

SYSTEMATIC REVIEW

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Defining the types of counterfeiters, counterfeiting, and offender organizations

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Abstract

Background: Product counterfeiting is growing in scope, scale, and threat. This includes awareness of deceptive and non-deceptive counterfeiting types. (This paper does not consider copyright or digital piracy, currency counterfeiting, fraudulent documents, or artwork forgery.) In response, many organizations are focusing on product counterfeiting including INTERPOL, International Standards Organization, World Health Organization, World Customs Organization, and the U.S. Department of Justice. The goal of this research is to help brand owners and agencies efficiently select appropriate countermeasures including overt, covert and forensic packaging features, as well as functions of market monitoring, modifying supply chains, enforcement, prosecution and legislation.

Methods: To understand how product counterfeiting is perceived, researched, and categorized we reviewed previous work in criminology, packaging science, behavioral science, supply chain management, economics, and business management.

Results: We use this collective literature to develop a typology of product counterfeiters, counterfeiting, and offender groups.

Conclusions: It is important to understand that anti-counterfeit strategies must be based on understanding the nature of the fraud and the fraudster. Developing a typology is common practice in criminology and is no less important for product counterfeiting. The concepts in this paper provide a typology to help organize a complex set of information. This assists in explaining the opportunity structure of the problem based on the type of counterfeiting, counterfeiter, and offender organization.

Keywords: Counterfeit; Fraud; Criminology; Typology; Intellectual property rights; Packaging; Supply chain; Situational crime prevention; Routine activity theory; Rational choice theory; Product protection; Brand protection

Introduction

Product counterfeiting is growing in scope, scale, and threat (FDA, 2010, FDA, 2006, WCO, 2007a, WHO, 2007, OECD, 2007b, Interpol 2007). This growth emphasizes the need for anti-counterfeit strategies that protect consumers and corporations alike. A critical first step in an anti-counterfeit strategy is developing a typology to define the different types of counterfeiters, counterfeiting, and offender groups. Better understanding each of these elements is consistent with the crime science perspective, which emphasizes the importance of crime events and criminal opportunities (Clarke, 1997; Clarke, 2004; Eck, 1993; Eck, 2003). Once a product counterfeit opportunity

is identified—either an actual incident by a company, an incident at a competitor, or an awareness of vulnerability—optimal countermeasures can be determined and selected.

While there is familiarity of package security for anti-theft or anti-tamper tactics, often the core anti-counterfeit strategy is unknown or undefined (Spink et al., 2011, Spink, 2012). Only by understanding the full opportunity structure^a of the infringement, through a new focus on the offender and the details of the infringement, can effective countermeasures be selected that can deter or aid detection of similar infringements. Selecting optimal countermeasures can avoid unproductive effort, minimize costs, more quickly reduce the opportunities, and hopefully provide a longer lasting deterrent effect. For example, a branded toothpaste violating the trademark; generic automobile parts that violates a design patent or a branded

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pharmaceutical pill bottle that violates the trademark as well as a patented, proprietary cap designs. This paper does not consider copyright or digital piracy, currency counterfeiting, fraudulent documents, or artwork forgery. The concepts are referred more generally to fraud rather than crime since the infringement is often not a violation of a criminal statute—in some countries, jurisdictions, or with some products the act maybe not be technically a crime or, if considering local norms, maybe not even unethical.

This paper begins with an overview of product counterfeiting and strategic business countermeasures. There is confusion of terms and objectives in the area of product counterfeiting so this background is necessary to establish a method for selecting countermeasures. This is followed by a review of the different types of counterfeiters, counterfeiting, and offender groups.

Background

While the quantitative estimates of product counterfeiting are elusive (Spink and Fejes, 2012), there is a general agreement that it is nearly 7 percent of world trade or over \$600 billion (CIB, 1997, CIB, 2007). Furthermore, only 5-10% of the counterfeit products would be considered luxury goods (Phillips, 2005). Lost tax revenues can also be astronomical. It is estimated that New York and Los Angeles annually lose \$1 billion and almost \$500 million, respectively, in city tax revenue due to counterfeited products (New York City Comptroller's Office, 2004, LACDC, 2007). There is evidence that virtually every type of product has been counterfeited, including infant formula, prescription drugs, vaccines, consumer goods, luxury goods and aftermarket parts for automobiles, aircraft, and nuclear power plants... and even World Customs Organization (WCO) training videos (WCO, 2007b, Hopkins et al., 2003). The public health risks associated with counterfeiting are diverse. Examples include lethal amounts of melamine in infant formula, carcinogenic Sudan Red food dye, medicines with little or no active ingredients, aircraft replacement parts that fail, and substandard electrical cords that catch fire (Hopkins et al., 2003).

Methods

To understand how product counterfeiting is perceived, researched, and categorized we reviewed previous work in criminology, packaging science, behavioral science, supply chain management, economics, and business management.

There were no human subjects involved in this research so Institutional Review Board approval or engagement was not needed.

Results and discussion

We use this collective literature to develop a typology of product counterfeiters, counterfeiting, and offender groups.

There are a range of concepts that must be reviewed before developing a typology of product counterfeiters, counterfeiting, and offender groups.

New product development requires a holistic and all-encompassing approach to effectively combat this broad and deep threat. Product attributes must be considered in the context of the supply chain and logistics network as well as the consumption of the product and final disposal or reuse of packaging materials (Spink et al., 2010). Various costs, such as packaging material and labor, are considered and compared with the potential risks of inadequate or ineffective packaging. If created in a holistic manner, packaging optimizes benefits and mitigates all related risks (Spink, 2009a). Having an all-encompassing awareness of the fraud opportunity is a prerequisite for businesses and successful decision-makers and researchers (Speier et al., 2011).

The same holistic awareness is required for those who encounter or anticipate product counterfeiting and seek optimal countermeasures. To achieve a holistic perspective, anti-counterfeiting researchers must first strive to understand the opportunity structure of the crime and its unique aspects before formulating packaging-based countermeasures. This approach is consistent with *scientific realism*, an epistemological approach that has utility for criminology (see Eck and Liu, 2008, Pawson and Tilley, 1997, Page 2000, Heinonen, 2010). Broadly, realism emphasizes the need to understand how crime occurs, which is informed by the opportunity structure of the processes that leads to crime, in order to effectively prevent it.

Basic definitions

Understanding the opportunity structure of counterfeiting begins with agreement on a basic definition. The World Trade Organization (WTO) defines product counterfeiting as: "Unauthorized representation of a registered trademark carried on goods identical or similar to goods for which the trademark is registered, with a view to deceiving the purchaser into believing that he/she is buying the original goods" (WTO, 2011). The key elements of this basic definition are if the product is similar and if there is *deception* of the consumer.

There are, however, inconsistencies among the various definitions of product counterfeiting (WHO, 2007, COE, 2006, WIPO, 2008, WCO, 2007b, Collins, 2004). Each definition variation is based on the root of the rules or laws. For example, the U.S. Food and Drug Administration (FDA) and the World Health Organization (WHO) documents demonstrate the nuances of defining counterfeiting. Their definitions are very similar, even to the extent of having many of the same phrases (WHO, 2007, FDA, 2007, 21 U.S.C. 321, 2004). Both agree that counterfeiting deliberately and fraudulently misrepresented the identity or the source of products. The FDA definition of counterfeiting

expands to include parallel-trade and product diversion—a product intended for one market or sales channel shipped to another.

Inconsistencies among definitions also occur due to the variety of technical terminology. For example, the term *counterfeiting* has two distinctly different uses. One is the over-arching term for the general issue and another common use for the term is the specific infringement of intellectual property rights regarding trademarks and patents (FDA, 2004, OECD, 2007a). Other similar terms contribute to the definition issue, such as *piracy*, which is used for unauthorized use of a copyrighted work such as a movie, music, book, or computer software. Another term that is sometimes synonymous with counterfeiter is *fraudster*^b. This term has been used to describe criminals committing counterfeiting activity (Dekieffer 2006, European Commission, 2006a, PriceWaterhouseCooper, 2007, FBI, 2013).

Attempts to harmonize counterfeiting terminology are occurring. For example, the International Standards Organization (ISO) is currently finalizing fraud of material goods terminology in Working Group 2 of Technical Committee 247 Fraud Countermeasures and controls (this does not include digital copyright piracy) (ISO, 2010). In many instances, the activity is not a crime (a violation of criminal law), a civil violation (if the activity is not contractually defined as unauthorized), or even considered unethical in some cultures or situations. The term *fraudster* may seem to be an informal term, which has been gaining acceptance by practitioners and researchers. The FDA, WHO, and ISO all refer to the base activity as fraud, so the perpetrators are *fraudsters*. Considering the general reference to the act of fraud by ISO, FDA and others, the term *fraudster* is the most appropriate and widely applicable term. To be consistent with the general use of the term fraud and *fraudster*, the vulnerability is referred to as the *fraud opportunity*.

Cause and effect relationships

Understanding counterfeiting also includes awareness of its opportunity structure including its *cause and effect* relationships. This is important for business decision-makers and researchers to understand regarding the potential to deter and detect product counterfeiting. *Cause* refers to the various motivations of counterfeiters to commit a specific incident^c and *effect* includes the various end results of their counterfeit crimes. While counterfeiting is commonly motivated by economic gain that deceives consumers, this does not comprehensively explain the cause and effect of all counterfeit crimes. For example, the *cause* of food fraud is the deliberate adulteration of food for economic gain, including acts of terrorism (Spink and Moyer, 2011b). The *effect* is not just the simple economic deception of consumers but also

the introduction of risks to public health (e.g., undeclared allergens, toxic additives, etc.).

The strategic anti-counterfeiting concepts of *reaction* and *prevention* are also important for business decision-makers and researchers to understand. *Reaction* refers to the events that occur after a counterfeit crime has been perpetrated. From a law enforcement perspective this would be enforcement and prosecution. From a food protection perspective this would be intervention and response. The seizure or quarantining of suspect goods is an example. Assessing the effectiveness of reactions to counterfeit incidents can be invaluable in preventing future counterfeit crimes. For example, incidents of melamine-adulterated infant formula permanently changed the way that protein-rich foods are screened (Moore et al., 2012). When developing proactive intervention steps, the food industry has adopted new test methods and it is now common practice to test for the melamine contaminant, which in and of itself creates a deterrent. Fraudsters are deterred from this type of fraud due to this improved and widespread monitoring.

Applying situational crime prevention

In relation to product counterfeiting, it is important for business decision-makers and researchers to understand Cohen and Felson's "chemistry of crime" and the "crime triangle" (Cohen and Felson, 1979, as adapted by Spink and Moyer, 2011a, Spink and Moyer, 2011b), which form the basis of applied crime prevention, or situational crime prevention (Clarke, 1980). An underlying theory of situational crime prevention is routine activity theory, which identifies the minimal elements that must converge in space and time (i.e., a motivated offender, suitable victim and lack of capable guardianship) in order to make crime possible (Cohen and Felson, 1979). Rational choice, another perspective informing situational crime prevention, introduces the concept of offender choice, or the idea that such elements influence offender decision-making during the planning and commission of crime events (see Clarke and Cornish, 1985). Situational crime prevention operates on the concept of offender choice by identifying ways to manipulate immediate situations (based on the elements of routine activity theory) so that offending appears less attractive.

Taken together, two basic constructs are critical to understanding and preventing crime events: the minimal elements of crime and offender choice (Heinonen, 2010). Building on this, it is informative to consider the offenders, victims and guardians (or lack thereof) (Felson and Clarke, 1997; Felson, 1998; Center for Problem-Oriented Policing, 2006) in product counterfeiting. The roles of counterfeiting offender and victims are, in theory, intuitive. The role of guardians need not be an individual, such as a law enforcement officer, and could include standardized reference

samples, test methods, corporate market monitoring, supplier audits, or transparency created by quality control programs. These dimensions are consistent with environmental criminology and form the theoretical foundation of the Counterfeiting Incident Cluster Tool.

Existing criminology typologies

In order to develop a typology for the study of counterfeit offenders, counterfeiting, and offender groups, we review existing, applicable, criminology typologies. For example, Canter and Larkin (1993) made a fundamental distinction between two types of serial criminal offender in terms of the offender's spatial behavior during the execution of serial crimes. *Marauders* operate in an area that is proximate to a home base while *commuters* commit crimes in locations more distant from their place of residence. Canter et al. (2003) created a typology of stranger-rape (vs. acquaintance rape) that distinguishes behavioral themes, such as hostile, controlling, stealing, or involving, coupled with the different types of violations experienced by rape victims, ranging from personal to physical violations. The composite model of stranger-rape consists of the four behavioral themes as different expressions of violation intensities. The typology model has implications for the classification of rapes, the investigation and potential preventive countermeasures of sexual attacks, and the treatment of victims.

Similarly, Holmes and DeBurger (1988) developed a typology that divides serial killers into four broad types: visionary, mission-oriented, hedonistic, and power/control. Those authors also noted that these are not definitive categories as some serial killers may exhibit aspects of each type at various times. This demonstrates that while there is utility in developing typologies to describe crimes and offenders, the approach can be challenged to distinctly capture all of potential variation.

Defining the types of counterfeiter

Before characterizing crime or criminal acts, it is important to review and define associated terms. Van Dijk & Waard (1991) emphasized that the typology of crime by several dimensions, such as offenders, situation, and victims, can provide insight to systematic countermeasures for specific crime problems. For example, a typology of frauds and fraudsters provides insight to the nature of specific fraud crimes and fraud offenders. Insight regarding potential countermeasures is also gained by understanding and classifying (clustering) the specific characteristics of each type fraud and fraudster.

Criminology provides the basis for understanding the offenders who are various types of counterfeiters. This is consistent with Clarke's crime science approach (Clarke, 2004) that focuses on understanding how crime events occur, which may vary by the type of offender and their

techniques. Definitions from criminology emphasize the various types of offenders (i.e. offender-based) rather than their unique offenses (i.e. offense-based). There are several different types of criminals presented in Table 1 that fit the actions of counterfeiters including recreational, occasional, occupational, professional, and ideological ((Spink et al., 2010) adapted from (Hagan, 2010)).

Each type of counterfeiter provides unique challenges for business product development and product protection since they operate in different opportunity structure that likely require different types of responses. Business decision-makers and researchers might choose to ignore recreational or occasional counterfeiters in favor of relatively more common adversaries such as occupational or professional counterfeiters (a decision that should be based on an analysis of incidents and the fraud opportunity, considering the magnitude of the economic or public health impact). Naturally, the scale of the opportunity often helps prioritize the anti-counterfeiting effort – where a high number of incidents would warrant more of a focus than a less frequent event. But a holistic and all-encompassing perspective requires all types of counterfeiters be at least considered prior to prioritization. This is essential before selecting countermeasures.

The scale of the opportunity due is also a function of how the counterfeiters are organized. For example, ideological counterfeiters can act as individuals (e.g. rogues, lone wolves, etc.) or they can be well-organized. The following section details the different types of offender organizations.

Types of offender organizations

Understanding the various types of offender organizations provides insight to how groups are structured, how they might be disrupted, and which countermeasures will be most effective. For years, criminologists have tried to understand the structure of how criminals organize, for instance, the differences among criminal associations, enterprises and clans (Paoli, 1998). What is clear today, however, is that criminal organizations take no single

Table 1 Criminal types and attributes applicable ((Spink et al., 2010) adapted from (Hagan, 2010))

Types of criminals	Definition
Recreational	Action for entertainment or amusement
Occasional	Infrequent, opportunistic
Occupational	Incidents at their place of employment either as an individual act or in collaboration with the company
Professional	Crime fully finances their lifestyle
Ideological	Domestic or international terrorist who commits this act to make an ideological statement or to economically harm an entity

structure. Therefore, scholars try to define offender groups more broadly instead of pointing to specific structures.

For example, it is argued that organized crime groups need not be large (i.e., a group of two or more can suffice) nor is it necessary for its members (or the crime they commit) to be part of a larger pre-existing organized criminal group (Albanese, 2011, Albanese, 2000). Instead, offender groups may simply be product-driven (i.e., with little or no group loyalty) and come together loosely to take advantage of available criminal opportunities (Albanese, 2011). Similarly, the United Nation's 2000 Convention Against Transnational Organized Crime defined an organized criminal group as a "structured group of three or more persons, existing for a period of and acting in concert with the aim of committing one or more serious crimes...in order to obtain, directly or indirectly, an economic or other material benefit" (UNICRI, 2008b, UNICRI, 2008a).

These two definitions converge on several broad dimensions: organized offender groups may be small or large; they do not need to have long-term operational capacity; and they do not have to be part of an established or more complex organization.

To assist in developing countermeasures, identifying the type of offender organization is important in assisting business decision-makers, to classify counterfeit opportunity. For example, the counterfeiters' network and connections are important regarding the breadth and depth of potential infringements. A large counterfeiting organization with manufacturing capabilities and connections to transnational crime groups poses a threat to distribute counterfeit products on a commercial scale throughout the world. They also have more access to resources, technologies, and can even have more effective bribery, or violent measures to support their activities. It should be assumed that such an organization will not be stopped by closing one manufacturing plant, closing a distribution node, arresting one leader, or seizing one shipping container. Types of offender organizations are important because they may influence the likelihood of crime displacement such as adapting to a new target or method (Eck, 1993; ECK, 2003). For example, larger organizations have greater capacity and resources which makes crime displacement a more likely threat to prevention; the opposite is also true where an occasional criminal with a simple, small offender organization could be deterred by just a stern warning or a simple overt packaging countermeasure.

Understanding the types of offender organizations is critical to predicting what business countermeasures actually would deter the counterfeiters. There are several key ways to identify, define, and classify offender organizations. Each concept provides a different perspective to help understand the most efficient and effective

countermeasure. In addition, each term is important since it is used in law enforcement and prosecution in the US or around the world (Table 2).

General definition of core group (FBI)

Regarding offender organizations, the U.S. Federal Bureau of Investigation (FBI) provides the following important definitions ((FBI, 2012) in (National Intellectual Property Rights Coordination Center, 2011)).

- *Criminal Enterprise*: "a group of individuals with an identified hierarchy, or comparable structure, engaged in significant criminal activity. ... This does not include the additional elements of violence, corruption, graft, or extortion necessary to be considered organized crime."
- *Organized Crime*: "...any group having some manner of a formalized structure and whose primary objective is to obtain money through illegal activities" and "maintain[s] their position through the use of actual or threatened violence, corrupt public officials, graft, or extortion." Traditional organizations such as the mafia or triads are common examples.
- *Members*: The individual criminals may be acting alone but have known ties to the organization and participate in the illegal activities of the group. An example is a gang member who separately produces and sells counterfeit DVDs.

Table 2 Types of offender organizations from various organizations

Concept of offender organizations	Source of definition	Description
General definition of core group	US Federal Bureau of Investigations (FBI)	This defines the individuals or core groups involved in the crime. These terms are used for enforcement and prosecution.
Specific definition of counterfeiting and piracy group	US National Intellectual Property Rights Center (IPR Center)	This expands on the general definitions to intellectual property rights crimes of counterfeiting and piracy.
Regional assessments and markets	UN Center for International Crime Prevention (UNCICP)	This is a system to define the structure of the organizations in relation to geographic proximity.
Central ten variables of criminal structure	UNCICP	This provides taxonomy for defining the details of specific criminal organizations.
Typology of hierarchy	UNCICP	This provides more detailed definitions of how the group or groups interact and conduct operations.

- *Sympathizers or supporters*: These may agree with the ideology of a group and provide financial support to the criminal organization, but do not participate in the primary criminal activities of the organization. An example is a criminal who contributes funds to a terrorist organization but does not him or herself, commit terrorist acts.

Specific definition of counterfeiting and piracy group (IPR Center)

The US National Intellectual Property Rights Center (IPR Center) is an affiliation of 18 agencies led by the U.S. Homeland Security Investigations (HSI which was formerly Immigrations and Customs Enforcement or ICE). Their focus includes counterfeiting and piracy since regulatory and statutory boundaries are in intellectual property rights (IP/IPR) crimes and intellectually property rights infringements. This focus included a report identifying the different types of offenders that are relevant to intellectual property infringement or product counterfeiting and piracy. This also provides insight to the diverse motivations related to IPR infringement. The taxonomy builds on the FBI offender organization terminology. In some cases, the IPR infringement is not the primary focus of the larger organization. Based on the FBI taxonomy the specific IP role is noted in parenthesis. For example, the perpetrators of IPR crimes in an organized crime group who pursue IPR crimes outside the main operations of their organized crime groups are classified in the FBI term as *members* and the terrorist groups who pursue counterfeiting are classified as *supporters*. The member or supporter conducts their IPR crimes usually with the knowledge of the main group but the activities are separate. A *small group* may be focused only on product counterfeiting whereas it may be only one of many activities for an *organized crime group*. Product counterfeiting may not be a formal organized crime group activity and the members conduct this crime with the knowledge of the organization but outside oversight. The different types of offender organizations are presented below (National Intellectual Property Rights Coordination Center, 2011).

- *Individual/ Small Groups*: “Although there are IPR cases involving solo or small groups of individuals who operate out of their homes, garages, or small storage facilities, there is little reporting and no actual analysis of the relative importance of such operators to the threat. ... This lack of reporting and analysis may be a reflection of the fact that individuals and small operations are a less attractive target for law enforcement than larger enterprises engaging in more significant infringing activity or also committing other more serious offenses.”
- *General Criminal Enterprises (Members)*: An example used to identify this group is “an Asian criminal enterprise of 30 defendants charged with smuggling into the United States counterfeit cigarettes worth approximately \$40 million and other counterfeit goods, including pharmaceuticals worth several hundred thousand dollars.”
- *Organized Crime Members (Members)*: “Organized crime groups are a specialized subset of criminal enterprises that maintain their position through the use of actual or threatened violence, corrupt public officials, graft, or extortion. For example, members of the Lim Organization, an Asian organized crime group in New York, trafficked in counterfeit goods and were charged with attempted murder and conspiracy to commit murder.” An aspect of deterring this group is the use of violence and the risk of retaliation to a company or investigators (e.g., violence or sabotage).
- *Terrorist Organizations (Supporters)*: “Terrorist supporters have used intellectual property crime as one method to raise funds. Central to this judgment is the distinction between terrorist supporters who merely provide funding and resources to a terrorist organization versus terrorist organization members who engage in the actual terrorist activities of violence. ... It is widely reported terrorist supporters may use IPR crimes to provide indirect financial support to terrorist organizations, but little current evidence suggests terrorists are engaging directly in IPR crimes to fund their activities.” There are many confirmed cases of product counterfeiting funding terrorist acts. For example, it was confirmed that the 1993 World Trade Center bombing was partially funded by the sale of counterfeit products (FBI, 2008).
- *Gangs in the United States (Supporters)*: “According to the National Gang Intelligence Center (NGIC), there are three subtypes of gangs: street gangs, prison gangs, and outlaw motorcycle gangs of these three groups, street gangs most often engage in and profit from IP theft, therefore this analysis focuses exclusively on this subtype.”
- *Foreign Government Offenders*: The primary motivation in this offender group is the theft of sensitive United States information including trade secrets and economic espionage. There are examples of state-sponsored counterfeits of branded products.
- *Warez Groups*: “[A] less common motivation for committing IPR [infringement] is personal fame and notoriety. These individuals are often members of Warez groups, sophisticated and hierarchical criminal groups operating in the United States and abroad that specialize in distributing infringing movies, music, and software via the Internet.”

Regional assessments and markets (UNCICP)

Each type of offender organization is focused on generating profit (except for Warez groups) based on the margin per unit, the number of units per transaction, and the number of transactions that can be conducted.

Two key concepts identified by the UN Center for International Crime Prevention (UNCICP) are the regional assessments of criminal *markets* and *structure*. Both enhance understanding of the IPR Center offender categories. Markets and structure are important to understanding where and how product counterfeiting occurs and how to disrupt the specific activity. The UNCICP report suggested, "A standardized system for examining trends in transnational organized crime should consist of three components - that of "groups" who are criminals working together, "clusters" who are often based in geographic localities, and "markets" which are organized by products the produce including distribution, sales, and product support networks (UNCICP, 2000).

Central ten variables of criminal structure (UNCICP)

The UNCICP report also identifies "Central Ten Variables" that further define the criminal structure. These variables are included in a survey tool that can be used by investigators to create harmonized evaluations of the criminal structure. Harmonizing the evaluation allows for evidence- and science-based classification and research. These are very important to business decision-makers and researchers when selecting or assessing the effectiveness of packaging countermeasures.

- **Structure:** This is the criminals' degree of hierarchy. A strictly hierarchical structure could be hurt by the removal of a single node or leader, whereas a looser but networked type would simply reform around the missing node (this type of fluid group is referred to by some as a swarm). Structure is also important since it forms the basis for the typologies of criminal organizations.
- **Size:** This is the number of associates in a group. This also includes the resources each associate brings to the group, such as manufacturing capacity or technical production capabilities. This is an important variable when selecting countermeasures that are effective given the criminal group's current set of capabilities.
- **Activities:** Some groups specialize only in specific products or actions while others are involved in a very broad range of products.
- **Transborder operations:** This variable addresses organized involvement across national borders. In some instances, manufacturing may be legal in the country of origin and only becomes illegal when products are combined elsewhere. Also, if criminal

operations are in different countries, intelligence gathering and analysis is much more complicated and may not identify the crime. Transborder operations also indicate expertise in moving products through multiple ports of entry (e.g. transshipping).

- **Identity:** This is usually related to a strong ethnic base but can also include other types of social ties such as motorcycle gangs.
- **Violence:** This is the willingness and evidence of a group's violence. In the report violence was defined by "harder evidence of its extent (e.g., numbers of business people or police officers killed)."
- **Corruption:** This is an indicator of the group ability to seek illegal preferential treatment from governments or agencies. Examples of this could include empowered officials that protect manufacturing plants, assure safe passage across borders, or generally contribute to illegal profit making activities.
- **Political Influence:** This variable addresses a group's ability to exert influence on governance either in lawmaking, enforcement, or prosecution.
- **Penetration into the Legitimate Economy:** If the associates are involved in the legitimate economy, they have access to information, components, and can operate in plain sight. Some of the information would include detailed insight on the strategies and activities of customs investigations.
- **Cooperation with other Organized Crime Groups:** This is identified by inter-group cooperation in the base country, outside the country, or both. Typically, a broader network of strong relationships correlates to its intelligence and the more options a group has for manufacturing, distribution, sales, and protecting the enterprise.

Typology of hierarchy (UNCICP)

The UNCICP report also provides more detail of criminal group structures and identifies five hierarchical typologies (UNCICP, 2000). This offers another way to review several previous concepts with respect to understanding the opportunity structure of the offender organization and selecting effective countermeasures.

- **Standard hierarchy:** Single hierarchical group with strong internal systems of discipline.
- **Regional hierarchy:** Hierarchically structured groups, with strong internal lines of control and discipline, but with relative autonomy with a geographic region (which could be transborder since they are defined by economic infrastructure not national borders).
- **Clustered hierarchy:** A set of criminal groups which have established a system of coordination and

control, ranging from weak to strong, over all their various activities.

- *Core group*: A relatively tight but unstructured group, surrounded in some cases by a network of individuals engaged in criminal activities.
- *Criminal network*: A loose and fluid network of persons, often drawing on individuals with particular skills, who configure themselves around an ongoing series of criminal projects.

This section reviewed the types of offender organizations as defined by important enforcement and research bodies. There are unique opportunities associated with each type of counterfeiter and offender organization. Each opportunity poses unique challenges to business decision-makers as well as researchers who are tasked with protecting products and consumers. An understanding of the nuance of the offender organizations is important to select efficient business-based countermeasures.

Defining the types of counterfeiting

It is important to identify the type of counterfeiting threat prior to selecting or developing effective countermeasures. Identifying the criminal act, in this case product counterfeiting is central to Situational Crime Prevention (Clarke, 1997). This section presents the various types of counterfeiting, related terminology, and important insights^d. A comprehensive list of counterfeit types includes incidents that are not routinely associated with counterfeiters such as theft and over-runs (Table 3). This expands beyond the common definition of product counterfeiting that is limited to an IPR infringement perspective focused only on trademark, patent, or copyright violations. For example, product theft and over-runs contribute vulnerabilities to

Table 3 Types of counterfeiting (Adapted from (Spink, 2009b, Spink, 2007))

Term	Definition
Adulterate	A component of the legitimate finished product is fraudulent
Tamper	Legitimate product and package are used in a fraudulent way
Over-run	Legitimate product is made in excess of production agreements
Theft	Legitimate product is stolen and passed off as legitimately procured
Diversion	The sale or distribution of legitimate product outside of intended markets
Simulation	Illegitimate product is designed to look like but not exactly copy the legitimate product
Counterfeit	All aspects of the fraudulent product and package are fully replicated

Note: In each case, fraudsters may not be following the regulatory definitions of Good Manufacturing Practices (GMPs), Good Agricultural Practices (GAPs), or Good Hygiene Practices (GHPs).

the fraud opportunities. Also, the existence of stolen or diverted products in a market suggests supply chain vulnerabilities and a fraud opportunity for counterfeits to enter that market. If market supply chains are loose enough for stolen or diverted goods to enter, then counterfeits or other more dangerous contraband may also enter (Closs and McGarrell, 2004, Voss et al., 2009). In addition, counterfeiters often enter a market or channel with stolen genuine products and later deceive satisfied, unsuspecting customers by substituting counterfeit products. For these reasons it is important for business decision-makers and researchers to have a comprehensive awareness of both existing and potential counterfeit threats. With definitions of the various types of counterfeiter, offender organizations, and counterfeits completed, this paper now addresses potential countermeasures.

Another important distinction for each type of product counterfeiting is that products could be deceptive or non-deceptive. Deceptive counterfeit products are presented in the marketplace as being genuine with the intent to deceive the purchaser. Non-deceptive counterfeit products are presented in the marketplace as counterfeit or fraudulent with no intent to deceive the purchaser (for more information see (OECD, 2007a) or (Spink, 2011)). Non-deceptive counterfeit products are marketed to consumers who seek counterfeit products such as apparel and luxury goods. Effective countermeasures must evaluate whether consumers are intending to buy genuine or counterfeit products.

Conclusions

It is important to establish that anti-counterfeit strategies must be based on understanding the nature of the fraud and the fraudster (Spink, 2011). Product counterfeiting is a very complex threat that requires perspective from many disciplines for prevention. The same thought process is applicable to selecting anti-counterfeiting brand protection countermeasures. Developing a typology is common practice in criminology and is no less important for product counterfeiting. The concepts in this paper provide the foundation for developing a method or tool to help organize a complex set of information that assists in explaining the opportunity structure of the problem based on the type of counterfeiting, counterfeiter, and offender organization. With the fraud, fraudster, and fraudster organization being defined, an additional research is required to define the victim. Another next step is to define counterfeiting victims and explore a counterfeiting “victimology.”

Endnotes

^aIn earlier publications and presentations, several of the authors referred to this as the “nature of counterfeiting”. Environmental criminology emphasizes understanding the

“opportunity structure” or “process” when addressing the crime incident, itself. Specifically the focus on the offender to better identify preventative countermeasures is fundamentally opposite of the usual business focus on packaging or corporate security actions (e.g. adding a hologram, increasing support of customs seizures at the borders, or investigations to prosecute retailers of counterfeit product.. The term “nature” is aligned with traditional criminology theory, which focuses on the factors underlying offender motivation, or “why” people commit crime.

^bThere is debate about the term “fraudster”. Admittedly the term “offender” is more familiar to criminologists and does apply. For consistency with the action defined as product fraud, the offenders are defined as fraudsters. The original US federal food laws in 1906 focused on a “fraud jokester” and there have been occasional FDA mentions of product fraud since then. The term fraudster and fraud has been used by FDA in 2012.

^cThis concerns the motivation to commit a counterfeiting incident and not the motivation to pursue a career in crime. Exploring further motivations toward criminality are beyond the scope of this paper.

^dCriminology theory often refers to this as “technique” rather than “type”.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

The authors all collaborated throughout the development of this concept through editing the final draft. JS was lead writer and Moyer was involved in crafting the original manuscripts. DM was instrumental in the early definitions of product fraud and specifically food counterfeiting which is evident in the number of previous publication. HP was instrumental in working with JS on the basic definitions especially through collaboration with the International Standards Organization Technical Committee 247 on Fraud Countermeasures and Controls. HP also specifically contributed to the review of other crime theories. JH has been a constant collaborator on a range of related typology projects and specifically contributed to the review of applying crime theories to the research question. All authors read and approved the final manuscript.

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References

- 21 U.S.C. 321. (2004). *Federal Food, Drug, and Cosmetic Act, Chapter II—Definitions* (Food and Drug Administration).
- Albanese, JS. (2000). The causes of organized crime: do criminals organize around opportunities for crime or do opportunities create new criminals? *Journal of Contemporary Criminal Justice*, *16*, 409–423.
- Albanese, JS. (2011). *Transnational Crime and the 21st Century: Criminal Enterprises, Corruption, and Opportunity*. New York, NY: Oxford University Press.
- Canter, D, & Larkin, P. (1993). The environmental range of serial rapists. *Journal of Environmental Psychology*, *13*, 93–99.
- Canter, D, Bennell, C, Alison, L, & Reddy, S. (2003). Differentiating sex offences: a behaviourally based thematic classification of stranger rapes. *Behavioral Sciences & the Law*, *21*(2), 157–174.
- Center for problem-oriented policing. (2006). *What is POP? Center for Problem-Oriented Policing Web Site*.
- CIB, Counterfeiting intelligence bureau. (1997). *Countering Counterfeiting. A guide to protecting & enforcing intellectual property rights* (Counterfeiting Intelligence Bureau (CIB), International Chamber of Commerce (ICC)).
- CIB, Counterfeiting intelligence bureau. (2007). *Overview of Counterfeiting. Counterfeiting Intelligence Bureau (CIB), International Chamber of Commerce (ICC)*.
- Clarke, RV. (1980). 'Situational' crime prevention: theory and practice. *British Journal of Criminology*, *20*, 136–147.
- Clarke, RV. (1997). Situational Crime Prevention, Chapter 1. In RV Clarke (Ed.), *Introduction* (Situational Crime Prevention 2nd ed.). Guilderland, NY: Harrow and Heston Publishers.
- Clarke, RV. (2004). *Technology, Criminology and Crime Science*. Springer.
- Clarke, RV, & Cornish, DB. (1985). Modeling offenders' decisions: A framework for research and policy. In M Tonry & N Morris (Eds.), *Crime and Justice: A Review of Research* (Vol. 6). Chicago, IL: University of Chicago Press.
- Closs, DJ, & Mcgarrell, EF. (2004). Enhancing Security Throughout the Supply Chain [Full Report]. In P Lawrence (Ed.), *IBM Center for The Business of Government: Special Report Series*. East Lansing, MI: Michigan State University.
- COE, Council of Europe. (2006). *Counterfeit Medicines: Survey Report*. Strasbourg: Council of Europe Publications.
- Cohen, LE, & Felson, M. (1979). *Social Change and Crime Rate Trends: A Routine Activity Approach* (American Sociological Association, pp. 588–608).
- Collins, D. (2004). *Brand Protection, Leatherhead*. Surrey, UK: Pira International.
- Dekieffer, D. (2006). Trojan drugs: counterfeit and mislabeled pharmaceuticals in the legitimate market. *American Journal of Law & Medicine*, *32*, 325–349.
- Eck, J. (1993). The Threat of Crime Displacement. *Center for Problem Oriented Policing*.
- Eck, J. (2003). Police Problems: The Complexity of Problem Theory, Research, and Evaluation. *Crime Prevention Studies*, *15*, 79–113.
- Eck, J, & Liu, L. (2008). Contrasting simulated and empirical experiments in crime prevention. *Journal of Experimental Criminology*, *4*, 195–213.
- European Commission. (2006). *Summary of Community Customs Activities on Counterfeit and Piracy, Results at the European Border - 2006* (In European commission - taxation and customs union (Ec/Tcu) (Ed.)).
- FBI, Federal Bureau Of Investigation. (2008). *FBI, Famous Cases by Category, World Trade Center Bombing 1993, FBI 100 - First Strike - Global Terror in America*.
- FBI, Federal Bureau Of Investigation. (2012). *Organized Crime, Glossary of Terms*.
- FBI, Federal Bureau Of Investigation. (2013). *Today's FBI – Facts & Figures*.
- FDA, Food and Drug Administration. (2004). *Combating Counterfeit Drugs, U. S. Food and Drug Administration*.
- FDA, Food and Drug Administration. (2006). *FDA Counterfeit Drug Task Force Report: 2006 Update*. Rockville MD 20857, U. S: Food and Drug Administration.
- FDA, Food and Drug Administration. (2007). *Counterfeit Drugs Questions and Answers*. U. S: Food and Drug Administration.
- FDA, Food and Drug Administration. (2010). *FDA Conducts Preliminary Review of Agency's Diversion and Counterfeit Criminal Case information* (Keynote Address by Dr. Margaret Hamburg at Counterfeit Drug Interchange Conference). Washington, DC: hosted by the Partnership for Safe Medicines.
- Felson, M. (1998). *Crime and Everyday Life*. Thousand Oaks, Calif: Pine Forge Press.
- Felson, M, & Clarke, RV. (1997). *Business and Crime Prevention*. New York, NY: Criminal Justice Press.
- Hagan, F. (2010). *Crime Types and Criminals*. Thousand Oaks, CA: Sage Publications.
- Heinonen, JA. (2010). *Measuring How Much Criminologists Know About Crime: Using Environmental Criminology to Assess Our Knowledge of Crime Events Criminal Justice*. Cincinnati: University of Cincinnati.
- Holmes, RM, & De Burger, J. (1988). *Serial murder: Studies in crime, law and justice* (Vol. 2). Newbury Park, CA: Sage.
- Hopkins, DM, Kontnik, LT, & Turnage, MT. (2003). *Counterfeiting Exposed: How to Protect Your Brand and Market Share* Hoboken. New Jersey: John Wiley & Sons.
- Interpol. (2007). *Intellectual Property Crimes: Trademark Counterfeiting & Copyright Piracy* (Interpol Intellectual Property Crimes Action Group (IIPCAG)).
- ISO, International Standards Organization. (2010). *Home Page, Technical Committee 247 (TC 247), Fraud Countermeasures and Controls*. IN ISO, I. S. O. (Ed.).
- LACDC, Los Angeles County Development Corporation. (2007). *A False Bargain*. In G Freeman, ND Sidhu, & M Montoya (Eds.), *The Los Angeles County Economic Consequences of Counterfeit Products [Final Draft]*. Los Angeles, CA: LAEDC.

- Moore, JC, Spink, J, & Lipp, M. (2012). Development and application of a database on food ingredient fraud and economically motivated adulteration from 1980 – 2010. *Journal of Food Science*, *77*, R118–R126.
- National Intellectual Property Rights Coordination Center, Ipr Center. (2011). *Intellectual Property Rights Violations: A Report on Threats to United States Interests at Home and Abroad*.
- New York City Comptroller's Office. (2004). *Bootleg Billions: The Impact of the Counterfeit Goods Trade on New York City, NYC Comptroller's Office, November 2004*.
- OECD, Organization for Economic Co-Operation and Development. (2007a). *The Economic Impact of Counterfeiting and Piracy, Part I: Overall Assessment [Draft]* (Organization for Economic Co-Operation and Development (OECD)).
- OECD, Organization for Economic Co-Operation and Development. (2007b). *The Economic Impact of Counterfeiting and Piracy, Part II: Efforts to Combat Counterfeiting and Piracy [DRAFT September 2007]*.
- Page, J. (2000). Studies in scientific realism. *British Journal for the Philosophy of Science*, *51*, 957–961.
- Paoli, L. (1998). Criminal fraternities or criminal enterprises? *Transnat Organized Crime*, *4*, 88–108.
- Pawson, R, & Tilley, N. (1997). *Realistic Evaluation*. CA, Sage: Thousand Oaks.
- Phillips, TIM. (2005). *Knockoff: the Deadly Trade in Counterfeit Goods: the True Story of the World's Fastest Growing Crime Wave*. London: Kogan Page.
- Pricewaterhousecooper. (2007). *Economic Crime: People, Culture and Controls* (The 4th biennial Global Economic Crime Survey Investigations and Forensic Services, PriceWaterhouseCooper (PWC)).
- Speier, C, Whipple, JM, Closs, DJ, & Voss, MD. (2011). Global supply chain design considerations: mitigating product safety and security risks. *Journal of Operations Management*, *29*, 721–736.
- Spink, J. (2007). *Global Counterfeit Food and Beverage Packaging: Impacts on Food Safety*. San Antonio, Texas, AFDO: Association of Food and Drug Officials (AFDO), Annual Conference.
- Spink, J. (2009a). *ACADEMIC FOOD STUFF, Risk management* (Packaging World Magazine, p. 27).
- Spink, J. (2009b). *Defining Food Fraud & The Chemistry of the Crime*. Chicago: American Association for the Advancement of Science (AAAS) 2009 Annual Meeting.
- Spink, J. (2011). The challenge of intellectual property enforcement for agriculture technology transfers, additives, raw materials, and finished goods against product fraud and counterfeiters. *Journal of Intellectual Property Rights*, *16*, 183–193.
- Spink, J, & Fejes, Z. (2012). A review of the economic impact of counterfeiting and piracy methodologies. *International journal of Comparative Applied Criminal Justice*, *0(0)*, 1–26. In Press.
- Spink, J, & Moyer, DC. (2011a). *Backgrounder: Defining the Public Health Threat of Food Fraud* (Research Grants). Minneapolis, Minnesota: National Center for Food Protection and Defense. <http://www.ncfpd.umn.edu/>.
- Spink, J, & Moyer, DC. (2011b). Defining the public health threat of food fraud. *Journal of Food Science*, *76*, R157–R162.
- Spink, J, Helferich, OK, & Griggs, JE. (2010). Combating the impact of product counterfeiting. *Distribution Business Management Journal*, *10*, 6.
- Spink, J, Singh, JA, & Singh, SP. (2011). Review of package warning labels and their effect on consumer behavior with insights to future anti-counterfeit strategy of label and communication systems. *Packaging Science and Technology*, *24*, 469–484.
- UNCICP, United Nations Centre for International Crime Prevention. (2000). Assessing transnational organized crime: results of a pilot survey of 40 selected organized criminal groups in 16 countries. *Trends Organized Crime*, *6*, 44–92.
- UNICRI, United Nations Interregional Crime and Justice Research Institute. (2008a). *Counterfeiting: A Global Spread, a Global Threat*.
- UNICRI, United Nations Interregional Crime and Justice Research Institute. (2008b). *UNICRI United Nations Interregional Crime and Justice Research Institute*.
- Van Dijk, J, & De Waard, J. (1991). A two-dimensional typology of crime prevention projects. *Criminal Justice Abstracts*, *23(4)*, 483–503.
- Voss, M, Closs, D, Calantone, R, Helferich, O, & Speier, C. (2009). The role of security in the food supplier selection decision. *Journal of Business Logistics*, *30*, 127.
- WCO, World Customs Organization. (2007a). *Counterfeiting and Piracy - Crime of the 21st century?* World Customs Organization (WCO): WCO News.
- WCO, World Customs Organization. (2007b). *Review of the Fight against Counterfeiting in 2006*. Belgium, World Customs Organization: Brussels.
- WHO, World Health Organization. (2007). *General information on counterfeit medicines* World Health Organization.
- WIPO, World Intellectual Property Organization. (2008). *Are there internationally accepted definitions of counterfeiting and piracy? Frequently Asked Questions*.
- WTO, World Trade Organization. (2011). *Glossary: Counterfeit Definition*.

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