



Technology and counterfeiting in the fashion industry: Friends or foes?

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Abstract This article addresses the relationship between technology and counterfeiting in the fashion industry. Starting with an economic analysis of counterfeiting, I examine how new technologies encourage counterfeiters while at the same time provide important tools to combat it. The development of sophisticated technologies to obtain, process, and reproduce images and the extensive use of new digital channels for online sales have simplified both production and distribution of counterfeit products. Based on tagging and DNA analysis, as well as web-based monitoring systems, trace and track technologies allow rights holders to combat counterfeiting through effective control of the entire production and distribution chain. This article considers an innovative method of product monitoring based on latest-generation IT platforms, integrated with portable devices, that can easily and immediately verify product authenticity. The spread of these new technological systems is closely related to the role of a party that is glaringly absent in the battle against counterfeiting: the consumer. Indeed, new technologies are the driving element in a virtuous circle where the consumer becomes an essential instrument in the battle against counterfeiting, along with the other players involved: companies, public institutions, and civil society.

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1. Technology, what a great innovation!

The globalization of markets and growing competition in international trade have made technology a key factor in the fashion industry, involving all stages of the production and distribution chain

(Quinn, 2010; Tortora, 2015). One of the most interesting aspects of this process is focused on the brand, which represents the real added value of fashion companies. The brand has become a symbol of social membership, and its intangible value has therefore increased dramatically (Fionda & Moore, 2009; Saviolo & Testa, 2002). This has made counterfeiting highly profitable, and defending against it a priority (Cohen & Juggessur, 2009).

In this scenario, technology has become fundamental, with a twofold impact on brand

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counterfeiting. On one hand, it has made counterfeiting more and more impressive, enabling the availability and use of low-cost means of falsification and making communication and distribution systems less complex; many past difficulties in reproducing copies of accessories have been overcome. On the other hand, new technologies provide crucial tools for the industry to fight back. Thanks to new technologies, firms possess efficient and innovative means to verify the authenticity of a product and to track and trace it, thus allowing for the reconstruction of its history along the whole supply chain.

This article deals with counterfeiting in the fashion industry, but the analysis on the relationship between technology and counterfeiting can be generalized to other sectors. Indeed, the brand is one of the main elements in the food, pharmaceutical, and electronics industries, too.

2. Counterfeiting worldwide

Counterfeiting is a vast and constantly growing phenomenon, as demonstrated by the latest available customs seizure data for 2011–2013 collected in a study conducted jointly by the EU Intellectual Property Office (EUIPO) and the Organization for Economic Cooperation and Development (OECD/EUIPO, 2016). In 2013, international trade in counterfeit and pirated goods amounted to 2.5% of world trade, or as much as \$461 billion.¹ The top five categories of goods most frequently seized in 2013 were shoes, clothing and accessories, leather goods, electrical equipment, and vehicle parts.

In Italy, the home of luxury brands with the highest prestige, counterfeiting has made an economic impact. In 2015, counterfeiting involved about €6.9 billion of turnover—an increase of 4.4% from 2012—making Italy Europe's foremost consumer of fakes (Izzi, 2008) and one of the main centers for the production and distribution of fakes (CENSIS & MiSE, 2012). Counterfeiting accounted for 100,515 jobs lost in the Italian economy, while the government lost about €1.7 billion in direct and indirect taxes. From 2008–2015, the total number of seizures was about 432 million items; the category most involved was clothing and accessories, representing €2.247 million, or 32.5% of the total (CENSIS & MiSE, 2016). It is evident that fashion is one of the top industries for counterfeit products.

3. How new technologies may encourage counterfeiting

New technologies have impacted counterfeiting in two main ways. First, digital technology has evolved enormously: Over the past 10 years, costs have steadily decreased and quality has steadily increased. Second, the power of the internet has become immense, deeply reshaping the whole world of retail.

3.1. Cheaper, and identical to the original

The weakest link in fashion industry counterfeiting has always been the difficulty of making items that look identical to originals. In the past, high-tech image-related devices were absurdly expensive, so that even simple acquisition of a high-definition image (e.g., a brand logo) was costly and/or impossible, let alone a whole pattern or 3-D decoration. Fake items could be sold cheaply, but were of bad quality. Good copies were either impossible to manufacture or expensive to produce. In either case, counterfeiters could not obtain large profits.

The scenario has changed as technology has become both cheaper and more sophisticated. To produce a high-quality copy of a luxury item, good materials must be used and all the patterns must be reproduced perfectly. To this end, the process of manufacturing a counterfeit product consists of three major steps: (1) obtaining an image of the original item, (2) processing it, and (3) using it in different ways depending on the fake to be created.

Over the course of 15 years, the acquisition process has gone from simple graphic scanners with low-to-medium pixels-per-inch resolution, to professional drum scanners or artwork software ranging from 4,000 pixels-per-inch to unlimited resolution. The costs of these devices have dropped significantly and the challenge of affordable labor has been overcome, as skilled workers are available in most countries where counterfeiting occurs.

Once an image is captured (step 1), some processing is required before a good reproduction can be obtained: scanning artifacts must be removed, software filters should be applied, and image brightness/contrast must be adjusted, et cetera. Significant improvement in these areas has occurred over the last 15 years due to professional software availability at reasonable cost to the public.

Adobe Photoshop and Microsoft Digital Image Pro, to name just two products, provide powerful tools for enhancing digital images. At the same time, PC operating systems are becoming increasingly powerful and offer image tools for use by virtually anyone.

¹ In dollar amount, this is the equivalent of drug trafficking.

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