Towards A More Proactive Approach to Brand Protection: Development of the Organizational Risk Assessment for Product Counterfeiting (ORAPC)

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Abstract

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Introduction

The range of counterfeit products that enter the legitimate marketplace is vast and includes handbags, purses, clothing, watches, aircraft parts, automotive parts, medical devices, pharmaceuticals, personal health care and beauty items, and consumer electronic goods. In fact, the scale of product counterfeiting is so vast that it is estimated to cost U.S. businesses hundreds of billions of dollars each year (International Anti-Counterfeiting Coalition, 2005; U.S. Government Accountability Office, 2010). In recent years the problem has shown appears to be increasing (Amendolara, 2005), and the growth of e-commerce has aided the proliferation of counterfeit goods (Treadwell, 2011). Additionally, data from the World Health Organization highlights the nature of this global crime, as counterfeit products have been detected in 140 different countries (United Nations Office on Drugs and Crime, 2010).

For consumers, the impact of counterfeit goods can be negligible, particularly if the item performs as desired and creates no harm. However, in many other cases counterfeit products can cause severe harms and pose significant threats to consumer health and safety (Cockburn et al., 2005; Heinonen and Wilson, 2012; Hosseini et al., 2011; Qureshi, et al, 2011). In every instance product counterfeiting creates harms for brand owners, requiring them to expend valuable resources to battle counterfeiters and stem the proliferation of illicit goods. Similarly, product counterfeiting fuels organized crime and contributes to a host of social ills, requiring government agencies and other stakeholders to respond.

As part of their brand protection efforts, companies typically make use of intellectual property rights laws (e.g. the Trademark Dilution Act of 1995, the Counterfeiting in Manufactured Goods Act of 2006, and the Prioritizing Resources and Organization for Intellectual Property Act of 2008), yet these represent reactive approaches to the problem

(Wilson and Kinghorn, 2014). While the use of intellectual property laws is an essential component of brand protection activities, reactive approaches to product counterfeiting begin to address the problem only once counterfeit goods have been manufactured and have already hit the market. More proactive approaches include tactics like incorporating special inks and dyes into product labels for product authentication, or serialization and bar codes that allow a package to be tracked across the globe. However, these efforts do not address a product's specific counterfeiting risk, and many serve only to ensure the legitimacy of the package, rather than the legitimacy of the product within the package. These responses do not help brand owners proactively identify where the risks for counterfeiting exist, which could help them reduce exposure to product counterfeiting.

Through an adaptation of a terrorism risk assessment model developed by Wilson et al. (2007), this article develops an initial proactive product counterfeiting risk assessment for use by brand owners, which can be tested and refined over time. It focuses on the factors that corporations should assess, but, for the present purpose, leaves the assessment process of each element to the corporations themselves. The goal of developing this risk assessment is to help corporations identify the products that are most at risk for counterfeiting, thereby giving them the ability to focus their resources in the areas where the greatest opportunities for crime are present. The importance of this assessment rests in the notion that the proactive identification of product counterfeiting risks will lead to more effective corporate brand protection strategies. More effective strategies will then reduce the harm done to brand owners and to consumers who unknowingly acquire counterfeit goods. As such, this risk assessment is intended to serve as the first-line of defense in a comprehensive and proactive brand owner strategy centered on identifying product-specific counterfeiting risk.

Importance of Identifying Counterfeiting Opportunities

Every brand owner is at risk for product counterfeiting, yet, there are many factors that shape risk over time, and across brands and products (Wilson and Kinghorn, 2014). Generic brand protection strategies that do not appropriately account for these unique risks are less efficient, and may be less effective, than product-focused strategies. Identifying the products most at risk for counterfeiting allows brand owners to direct internal (e.g. brand protection team, legal counsel) and external (e.g. customs agencies, contractors) resources in ways that are likely to have the greatest crime prevention effects. Product-focused counterfeiting risk assessments operate like other types of situational approaches to crime prevention by informing strategies that increase the difficulties associated with the completion of a crime (Clarke, 1980).

Identifying counterfeiting opportunities before counterfeiters are able to manufacture and distribute fakes can drastically reduce the amount of harmful products that reach consumers. The use of a brand owner initiated risk assessment as an integral part of the identification of product counterfeiting opportunities will lead to benefits for corporations, shareholders, governments, and many other stakeholders. Each of these groups has a vested interest in the early identification of product counterfeiting opportunities, yet brand owners have the greatest potential to reduce the potential harms to themselves, as well as the harms that might affect other stakeholders.

News articles in recent years (for examples, see: Associated Press, 2013; Fuller, 2000) have chronicled the rise in counterfeiter sophistication, describing how counterfeiters have begun to respond to increases in consumer brand knowledge, as well as anti-counterfeiting efforts undertaken by governments and brand owners. However, most brand owners have taken a

reactive approach to their product counterfeiting issues (Wilson and Kinghorn, 2014); there have been exceptions to this, as some brand owners have embraced proactive approaches like the use of sophisticated changes to packaging security features (Xu and Zhao, 2013; Zhao, Wang and Liao, 2013). Reactive responses to product counterfeiting do not help to prevent the growth of counterfeit goods, they simply respond to identified instances of counterfeiting and at best cut short the amount of time the counterfeiter is able to realize a return on his or her criminal investments.

Product counterfeiting infringes upon a brand owner's trademark rights, and impedes their ability to utilize their intellectual property in ways that maximize financial returns. Thirty years ago it was estimated that the cost to brand owners, in terms of the retail price of the seized good, reached as high as $30 billion a year (Abbott and Sporn, 2002; Stern, 1985). Recent estimates suggest that the problem could be as large as $600 billion a year (Chaudry and Zimmerman, 2009; U.S. Government Accountability Office, 2010), and it is estimated that the global impact of counterfeit products will have exceeded $1 trillion by the close of 2015 (BASCAP, 2011). For brand owners, these costs represent lost revenue, but they also incur additional costs related to monitoring, investigation and litigation, and costs of storage and destruction of counterfeit goods.

Brand owners can also suffer serious damage to their reputations as a result of poor-quality counterfeit products, particularly when consumers are harmed by these items. For consumers a brand can represent an implicit guarantee of quality, and brand awareness and positive perceptions of a brand influence consumer buying preferences (Keller, 1993; Macdonald and Sharp, 2000; Nedungadi and Hutchinson, 1985; Wilson and Kinghorn, 2014). When a counterfeit good fails to deliver upon these expectations consumers may feel as if the brand

owner is at fault, which may lead to reduced consumer confidence and other negative outcomes (Bird and Steckel, 2011; Commuri, 2009).

The most damaging effects of product counterfeiting are felt by the consumers of these products (Bale, 1998; Bunker, 2007), as counterfeits pose serious risks to consumers. Because of the potential impact to consumer health and safety, product counterfeiting is considered a significant global health problem (Forzley, 2003). Counterfeit pharmaceuticals, in particular, have received a great deal of attention because of the sheer number of consumers that have been harmed by taking drugs they thought were legitimate. These harms result not only from the use of pharmaceutical products that are complete fakes of legitimate products, but also from the dilution of legitimate products, and the rebranding of expired drugs (Majid, 2008). Consumers may have no way of knowing that the drugs they are taking are counterfeit, and they have no idea that these drugs are not likely to function in the same manner as the genuine product. Accordingly, consumers and brand owners are inextricably linked, as the harms experienced by consumers can quickly affect the reputation of legitimate goods, and brand owners.

Product counterfeiting has also been found to affect the employees of legitimate brand owners, as by one estimate 2.5 million jobs have been lost due to the growth of product counterfeiting and piracy worldwide (BASCAP, 2011). The social impact of lost jobs, in general, include significant declines in standards of living and access to disposable income (Topel, 1990), significant declines in the physical and mental health of older workers (Gallo et al., 2000), and declines in the academic performance of children whose parents experience job disruptions (Stevens and Schaller, 2011). The harms that come from counterfeiting are, therefore, never confined just to a brand owner's bottom-line profits. However, through proactive anti-counterfeiting and brand protection activities like the use of a product risk

assessment designed to identify counterfeiting risk, these harms can be greatly reduced. As such, the identification of counterfeiting risk must become the tip of the brand protection spear, as it allows brand owners to see opportunities for counterfeiting before they have the potential to materialize into greater social harms, allowing brand owners to focus their resources on mitigating counterfeiting opportunities.

The Use and Usefulness of Risk Assessments

The use of risk assessments in many business, health, and human service contexts is on the rise. Although considerable variation exists in how these tools are applied, risk assessments are increasingly being used to structure, inform, and/or determine a wide range of practices. In the criminal justice system alone, it has become quite common for risk assessment instruments to be used in making decisions related to arrest, diversion, bail, pre-sentence investigation, sentence, classification, and release (Hannah-Moffat, 2010). Likewise, the use of predictive analytics in policing is, in many ways, an attempt to assess risk for the strategic deployment of resources (Uchida, 2010). As researchers continue to develop new instruments and fashion creative ways in which these tools can be used to improve outcomes (e.g., reduce recidivism, decrease costs), the usefulness of risk assessments is expanding.

Risk assessments in criminal justice

The criminal justice system experienced a paradigm shift in its crime control strategies in the last two decades of the 20th century (Simon and Feeley, 2011). During this time, many new policy discourses and objectives emerged that incorporated the use of risk management techniques (e.g., probability calculations) to improve public safety (Feeley and Simon, 1992; 1994). This emphasis on “actuarial” risk prediction was largely a response to the broader

systemic demand for more evidence-based decision-making in the criminal justice system (MacKenzie, 2006; Sherman, 1998). Risk prediction models have been particularly appealing in this regard because they provide justice officials with reliable, valid, and objective determinations of risk (Bonta, 2002).

In the past, justice officials have largely had to rely on their own subjective professional experience in making many discretionary decisions (Bonta, 1996; Clements, 1996). Over the last three decades, however, a number of empirically-based risk assessment and classification tools have been developed to better inform decisions (Andrews, Bonta, and Wormith, 2006). Although there still exists a strong preference amongst many professionals to base decisions on their personal experience (Boothby and Clement, 2000), research has consistently demonstrated that actuarial assessments are a more effective method for correctly predicting outcomes (Andrews and Bonta, 2010; Grove et al., 2000). Basing decisions on clinical opinion, or "gut feelings", has further been discredited for producing "excessive subjectivity, inconsistency, bias and potential stereotyping, legal vulnerability, and lower predictive validity than structured objective methods" (Brennan, Dieterich, and Ehret, 2009, pp. 21-22). Organizations are therefore wise to incorporate the use of actuarial risk assessments whenever important decisions are to be made, rather than relying solely on employees to make subjective judgments about what should be done (Bonta, 2007).

Developing and validating risk assessments

The primary goal of a risk assessment is to predict the likelihood for the occurrence of a specific outcome (e.g., recidivism, failure to appear, use of illicit substances) with a high level of predictive validity (Van Voorhis, 2009). In constructing an actuarial assessment, individual items that are believed to correlate with the criterion of interest are placed into a prediction

model (Gottfredson and Snyder, 2005). In calculating the risk score, a predetermined amount of points are added if the factor is present and no points are added if it is not (Burgess, 1928). When the total scores are summed, those with more points are thought to have a higher probability of experiencing the outcome than those with a fewer points. For practical purposes, the scores are often binned into distinct risk level categories according to their probability for experiencing the criterion of interest (e.g., low-risk, moderate-risk, high-risk; Flores et al., 2006).

Statistically, the items in an assessment that have a significant relationship with outcome add to the predictive accuracy of the overall risk scale (Austin, 2006). In contrast, items that produce non-statistically significant relationships will contribute little, or may even reduce, the predictive validity of the risk scale (Baird, 2009; Barnoski, 2003). Therefore, it is important for risk assessments to include both theoretically relevant *and* empirically valid items. Once developed, risk assessments are often validated on many different samples to test efficiency (Vose, Cullen, and Smith, 2008), and this information is often used to revise and improve the predictive accuracy of the instrument.

Effectiveness of risk assessments

There is now a large and growing literature on the predictors of antisocial behavior, with a key distinction made between "static" (i.e., unchangeable) risk factors and "dynamic" (i.e., changeable) need factors (Andrews and Bonta, 2010; Andrews, Bonta, and Hoge, 1990). Whereas many of the early risk assessment tools consisted of relatively few historical static items, most of the tools in use today include both static *and* dynamic factors (Baird, 2009). Assessments comprised of both risk and needs items (i.e., risk/needs assessments) have been found to achieve greater predictive validity compared to those limited to only static risk factors (Andrews et al., 2006; Gendreau, Little, and Goggin, 1996). There are currently a plethora of

risk/needs assessment instruments available that have been developed to predict general (e.g., recidivism, institutional misconduct) and/or specific outcome types (e.g., personality, psychopathy/violence, sex offense). Hundreds of primary studies and multiple meta-analyses conclude that risk/needs assessments are capable of producing good predictive validity depending on the specific tool used and the type of outcome examined (Andrews and Bonta, 2010; Campbell, French, and Gendreau, 2009; Gendreau et al., 1996; Gendreau, Goggin, and Smith, 2002).

In addition to improving predictive accuracy, risk/needs assessments are also able to identify the aspects of a situation that should be targeted for change (Bonta, 2007; Schwalbe, 2008). Differences found in the need areas between initial and follow-up assessments have been associated with changes in the likelihood of the occurrence of the outcome (Labrecque et al., 2014; Vose, Smith, and Cullen, 2013). Further, better results have been reported when interventions are triaged and targeted toward higher risk cases, rather than applied equally to everyone (Lowenkamp, Latessa, and Holsinger, 2006).

Elements and Composition of the Organizational Risk Assessment for Product Counterfeiting (ORAPC)

In criminal justice, risk assessments have been described as the cornerstone of evidence-based practices (Andrews and Bonta, 2010), and they have become an integral part of many criminal justice operations (Holsinger, Lowenkamp, and Latessa, 2006). The value of actuarial risk assessments should not be underestimated as they provide many potential benefits including improving safety, more efficiently allocating resources, enhancing managerial accountability, and optimizing decision making processes (Hannah-Moffat, 2009). Because of the serious risks

that product counterfeiting poses to brand owners, and through them to other stakeholders, the development of an effective product counterfeiting risk assessment is an essential step in the development of proactive brand protection strategies.

The risk assessment developed in this article focuses upon the identification of brand owner risk in part because brand owners have the ability to accurately assess their own products, vulnerabilities, and brand protection strengths. Furthermore, the development of a brand owner product counterfeiting risk assessment represents one way to help corporations efficiently allocate scarce resources to areas that are most vulnerable to product counterfeiting. The outcomes of this process will benefit brand owners as they will be better enabled to identify where anti-counterfeiting resources should be distributed; they will also benefit consumers and society because proactive anti-counterfeiting efforts will make it more difficult for counterfeiters to succeed.

The initial product counterfeiting risk assessment proposed here is based upon a model developed by Wilson et al. (2007) that was created to assess the risk of a terrorist attack. According to the model the overall risk of a criminal event is influenced by three factors:

1) threat of an event (presence of offender with capability to “attack”)
2) the target's vulnerability (likelihood of damage, given an “attack”), and
3) the consequences (nature and scale of damage if “attack” is successful).

These factors are adapted to product counterfeiting to create a comprehensive risk assessment scheme where the level of product counterfeiting risk is determined by the threat of product counterfeiting (TPC), the brand owner's vulnerability to product counterfeiting (VPC), and the potential consequences that would be realized should the counterfeit product enter the market

and reach consumers (CPC). While this assessment focuses upon an individual product's risk, it is likely that different products will have shared or overlapping risk factors.

The risk assessment

We have titled this assessment the Organizational Risk Assessment for Product Counterfeiting (ORAPC) because it focuses upon organizational elements that play an important part in generating opportunities (or risks) for product counterfeiting. Each of the elements of the assessment (TPC, VPC, and CPC) are comprised of several factors, or assessment criteria, which are scored via a Likert-type scale ranging from 1 to 5. The assessment is designed so that lower overall scores equate to lower risk of counterfeiting, meaning that several of the assessment criteria employ a reverse-ordering of labels used in the Likert-type scales. Giving each factor equal weight, scores for assessment criteria are summed within each element to give an elemental score; elemental scores are then summed to provide an overall score representing the organization's risk of product counterfeiting. Many of these assessments will be subjective interpretations informed by the organization's viewpoint and based upon an examination of data and information gathered from across the business. The completion of the ORAPC necessarily becomes a business-wide endeavor as it will likely require data and input from a number of sources within the organization. Each of the ORAPC's elemental assessment criteria are discussed below, and a complete list of the assessments and their related scoring categories can be found in Appendix A.

Threat of product counterfeiting

The Threat of Product Counterfeiting refers to the threat posed to a product by counterfeiters. While reaching an exact prediction of potential counterfeiting activity is an impossible benchmark to achieve, brand owners must understand to every extent possible the

likelihood that counterfeiters will be successful in their attempts. Assertions about the choices counterfeiters make regarding the products they will target relate to the potential to realize high profit margins, the product's luxuriousness, exclusivity, or market demand, and the extent to which the item is an essential need for some segment of the population (Organisation for Economic Cooperation and Development, 2007; Wilson and Kinghorn, 2014). Items that produce higher profits, are seen as more desirable, or are determined to be necessary or essential goods, are the items that are the most likely to be targeted. Yet, brand owners must consider several other relevant factors when determining the likelihood of product counterfeiting, including the following: the likelihood that counterfeiters will be able to access essential materials, equipment and information needed to replicate the item; the quality of counterfeit good the counterfeiter is likely to produce; and the level of deception and ability to coordinate other business processes that are required in order to complete the scheme. We propose seven assessment criteria for gauging a product's threat of counterfeiting.

TPC.1) To your knowledge, how frequently are counterfeit goods discovered in this particular product category? This question is designed to assess how often, as far as the brand owner is aware, products of a similar nature have been counterfeited. Should there be an issue with counterfeiting of similar products, or products within the same product category, then it is likely that the product in question will be at higher counterfeiting risk. This question has relevance for new products as well as established goods. For new products, this question can help brand owners to understand the risks they may face upon entering a market. The identification of these risks should not deter market entry, but rather should prompt the brand owner to consider the quality of anti-counterfeiting strategies they will use to protect the product. For existing products, this question can help brand owners to understand their existing risk level,

and may lead them to investigate whether counterfeiting is currently occurring. Should an existing product hold a significant share of the market understanding whether other products have been counterfeited is useful in the development of anti-counterfeiting solutions.

TPC.2) Based upon sales and marketing returns, and relative to competitor products, how desirable is this product? This assessment question is intended to capture demand for the brand owner's legitimate good through a general assessment of the product's desirability. Ranging from very undesirable to very desirable, the purpose of this assessment criterion is to gauge, as closely as possible, market demand for products that could be classified as deceptive counterfeits. Because it can be difficult for consumers to distinguish between legitimate goods and deceptive counterfeits (Foxman, Muehling and Berger, 1990), deceptive counterfeits can be thought of as simply helping to fill market demand for a legitimate good (deKeiffer, 2006; Nia and Zaichkowsky, 2000). As such, high demand for a legitimate good likely translates into the perception among counterfeiters that prime opportunities for the supply of deceptive counterfeits exist. At the same time, high demand for legitimate goods can lead to increased opportunities for non-deceptive counterfeits to enter the market, so long as the good looks authentic enough to allow the customer to pass the item off as a legitimate good.

TPC.3) Thinking about today, how difficult is it for a consumer to obtain your legitimate product from an authorized source/location? This question is designed to gauge the availability or supply of the legitimate good within the marketplace, where it is obtained from a legitimate source; this means that brand owners would not consider the ease by which a consumer could find a legitimate good that had been diverted to an illegitimate supplier. If a legitimate good is available for purchase in quantities and at a price that meets consumer demand, and the product is available for purchase by consumers, then it can be assumed that

demand for counterfeits will decline. At the same time, when supplies of a legitimate good increase beyond demand, it can be assumed that prices will fall (negatively impacting brand owners) and the market for counterfeits will shrink (positively impacting brand owners).

However, when there are not enough legitimate goods to meet consumer demand, counterfeiters have an opportunity to bring counterfeits into the market in order to meet consumer demand. Importantly, the infusion of counterfeits into the market can, theoretically, go unnoticed so long as supply underperforms or equals demand and prices remain stable. However, the introduction of low-cost counterfeits could shift the demand curve to an equilibrium point defined by lower prices and decreased market share for legitimate goods. Accordingly, it is vitally important that the employees involved in brand protection understand the availability of their goods; this assessment criteria is intended to measure how well the company is tracking the supply of its products relative to demand.

TPC.4) What is the likelihood that a market for non-deceptive versions of your product currently exists? While the market for a legitimate good can serve as a proxy measure of the market for a deceptive counterfeit of that good, it is likely not a good measure of the market for non-deceptive counterfeits. Some consumers seek out non-deceptive counterfeits as substitute goods when they cannot afford to purchase, or choose not to purchase, the legitimate item (Norum and Cuno, 2011; Swami, Chamorro-Premuzic and Furnham, 2009; Tom et al., 1998). In order to meet the demands of this market, counterfeiters produce goods that mimic the features/looks of the legitimate good but do so in a way that may make it easy for consumers to determine that the item is not genuine. Additionally, counterfeiters may decide to sell their items in locations that signal to consumers through a variety of contextual cues that they should

question the legitimacy of the good (Fejes and Wilson, 2013; Harvey and Walls, 2003), such as when luxury purses are sold at flea markets, or designer shoes are sold online at a deep discount.

Even though there is little likelihood of deception with this type of counterfeit, their presence in the market can still create harms for brand owners, consumers, and society (Higgins and Rubin, 1986). Therefore, as part of the overall assessment of counterfeiting risk, brand owners must assess whether there is a market for non-deceptive counterfeits of their product. Assessment of this factor should capture the brand owner's perception of the likelihood or probability that a market for non-deceptive counterfeits exists. Accordingly, the intent of this assessment criteria is to capture the company's perception of risk that arises out of markets in which the company does not operate, nor intends to supply its products.

TPC.5) How easy would it be for an unauthorized party to obtain the equipment needed to reproduce a counterfeit of this product? In order to produce counterfeit goods, counterfeiters need to have access to the right type of equipment. For example, manufacturing counterfeit pharmaceuticals may require the counterfeiter to have access to a pill press and a die or stamp that can reproduce the shape and markings found on the legitimate pharmaceutical. Additionally, the counterfeiter may need to obtain a machine that is able to recreate the foil-backed blister pack in which the drugs are packaged. When this equipment is prevalent, or easy to obtain, the ease of counterfeiting increases, particularly when there are numerous sources offering the equipment a counterfeiter would need to reproduce genuine-looking products. This is the case for the equipment needed to produce pharmaceuticals and pharmaceutical packaging, such as tamper evident cartons, as well as the equipment needed to make other fake goods, such as the high-speed, computer operated sewing machines used to make leather purses, which can easily be found online. The increasing availability of 3D scanning and printing suggests

obtaining and creating products and components of products will only become easier over time (Wilson, 2015).

The use of proprietary or hard to obtain equipment, such as custom manufactured machines that are designed and built for a specific purpose and a specific customer, makes it more difficult for a counterfeiter to reproduce legitimate goods. Using equipment that is difficult to obtain raises the costs of manufacturing counterfeits by directly impacting the amount of money counterfeiters need to spend to begin producing fake goods. As a result, the cost and inaccessibility of the equipment become barriers to market entry for counterfeiters.

TPC.6) How easy would it be for an unauthorized party to obtain the materials or components needed to reproduce a counterfeit of this product? Like essential equipment, counterfeiters need access to the appropriate raw materials/components needed to produce counterfeit goods, particularly as regards the production of deceptive counterfeits. When raw materials and essential product components are easy to obtain, barriers to counterfeiting begin to fall away. This assessment criterion is not a measure of the use of proprietary components, but rather is intended to gauge the ease by which the main materials used to manufacture a product can be obtained. When materials are difficult to obtain the costs of counterfeiting (barrier to entry) increase. While the counterfeiter will likely be able to purchase materials that mimic those used to make the legitimate good, their inability to access key materials at a low price point may mean that they will leave clues as to the illegitimacy of their products. These clues can make it easier to distinguish legitimate from counterfeit goods as the substitute materials will likely have certain characteristics, as well as important and noticeable qualities, that distinguish the counterfeit from the original product.

TPC.7) How easy is it to access the knowledge needed to combine materials and equipment used in the manufacture of the product? In addition to having access to the key materials, components, and equipment necessary to produce a counterfeit good, counterfeiters must be able to accurately integrate materials and equipment in order to produce the counterfeit. In some instances, the knowledge necessary to reproduce a product is commonly available and in no way proprietary. In other cases knowledge of how equipment and materials combine to create a product is an essential part of the production process, irrespective of the proprietary nature of the good being manufactured. For example, there are many manufacturers of blown polyethylene film products, and each manufacture uses the same set of base ingredients and follows a similar manufacturing process.

However, one manufacturer many use certain additional processes to ensure that their products have more uniform thickness and better performance capabilities. This production-based knowledge provides the brand owner with a strategic advantage in the market place, and the product's characteristics can be used as cues to distinguish legitimate rolls of film from counterfeit rolls. Should the proprietary production processes that give their film these additional and valuable features reach counterfeiters, the illegitimate products that reach the market may become indistinguishable from the legitimate ones. Therefore, the risk of product counterfeiting increases when counterfeiters are able to gain access to proprietary production knowledge.

The assessment criteria forming the Threat of Product Counterfeiting are summed to reflect the level of threat a product faces:

$$\text{Product TPC} = \text{TPC.1} + \text{TPC.2} + \text{TPC.3} + \text{TPC.4} + \text{TPC.5} + \text{TPC.6} + \text{TPC.7}$$

Vulnerability to product counterfeiting

A brand owner's vulnerability to product counterfeiting relates to brand protection weaknesses that exist in manufacturing processes, the product supply chain, and the product distribution chain. Weaknesses in these areas can create opportunities for product counterfeiting as counterfeiters are able to divert product, access raw materials or product formulations, steal packaging and other materials used to secure the product, and introduce counterfeit goods into the distribution stream alongside legitimate goods. As such, vulnerability can be assessed by determining the ease by which counterfeiters can access sensitive or important product information, and the level of guardianship extended to products, materials, packaging and product information while they are in the supply and distribution chains.

In many instances, counterfeit goods can appear in the marketplace irrespective of a company's ability to reduce its internal vulnerabilities, however, addressing internal vulnerabilities can reduce overall opportunities for counterfeiting. Vulnerabilities are assessed in terms of the infrastructures and processes that develop around a product, and the assessment of vulnerability for product counterfeiting should not be taken as an assessment of a product's inherent vulnerability. Rather, the assessment of vulnerability should be a means for organizations to assess the quality of their brand protection function, as well as the relative strength of brand protection activities directed toward their products while they are in the hands of trusted partners, such as transportation intermediaries, third-party integrators, contract manufactures and packagers, and distributors.

VPC.1a) Considering this particular product, how often are contract manufacturers used to produce all, or part, of the product?

VPC.1b) Considering this particular product, how often are contract packagers used to package all, or part, of the product? Products that are manufactured within the brand owner's facilities are likely under greater levels of oversight than are products manufactured through contracted partners. This is not to say that a brand owner's employees cannot and will not help to facilitate counterfeiting through theft or the misappropriation of materials, products and resources. Rather, when products are manufactured away from facilities that are under the direct control of brand owners there are likely more opportunities for parties to collude with counterfeiters or produce counterfeits themselves. Additionally, the use of contract manufacturers means that proprietary equipment, materials, or processes are outside of the direct control of the brand owner, which increases the risk of product counterfeiting.

In a similar way, the use of contract packagers means that brand owners are exposed to counterfeiting risk due to the fact that an outside party has been given responsibility for packaging products, and in many cases shipping those items to distributors or consumers. In these instances opportunities for counterfeiting arise from failures in guardianship that allow products, packaging, or security technology to fall into the hands of counterfeiters (Hollis and Wilson, 2004(. If the product in question is manufactured with proprietary components or through proprietary processes, the importance of accounting for this risk increases.

VPC.2) Approximately how much of the product's components are proprietary (manufactured exclusively for this product AND exclusively for your company)? Products manufactured with commonly available components are easier to counterfeit than products that are manufactured with proprietary components. This is because the common components may be obtained relatively easily, and are likely available from a multitude of sources. When products are manufactured using proprietary components, brand owners have the ability to

monitor and control the supply chain, and, likely have the ability to dictate how the proprietary component is distributed by the supplier. Accordingly, brand owners using proprietary components have high levels of control over the activities of their suppliers. At the same time, the use of proprietary components places increased emphasis on the quality of the relationships that exist between brand owners and their partners, including suppliers, as well as contract manufacturers and contract packagers.

When products contain commonly available components, identifying where counterfeiters were able to obtain the components can be a difficult process. For counterfeiters, the need to obtain proprietary components likely increases the costs of manufacturing and can become a barrier to entry, or at least a disincentive to counterfeiting. Additionally, when counterfeits enter the market that contain the brand owner's proprietary component it becomes easier to narrow down the likely sources of the component. Once the source has been identified it can be shut down, effectively ending the counterfeiter's ability to continue to produce the counterfeit good.

VPC.3a) When the product leaves the manufacturing facility and travels through distribution channels how often does the company utilize procedures intended to provide oversight or control over where the product goes?

VPC.3b) When the product leaves the manufacturing facility and travels through distribution channels, how often does the company use procedures to provide oversight or control over who handles the product? Once a product has been manufactured and packaged, the time that elapses until the product reaches the consumer and the number of intermediaries that handle the product are critical concerns for brand owners seeking to minimize opportunities for product counterfeiting. Products can be diverted from their intended destinations while in the

legitimate distribution stream, and counterfeit goods can be intermingled with legitimate goods within the distribution stream as well. This assessment criteria uses two related questions intended to gauge the brand owner's guardianship activities while the product is in the distribution stream (Hollis and Wilson, 2014).

Some brand owners will not have any exposure to risk during this process because they ship their products directly to customers; while there are risks that appear once a product gets into the hands of the end user, that risk is addressed with the next assessment criterion. However, many brand owners manufacture a product then ship it to another location where the product is stored until it is sent off to the end user. In some cases, the product will make multiple storage stops during its transit from the production floor to the customer, and in other cases the manufacturer may never see the product as outside parties handle manufacturing, packaging, and shipment to distributors or direct distribution to customers. As such, these assessments are intended to be complements to the previous assessment addressing the use of outside manufacturing and packaging operations.

The assessment criteria assessing a product's Vulnerability to Product Counterfeiting are summed according to one of the following:

$$\text{Product VPC} = \text{VPC.1a} + \text{VPC.1b} + \text{VPC.2} + \text{VPC.3a} + \text{VPC.3b}$$

Consequences of product counterfeiting

Accurately assessing the consequences of product counterfeiting may be the most difficult part of this risk assessment to complete as it requires the brand owner to consider the potential effects of counterfeiting. To begin with, brand owners must consider the consequences to the company should counterfeit products be manufactured and enter the marketplace (Wilson and Kinghorn 2014). The financial and organizational consequences of product counterfeiting

can include the costs of investigating suspected counterfeit goods, legal proceedings, and the storage and destruction of any seized goods. Additionally, brand owners need to appropriately assess the potential damage to the brand that counterfeit goods could create. Damages to the brand can include assessments of the resources that must be put into public relations campaigns, declines in profitability or market share, and reduced consumer confidence and other long-term issues the company may face. Therefore, the assessment criteria used to measure counterfeiting risk for this element of the ORAPC are necessarily broad, allowing brand owners to determine their level of risk in a wide rather than a narrow fashion.

CPC.1) What is the likelihood that a counterfeit of this product would have a material impact on company earnings? Counterfeit goods can impact a brand owner's revenue in one of several ways, including the loss of current customers, or the loss of potential customers who chose to purchase a counterfeit good instead of the legitimate item. The assessment of loss will vary by the type of counterfeit in question, as the losses associated with deceptive counterfeits can accrue differently when compared to non-deceptive counterfeits. For consumers who purchase items they believe to be genuine, with all factors between the items appearing equal (such as price), there is certainty that the brand owner will lose revenue when consumers are fooled into purchasing counterfeit goods instead of the legitimate item. With regard to non-deceptive counterfeits, the certainty of financial loss is not absolute, as consumers who purchase counterfeit goods may not have ever purchased the legitimate item.

For example, an individual who purchases a counterfeit luxury purse knowing it to be counterfeit, yet doing so because the cost to acquire the counterfeit item is significantly less than that required to obtain the legitimate good, may not represent a lost sale for the brand owner. The cost of the luxury purse is a barrier to purchasing that the customer would not have been

able to overcome had the non-deceptive counterfeit not been available. It is possible that should the non-deceptive counterfeit have been unavailable the consumer would have simply saved enough money to purchase the item at a later date, yet this still represents a situation where there is not an absolute certainty that the brand owner has lost a potential sale. As a result, there may still be an impact to revenue.

It should be noted that the total effect of the existence of counterfeit products in the marketplace on earnings is both direct and indirect. Here we noted the direct effects that could result from lost sales due to product substitution. However, product counterfeits indirectly affect earnings through the remaining factors discussed in the section (e.g., counterfeits diminish brand reputation, which, in turn, can lead to lost sales and overall earnings).

CPC.2) How costly are the resources required to respond to an incident of product counterfeiting? There are many direct costs associated with responses to product counterfeiting, including costs associated with investigation and enforcement, product recalls (if necessary), and the need to respond to lawsuits should they be filed. The scope of a counterfeiting scheme will determine, in part, how high these costs may reach, with broader more impactful schemes resulting in greater costs for brand owners. Additionally, the type of product counterfeited will have an impact on the overall costs of response, particularly if brand owners pay the costs of product returns, replacement or repair costs associated with the failure of counterfeit goods.

CPC.3) What effect might counterfeits have on your product's reputation in the market? Reactive approaches to brand management do not aid in removing opportunities for product counterfeiting, meaning that counterfeits are most likely detected only once they have begun to enter legitimate distribution channels and reach consumers. When counterfeits are not recognized as illegitimate and intermingle with legitimate goods, the performance failures and

negative effects of the counterfeits can easily be viewed to be features of the legitimate good. So long as the counterfeit product goes undetected, when products fail to perform as expected it is likely going to be assumed that there are issues with the legitimate good. These perceptions can lead consumers to seek alternative products they believe to be more effective, leaving behind the potentially beneficial aspects of a legitimate product that has been tainted by illegitimate knock-offs.

The assessment criteria forming the Consequences of Product Counterfeiting component are summed as follows:

$$\text{Product CPC} = \text{CPC.1} + \text{CPC.2} + \text{CPC.3}$$

A product's overall risk of product counterfeiting, or ORAPC score, is determined by summing the values obtained from each section of the assessment:

$$\text{ORAPC score} = \text{TPC} + \text{VPC} + \text{CPC}$$

Discussion

Our intent in developing this risk assessment is to assist brand owners in the proactive identification of product counterfeiting risk by helping them take a targeted approach to assessing their products. Just as the risks of product counterfeiting will vary across organizations, individual products carry idiosyncratic factors that affect counterfeiting risk. It is therefore necessary for brand owners to assess counterfeiting risk for each of their products, not just for the brand overall. In the end, we believe the use of this risk assessment will allow brand owners to more efficiently assess product counterfeiting risk, and more effectively utilize anti-counterfeiting resources.

However, it must be warned that this risk assessment is not, nor is any risk assessment, a panacea; it will not eliminate a brand owner's risk of having its products counterfeited. This risk assessment is the first step in a comprehensive plan of corporate-wide product protection, it simply illuminates the dark recesses of counterfeiting opportunities. What brand owners do to address these opportunities and how they choose to use the information gained from the risk assessment is solely within their discretion, yet, we strongly suggest that the ORAPC not be used as a performance metric.

The ORAPC's greatest benefit is its ability to identify product-specific counterfeiting risk. As such, it has great promise as an internal benchmarking tool that can help brand owners determine which products are at greatest risk, so that they can prioritize efforts and resources, assess their progress in reducing risk over time, and aid decision-making and resource allocation processes. Through this risk assessment, brand owners have a useful and informative mechanism to assess opportunities for counterfeiting that allows them to direct resources to the problem in the most efficient way. The model proposed here helps brand owners assess the risks they are exposed to regarding specific products. The challenge is that there are myriad additional factors that experts and research could suggest be considered in such a model. We do not present this model as definitive, but rather as an approach that captures many of the most significant concerns. In so doing, it gives brand owners an immediate tool to help their brand protection planning where few tools exist, and it provides scholars and practitioners concerned about improving product counterfeit risk estimation a point from which to build.

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APPENDIX A

ORAPC Assessment Scales

Threat of Product Counterfeiting

TPC.1) *To your knowledge, how frequently are counterfeit goods discovered in this particular product category?*
1-Never, 2-Rarely, 3-Sometimes, 4-Often, 5-Always.

TPC.2) *Based upon sales and marketing returns, and relative to competitor products, how desirable is this product?*
1-Very undesirable, 2-Undesirable, 3-Neutral, 4-Desirable, 5-Very desirable.

TPC.3) *Thinking about today, how difficult is it for a consumer to obtain your legitimate product from an authorized source/location?*
1-Very difficult, 2-Difficult, 3-Neutral, 4-Easy, 5-Very easy.

TPC.4) *What is the likelihood that a market for non-deceptive versions of your product currently exists?*
1-Very improbable, 2-Somewhat improbable, 3-Neutral, 4-Somewhat probable, 5-Very probable.

TPC.5) *How easy would it be for an unauthorized party to obtain the equipment needed to reproduce a deceptive counterfeit of this product?*
1-Very difficult, 2-Difficult, 3-Neutral, 4-Easy, 5-Very easy.

TPC.6) *How easy would it be for an unauthorized party to obtain the materials or components needed to reproduce a deceptive counterfeit of this product?*
1-Very difficult, 2-Difficult, 3-Neutral, 4-Easy, 5-Very easy.

TPC.7) *How easy is it to access the knowledge needed to combine materials and equipment used in the manufacture of the product?*
1-Very difficult, 2-Difficult, 3-Neutral, 4-Easy, 5-Very easy.

Vulnerability to Product Counterfeiting

VPC.1a) *Considering this particular product, how often are contract manufacturers used to produce all, or part, of the product?*
1-Never, 2-Rarely, 3-Sometimes, 4-Often, 5-Always.

VPC.1b) *Considering this particular product, how often are contract packagers used to package all, or part, of the product?*
1-Never, 2-Rarely, 3-Sometimes, 4-Often, 5-Always.

VPC.2) *Approximately how much of the product's components are proprietary (manufactured exclusively for this product AND exclusively for your company)?*
1-More than 75%, 2-Between 50% and 75%, 3-Between 30% and 50%, 4-Between 10% and 30%, 5-Less than 10%

VPC.3a) *When the product leaves the manufacturing facility and travels through distribution channels how often does the company utilize procedures intended to provide oversight or control over where the product goes?*
1-Frequently use, 2-Almost every time, 3-Occasionally/Sometimes, 4-Almost never, 5-Never use.

VPC.3b) *When the product leaves the manufacturing facility and travels through distribution channels, how often does the company use procedures to provide oversight or control over who handles the product?*
1-Frequently use, 2-Almost every time, 3-Occasionally/Sometimes, 4-Almost never, 5-Never use.

Consequences of Product Counterfeiting

CPC.1) *What is the likelihood that a counterfeit of this product would have a material impact on company earnings?*
1-Not probable, 2-Somewhat improbable, 3-Neutral, 4-Somewhat probable, 5-Very probable.

CPC.2) *How costly are the resources required to respond to an incident of product counterfeiting?*
1-Not costly, 2-Slightly costly, 3-Somewhat costly, 4-Moderately costly, 5-Extremely costly.

CPC.3) *What effect might counterfeits have on your product's reputation in the market?*
1-No effect, 2-Minor effect, 3-Neutral, 4-Moderate effect, 5-Major effect.