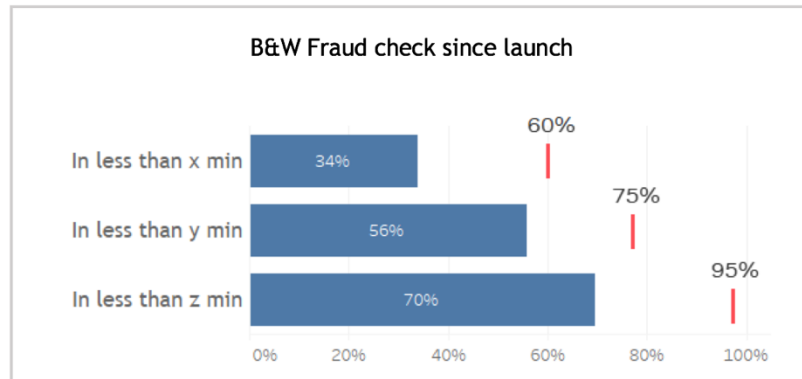


Figure 18 - Fraud SLA assessment since the first B&W website launch.

Envisioning that third-party performance may impact fraud check time, an analysis excluding its intervention was designed. Results increased up to 5 pp in each of the time frames. However, the SLA was still far from being met, as exhibited in Figure 19. Concluding, although a third-party may influence some orders approval time, the Fraud Team performance is still the most relevant variable.

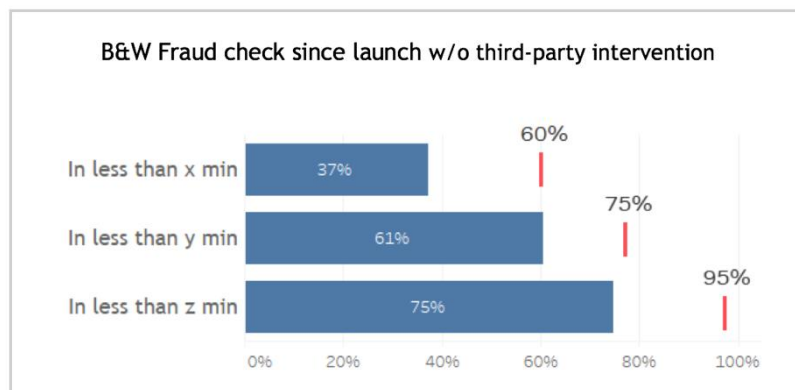


Figure 19 - Fraud SLA assessment w/o third-party since the first B&W website launch.

Such results are a great concern for the B&W business unit, as fraud prevention is compromising the whole order fulfilment process efficiency. One of the main reasons for the long fraud check waiting time is the lack of visibility over the B&W orders, which only represent approximately 3% of all Farfetch orders. Since the Fraud Team looks at the overall operation, visibility over B&W performance has no representability.

There is, certainly, a massive opportunity to improve in this field. The following solutions could be implemented:

- Using the developed reporting model to enlighten the Fraud Team with the visibility which is currently lacking. Also, it may operate as a communication tool between the B&W Operations Team and the Fraud Team;
- Having monthly meetings with the Fraud Team to present results, improvements and discuss the next steps to achieve an exquisite performance;
- Allocating exclusively a fraud agent to prioritize the B&W orders waiting for fraud check;
- Developing an exclusive B&W live reporting model. It should identify all the orders waiting for fraud check, while ordering them by waiting time. This suggested report should be constantly visible for the Fraud Team agents.

Third-Party Integration

Throughout the development of this project, some of the fraud third-party interventions were registering long fraud check time. This suspicious behaviour was closely investigated, through the Operational Fraud Overview, and outliers were identified. As a matter of fact, some of the orders with third-party interference were taking over two days to have the fraud check process completed.

This situation was firstly communicated to the Fraud Team, who realised that orders were not being correctly communicated to the third-party system. Therefore, the involvement of the Farfetch Integrations Team was required.

A pattern was identified. It was concluded that the payment information relying on credit card tokens was not being appropriately transmitted by the PSP to the fraud third-party. Such gap was terminated and all the payment details are now instantly provided.

It is important to reinforce that the developed internal reporting model was appropriately reactive to enable the perception of this failure. Since fraud third-party usage is irrelevant for the Farfetch business model, its performance was not being previously measured. This explains why such issue had never been reported.

5.3 Shipping label creation

Regarding this Farfetch activity, the developed reporting model revealed that the SLA is not being met. In the first five months of 2017, only 90% of the manually AWBs were created in less than 2 hours, 5 pp below what was agreed. Although the established service level is not being delivered, the current situation is not alarming. However, it had been again proven the necessity of assessing B&W performance apart from Farfetch orders.

Despite the structured process for manually creating AWBs, most of this activity must be performed automatically. Considering this, an abnormal situation was identified. Unexpectedly, orders shipped from a specific stock point were not having any of the shipping labels automatically created. The results for week 20 in Figure 20 triggered the suspiciousness about the conformity of this process.

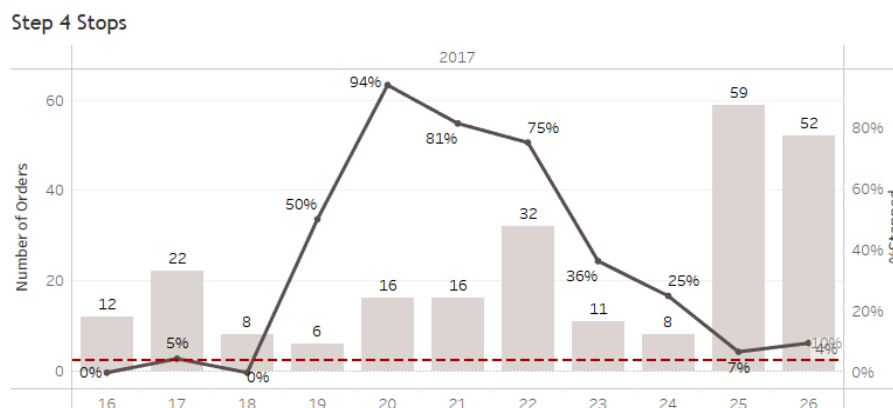


Figure 20 - Manually Created Shipping Label: An abnormal case.

The communication of this irregular scenario to several Farfetch Teams led to the identification of the source of this massive stop rate. An incorrect setup in the carrier account for the ground service was compromising the automation in AWB creation. Such incongruity was eliminated during week 23. This improvement, exhibited in Figure 21, resulted in a 0% stop rate in the following week (week 24) for the ground service.

Step 4 Stops

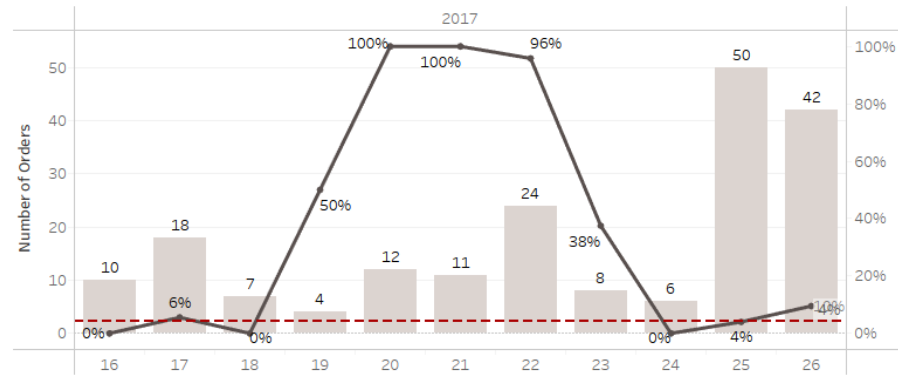


Figure 21 - Stock point x stop rate for the ground shipping service.

6 Conclusions and Future Work

The provision of a widespread e-commerce service requires a fully established operation, especially in the demanding luxury fashion industry. In-house outsourced activities instigate a blind trust in the service level delivered. This was the case of the B&W business unit, which relies on Farfetch activities expertise to build its order fulfilment workflow. However, even in such circumstances, a remarkable operational performance can only be accomplished when monitored.

Although Farfetch was already measuring performance, B&W volume is irrelevant within the parent company's traffic. Also, its business model and processes may differ. Consequently, evaluating overall performance was not being enough to address B&W processes' weaknesses.

All the new business unit reporting mechanisms were financially focused. This was motivated by the brands' eagerness to have visibility over sales information. Nevertheless, e-commerce financial outcomes rely on a smooth operational workflow that meets customers' expectations. Accordingly, the aim of this project was to give visibility over the operational performance of the in-house outsourced activities. In other words, the goal was to enlighten decision-makers with a broader set of metrics, creating thought-provoking analysis. Thus, relevant existing KPIs were replicated and new ones were designed. Afterwards, a data visualization process escorted the development of a new fully-fledge internal reporting model.

In the aftermath of this project, the B&W internal stakeholders were fully aware of the service level of the payments system, fraud prevention and shipping label creation. Such achievement was accomplished through the development of two storytelling reporting branches. Performance assessments in different depths and periodicities are enabled.

Besides, this project contemplated a data analysis phase to identify opportunities to improve. Several solutions were suggested for each area; some of them have already been implemented, while others' feasibility is still being studied.

An assessment of the payments system performance revealed that credit card and PayPal are the preferred payment methods. Also, local payments have shown relevancy within the regions in which they are available, being a wise strategic move. Regarding performance, the B&W authorisation rate is approximately 15 pp lower than Farfetch's. Such discrepancy is explained by an immature, vulnerable and still adapting payment system. Hence, this project stretches a group of suggestions to mitigate some of the system failures. Firstly, the implementation of a divisional payment system architecture was recommended. Considering the importance of the US market, the proposition was to build a dedicated payment workflow to ease the communication with American banks. Secondly, within the credit card value chain, the implementation of a stronger fallback path was suggested. This would reduce the highly dependency on the main PSP and an increase in authorisation rate could be expected. Lastly, regarding PayPal, this project emphasised the inexistence of the PayPal billing agreement option in all the websites. Such feature is now to be implemented and an increase in the customer experience should be expected.

Regarding fraud prevention, the B&W Operations Team has now a good perception of this activity's performance. As a matter of fact, the established SLA is far from being met. The service delivered registered to be up to 25 pp lower than what was agreed. Moreover, this project highlighted the impact of the existing third-party in the fraud check waiting time. An alignment with this service provider is now to be done. All in all, the developed reporting model facilitates communication with the Fraud Team, prompting the implementation of measures to improve the process.

Lastly, the Delivery area service level is 5 pp bellow the SLA. Furthermore, the model revealed to be extremely reactive and instigated corrections in the store setup information.

A good reporting model shall be sufficiently flexible to adapt to change. Thus, the developed structure was carefully thought and conceived. It is prepared for the inclusion of additional tabs and insights in the future. As organisations grow, reporting tools need to evolve.

The order fulfilment process does not only rely on the analysed Farfetch activities. Stores and warehouses also play an important role in this process and may compromise the overall operational performance. Thus, additional tabs regarding their performance should be included in this reporting model. Thereby a complete overview of the operation could be achieved.

Besides, sooner or later, B&W brands will be demanding to have a clearer view over the order fulfilment performance. Accordingly, the most relevant charts within this project may be selected for enlightening clients with brand focused dashboards. This reinforces the capability of this report to adapt to different necessities.

To support the Farfetch teams that serve the B&W business unit, the development of a real-time dashboard could be advantageous. The more up to date information is, the quicker and effectively actions can be taken. Such measure would enable real-time awareness over the B&W order fulfilment.

To sum up, the B&W decision-makers are now empowered with data-driven insights, prompting proactive actions and encouraging continuous improvement. The developed operationally focused reporting model, especially eased the day-to-day work of the B&W Operations Specialists. By continuously monitoring operational performance, a transparent communication flow may now be established with the Farfetch Teams.

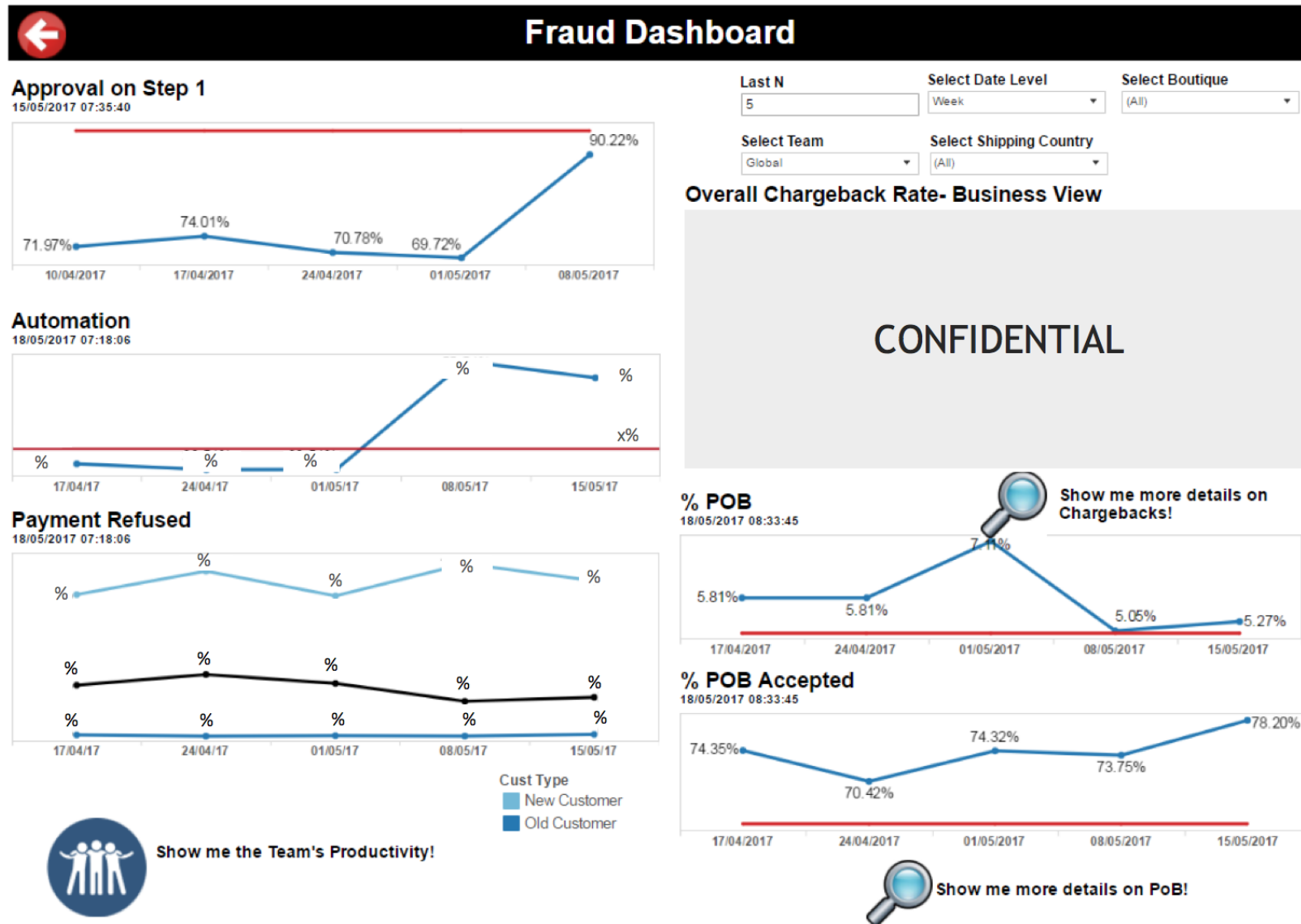
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APPENDIX A: Farfetch Fraud Dashboards

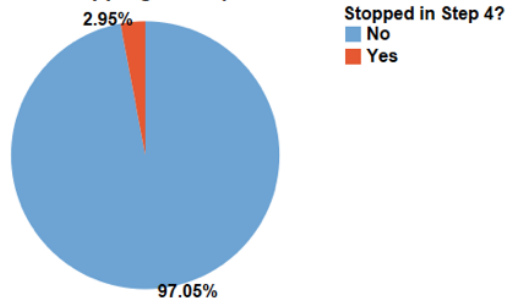


APPENDIX B: Farfetch Step 4 Dashboards

Step 4 KPIS: Previous Day



% Orders stopping in Step 4

Number of Orders stopping in Step 4
Stopped in Step 4?

No	15,423
Yes	468
Total Orders	15,891

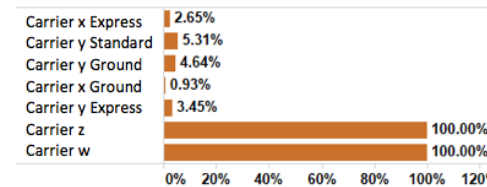
Agent performance per Time in Step 4

Confidential

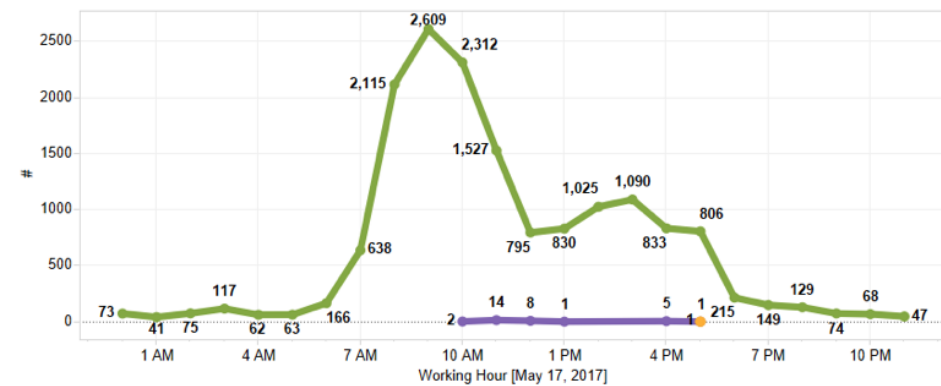
Agent total performance

Confidential

Orders stopping in Step 4 by carrier



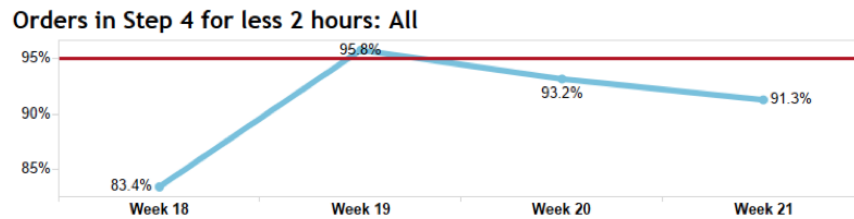
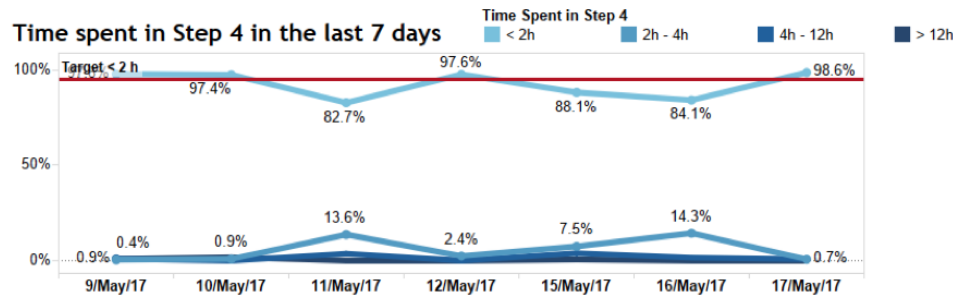
Orders OUT Step 4 per hour



SLA Step 4 per office

	JP	PT	US	All
# Orders SLA	Confidential			
# Total Orders				
SLA [%]				

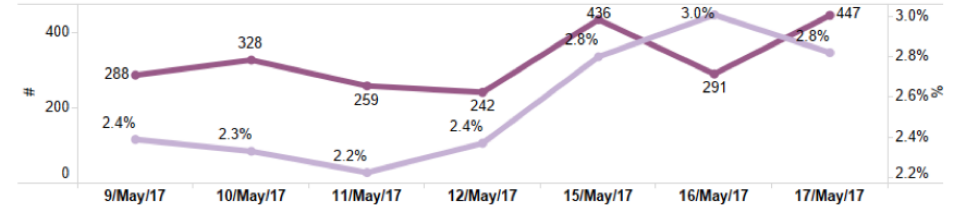
Step 4 KPIs: Weekly



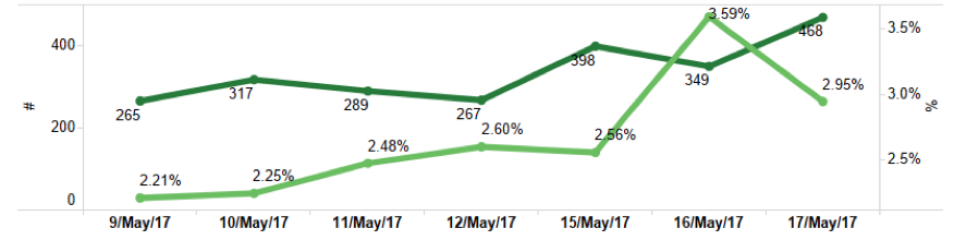
Orders in Step 4 for less 2 hours: Per Office

CONFIDENTIAL

Orders IN Step 4 per day



Orders OUT in Step 4 per day



Total Orders per Agent

CONFIDENTIAL

% Orders OUT Step 4 per Office

CONFIDENTIAL

APPENDIX C: Prototype

FARFETCH Black&White

Brand

Brand x

Filter 1

(All)

Filter 2

No

Date

Ready To Send

Last 4 weeks

Date Level

Week

Chart 1

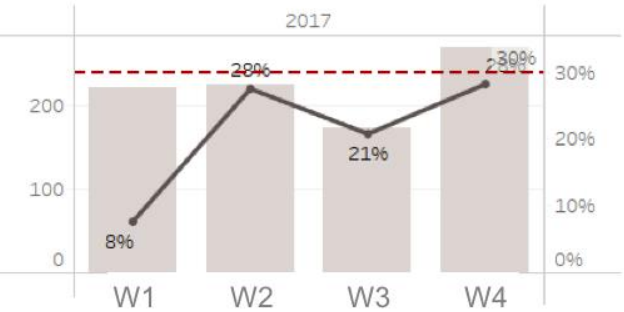


Chart 4

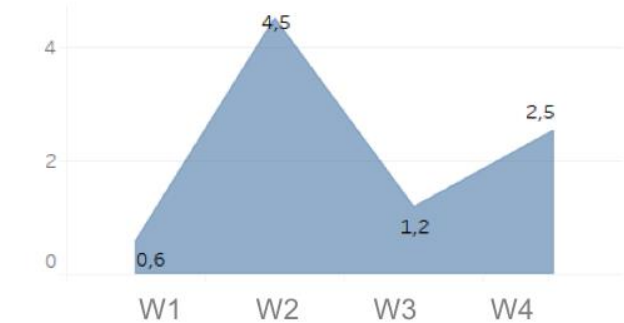


Chart 2



Chart 5

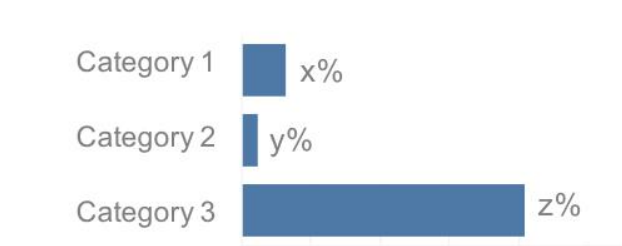
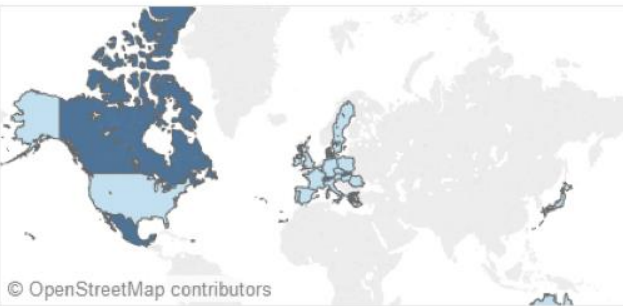


Chart 3



Chart 6



Prototype
<Insert Subtitle>

Reference 1
10%
FF 20%
WTD 28%
MTD 22%

Reference 2
55%
SLA 50%
WTD 30%
MTD 82%

APPENDIX D: Executive Overview

Payments Executive Overview



Fraud Executive Overview

FARFETCH

Black&White

FRAUD

Click here.
Detailed view.

Brand

Brand x

Exclude Third-Party?

No

Date

Last 4 weeks

Date Level

Week

Refusals Perspective

Order Value (GBP)

Refusal Rate

XX%

FF

FF%

MTD

MM%

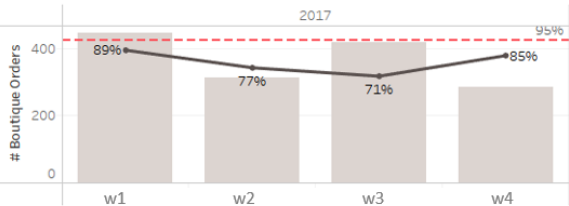
YTD

YY%

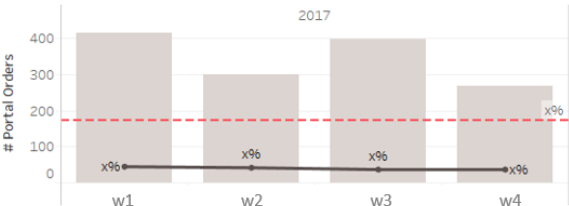
Time to Approve Agreement

	MTD	YTD	SLA
In less than z min	57%	59%	61%
In less than y min	33%	32%	42%
In less than x min	19%	20%	23%

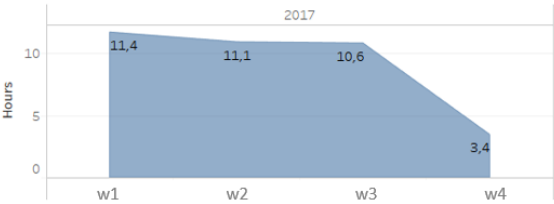
Approved on Step 1



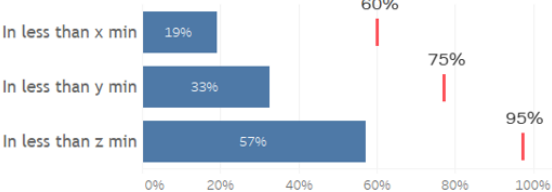
Auto Approval



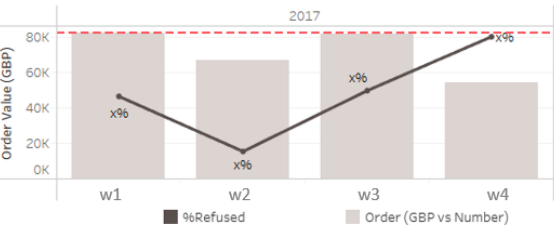
Average Approval Time



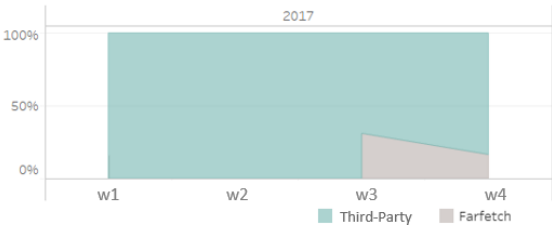
Approval Moment



Refusal Rate



Refusals by Agent

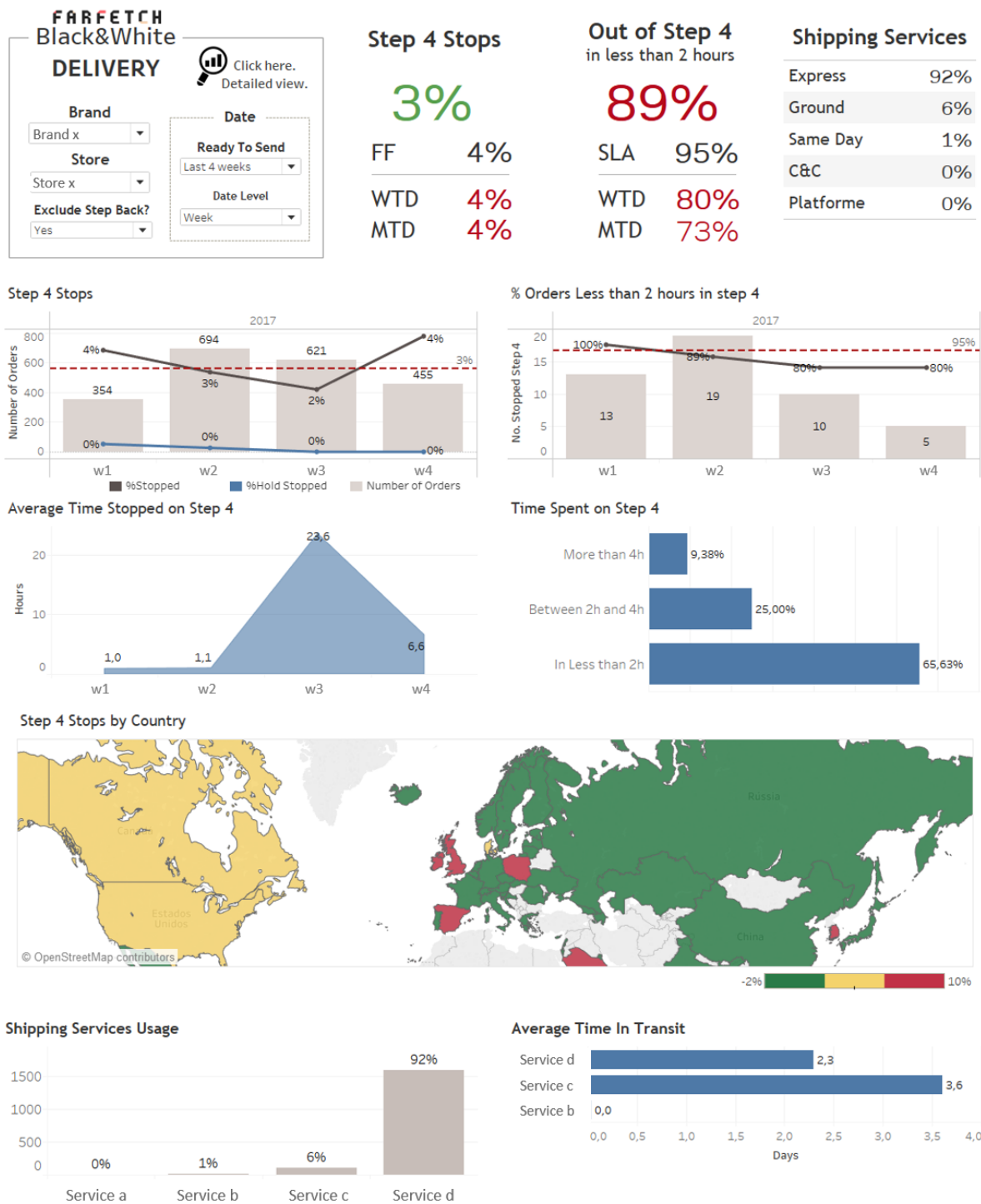


Chargeback Rate

CONFIDENTIAL

%Chargeback (GBP) %Chargebacks (Number)

Delivery Executive View



APPENDIX E: Payments Operational Overview

FARFETCH Black&White

Brand: Payment Method:

Date: Region:

Date Level: Shipping Country:

Authorisation Rate

Exclude Dropouts?

Only Issuer Response?

Authorisation Rate

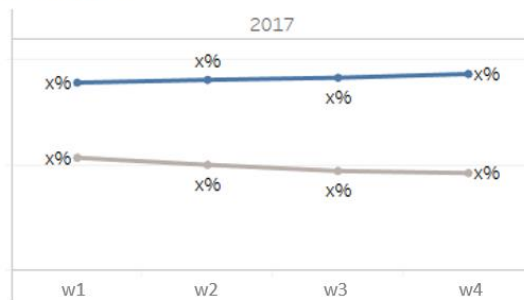
XX%

WTD MTD YTD WW% MM% YY%

PAYMENTS

CREDITCARD
PAYPAL

Authorisation Rate



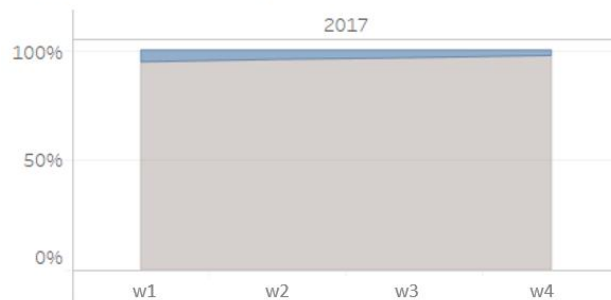
Customer Attempts (Avg)



Dropout Rate



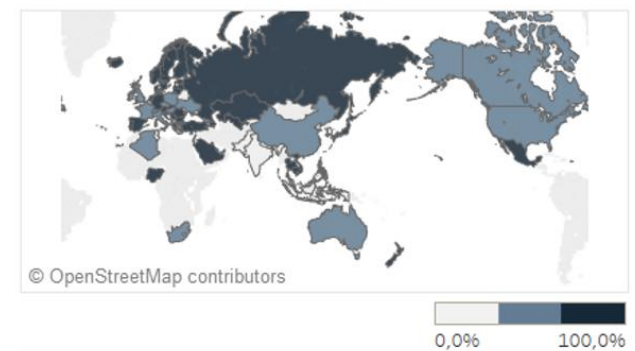
Payment Method usage



Refusal Reasons

CONFIDENTIAL

Authorisation Rate by Country



FARFETCH Black&White

Brand: Brand x

Payment Method: CREDITCARD

Date: Last 4 weeks

Date Level: Weeks

Region: (All)

Shipping Country: (All)

Authorisation Rate

Exclude Dropouts? Yes

Only Issuer Response? No

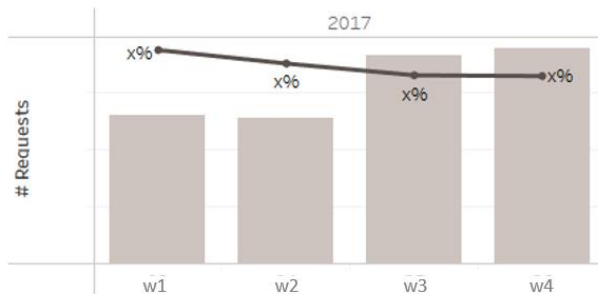
Authorisation Rate

XX% $\frac{FF(2016)}{MTD}$ $\frac{FF\%}{YTD}$ $\frac{MM\%}{YY\%}$

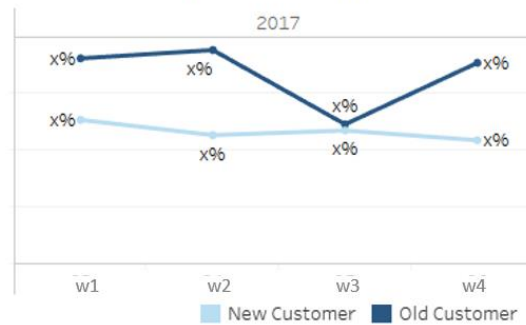
PAYMENTS

CREDITCARD

Authorisation Rate



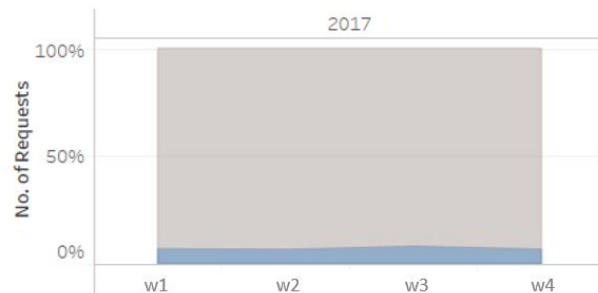
Authorisation Rate by Customer Type



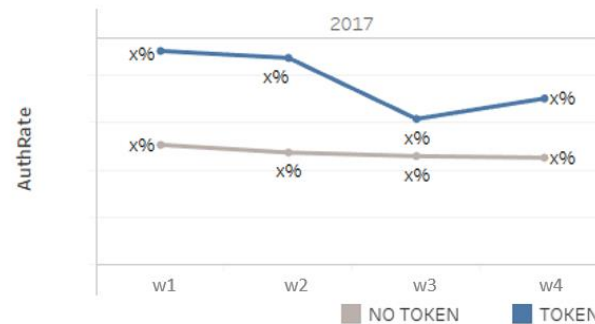
Customer Attempts (Avg)



Tokenization Usage



Authorisation Rate and Tokenization



Refusal Reasons

CONFIDENTIAL

FARFETCH Black&White

Brand
 Brand x ▾

Date
 Last 4 weeks ▾
 Date Level
 Weeks ▾

Region
 (All) ▾

Shipping Country
 (All) ▾

Authorisation Rate
 Exclude Dropouts? Yes ▾
 Only Issuer Response? No ▾

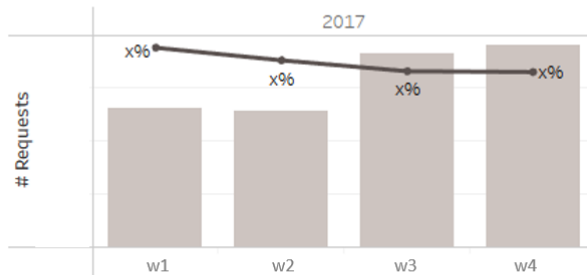
Authorisation Rate

XX% WTD WW%
 MTD MM%
 YTD YY%

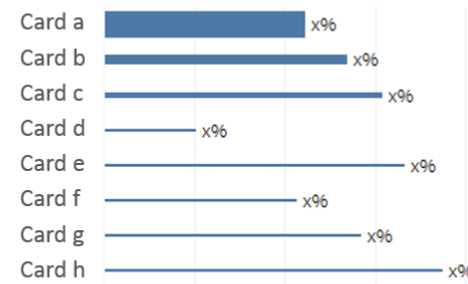
PAYMENTS

Credit Card Value Chain

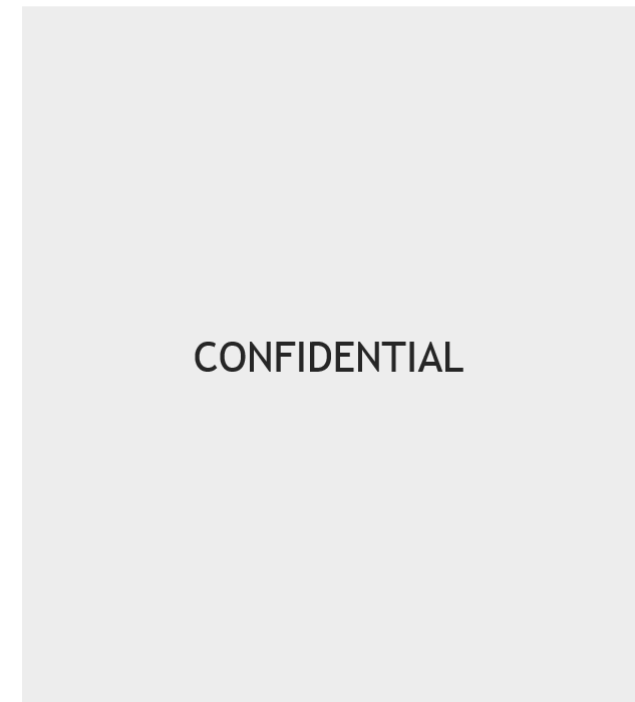
Authorisation Rate



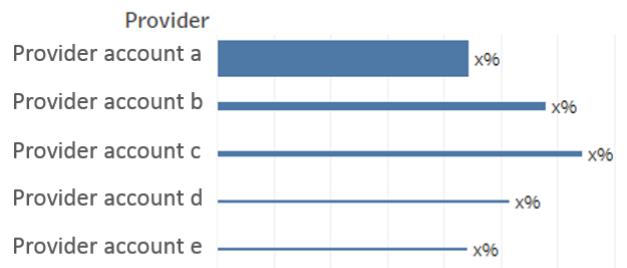
Authorisation Rate by Card Type



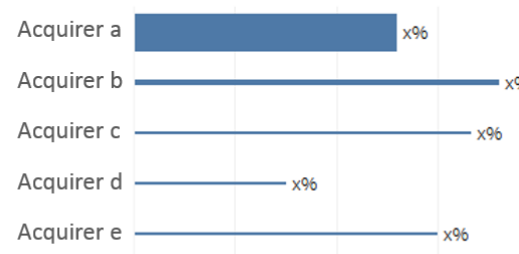
Authorisation Rate by Issuer Response



Authorisation Provider Rate



Authorisation Rate by Acquirer



FARFETCH Black&White

Brand:

Local Payment:

Date:

Date Level:

Shipping Country:

Authorisation Rate:

Only Issuer Response?

Authorisation Rate

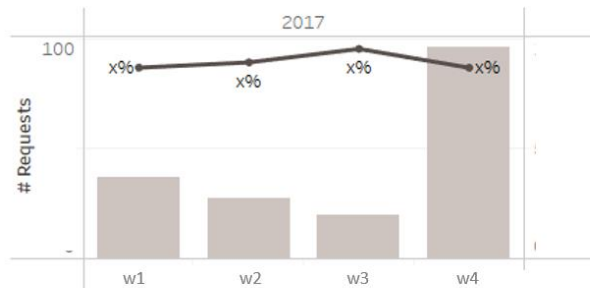
XX%

WTD WW%
MTD MM%
YTD YY%

PAYMENTS

Local Payment x

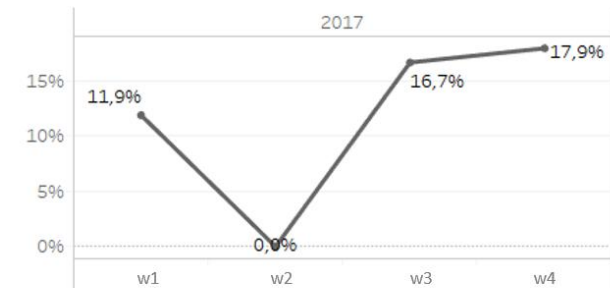
Authorisation Rate



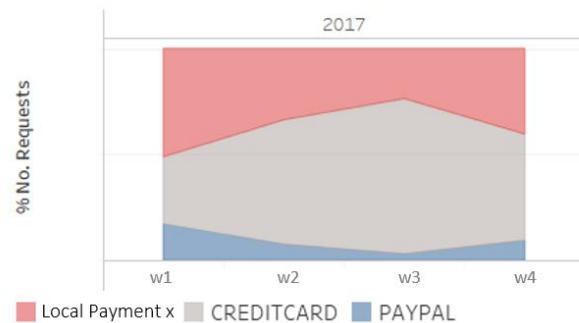
Customer Attempts



Dropout Rate



Local Payment Method Usage



Details by Country

CONFIDENTIAL

Local Payment Countries

CONFIDENTIAL

APPENDIX F: Fraud Operational Overview

FARFETCH Black&White

Brand
Brand x

Exclude Third-Party?
No

Date
Last 4 weeks

Date Level
Week

Approved on Step 1

79%

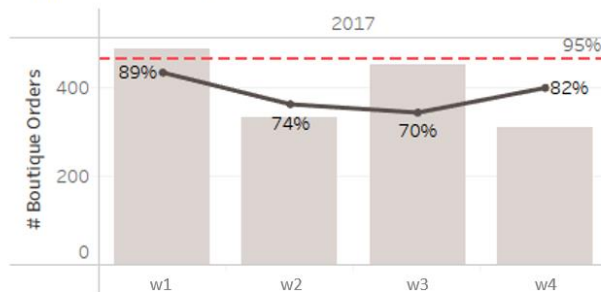
FF	95%
MTD	77%
YTD	81%

Time to Approve

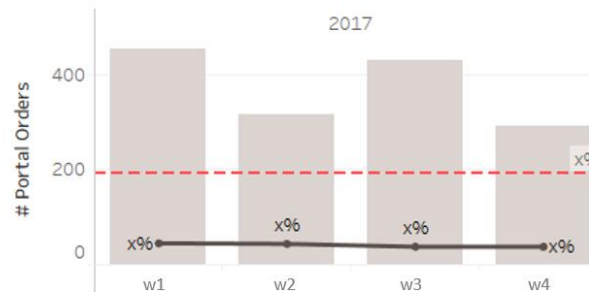
	SLA
In less than z min	54% 95%
In less than y min	31% 75%
In less than x min	18% 60%

FRAUD
Time

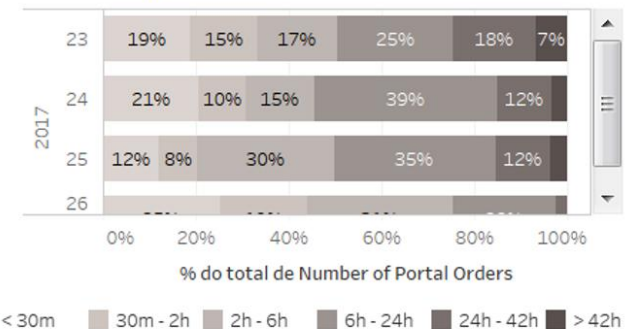
Approved on Step 1



Auto Approval



Time To Approve



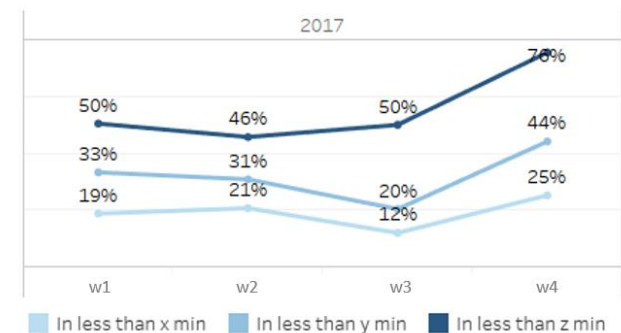
Average Approval Time



Time Blocked on Step 2



Time To Approve (SLA)



FARFETCH Black&White

Brand:

Date:

Perspective:

Date Level:

Refusal Rate

XX%

FF
MTD
YTD

FF%
MM%
YY%

FRAUD

Refusals

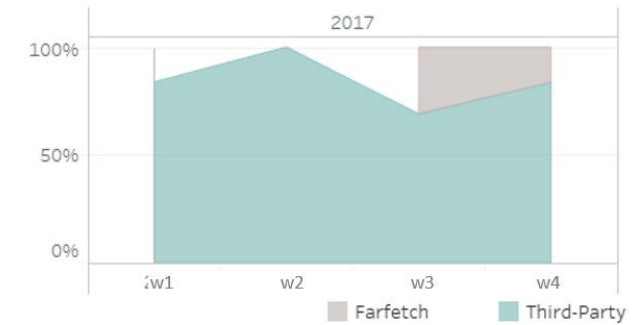
Refusal Rate



Refusals by Type of Customer



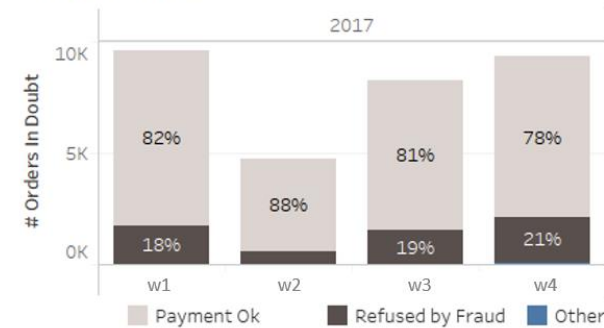
Refusals by Agent



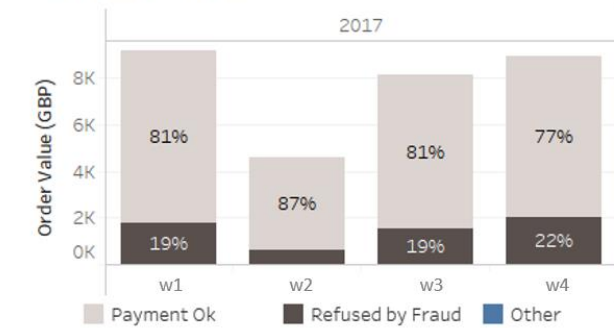
In Doubt Rate



In Doubt Results



Third-Party Results



FARFETCH Black&White

Brand

Brand x

Date

Last 4 weeks

Date Level

Week

Perspective

Order Value (GBP)

Time on Third-Party

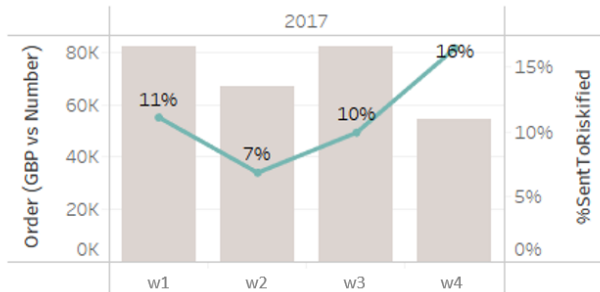
12,2
HOURS
(Average)

Riskified Performance

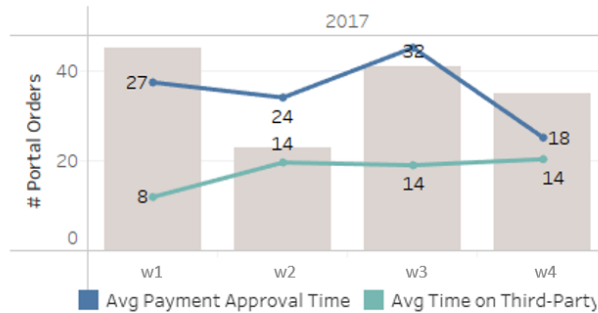
Less than 24H	93%
Less than 6H	24%
Less than 2H	22%
Less than 30min	21%

FRAUD
Third-Party

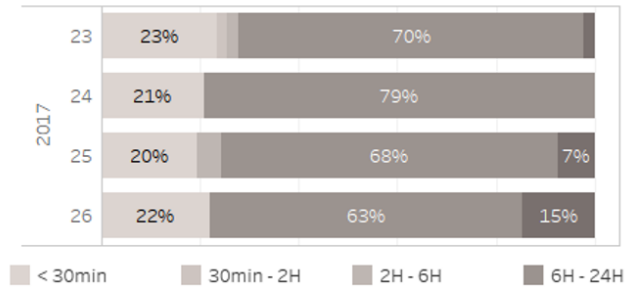
Sent to Third-Party Rate



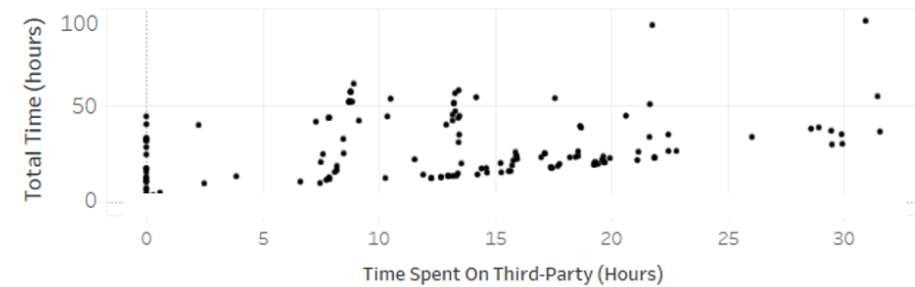
Avg. Time to Approve (hours)



Time Spent on Third-Party



Third-Party Influence



Third-Party Chargeback Rate



%Chargeback (GBP) %Chargebacks (Number)

APPENDIX G: Create Shipping Label Operational Overview

FARFETCH Black&White

Brand:

Store:

Exclude Backsteps?:

Date:

Ready To Send:

Date Level:

Manually Created AWB

3%

	FF	4%
WTD	4%	
MTD	4%	

Created in less than 2h

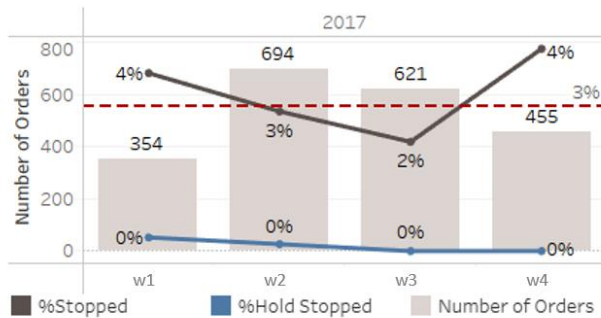
89%

	SLA	95%
WTD	80%	
MTD	73%	

Delivery

Step 4

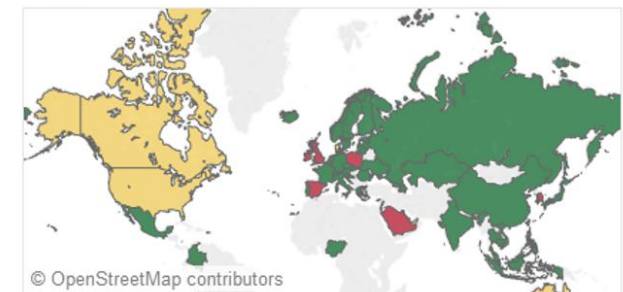
Step 4 Stops



% Orders Less than 2 hours in step 4



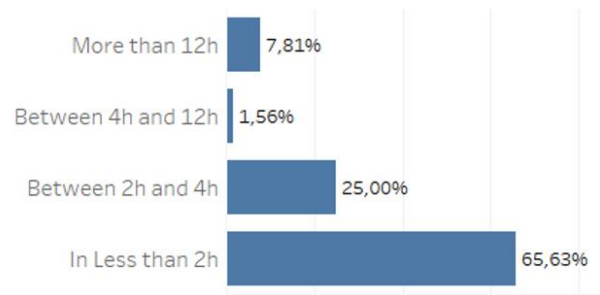
Step 4 Stops by Country



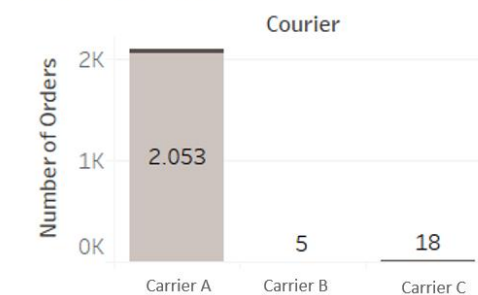
Average Time Stopped on Step 4



Time Spent on Step 4



Step 4 by Carrier



Delivery Shipping Services

FARFETCH Black&White

Brand
Brand x

Store
(All)

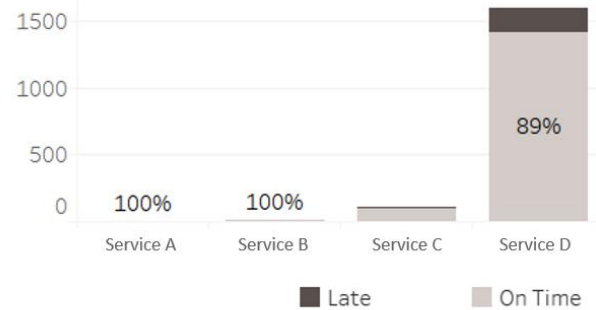
User Country
(All)

Date
Ready To Send Date
Last 4 weeks

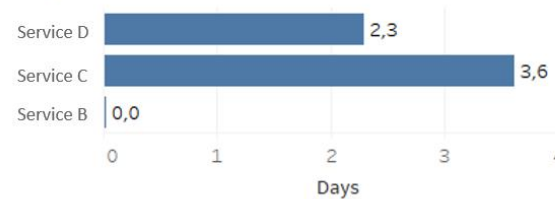
Date Level
Week

	Time in Transit (Days)	Total Leadtime (Days)
Express	2,292	3,721
Ground	3,610	5,043

Shipping Services Usage



Average Time In Transit



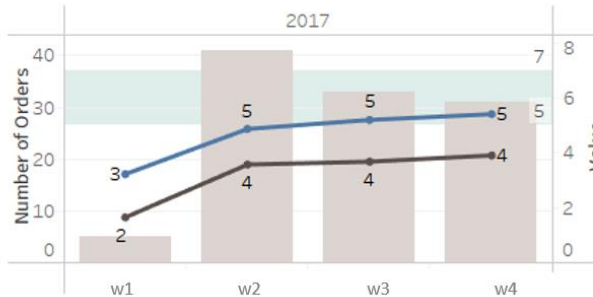
Average Time In Transit Over the World



Express : Average In Transit Time



Ground : Average In Transit Time



Same Day Delivery

