The Role of Regulatory Resilience in Supply Chain Optimization: A Case Study

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Abstract

As the difficult period, we have just been through, witnesses, resilience is needed now more than ever. Within this context, regulatory resilience is addressed through a case study. In fact, parallel imports and counterfeiting may have a strong negative impact on sales volume, turnover, and hence on business performance. In order to prevent this, a resilience process aiming to deal with those illegal activities is implemented, and the automation of this process by setting up a software solution named R^{2}APID (Regulatory Resilience Against Parallel Imports and Doctoring) is explained in this paper.

Keywords
supply chain transformation, regulatory resilience, parallel imports, counterfeiting

1. Introduction

The cosmetics industry, as all other business sectors, is facing a complex and ever-changing world. The new technologies, the increasing digitization of society, and the challenges of customer experience and sustainability have heavily shaken up the business model of beauty corporations and created a real need to transform the entire value chain: R&D, human resources, IT, marketing, manufacturing, and supply chain, which is a strategic area and a business driver. In order to maintain this important role and help the company to continue having a competitive advantage in the market, Supply chain needs to undergo a transformation that focuses on defining new operating models adapted to the new distribution channels (e-commerce, retail…) and integrating new technologies. An example of supply chain transformation program of one of the worldwide largest enterprises in the cosmetic sector shows that seven pillars are considered essential parts of the supply chain transformation framework. We are talking about (1) consumer driven customer care (consumer satisfaction is the new product performance), (2) D2C (Direct to consumer) excellence (Develop and optimize direct e-commerce and retail supply chain in order to reduce time to market and gain consumer satisfaction), (3) Omnichannel network design (Enhance flexibility and agility in the distribution centers, be fully compliant with regulation, provide end-to-end traceability of all products sold, and possess a true human expertise worldwide in warehousing and transportation), (4) Smart data (Data availability and usability), (5) Demand driven S&OP (Sales and operations planning) (Industrial agility, Demand sensing (Insight data, sell out, machine learning)), (6) New supply chain segmentation (Lean operations (Mass production), adaptive supply chain (B2B customer proximity), fast supply (adapt quick to demand), light processes (minimal structures and operations)), (7) Agile end to end operations. As is clear, this transformation seeks to promote agility as a key survival method of working. However, although the response of an agile supply chain to the threats of the business environment will be quick and effective, the negative long-term impact of the resulting disruptions cannot be eradicated in the absence of resilience capabilities (Lenort and Wicher 2012). In order to be able to bounce back from a disruption (risks related to processes

and control, supply and demand), resilience of the supply chain must be achieved. In this context, an eighth pillar (Resilient End-to-End operations) should be added to the list.

In order to deal with potential threats to the company, object of this study, business continuity management is adopted. The definition set out in ISO 22313:2020 (reproduced verbatim) states that business continuity management is «*a holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities*» (ISO 22313:2020). Business continuity includes planning and preparation to ensure that the plant, warehouse, and third-party warehouse can avoid business interruption if a disruption or adverse event occurs and can return to normal operations within an acceptable time frame. A Business Continuity Plan is a package of documentation whose role is to help the system cope with threats and disturbances while ensuring continuity of operation and avoiding interruptions of critical functions as much as possible. To ensure a constant operational readiness of the Continuity activities, an awareness and training plan should be established by the Continuity Plan Leader. The continuity plan should be updated and tested frequently, at least yearly to put into practice the Continuity Plan content, to strengthen continual improvement, and to train future users. Business continuity is based on 3 processes: Continuity plan development (Business Impact Analysis, Recovery Strategies, Plan Development), Continuity Plan Update and Testing (Develop Testing, conduct training for business continuity team, Update the Business Continuity based on lessons learned), Continuity Plan Execution (Assess crisis, Selection of scenarios based on decision tree, Activate dedicated Continuity Plan). The processes covered by this plan are warehouse processes (Receiving, Storage, Picking, Value-Added operations, Shipping) and factory processes (Receiving, Quality control, RM Storage, Weighing, Bulk manufacturing, Filling / Packing, Finished Good Storage, Shipment). However, in addition to manufacturing supply chain and Physical Distribution, there are nine Supply Chain Domains described in table 1.

Table 1. Supply chain domains

Supply chain domain	**Description**	**KPI**
Sales & Operations Planning (S&OP)	A medium term cross-functional planning process which sets the sales forecast, compares it to operational capability, decides optimal solutions to constraints, and defines the commitment of future business performance versus its strategic goals (Kristensen and Jonsson 2018).	• Forecast bias & Forecast accuracy • Stock value & Stock coverage • Service KPI • % of Excess and Obsolete
Supply Planning	The objective of Supply planning is to deliver target service level with optimized inventories (Wang et al. 2020).	• Stock in value • Stock in days • Service level • E&O : Excess & Obsoletes
Demand Planning	Demand Planning is responsible for building reliable sell-in forecasts per product in order to better drive the business (Wang and Yun 2020).	• Forecast Bias and Forecast Accuracy • Percentage of gap between forecast and trend at each retrending and gaps communication
Customer Care & Credit	Customer Care & Credit aim at providing innovative services for an enhanced Customer Experience towards profitable growth for the company and Customer (Zekhnini et al. 2020).	• OTFR (On Time Fill Rate is the percentage of units delivered on time vs the total units ordered) • OTIF (On Time In Full is the percentage of complete orders delivered on time vs the total number of orders) • Dispute Rate (the percentage of registered claims vs the total number of orders invoiced)

		• Cost to Serve (the total cost to serve a customer in % of its turnover and in price/unit (direct costs: Customer Care, physical execution, transportation, reversal logistics))
Direct E-Commerce	In addition to mastering all the traditional Supply Chain streams, E-commerce Supply Chain masters specific D2C Supply Chain Streams to achieve the target service level and enables the best shopping experience in line with the brand image (equity) and local market specificities (Tolstoy et al. 2020).	• On site Availability • % Payment Rejection • Click to possession • % Customer interaction • % Returns • Cost to serve • NPS (Net Promoter Score)
Retail supply chain	Retail supply chain covers end-to-end process in the stores: from the catalogue management and assortment to the point of reaching the merchandise to the customer. Its objectives are to ensure the stock level coverage, the on-shelf availability and optimize store and supply chain team workload in order to dedicate more time to serve the consumers (Salehi Sadghiani et al. 2015).	• Stock Coverage • On-Shelf Availability (Products availability in store) • Excess & Obsoletes • Store satisfaction • Accuracy of the stock
Transportation	Transportation aims at delivering products to the customers at the expressed level of service, optimal cost and lowest carbon footprint, by defining an adapted planning (Wilson 2007).	• CO2 Efficiency • Service quality indicators • Cost indicators • Activity indicators
Customs	To ensure legal compliance regarding customs declarations , diffuse the company standards , train and develop local and regional teams and validate structural internal or external options and duties optimization (Pourakbar and Zuidwijk 2018).	• Numbers of files • Days of clearance • Inventory in customs • Conformity rate • Duties paid
Data Quality Management	Data Quality Management aims at meeting internal and external (customers, distributors, regulatory) information needs by ensuring data accuracy, reliability, timeliness, completeness, availability, consistency and in compliance with the company and external standards (Shamsuzzoha et al. 2020).	• Activity Indicators • Catalogue Indicators • Codification process Indicators • Quality performance Indicators • Regulation Compliance indicators • Publication completeness Indicators

By focusing on the last two domains (Customs and Data Quality Management), we notice that regulatory compliance has an important impact on the Supply Chain optimization. Hence, this paper will be an attempt to introduce the notion of regulatory resilience and to define its role in achieving Supply Chain resilience.

In order to do this, the first section will be dedicated to enumerating the different regulatory issues that the company is suffering from, the second one will represent the resilience process against parallel imports and counterfeiting, which are among the most serious regulatory concerns. In the third section, an IT tool, called R^2APID and developed based on the resilience process discussed in the previous section, is shown forth. Finally, conclusions will be made and opportunities for further work will be exposed.

2. Regulatory concerns

Today, the company's regulatory concerns are:

- Parallel imports and Gray markets, which are unauthorized distribution channels of genuine branded products, and which constitute a significant challenge on the management of global supply chains (Zhao et al. 2016).
- Counterfeit Supply Chains, which are illicit businesses producing and distributing items that can be dangerous, presenting health and safety risks ranging in severity from moderate to potentially life-threatening (Eser et al. 2015).
- Intensive and repetitive pre-market inspections, this happens at customs level in order to verify that the shipped goods are registered with the relevant authorities (Ministry of Health and/or Ministry of Trade and Industry).
- Labelling requirements (Claims), they should be clear and understandable to the average end users. According to the European Parliament and Council Regulation (EC) 1223/2009 on cosmetic products (definition reproduced verbatim): "*In the labelling, making available on the market and advertising of cosmetic products, text, names, trademarks, pictures and figurative or other signs shall not be used to imply that these products have characteristics or functions which they do not have*." (Ec.europa.eu 2021) The six common criteria that should be used in assessing claims are Legal compliance, Honesty, Veracity, Evidence support, Equity, and Shared decision-making. Financial sanctions can be imposed in reaction to non-compliance of claims with the common criteria.
- Ability to capture the correct data on time and to efficiently track different variants through the product's lifetime in order to ensure its compliance.
- Halal cosmetics, after food and finance, Halal industry is emerging also for cosmetics (Hashim and Musa 2014). However, many issues and challenges are occurred in the implementation of Halal supply chains, such as extra cost, Consumer behavior regarding halal, Transportation and Information Technology, and Halal certification (Qurtubi and Kusrini 2018).
- Animal experiments, as per the 7th Amendment to the Cosmetics Directive (2003/15/EC), new arrangements regarding the prohibition of testing cosmetic finished goods and ingredients on animals are implemented. It categorically prohibits the testing of cosmetic products, whether finished goods or ingredients or raw materials, on animals and forbids the commercialization of this type of products in the European Union markets. Therefore, cosmetic enterprises have been forced to find new methods to evaluate the safety of cosmetic formulas without having to test them on animals (Octavio et al. 2017).
- Cosmetovigilance, this is the management and reporting of undesirable events caused by cosmetic products and affecting human health (Zweers et al. 2012).

In the next section, a resilience process supporting the fight against parallel imports and counterfeiting will be set up.

3. Parallel imports and counterfeiting – Resilience process

So as to model the resilience process dedicated to dealing with parallel imports and counterfeit products, the Business Process Model and Notation (BPMN) will be used (Figure 1). It is a notation for business process modeling. It is widely used by professionals because of its several advantages; it is practical, comprehensive, and user-friendly. It provides also extensive possibilities (Hassen et al. 2017).

The report form mentioned in the model below (Figure 1) is divided into three parts:

- Information about the product (Brand, product name, barcode, batch number…)
- Information about the store where the parallel traded and/or counterfeit products were found (Corporate name, type (Retail store, Warehouse), address, city, geolocation, type of illegal activity (parallel import, counterfeiting), estimated quantity, storage type (displays, boxes, counter-top displays…), comments)
- Information about the form (sender name, date of dispatch).

Once this report form is filled in by the field salesperson, it is sent to the regulatory affairs manager who analyzes and studies the received information. One of two possible scenarios will apply: if the concerned products are not registered, the regulatory dossier should be prepared and submitted to the relevant authority, which takes on a responsibility to evaluate the dossier and, if this latter is complete, deliver the registration certificate. Then, the regulatory affairs manager can prepare a letter to the relevant authority explaining the problem. That will allow carrying out a market investigation and taking corrective actions. The explanatory letter can be prepared directly if the products are already registered.

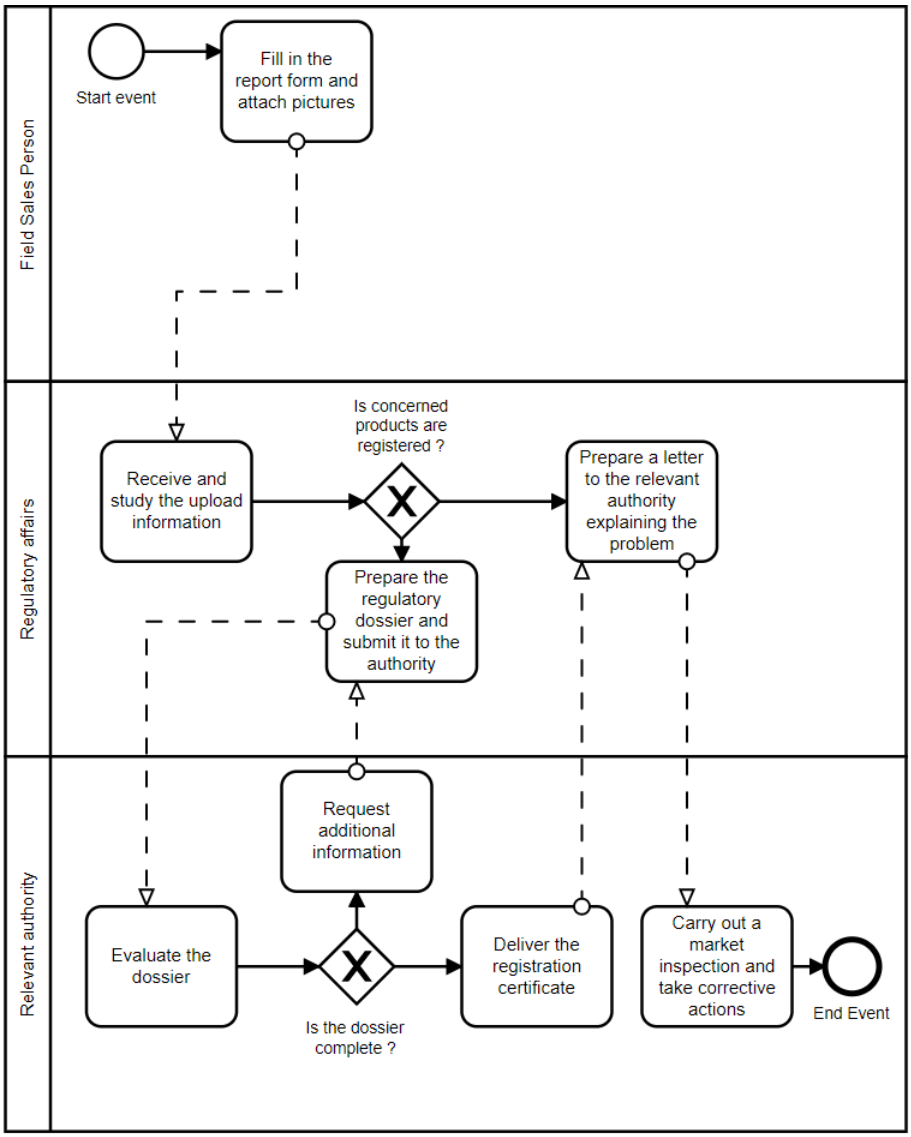

Figure 1. Parallel imports and counterfeiting – Resilience process

This process includes the three fundamental components of a resilience process (Said et al. 2019), which are:

- Anticipation: (1) Maintain a watch in the market, (2) Make sure in advance that the entire catalogue is registered in order to accelerate the process and avoid delays, (3) Work on being authorities preferred partner.
- Resistance: Try, by way of regulation, to combat illicit activities infringing intellectual property rights.
- Recovery: The overall demand for licit goods increases and, through it, the revenues of the legitimate company.

With the aim of optimizing this process and boosting its efficiency, an IT tool is developed. R^2APID (Regulatory Resilience Against Parallel Imports and Doctoring) is the name given to this tool.

4. Regulatory resilience against parallel imports and doctoring

"Regulatory Resilience Against Parallel Imports and Doctoring" is a tool developed using ASP.NET, which is a platform, designed by Microsoft, dedicated to the development of various types of applications, including web applications using programming languages (For the development of R^2APID, we used VB.NET) (An et al. 2019).

4.1 Home Page

The home page, illustrated by figure 2, contains three modules: (1) Report an illegal activity, (2) Prepare an explanatory letter, and (3) Dashboard.

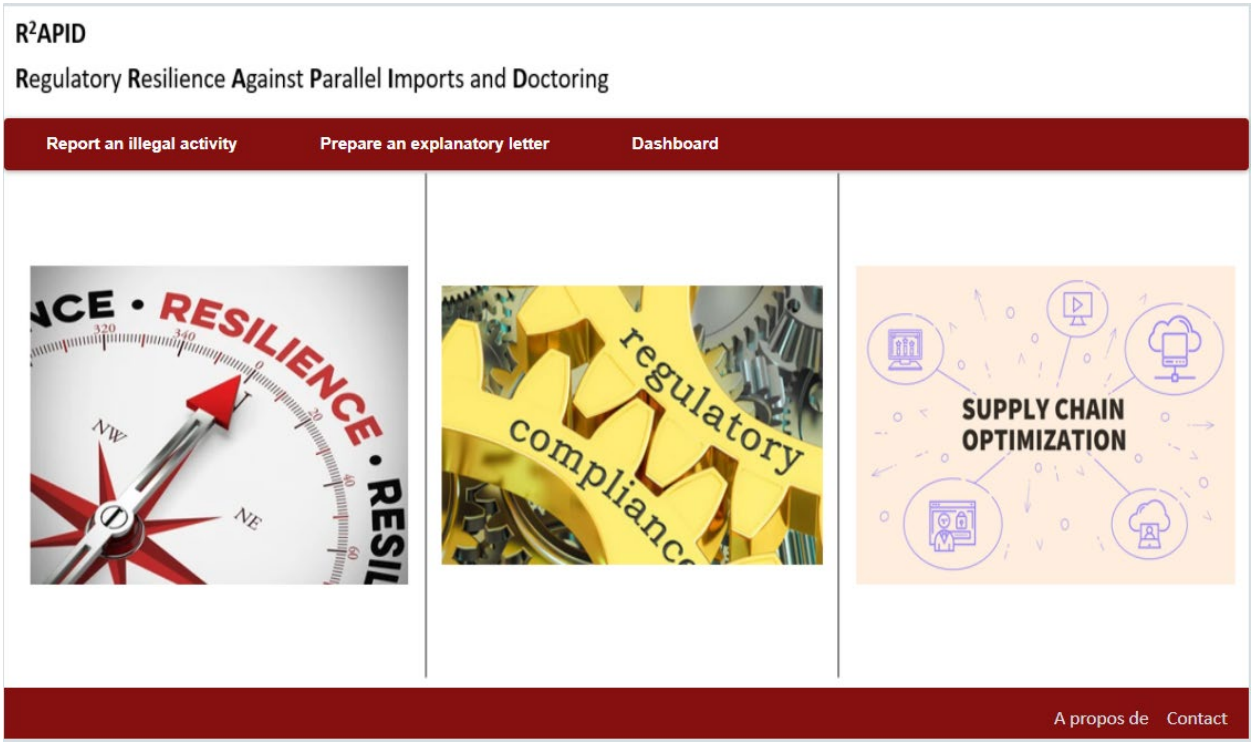

Figure 2. R²APID – Home Page

4.2 Report an illegal activity

Figures 3 & 4 illustrate the interfaces used to report an illegal activity. Depending on the tracking system used by authorities, the concerned product can be scanned instead.

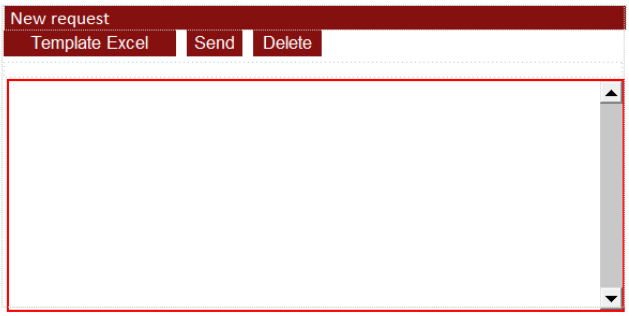

Figure 3. R²APID – Module 1: Report an illegal activity

Product information					Store information									
Brand	Product name	EAN-13	Batch number	Picture link	Store type (Point Of Sale / Warehouse)	corporate name	address	City	Photo	Illegal activity type (Parallel Imports / Doctoring / Both / Other)	Comment	Estimated quantity	Storage type	

Figure 4. R²APID – Module 1: Template Excel

4.3 Prepare an explanatory letter

By typing the relevant request number and then clicking on Go (figure 5), a letter with all information related to this request is sent to authorities via email.

Figure 5. R²APID – Module 2: Prepare an explanatory letter

4.4 Dashboard

This module will contain a listing of all illegal activities reported. Moreover, many indicators can be put in place and analyzed (Number of requests per year, impact on sales and turnover…).

5. Conclusion

The present paper consists of a case study of the supply chain transformation imposed by the VUCA (Volatile, Uncertain, Complex, and Ambiguous) environment in which the company concerned operates. Following an in-depth analysis, the importance of ensuring regulatory resilience has been stressed. In this respect, a list of the different regulatory concerns faced by the company, and which may slow down the supply chain performance and threaten its functioning, has been drawn up. Then, a resilience process, serving the purpose of limiting parallel imports and counterfeiting, recognized as amongst the most threatening regulatory challenges, has been proposed. Lastly, an IT tool called R²APID (Regulatory Resilience Against Parallel Imports and Doctoring) and which automating the resilience process previously mentioned, has been introduced. In our future work, we will try to dip into other types of resilience in order to help with optimizing process management in general.

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