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Improvement of the Parallel Importation Logistics Process Using Big Data

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Abstract

South Korea has allowed parallel importation since 1995. Parallel importation causes competition among importers in the logistics process allowing, consumers to purchase foreign brand products at low prices. Most parallel importers base product pricing on subjective judgements. Fashion products in particular, have different sales rates depending on trends and seasons, so sales performance varies greatly depending on selling price timing and policy. The merchandiser (MD) set the price on parallel importation products by aggregating information on imported products and pricing goods. However, this customized process is very time consuming for the MD. This is because the logistics process of parallel importation's customs clearance procedures and repair works is complicated and takes a significant amount of time. In this paper, we propose an improved parallel importation logistics process based on big data, which automatically sets the price of parallel importation products.

Index Terms: Logistics Process, Parallel Importation, Big Data, Merchandiser, Price

I. INTRODUCTION

In line with the invigoration of global trade and continued economic growth, domestic consumers are continuously increasing their demand for foreign brand products. However, many consumers complains that it is difficult to feel the effects of a price drop in imported brand products, despite expectations that price stability for imported brand products are rising after following the multilateral free-trade zone (FTA) and its effectuation. For some foreign brand products, there is a large gap between import prices and sales prices depending on the import distribution channels. This phenomenon is mainly attributable to the monopolistic formation of the import structure, with foreign brand importers importing certain brands exclusively [1].

Therefore, parallel imports are required through the diversification of distribution channels via systematic acceptance of parallel imports alongside regular imports. In 1995, South Korea allowed parallel imports for the first time. Parallel imports can be defined as the activity of a third party, unrelated to the right, selling genuine goods without the approval of the right person to a foreign country. The good is legally distributed by a right person, such as a trademark, patent right and other intellectual property rights at home and abroad [2]. Genuine goods are products that are sold and affixed by persons who have the right to use certain trademarks in a foreign country, and they are legally distinguished from counterfeit goods that do not have a legitimate trademark. Parallel imports eventuated due to international price differences. Parallel imports is eventuated due to international price differences. Parallel imports are frequently seen when the selling price in a foreign country is significantly lower than the selling price at home the country of origin and the arbitrage is high for the same product. In other words, by

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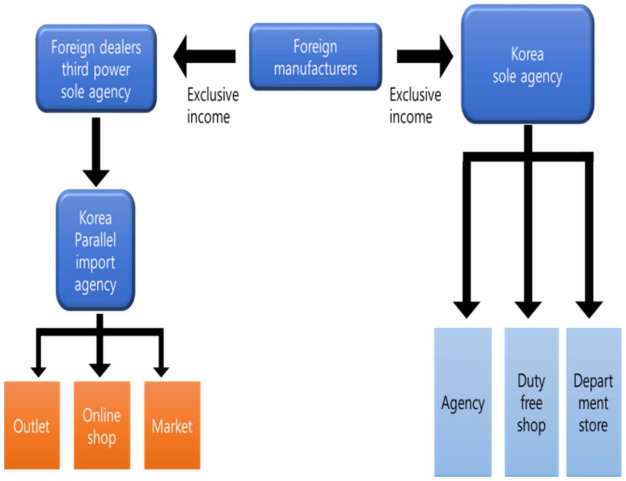

Fig. 1. Distribution and logistics structure of parallel importation.

using parallel imports, consumers can purchase brand products sold at a domestic general agency at a lower price [2, 3].

Fig. 1 illustrates the distribution logistics process of parallel imported goods.

The merchandiser (MD) sets a product's price subjectively by aggregating information such as production year, product condition and manufacturing country of the parallel imported product. However, the parallel imports logistics process is complicated and significant amount of time is taken to set the product's price, causing delays to the marketing of products [4].

In this paper, we propose an improved parallel imports logistics process based on big data, in which MD can quickly determine prices of parallel import products based on reliable, diverse information.

II. THEORETICAL BACKGROUND

A. Parallel Importation

Parallel Importation is a system that allowing importers other than importers with exclusive rights to import goods through vendors such as free trading ports in countries other than the manufacturing country. Through, by parallel import, consumers can purchase brand products at a lower price than they sell in a general agency. There are multiple drivers for parallel imports and, causes of price differences at home and abroad. First, domestic and international price differences may occur if the manufacturer of the original products implements a price differentiation policy between countries. Second, a single importer is in charge of the distribution of an original product according to the market situation of each country, when price control is unavailable to importers in each country because the manufacturer or intellectual property rights holders are not monopolized. In this case, domestic and international price differences may occur. Third, even if the exchange rate fluctuates, domestic and foreign price differences will arise if local prices are not adjusted to match exchange rate changes to maintain market share in the local market. Fourth, parallel imports may occur if the official distributor purchase more goods from the manufacturer than normally available for sale in the distribution area and sell its excess to parallel importers in other countries. Lastly, parallel imports may occur when a manufacturer sells over-produced products or stocks of products by dumping them in the international market [5-7].

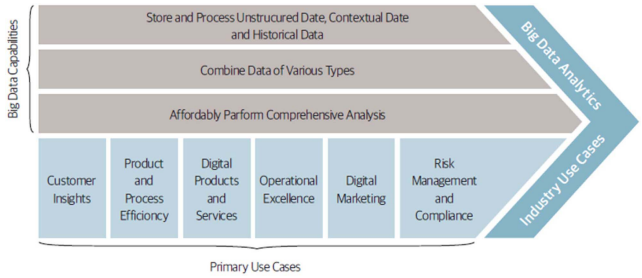

Fig. 2. The Big Data Value Model, Source :Garthner Research, 2015).

B. LOGISTICS CASES BASED ON BIG DATA

The Gartner Group has divided the main purpose of big data analytics into six categories, as shown in Fig. 2 through the Big Data Value Model (2015) [8].

The model includes customer insight, product process efficiency, digital products service, operational excellence and digital marketing. It looks at major examples of big data use by foreign and domestic companies by largely re-racking the main purpose of big data analysis into managing customer relationships, improving internal processes, improving efficiency and creating new value positions [8].

Big data is a technology that extracts value from data and analyzes the results. It includes a large set of structured or unstructured data that goes beyond the capabilities of the existing database management tools. There are many cases where big data technologies have been used in logistics. For example, Amazon has used big data technology for inventory management systems and predictive delivery services. Using big data, they have accurately forecasted the changing purchase patterns of consumers in real time and reflected these in their inventory policies. By applying big data technology to the inventory management system, it efficiently managed inventory quantity, maximized efficiency, reduced costs, and generated profits. It also analyzed information such as a customer's previous order lists and interesting products in shopping carts. This information enables customers to receive products as soon as possible after ordering by predicting delivery from a warehouse near the customer's

address, even if the customer is uncertain about the purchase. Fashion brand ZARA attaches Radio-Frequency Identification (RFID) tags to all clothes they sell. RFID tags identify stock status, products frequently worn by customers, and consumer preferences,. They extract preference data from customers through the Social Network Service (SNS) and online stores, and send it to the data center. The data center finally analyzes a various data and use it to create new products. In addition, ZARA, in collaboration with Massachusetts Institute of Technology (MIT) was able to reduce unnecessary inventory. They achieved this by developing a big data based inventory distribution system where sales and inventory data from stores around the world were analyzed in real time. ZARA makes decisions based on big data by analyzing demand forecasts by product, sales trends by store, and identifies the correlation between displayed number of goods and volume. Based on accurate decision-making with big data, they realized the policy of non-stock operation [8-10]. Samsung SDS developed its own integrated Supply Chain & Logistics solution "Cello" in 2011 based on its know-how in establishing Information Technology (IT) systems and consulting through many project experiences in integrated logistics [11]. Fig. 3 shows the range of logistics services for the "Cello" platform.

Cello Square Version 1 is core to an analysis platform with Big Data technology. That is the information generated by the transport region and route is analyzed and provided to shippers and logistics companies via email and mobile.

Cello square version 2, of innovation is the Internet of Things (IoT) integrated management platform as a key technology. Through the convergence of big data and IoT, Supply Chain Management (SCM) plans and logistics execution functions are managed in an integrated manner. This includes establishing daily logistics execution plans, which have shown limitations in traditional SCM and logistics solutions in the past.

Cello Square Version 3 is the core of the market-operating platform with artificial intelligence and block chain technology. Combining technical knowledge and operational experience accumulated through big data and IoT technologies with block chain technology, provides online logistics services optimized from order customs clearance, return and payment.

Fig. 3. Cello Logistics Service Platform of Samsung SDS. Source: www.samsungsds.com (2019).

C. Merchandiser's role

Merchandising began in use in the late 19th century and it was organized by Sears Roebuck in the U.S. from the 1920s. Merchandising is a plan to commercialize products or services that meet customer needs to be distributed at the right time and place [12].

The merchandising process is shown in Fig. 4.

The MD selects a target market through analysis of the internal and external environment of the enterprise. They set merchandising policy, and control product planning, purchase management, price management and product management according to the product area. In addition, the company promotes the increase of sales.

Because parallel importation products are genuine products, there is no dispute over trademark infringement due to parallel importation if the requirements for parallel import functions are met. Parallel importation procedures may vary depending on the type of parallel importation products

Merchandising is the most important task for retailers. It involves attracting customers and pursuing customer satisfaction at the same time through differentiated product management and displays from competitors, and rapid entry and exit of products, a prerequisite for differentiation from other retailers. It includes not only product activities in the store, such as product planning, pricing, sales, promotion, but also inventory management processes in the supply chain. The MD is responsible for the product and is responsible for all of its responsibilities before it is sold to customers, including information collection, product development, sales decisions and sales promotion.

The company is particularly responsible for developing original products that can respond to competitors as well as developing alternative products according to the product

Fig. 4. Merchandiser' role and parallel importation process.

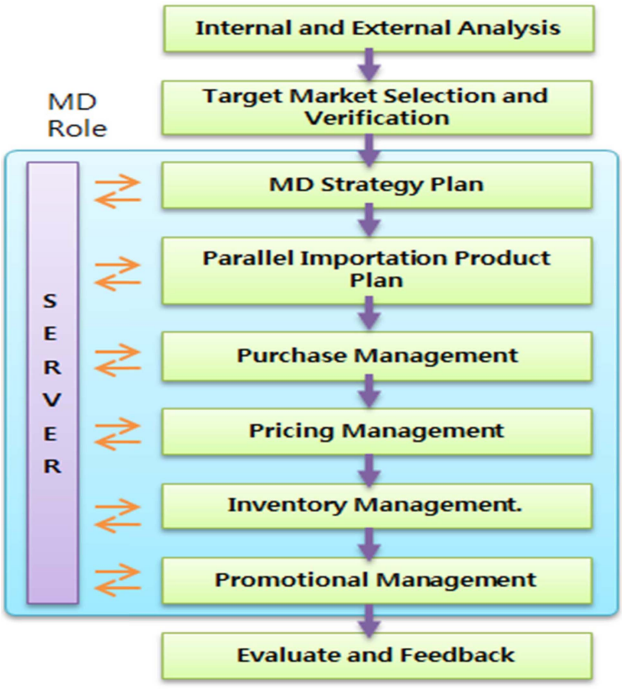

Fig. 5. Parallel importation flowchart of clothing products.

Fig. 6. Process of merchandising for pricing parallel importation.

cycle. They are also responsible for the overall work from product planning to introduction to secure competitive advantage with third parties.

Thus, merchandising is one of the marketing activities. It is mainly used to make decisions about the products to be produced or sold. This includes product planning such as the function, size, design and packaging, the production or sales of the product, the timing of the sale and the price. The MD acts as a bridge between products and consumers, and is the manager and decision maker managing the entire process from product creation to destruction. Based on market research and data analysis, the MD plans new products, discovers unique products, and purchases them. They also control marketing, selling techniques, and inventory management. The MD belongs to distributors or manufacturers, or work in the trading company. They are also referred to as the buyer as a proxy for the purchase. The role and demands of MD are increasing as distribution channels such as department stores, TV home shopping, and online shopping malls diversify, and competition among industries and/or companies intensifies [12, 13].

III. LOGISTICS PROCESS OF PARALLEL MPORTATION PRODUCTS

As parallel importation products are genuine products, there is no dispute over trademark infringements due to parallel importation if the requirements for parallel import function are met. Parallel importation procedures may vary depending on the type of parallel importation products. Fig. 5 shows the procedure in which domestic importers parallel import clothing [14].

First, the importer obtains and purchases overseas suppliers. After entering Korea, when brought into the bonded area, import is reported to the customs office and if there are no problems with the parallel import products, they are released from the bonded area. Parallel import goods and packing boxes are subsequently marked with quality marks and prices, and then sold to customers [15].

In general, the process of merchandising for pricing parallel imports is shown in Fig. 6.

First, the work order is received. The work order is delivered from the MD before the ship arrives or within two days of arrival. Second, information on the parallel imported products such as Bill of Loading (B/L) number trade number, arrival date, brand and style code in parallel import system are registered. Third, the gender, brand, and season according to the criteria of the item are classified. Finally, using the information from the parallel import product, the MD determines the price of the product and attaches a price tag based on empirical judgment. After attaching price tag by product, they attach a packing list by box and proceed to attach a care label. However, the existing parallel import merchandising process has multiple problems. If the MD is far from the port's bonded warehouse, it is time consuming

to price the product. In addition, in the case of parallel import goods such as clothing, the process takes a significant amount of time, money as it is carried in the bonded area, and the same operation is repeated twice in the customs declaration and repair work.

IV. IMPROVEMENT PLAN FOR PARALLEL IMPORTATION LOGISTICS PROCESS BASED ON BIG DATA

Most of parallel imported fashion products such as clothing and miscellaneous goods are priced according to the subjective judgment of the MD. For fashion, in particular products differ greatly in sales rates according to trends and seasons. As such, profits from sales are determined by the pricing of the MD. However, if the price of the parallel import product is set too high, it can lead to sluggish sales. On the contrary, if the price of parallel import goods is set too low, the goods are sold out earlier than expected. Despite the possibility of leaving many margins, the product may have been sold for a lower profit than its initial value. In this paper, we propose a method where the MD can determine the price of parallel import products automatically by using big data technology with reliable objective data such as product prices and sales records.

Fig. 7 shows the system composition of parallel import products using big data technology.

The basic configuration is to collect big data such as packing list information and domestic sales information about parallel imported goods through the server and transmit the collected information to the MD terminal. The MD refers to a professional in charge of planning and selling products, and has the right to make decisions on aspects such as merchandising plans, purchasing, processing, product displaying, and sales.

Fig. 8 illustrates the process of pricing parallel import product with big data technology.

In step 1, the big data is generated by collecting the packing list information of the goods obtained in the past parallel import process and the domestic sales information on the imported fashion goods in a predetermined server. Packing list information includes item, brand, style code, season, gender, fiber mixture rate, year of production, manufacturing country and country of sale. Domestic sales information includes domestic sales prices, discount prices, the number and duration of discounts, stock status, sold out period, and seasonal sales.

In step 2, the packing list information about the newly imported fashion goods through the inspection terminal is transmitted to the server and the MD terminal. The packing list information of the new parallel import goods sent to the server is collected as big data and used to generate information for pricing. The packing list information of the new parallel import goods sent to the MD terminal is used directly by the MD pricing the goods.

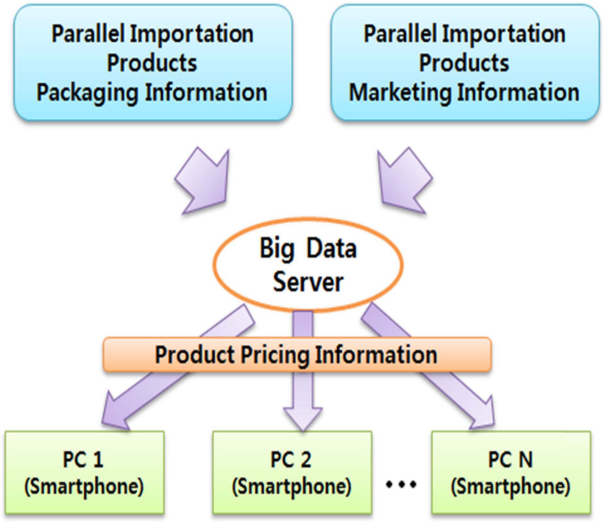

Fig. 7. Parallel importation system based on big data technology.

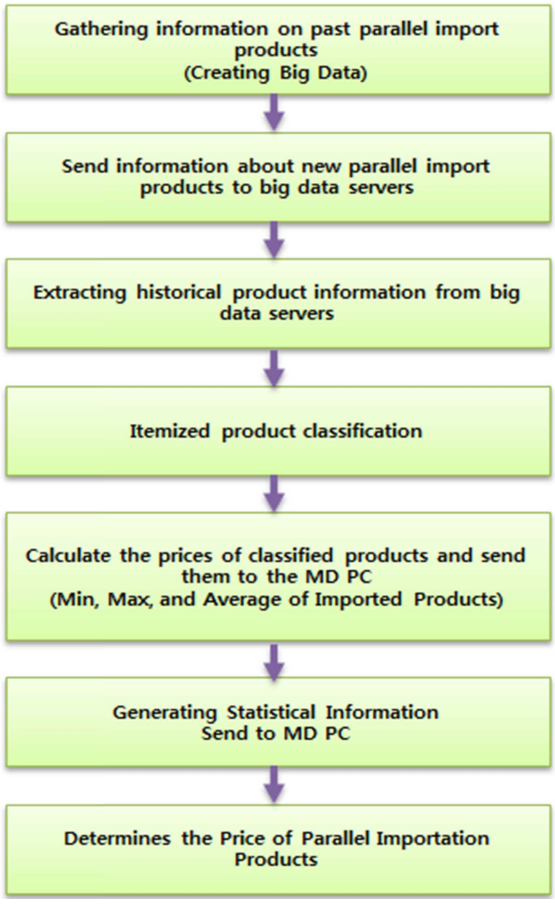

Fig. 8. Process of pricing parallel importation product based on big data.

In step 3, the server extracts a list of past products of the same or similar type (items) as the new parallel imported goods from the big data. This is based on the packing list information of the new parallel imported goods. The details of past parallel import products are identified from big data to extract a list of products of the same or similar type as new parallel import products. At this time, the product list may be extracted with various options that can be separately designated by the user. The options may be input through a program linked with a server.

In step 4, the packing list information is compared with the list of past parallel imported goods extracted in step 3, and the products are classified by at least one identical configuration item.

In step 5, the minimum, maximum, and average values are calculated from the price information of past parallel import products classified in step 4 and sent to the MD terminal. It is possible to calculate the past price of goods classified by brand or fiber mixture rate, and to transmit the calculated value to the MD terminal, so that the merchandiser can use it as reliable information in setting the price. Instead of simply calculating the minimum, maximum, and average values from the extracted product list, the recommended price may be calculated by partially reflecting the selling price of the country of manufacture, the domestic selling price, and the discounted price.

In step 6, step 4 may be added to generate statistical information for a certain period for each packing list and configuration items of the domestic sales on in the server. These may be transmitted to the MD terminal. Thus, price information in the past, and sales by period or season, or sales by economic situation or trend at that time can be provided by chart or graph. This provides more reliable information to the MD. Thus, the MD can automatically calculate the recommended price for parallel import products by using big data's statistical information.

In step 7, based on the minimum, the maximum, and the average value received from the server, pricing information may be input through the MD terminal and transmitted to the server to feed back the big data. By sharing commodity prices finally determined by the MD with servers, information in big data can continue to accumulate. This also means the latest information can be updated in real time to provide big data information to other MDs in the company.

V. CONCLUSIONS

Parallel import logistics refers to the import and sale of products by individuals or general companies, not by official sales outlets or importers. In principle, parallel imports of all imports are permitted to the extent that they do not impair the trademark's inherent function of source marking and quality assurance. Parallel imports have the effect of lowering prices and benefiting consumers even if they sell products made overseas in Korea. In this paper, we proposed an improvement to the parallel import logistics process based on big data. By adopting this process, the MD can quickly and automatically determine the price of parallel import products, utilizing accumulated data related to past parallel imports. The proposed process easily sets an appropriate price to satisfy the sales rate and the margin rate by providing reliable information for pricing based on the aggregated big data to the MD terminal. In addition, there are subsidiary effects, pricing can be quickly determined and dominate markets in advanced. This is because the MD can selectively collect and extract information on past parallel imported products from aggregated big data.

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