Examining the Correlates and Reporting of On-Line Product Counterfeiting Victimization

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Abstract:

The growing pace of e-commerce has helped facilitate the sale and distribution of counterfeit products. Consumers using on-line auction or retail sites cannot fully validate goods before making purchases and instead must depend upon "faceless" sellers to deliver authentic items, thus greatly expanding opportunities for fraud. Despite the growth of on-line product counterfeiting, little research has examined this form of intellectual property crime, limiting our basic understanding of the problem and victim reporting. In part, research in this area is lacking because very few organizations provide data on this type of victimization. Drawing on 2009 and 2010 complainant data from the Internet Crime Complaint Center, we examine the characteristics, costs and reporting of on-line auction and non-auction product counterfeiting victimization. We discuss the implications of our findings for improving law enforcement and industry prevention and response, increasing victim reporting and advancing knowledge about the nature of these crimes.

Background

The proliferation of computers and Internet connected devices revolutionized the way that individuals purchase goods and services (Newman and Clarke 2003). Individuals can readily acquire a range of products through websites and auction services from businesses with brick and mortar locations off-line, or directly from other consumers. This innovation has drastically increased the ease with which individuals can engage in various forms of fraud, particularly product counterfeiting where individuals attempt to pass a manufactured copy of an original retail item in an attempt to deceive consumers (Dolan 2004; Newman and Clarke 2003; Wall and Large 2010). For example, the Office of Economic Co-Operation and Development reported that several hundred billion dollars are lost yearly to the distribution of counterfeit products over the Internet (OECD, 2007). Alternatively, a seller may never actually deliver the product after receiving payment from their prospective customer (Dolan 2004). In fact, the Internet Crime Complaint Center (2011) reports non-delivery of goods as one of the most common complaints from victims over the last decade. Additionally, the Federal Trade Commission received over 56,000 consumer complaints of auction fraud in 2010 alone (Federal Trade Commission 2011).

Despite the growth of auction fraud and online counterfeiting generally, few researchers have considered the demographic composition of victims of this form of crime (see Dolan 2004; Newman and Clarke 2003; Wall and Large 2010). This stems in large part from the underreporting of this form of cybercrime to law enforcement agencies (Holt, 2003; Stambaugh et al. 2001). Many researchers have noted that victims may not know what agency has the proper jurisdiction to investigate cybercrime complaints, thereby reducing the likelihood of reporting (Dolan 2004; Holt 2003). Alternatively, an individual may feel embarrassed that they

were defrauded or scammed, or believe that small financial losses make the event too insignificant to report to law enforcement (Dolan 2004). Finally, some may believe that local law enforcement may be unable to investigate the offense rendering reporting moot (Holt 2003). As a consequence, there is a substantive lack of knowledge about the victims of product counterfeiting, and the factors affecting the underreporting of on-line product counterfeiting and auction fraud. To directly address this gap, we examine such victimizations reported to the Internet Crime Complaint Center from 2009 and 2010.

Data and Methods

We obtained 2009 and 2010 complainant data from the Internet Crime Complaint Center, which is collected by the National White Collar Crime Center (NW3C)[1]. We focus specifically on complaints of auction and non-auction fraud victimization through the delivery of fake products reported by US victims. These incidents represent product counterfeiting, or the intellectual property rights infringement of "material" or "fake goods." A total of 2,678 victims were included in the final sample after removing outliers for *dollar amount lost* (i.e., $1,815,637; $300,000; $145,885; $130,000), 30 complainants whose nationality was unknown, and those who reported music/software piracy or copyright infringement.

We conduct three types of analyses. First, we describe the characteristics, costs and reporting of all victims. Second, we examine these same factors but broken down by auction and non-auction victims. Finally, we conduct a binary logistic regression to predict victim reporting. We recoded the dependent variable, *report to any entity* (1 = yes; 0 = no), to measure if the victim reported the incident to any of the following: the suspect/business that victimized them,

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[1] The form for filing a complaint is found at http://www.ic3.gov/default.aspx. However, because filed complaints are transmitted to NW3C, readers should contact the authors to see a full version of the instrument for a complaint of auction or non-auction fraud victimization.

the Better Business Bureau, a consumer protection agency, a private attorney, or the police/other type of law enforcement. We created from the original data four binary independent variables: *US suspect* (1 = yes; 0 = no), *victim under 30* (1 = yes; 0 = no), *auction victim* (1 = yes; 0 = no, non-auction victim) and *prior relationship with suspect* (which measures if the victim knew the suspect prior to incident: 1 = yes; 0 = no). We also created from categorical variables two count variables: the number of *methods of payment* used by the victim (e.g., cash, cashier's check, check/debit card, credit card, money order, wire transfer, other) and the number of *mediums used by suspect* in the course of the incident (e.g., bulletin board, chat room, email, fax, in-person contact, Internet messaging, mail, newsgroups, telephone, web site, wire, other).

Other independent variables in the regression models that did not require transformation included *male victim* (1 = yes; 0 = no), *initial contact unsolicited* (which measures if initial contact between the victim and suspect was unsolicited or uninvited: 1 = yes; 0 = no), *researched suspect* (which measures if the victim conducted any research on the suspect prior to the incident: 1 = yes; 0 = no) and *dollar amount lost* (a continuous measure of the victim's monetary loss). Just over 14 percent of victims reported zero dollar losses for this variable, but almost 25 percent of victims reported losing less than fifty dollars. Furthermore, 26 victims reported losing less than ten dollars. It appears reasonable for victims to report no loss; thus, zero values are included in our analyses.

Descriptive Statistics for All Victims

Demographic characteristics of auction and non-auction victims are displayed in Table 1 (for categorical variables) and Table 2 (for count variables). Nearly three-fourths of suspects are from the US and male. Most complainants are non-auction victims, male, and tend to be older (almost 70 percent are 30 or older). Most victims did not use a third party online payment

service (e.g., PayPal, BidPay, Escrow); instead, credit cards and check/debit cards were used most frequently.

Suspects used a variety of mediums to contact victims but tended to use less than two during the incident. Email and website contact was most common, but only a quarter of initial contacts were unsolicited. Since products were purchased on-line, it is not surprising that very few victims had a relationship with the suspect prior to the incident. Finally, the median amount lost by victims was $164.

Most complainants did not report the incident to any of the entities mentioned above. Of those that did (N = 1,084), they most often contacted the individual or business who sent the fraudulent product. Victims were much less likely to contact a law enforcement agency and, on average, contacted just one entity.

Descriptive statistics by victimization type

Auction and non-auction fraud victims are similar on certain characteristics (see Table 3). For example, both groups are usually male and tend to be victimized by male suspects in the US. However, non-auction victims are slightly younger (a larger proportion is under 30 years old). Furthermore, auction victims are much more likely to use third-party payment services. Both groups, however, most often used credit and debit cards. Suspects typically use e-mail to contact both groups, though initial contact with non-auction victims is more likely to be unsolicited. More auction victims conduct research on suspects prior to the incident. Finally, most victims across groups do not report the incident to any entity. Overall, both groups are similar on count variables, but auction victims lose slightly more money per transaction—a median of $233 versus $140 (not shown in a table).

Regression results

We conducted a binary logistic regression to predict whether or not victims reported to any entity (see Table 4). Due to missing data, we performed multiple imputation to replace missing values for several variables, using the standard of five imputations. Two models were estimated: one with ten predictors, the other with seven variables after removing *US suspect*, *methods of payment used* and *mediums used by suspect*. These variables are each missing roughly a third of their values and were removed in order to reduce the amount of imputed data. We use this reduced model to examine whether or not the effect of other variables remains stable when those with high missing values are excluded from the model.

Based on the pooled estimates across imputations for the full model, being male coincides with not reporting. Younger victims also tend to report victimization less than those over 30. Experiencing auction fraud and losing higher dollar amounts leads to reporting. The positive effect of having a relationship with the suspect prior to victimization, conducting research, and having contact through multiple mediums suggests that having a greater knowledge or familiarity with the suspect prompts reporting. All of these relationships hold in the reduced model, suggesting they are stable and not affected by the variables with high missing values. Finally, the nature of initial contact between victim and suspect (across models), suspect nationality and the number of methods of payment used do not affect reporting to any entity.

Discussion and Conclusions

Overall, the findings suggest that victims of product counterfeiting via auction sites and non-auction sites are minimally different. The most substantive difference is that victims buying products outside of online auction houses use less secure forms of payment. The lack of substantive differences between groups supports the notion that fraudsters attempt to target as many groups as possible in the course of their scams (Titus, Heinzelman, and Boyle, 1995;

Holtfretter, Reisig, & Pratt, 2008). In addition, this study also validates the mixed findings on the demographic composition of fraud victims (see Holtfretter et al., 2008 for discussion).

Additionally, the regression results indicate there are key populations most in need of targeted messages about reporting incidents of on-line product counterfeiting. Specifically, young males are common victims, and it should be communicated that product counterfeiting is a crime, regardless of how much money is paid for the product. Furthermore, victims should be encouraged to report the incident despite their knowledge of or familiarity with the suspect which could also improve baseline parameters of on-line product counterfeiting victimization. Major on-line outlets and retailers, like eBay, PayPal, and Amazon, along with local law enforcement, could help deliver these targeted messages and heighten the overall awareness of this growing problem.

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Table 1. Descriptive Statistics of All Victims (categorical variables)

Variable	N	Frequency	%
US suspect	1,797	1,305	72.6
Male suspect	1,193	883	74.0
Male victim	2,678	1,490	55.6
Victim under 30	2,678	823	30.7
Victim age	2,678		
Under 20		113	4.2
20 to 29		710	26.5
30 to 39		657	24.5
40 to 49		599	22.4
50 to 59		419	15.6
Over 60		180	6.7
Auction victim	2,678	737	27.5
Third party payment service	2,286	1,111	48.6
Method of payment	2,678		
Credit card		610	22.8
Check/debit card		482	18.0
Cash		336	12.5
Wire transfer		295	11.0
Money order		126	4.7
Cashier's check		59	2.2
Other		18	0.7
Mediums used by suspect	2,678		
Email		960	35.8
Web site		502	18.7
Telephone		445	16.6
Internet messaging		318	11.9
Mail		302	11.3
In-person contact		203	7.6
Other		180	6.7
Bulletin board		114	4.3
Wire		95	3.5
Fax		63	2.4
Chat room		48	1.8
Newsgroups		9	0.3
Initial contact unsolicited	2,529	648	25.6
Prior relationship with suspect	2,612	158	6.0
Researched suspect	2,572	826	32.1
Report to any entity	2,678	1,084	40.5
Reporting by entity	1,084		
Individual/business		651	60.1
Law enforcement		409	37.3
Consumer protection agency		133	12.3
Better Business Bureau		113	10.4
Private attorney		39	3.6

Table 2. Descriptive Statistics of All Victims (count variables)

	N	Min	Max	Mean	Median	S.D.
Methods of payment used	1,811	1	6	1.06	1.00	0.30
Mediums used by suspect	1,866	1	8	1.73	1.00	0.95
Dollar amount lost	2,678	0	100,000	1,328.66	164.00	5,933.52
Reporting depth	1,084	1	5	1.24	1.00	0.58

Table 3. Descriptive Statistics by Type of Victimization (categorical variables)

Variable	Auction			Non-Auction		
	N	Frequency	%	N	Frequency	%
US suspect	607	477	78.6	1,190	828	69.6
Male suspect	364	263	72.3	829	620	74.8
Male victim	737	435	59.0	1,941	1,055	54.4
Victim under 30	737	189	25.6	1,941	634	32.7
Victim age	737			1,941		
Under 20		28	3.8		85	4.4
20 to 29		161	21.8		549	28.3
30 to 39		171	23.2		486	25.0
40 to 49		173	23.5		426	21.9
50 to 59		142	19.3		277	14.3
Over 60		62	8.4		118	6.1
Third party payment service	687	566	82.3	1,599	545	34.1
Method of payment	737			1,941		
Credit card		192	26.1		418	21.5
Check/debit card		130	17.6		352	18.1
Cash		31	4.2		305	15.7
Wire transfer		78	10.6		217	11.2
Money order		29	3.9		97	5.0
Cashier's check		10	1.4		49	2.5
Other		6	0.8		12	0.6
Mediums used by suspect	737			1,941		
Email		309	41.9		651	33.5
Web site		109	14.8		393	20.2
Telephone		95	12.9		350	18.0
Internet messaging		98	13.3		220	11.3
Mail		119	16.1		183	9.4
In-person contact		13	1.8		190	9.8
Other		69	9.4		111	5.7
Bulletin board		10	1.4		104	5.4
Wire		24	3.3		71	3.7
Fax		17	2.3		46	2.4
Chat room		5	0.7		43	2.2
Newsgroups		1	0.1		8	0.4
Initial contact unsolicited	688	133	19.3	1,841	515	28.0
Prior relationship with suspect	720	35	4.9	1,892	123	6.5
Researched suspect	696	315	45.3	1,876	511	27.2
Report to any entity	737	328	44.5	1,941	756	38.9
Reporting by entity	328			756		
Individual/business		254	77.4		397	52.5
Law enforcement		86	26.2		323	42.7
Consumer protection agency		33	10.1		100	13.2
Better Business Bureau		19	5.8		94	12.4
Private attorney		15	4.6		24	3.2

Table 4. Binary Logistic Models Predicting Victim Reporting

Predictor	Full Model	Reduced Model
Male victim	−.197 (.084)*	−.183 (.082)*
Victim under 30	−.245 (.089)**	−.241 (.089)**
Auction victim	.226 (.092)*	.206 (.091)*
Dollar amount lost	.000 (.000)**	.000 (.000)**
Initial contact unsolicited	.148 (.097)	.126 (.096)
Prior relationship with suspect	.617 (.187)**	.621 (.184)**
Researched suspect	.257 (.089)**	.267 (.090)**
US suspect	.005 (.114)	
Methods of payment used	.044 (.146)	
Mediums used by suspect	.159 (.050)**	
N	2,678	2,678

* = p < .05

** = p < .01

Note: Results are presented as regression coefficient (standard error)