

Safeguarding Korean Export Trade through Social Media-Driven Risk Identification and Characterization

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Abstract

Purpose – Korean exports account for a vast proportion of Korean GDP, and large volumes of Korean products are sold in the United States. Identifying and characterizing actual and potential product hazards related to Korean products is critical to safeguard Korean export trade, as severe quality issues can impair Korea's reputation and reduce global consumer confidence in Korean products. In this study, we develop country-of-origin-based product risk analysis methods for social media with a specific focus on Korean-labeled products, for the purpose of safeguarding Korean export trade.

Design/methodology – We employed two social media datasets containing consumer-generated product reviews. Sentiment analysis is a popular text mining technique used to quantify the type and amount of emotion that is expressed in the text. It is a useful tool for gathering customer opinions regarding products.

Findings – We document and discuss the specific potential risks found in Korean-labeled products and explain their implications for safeguarding Korean export trade. Finally, we analyze the false positive matches that arise from the established dictionaries that were used for risk discovery and utilize these classification errors to suggest opportunities for the future refinement of the associated automated text analytic methods.

Originality/value – Various studies have used online feedback from social media to analyze product defects. However, none of them links their findings to trade promotion and the protection of a specific country's exports. Therefore, it is important to fill this research gap, which could help to safeguard export trade in Korea.

Keywords: Electronic Commerce, Electronic Word of Mouth, Risk Management, Social Media, Sentiment Analysis

JEL Classifications: D12, F14, O53

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1. Background: Korean Exports and Online Reviews

South Korea was the United States' sixth largest source of imports in 2018. This totaled \$74.3 billion, including billions of dollars of electronics and food products (OUSTR, 2020). A significant number of these Korean products are sold online or reviewed online by American consumers. A reputation for producing high quality products facilitates premium product pricing (Shapiro, 1983), and a reputation for providing poor quality products, relative to other countries, can result in price discounts (Agrawal and Kamakura, 1999), and thus, in the long run, may negatively impact Korean export trade.

Often, international buyers must rely on online reviews as credible sources to make decisions on product quality, brand recognition, and aftersales services (Giri and Thapa, 2016; Dwivedi et al., 2009). These sources can range from user reviews on e-commerce websites (e.g., Amazon.com) to product-related online videos and video comments (e.g., on YouTube.com), to product reviews on social media sites (such as Facebook.com), and to product reviews posted on blogs and online forums. These reviews play important roles in creating an electronic form of word-of-mouth (eWom), where users who have used products or services share their thoughts and feedback through electronic channels. eWom can help companies to increase both their sales and market recognition. In the past decade, companies have relied on eWom as a tool to build trust with customers who increasingly rely on the past experiences reported by other customers who have used the products or services, instead of traditional marketing platforms, like print media or TV ads. For example, online reviews from Amazon, eBay and YouTube have become very popular with online consumers (Von Helversen et al., 2018).

The effects of eWom on companies and their products can be multifold, and the feedback can be positive or negative. In short, if products garner positive reviews, then the associated companies can benefit from the eWom. However, companies can also receive negative responses from their customers if their products or services have unfavorable reviews (Pee, 2016). Thus, in addition to interacting with their customers through social media, companies can analyze users' feedback from social media too (Boon-Long and Wongsurawat, 2015). Conventionally, companies have received customer feedback from various channels. However, this feedback often relies on official channels, such as business partners, distributors, or other storefronts – both offline and online – to report the issues to the parent companies. However, the turnaround time for information about defective products may be weeks or months, and it can take additional time for companies to collect and analyze as there are significant time lags between manufacturing, distribution, purchase, and consumption. Furthermore, product defect reports are often not directly received by the manufacturer, since many customers do not report defective products through the official channels. To obtain data on product feedback or defects, companies can analyze customers' feedback through the online reviews that are readily available through various social media channels. By identifying and characterizing product issues through online reviews, companies can get current, up-to-date information on product defects. Companies can use this information to improve their product development for future products. Using data extracted from online feedback can greatly help to reduce the various risks that come with manufacturing and distributing defective products.

Regarding product compliance risks, product recalls are a major concern for Korean companies (Huh and Choi, 2016). The Korean government enforces hundreds of product recalls annually, with approximately two-thirds of recalled products originating from China, and the remaining one-third originating primarily from Korea (Nottage, 2020). Korean products have often suffered calamitous recalls in international markets – such as the 1.9-

million-unit Samsung Galaxy Note 7 recall (CPSC, 2016a/2017), and the 2.4-million-unit Samsung top-loader recall (CPSC, 2016b). The recent major Korean enoki mushroom recall involved three companies, and was associated with 31 hospitalizations and 4 deaths (CDC, 2020). Product recalls may have substantial negative effects on the wealth of sellers (Jarell and Peltzman, 1985), severely damaging their corporate image and investor confidence (Zhao et al., 2014). They can also have negative trade policy implications, such as potential trade restrictions and severely negative trade consequences. For instance, Liu, Kerr and Hobbs (2009) document that there has been substantial negative media attention, strong pressure to tighten regulatory barriers, outright bans on Chinese imports, serious declines in consumer confidence in Chinese goods, and consequent declines in Chinese exports following significant product safety incidents with Chinese exports. These declines were so severe that Liu, Kerr and Hobbs (2009) contend there was even substantial collateral damage, with reductions in export sales even for Chinese firms with no safety problems. Safeguarding Korean exports by avoiding damaging highly public quality incidents is thus critical.

Globally, product risk characterization has been an import concern of both regulators and corporations. Formal product risk assessment methodologies have been developed and documented by the United States Consumer Product Safety Commission (US CPSC), Health Canada (2016), and the European Commission (2015). All of these incorporate an evaluation of both the severity of the potential injury to consumers and the likelihood of injuries occurring. Risk assessment is informed by heterogeneous data from a variety of sources, including but not limited to physical product tests and inspections, hospitalization reports and death certificates, and unsolicited consumer complaints via multiple modalities, such as telephones, mail, and the Internet.

Various studies have used sentiment analysis to analyze online feedback from social media to analyze product defects, such as Abrahams et al. (2012) and Bergstrand and Finlaw (2011). Prior research has, for instance, used online reviews to analyze defects in home appliances (Goldberg and Abrahams, 2018; Law et al., 2017), children's toys and baby products (Mummalaneni et al., 2018; Winkler et al., 2016), electronics (Abrahams et al., 2015) and automobiles (Abrahams et al., 2013). However, none of these studies link their findings to the conceptual frameworks of risk management in the context of a specific country that could potentially lead to the improvement of production within that specific country. Therefore, it is important to fill this research gap, which could lead to improvements in the manufacturing of different products being sold online in the source country.

2. Related Work

In this section, we describe related work in the areas of eWom, brand crisis management, risk management, and product development.

2.1. eWom and Brand Crisis Management

eWom has garnered much attention from companies who sell products through e-commerce channels. In the past, companies usually relied on traditional marketing channels, such as TV commercials or printed ads (Geraghty and Conway, 2016). However, with the proliferation of the internet and digital technologies over the past few decades, companies have switched their attention to online advertising to increase the reach to their customers (Nwokah and Ngirika, 2017). The increase in the popularity of e-commerce and m-commerce transactions has transformed consumer behavior and prompted consumers to be

more receptive to information being presented in digital forms (Teeramungcalanon, 2020). Customer feedback through online product reviews has become an important source that consumers use to search for opinions and shared experiences before they make decisions about buying products (Liu and Zhang, 2010). In addition, if products have negative reviews, such as product defects or hazardous parts, it could indicate potential future consumer action or regulatory action, such as possible lawsuits or product recalls. Product recalls are a “product crisis” for companies, which can lead to them developing negative reputations. This makes these companies vulnerable to future sales losses, especially where the firm has diminished control of social media content about its product (Lee et al., 2015). In some serious cases, lawsuits can result from product defects that result in property damage, or consumer injury or harm, especially if reported by many consumers. If these negative physical or emotional impacts are intensified through online channels, the risks can harm companies’ reputations in both the short and long term, which could lead to an international product being recalled and hinder trade activities in the long run. Hence, there has been a need for brand crisis management (Souiden and Pons, 2009). This may involve the use of information obtained from eWom to prevent, identify, and manage the negative effects on a company’s reputation, as well as other negative impacts on companies who rely on eWom from online product reviews.

2.2. Risk Management and Product Development Life Cycle

One strategy for managing brand crises is to rely on gaining valuable customer insights from product reviews through social media channels. Companies can benefit from analyzing the data to gain an understanding of what customers want (Anshari et al., 2019; Sithipolvanichgul, 2018). By leveraging the available data from social media channels, companies can also use the findings to improve future versions of the products. Ultimately, the Product Development Life Cycle (PDLC) can be improved by having the available data to help improve the understanding of customer requirements, prevent future design and manufacturing errors, and shorten the development time between the releases of new product versions (Hines et al., 2006). The PDLC stages are Plan, Develop, Evaluate, Launch, Assess, Iterate or Kill. Planning usually involves the pre-production processes where analyses of customers and competitors are the main concerns for companies. By identifying consumer needs through data retrieved from social media channels, companies can get insight information from their customer demographic and from competitors’ products when users make product comparisons in their reviews. In the Develop and Evaluate stages, companies can gain valuable information by identifying and classifying products’ defects and errors to help companies have both the direct interaction and feedback necessary to assess and further improve their products. However, if the products’ defects cause damages, either in terms of the company’s reputation or financially through lawsuits, then companies can decide to conduct product recalls or even terminate the product development completely.

Hence, online reviews through social media can play a pivotal role to help inform the product development process. The information that can be shared through social exchanges between consumers and the manufacturer is important for product improvement (Piller et al., 2012). Companies who collect information efficiently from customers can use that information for their benefit to reduce the risk of them investing their resources in developing problematic or undesirable products in future versions (Ogawa and Piller, 2006).

Prior research has leveraged social media to both find and assess hazards across a broad array of consumer products (Lockett et al, 2006). Social media data sources include product reviews from online retailers (Goldberg and Abrahams, 2018; Mummalaneni et al., 2018;

Winkler et al., 2016; Zaman, 2019), discussion boards (Abrahams et al., 2015), and online videos (Nasri et al., 2018). While it is not an exhaustive source of risk reports, social media data presents a convenient public repository of an extensive assortment of consumer-generated product hazard reports.

Past studies of product safety concerns mentioned in social media have been agnostic to country-of-origin and so have not provided the methods needed to direct attention to products sourced from a specific country. In this study, we develop country-of-origin-based product risk sensing methods for social media, with a specific focus on products manufactured in the Republic of Korea. Such a focused analysis is helpful for Korean manufacturers, trade representatives, and trade advisors, as it facilitates both product quality management and reputation management for Korean brands singularly and Korea collectively.

3. Methodology

We employed two social media datasets containing consumer-generated product reviews: (1) textual product reviews from Amazon, the world's largest e-commerce retailer, and (2) videos from YouTube, the world's largest online video sharing platform.

Sentiment analysis is a popular text mining technique that is used to quantify the type and amount of emotion expressed in the text. It is a useful tool for gathering customer opinions regarding products. Sentiment analysis uses each individual word context and a dictionary of positive and negative words to determine context-aware sentiment. There has been much previous research using sentiment analysis used to study online reviews, e.g., Cheng and Jin (2019); Fang and Zhan (2015); Fan et al. (2017); Jo and Oh (2011). We employed smoke-term analysis – a specific adaptation of sentiment analysis, shown to be more effective for product defect discovery (Abrahams et al., 2015) – for our analysis.

3.1. Amazon Product Reviews

We obtained a dataset of approximately 233 million product reviews from Amazon.com from Ni et al. (2019), which covered the period from May 1996 through to Oct 2018. We filtered the dataset to recognize (without case-sensitivity) the word “Korea” in both the product title and description. We removed Books, Movies and TV shows, Software, and Video Games from the dataset, as these items are unlikely to cause hazards and could lead to an excessive number of false positive matches for terms like “hospital”, “dangerous”, “fire”, and so forth, which may indicate potential product hazards in other categories. We arrived at a subset of 99,807 reviews that mentioned “Korea”, as shown in Table 1, which indicates the number of reviews per product category. As Table 1 indicates, four categories (Cell Phones & Accessories [27% of reviews], Grocery [18%], Amazon Home [14%], and Tools & Home Improvement [12%]), accounted for most of the reviews [total 70% of all reviews] for Korean products on Amazon during the 22-year period under review.

Table 1. Distribution of Korean Product Reviews by Product Category

Product category	Number of reviews
All Beauty	1,560
All Electronics	1,647
Amazon Home	13,589
Arts, Crafts & Sewing	1,673
Automotive	5,120

Table 1. (Continued)

Product category	Number of reviews
Baby	100
Camera & Photo	5,240
Car Electronics	452
Cell Phones & Accessories	26,726
Collectibles & Fine Art	1
Computers	2,732
GPS & Navigation	21
Grocery	17,766
Health & Personal Care	514
Home Audio & Theatre	1,640
Industrial & Scientific	240
Musical Instruments	662
Office Products	2,184
Pet Supplies	383
Sports & Outdoors	2,720
Tools & Home Improvement	12,063
Toys & Games	2,774

We employed established “smoke-term” mechanisms to identify the reviews that mentioned potential risks. A “smoke term” is a word or phrase determined by statistical and information retrieval methodologies that are more prevalent in reviews that mention a safety concern than they are in reviews that do not. To filter the Amazon product reviews, we applied two distinct smoke-term dictionaries, sourced from Goldberg and Abrahams (2018) – see Table 2, Panel (a) – and Zaman (2019) – see Table 2, Panel (b) and Appendix A. For the former dictionary, all terms were equally weighted, meaning that the total smoke score for the Amazon review was incremented uniformly by 1 point each time a matching term was found. For the Zaman dictionary, each term had its own weight, meaning a match for a high-weight term (that is, a term highly prevalent in Zaman’s dataset of historic safety concern reports) would increment the total smoke score for the review by a higher amount than for a low-weight term (a term less prevalent in the historic safety concern reports). We manually curated the full-term list from Zaman (2019) to remove terms deemed unlikely to relate to hazard reports, and arrived at an abbreviated smoke term list from Zaman (2019), which we report here. For brevity, Table 2, Panel (b) shows only the top 95 single words from the Zaman smoke-term dictionary, and the remaining terms (94 two-word and 100 three-word phrases) are included in Appendix A. Term weights have been omitted for brevity, but terms have been listed in order from highest- to lowest-weight single-words, highest- to lowest-weight 2-word phrases, and highest- to lowest-weight 3-word phrases, so the more important terms appear first in each list.

Table 2. Smoke Terms Used to Filter Amazon Product Reviews Containing “Korea”

(a)		(b)			
Goldberg and Abrahams (2018)		From Zaman (2019); continued in Appendix A			
burning	choking	burned	slips	flames	shaky
caught	fire	irritation	face	bruises	violently
dangerous	fell	blood	toxicity	smack	harm
fire	head	swallowed	lead	painful	tipping
hazard	cut	unstable	intestine	slip	suffer
injuries	sharp	hazards	gash	bruise	injury

Table 2. (Continued)

(a)		(b)			
Goldberg and Abrahams (2018)		From Zaman (2019); continued in Appendix A			
safety	fall	mouth	sparks	horrid	emergency
unsafe	chemicals	hot	respiratory	vomiting	pneumonia
caught fire	toxic	asleep	gas	dermatitis	mold
fire hazard	hazard	secure	accidentally	arsenic	poisoned
not recommend	smoke	stitches	bleeding	injuring	warns
on fire	hit	cutting	burned	asthma	carcinogenicity
a fire hazard	burning	fumes	slippage	burn	pulmonary
caught on fire	choke	chin	hospital	cutting	suffocated
	neck	magnets	terrified	rash	suffocating
	rash	throat	cuts	dangerous	esophagus
	fallen	hurt	exposed	died	sores
	wobbles	wobbly	cancer	punched	crash
	slippery	allergic	sick	bromine	agony

3.2. YouTube Product Review Videos

We obtained a dataset of 16,402 consumer product review videos from YouTube, from Nasri et al. (2018), including the manufacturer's name, product type, video URL, and video title, description, and publication date. This dataset spanned the period from March 2006 through to January 2017. Nasri et al.'s video sample was scored and filtered using Nasri et al.'s list of 200 hazard-indicative words to boost the proportion of hazard mentions and was manually coded to annotate the existence or absence of a potential safety concern in each video. The dataset covered 70 distinct international manufacturers. For each manufacturer, we manually ascertained the headquartering country of the corporation to determine whether it was based in the Republic of Korea. We extended the procedure from Nasri et al. (2018) by incorporating a modified snowball (chain referral) sample (Goodman, 1961; Biernacki and Waldorf, 1981), using both YouTube's "Up Next" recommendations, as well as a manual search on the product's name or product type and incident-type keywords (e.g. "top loader explode") to roll related observations (videos) into the dataset. For all the items, we have reported the consumer's verbatim content, and made no claims as to the veracity of the consumer's claims or the legitimacy of safety concerns – these require further investigation by competent authorities.

4. Results

We report here the results for products associated with the word "Korea", in both the Amazon product reviews dataset and the YouTube product-review video dataset.

4.1. Amazon Product Reviews

For the Goldberg and Abrahams dictionary, 73 of the Amazon reviews for products labeled "Korea" in our dataset matched two or more smoke terms, and a further 454 reviews matched one smoke term from the Goldberg dictionary.

For the Zaman dictionary, 9,737 Amazon reviews for products labeled “Korea” in our dataset matched one or more smoke terms. Fig. 1 shows the distribution of total smoke scores for Amazon reviews for products for “Korea”, with one or more matches when scored with Zaman’s weighted smoke-term dictionary.

Fig. 1. Overall smoke score for Amazon Product Reviews containing “Korea”, scored with abridged Zaman (2019) dictionary

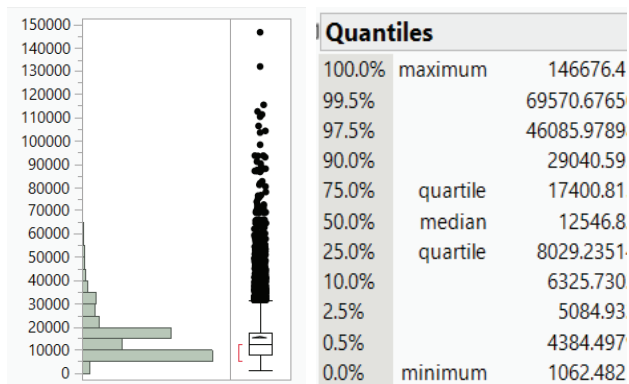


Table 3 lists an illustrative sample of Amazon reviews for products that included “Korea” in their product title or description, and contained terms in our smoke-term dictionaries. Table 3 includes the manufacturer, Amazon’s unique product identifier (ASIN) with the date when the review was posted, and the consumer’s comment that contained the matching term. Term matches are highlighted in **bold** for any terms matching the Goldberg and Abrahams (2018) or the abridged Zaman (2019) smoke-term dictionaries.

Table 3. Illustrative Amazon Product Reviews for Product Descriptions Containing “Korea” and Matching Smoke-Term Dictionaries

Manufacturer	ASIN, Date	Product Type	Comment with Match
Gens ace	B017B4NPOK 7/10/2017	Battery pack	“ DANGEROUS... Second time I charged it, the battery caught on fire and exploded . It lit my workbench on fire and almost burned down my garage.”
Dongsuh	B00FRECXFO 5/4/2018	Tea	“After drinking this tea, I was hospitalized for severe nausea... I was totally amazed when the hospital blood tests revealed Marijuana!! The hospital and I believe the tea was spiked with Marijuana.”
Ceptics	B007SBGBDO 11/18/2014	Travel adapter plug	“ Caught on fire the 1st time I used it!”
Ceptics	B00BLTCHN2 3/11/2015	Travel adapter plug	“Made loud popping noise, then flash of light, then really bad burning smell.”

Table 3. (Continued)

Manufacturer	ASIN, Date	Product Type	Comment with Match
Aketek	B0053DDNW6	Dashcam	"I use it for one day, the unit started to smoke ... UNIT IS DANGEROUS!!! "
	2/20/2013		"battery started smoking as soon as I put it in the camera and it melted the plastic."
	8/13/2014		"The second I plugged in the power cord it started smoking. Thank god I unplugged it before it caught fire ."
	11/2/2015		"When I plugged it in, the screen flashed once and then I saw SMOKE ... yes, SMOKE coming from the interior of the camera; so I quickly unplugged the camera. After unplugging the camera, the smoke lasted from approximately 2 minutes; and for the entire time I clearly smell a burnt substance... this product could be categorized as being unsafe ; and could potential cause fire ."
	1/3/2018		"When I installed it in the car and connected the power to it, the thing began to sizzle and spark and smoke almost instantly."
	2/26/2013		"bought 4 in a row... 3rd one it has smoke come out when plugged in."
	4/18/2013		
Cheengoo	B00N40P4P4	Baby rattle	"the tags start to come loose after a couple washes. They are easy to remove but definitely a choking hazard for baby."
	2/18/2018		
Goldengulf	B00CC8OZ8Q	Tablet computer	"this is a dangerous product!... attempting to charge it, it became EXTREMELY hot and then was dead... it got so hot when I attempted to see how it was charging that it actually stuck to the leather topped table it was sitting on!!!"
	10/2/2013		
Buddha Teas	B00NC5P9S8	Chaga Tea	"My husband was highly allergic to whatever is in this product... He broke out in welts and throat and lips swelled up. Had to take Benadryl. Very scary situation."
Gwangcheon Joyang Food Co Ltd	B01DI1R3UC	Korean Seaweed	"I had an allergic reaction to these. I'm not at all allergic to seaweed (I eat it all the time), so it leads me to believe that something that they used when processing this was the cause."
	1/30/2018		
Annie Chun's	B000E148MG	Packaged food	"Corn starch! ... We are allergic to corn starch, and... this DOES have corn starch. If you are allergic, or sensitive to corn, do not order this product. The corn is not listed, but believe me, it is there – and once you get your package you will see it on the label."
	10/14/2009		
	B000E123IC		"It contains soy sauce despite ingredient label. The ingredients in the image show this product does not contain soy sauce. The product I received does contain soy sauce. I am allergic to soy."
	6/7/2016		

Table 3. (Continued)

Manufacturer	ASIN, Date	Product Type	Comment with Match
	B01EWVORPG 8/14/2018		“Contains Coconut Oil!... But I always felt unwell after eating them. I’m allergic to coconut... spoiler alert, apparently these have coconut oil in them! So what, you say? Well, I’d carefully read the ingredients list on Amazon, and there’s no coconut oil listed... Long story short, five stars for taste, but they seriously need to address the ingredients list on here.”
	B000E123IC 7/19/2015		“... while they seem to have changed the recipe, they haven’t changed their information on the packaging. It’s listed as having a mild rating for spiciness, doesn’t mention any peppers in the ingredients... The 2 I’ve used, both were extremely hot, both had large quantities of small dried red peppers. This incorrect labeling could result in serious health issues for anyone with allergies to peppers.”
	B000E148MG 6/3/2011		“an order arrived with two of the noodle packets punctured with the noodles growing green, fuzzy mold all over. Disgusting... Then the most recent order, June 2012, arrived with rancid sauce and rancid peanuts unfit for consumption.”

A review of the manufacturers listed in Table 3 revealed that they may:

- a) be based in Korea (the Dongsuh website shows a Seoul business address) and/or manufactured in Korea (Gwangcheon Joang Food Co specifies its seaweed as “Product of Korea”).
- b) be a subsidiary or affiliate of a Korean corporation (e.g. Annie Chun’s is a brand of CJ CheilJedang, a Korean public company).
- c) source raw materials from Korea (Gens ace specified “Superior Japan and Korea Lithium Polymer” materials).
- d) use an ingredient with traditional Korean roots (“Chaga” is a Korean medicinal herb – Shirakabatake – but the distributor, Buddha Teas, sources their product from Canada).
- e) distribute to Korea or have products intended for Korean use (e.g. Aketek dashcam provides Korean as one of the 10 available languages; one customer mentioned that the Aketek product was made in China; Ceptics travel adapter plugs lists Korea as a compatible zone, though the Amazon listing specifies that manufacturer is a United States limited liability corporation; the Goldengulf tablet computer lists Korean as a supported language).
- f) have a Korean name, Korean influence or inspiration (e.g. “Cheengo” means “friend” in Korean, though the product is designed in America and was made in China).

Items under a) through to d) (above) may present reputational risks for Korean companies. Items under e) (above) may present risks to Korean consumers, as well as Korean companies that distribute these products to Korean consumers. Items under f) may be false positives as they may be neither manufactured in Korea nor distributed there.

Table 3 indicates that even if specific consumer comments are not *specific* risks, online

reviews may be helpful in identifying *systemic* failures or systemic risks. For example, the United States Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA) requires milk, eggs, fish, shellfish, tree nuts, peanuts, wheat, and soy to be explicitly declared on food box labels. In the illustrative Annie Chun’s reviews in Table 3, the customers mention that the online product listing omits the allergen, but the physical box declares the allergen: there is no clear regulatory violation here as the law requires an allergen declaration only on the box label, rather than the online product listing. Further, while soy and coconut (classified as a tree nut) fall into the FALCPA “major food allergen” categories, one reviewer mentions a corn allergy, which is not classed as a “major food allergen”. Nevertheless, the allergen-related comments directed at Annie Chun’s products in Table 3 indicate *systemic* risks (possible product recall due to labeling errors, and consumer dissatisfaction due to ingredient listing errors) for the corporation. In Feb 2020, Annie Chun’s issued a voluntary recall for its Japanese-Style Teriyaki Noodle bowls due to undeclared peanuts (FDA, 2020), indicating that the systemic risk of recall due to labeling errors is indeed substantial.

4.2. YouTube Product Review Videos

Samsung was the only Korean-headquartered corporation in the dataset, and 130 videos with unique titles matched the manufacturer’s name *Samsung*, as well as one of the 200 smoke words in Nasri et al.’s smoke word list. Of the 200 smoke words employed by Nasri et al. (2018), only 26 unique smoke words matched a YouTube product review for a Korean product in our YouTube video dataset. These words are listed in Table 4.

Table 4. Distinct Smoke Words from Nasri et al. (2018) Matching Korean Products in our YouTube Video Dataset

explode	horrible	smell
malfunction	defects	causing
beware	damage	careful
smoking	leakage	burn
problem	abnormal	injure
fault	crap	incident
risk	shit	secure
fire	safety	injured
cause	concern	

An analysis of the matching videos indicated that they were constituted of videos:

- (a) related to prior product recalls;
- (b) that claimed potential safety concerns which had not yet been addressed in prior product recalls; or
- (c) were clear false positives, unrelated to safety concerns.

We address (a) and (b) here and return to (c) in the Limitations and Future Work section.

(a) Videos related to prior product recalls

One hundred and one (101) matching videos were related to product recalls. These constituted:

- 73 videos relating to CPSC recall number 16-266 (“Samsung Recalls Galaxy Note7 Smartphones Due to Serious Fire and Burn Hazards”) and the follow-on expanded recall 17-011; and
- 28 videos relating to CPSC recall number 17-028 (“Samsung Recalls Top-Load Washing Machines Due to Risk of Impact Injuries”).

From a risk-management perspective, tracking the proliferation of these videos clarifies the genesis and severity of the negative publicity related to the recall. However, videos relating to prior product recalls are unhelpful in detecting emergent product risks, as the emergent risk would have already been investigated by the corporation and regulators prior to the recall announcement.

(b) Videos claiming potential safety concerns, unaddressed by recalls

Table 5 lists an illustrative sample of consumer safety claims for Korean products that were found in YouTube videos, either *prior* to the announcement of a product recall, or not known to be associated with a product recall. The superscript O in Table 5 indicates the observations that were obtained through snowball (chain referral) sampling using YouTube’s “Up Next” feature. Consumer claims are not necessarily indicative of bona fide product safety issues, and all claims require further investigation to verify their legitimacy. Some videos involved consumer misuse (e.g. the use of an unauthorized or potentially counterfeit product or a third-party replacement part, such as 3rd party battery).

However, in at least five cases in Table 5 (videos where consumers claim their top load washing machine “exploded”), it appears that the consumer’s claim was verified by a *subsequent* product recall, some 1 – 3 years later. This indicates that, though hazard reports are rare, online videos may indeed be an early warning signal of an emergent product risk. Under the presumption that the video incident report is for the same issue that prompted the eventual top loader recall, it is possible that, had Samsung responded to the reported top loader issue at the time of the earliest online video report (in 2013), rather than 3 years later, it could have substantially reduced the number of defective units in circulation (2.8 million units were recalled), product failure incidents¹, associated unit recall cost, and its reputational damage of these incidents.

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(a) Videos related to prior product recalls

One hundred and one (101) matching videos were related to product recalls. These constituted:

¹CPSC recall 17-028 narrative states that: “Samsung has received 733 reports of washing machines experiencing excessive vibration or the top detaching from the washing machine chassis. There are nine related reports of injuries, including a broken jaw, injured shoulder, and other impact or fall-related injuries.”

- 73 videos relating to CPSC recall number 16-266 (“Samsung Recalls Galaxy Note7 Smartphones Due to Serious Fire and Burn Hazards”) and the follow-on expanded recall 17-011; and
- 28 videos relating to CPSC recall number 17-028 (“Samsung Recalls Top-Load Washing Machines Due to Risk of Impact Injuries”).

From a risk-management perspective, tracking the proliferation of these videos clarifies the genesis and severity of the negative publicity related to the recall. However, videos relating to prior product recalls are unhelpful in detecting emergent product risks, as the emergent risk would have already been investigated by the corporation and regulators prior to the recall announcement.

(b) Videos claiming potential safety concerns, unaddressed by recalls

Table 5 lists an illustrative sample of consumer safety claims for Korean products that were found in YouTube videos, either prior to the announcement of a product recall, or not known to be associated with a product recall. The superscript O in Table 5 indicates the observations that were obtained through snowball (chain referral) sampling using YouTube’s “Up Next” feature. Consumer claims are not necessarily indicative of bona fide product safety issues, and all claims require further investigation to verify their legitimacy. Some videos involved consumer misuse (e.g. the use of an unauthorized or potentially counterfeit product or a third-party replacement part, such as 3rd party battery).

However, in at least five cases in Table 5 (videos where consumers claim their top load washing machine “exploded”), it appears that the consumer’s claim was verified by a *subsequent* product recall, some 1 – 3 years later. This indicates that, though hazard reports are rare, online videos may indeed be an early warning signal of an emergent product risk. Under the presumption that the video incident report is for the same issue that prompted the eventual top loader recall, it is possible that, had Samsung responded to the reported top loader issue at the time of the earliest online video report (in 2013), rather than 3 years later, it could have substantially reduced the number of defective units in circulation (2.8 million units were recalled), product failure incidents, associated unit recall cost, and its reputational damage of these incidents.

Table 5. Illustrative Examples of Video-Based Consumer Safety Claims for Korean Products

Video ID ²	Product Type	Product Age	Consumer Safety Claims	Original Video Date	Eventual Recall Date (Time Elapsed) [CPSC Recall ID]
XiFELuvnslg	1670 Printer	1 day	“Smoking”	Jan 25, 2013	None.
O SROrqiil1zs	M2020 Printer	Unknown	“Burn smoking” ³	Dec 9, 2016	None.
jpH-3cxm9O0	Top Loader Washing Machine	1 day	“Exploded!”	Oct 12, 2013	Nov 4, 2016 (1-3 years later) [17-028]

² Source video can be found by appending Video ID to the URL: <https://www.youtube.com/watch?v=>

³ Video poster later comments product is “normal” (not dangerous). Video comments claim: “Mine is doing similar (M2835DW) ... something lit up as if something is on fire or glowing with heat”... “Mine does that too!”... “Mine just did that last week. Now I’m afraid to use it.”

Table . (Continued)

Video ID	Product Type	Product Age	Consumer Safety Claims	Original Video Date	Eventual Recall Date (Time Elapsed) [CPSC Recall ID]
Nc4ps-dPoI0		“Brand new”	“Top Load washer explodes”	Apr 6, 2015	
gIn23nqN3ew		< 1 year old	“Samsung washing machine explodes”	Sep 27, 2015	
O i1UFVKuqxGk		5 separate incidents	“Consumers claim some Samsung washing machines explode”	Nov 3, 2015	
O HKaxB8Wb4gE		+ - 1 year old.	“Aftermath of Samsung Washer Explosion/Malfun ction”	Nov 16, 2015	
Nq7Omb_r6eU	Front Loader Washing Machine	8 years	“Smoking ready to catch fire”	Jan 13, 2014	None.
gzVOtZaeDLU	S3 mini phone	Unknown	“Swollen battery: potential risk of fire or explosion”	June 30, 2014	None.
uGgE48Ll2Zw	Galaxy S6	Unknown	“Naked Samsung S6 explodes”	Sep 16, 2016	None.
DyVXnVEA9Ko	ME21H706M QS microwave	About 2 years	“Runs by itself with the door closed”	Sep 2, 2016	None.
O skzG4DPs6-4	SMH1816S Microwave	Unknown	“Running while door open”	May 30, 2019	None.

Our findings confirm the observations from the prior research (Abrahams et al., 2012) that sentiment analysis (finding words associated with negative emotion) is insufficient to discover safety concerns, since these can be expressed in non-emotive factual language. For example, the phrases of interest for reviews DyVXnVEA9Ko and skzG4DPs6-4 suggest potential safety issues (a microwave running with its door open, or running by itself without the user pressing the control panel button) and contain no negative sentiment words.

In the absence of further investigation, which is beyond the scope of this research, it is difficult to verify the legitimacy of consumer safety claims. For example, the printer smoke

reported in videos XiFELuvnslg and SROrqi1lzs may not result in the ignition of a combustible, and could simply be a water vapor cloud resulting from high in-room humidity. Nevertheless, consumer statements that are possibly not legitimate hazards can still be damaging to the brand, and risk management may be necessary – e.g. the manufacturer may reduce the negative revenue impact by timeously countering the consumer’s claims through an explanation or response on the third-party video platform.

Though the authenticity and severity of each consumer claim require further investigation, the data suggests that online video can serve as an early indicator of emergent product risks and emergent brand risks. As highlighted by Nasri et al. (2018), video-based reviews are an alternative to text-based product reviews, in the context of safety hazard detection. Videos can provide more information about the underlying problem. Manufacturers can review the videos and identify the exact technical problems. Also, it is less likely that online videos are faked, compared to text-based reviews as reviewers show the problems in their videos. Despite these advantages, few studies have been conducted on video-based reviews being used to identify safety hazards.

5. Discussion

It is important to note that the consumer claims reflected here and throughout this research are not necessarily legitimate safety concerns, as verification would require an investigation beyond the scope of this work. Threats to safety-hazard legitimacy include, *inter alia*:

- The *review may be fake* or could exaggerate the seriousness of the issue: for example, if it were posted by a disgruntled consumer or a zealous competitor.
- The *product acquired may be counterfeit or non-OEM* (not produced by the Original Equipment Manufacturer), in which case the legitimate manufacturer may not be at fault. For example, exploding batteries may be knock-offs that do not comply with electronics manufacturing standards or have not undergone rigorous pre-shipment testing. Counterfeit and non-OEM products (e.g. manufactured in China) may be cannibalizing Korean exports. Identifying counterfeits or non-OEM products through hazard reports can allow counterfeits to be removed from online marketplaces and can restore export sales to Korean OEM manufacturers.
- The safety hazard may arise from *consumer misuse* rather than a design or manufacturing flaw. For instance, a fire hazard complaint relating to travel adapters could result from a consumer mistakenly inserting the adapter into an outlet with the incorrect voltage.
- The product may have been *damaged during storage or shipment*, which may have been caused by *improper distributor or retailer handling or product tampering* rather than manufacturer error. For example, “came with cut seals on the side and no seal for the lotion. Which seems a little offsetting... had to return the item!” or “This thing came in dirty!” or “Looks used and dirty which is concerning since it’s a FACE PRODUCT!!!!”

Though the claims reported here, if verified, could represent a product safety risk, they may represent a brand-reputation or country-of-origin reputation risk, even in the absence of verification, since they may be *perceived* as being legitimate by potential customers reading online reviews prior to purchasing. Prior research has demonstrated that online reviews have a demonstrable effect on sales (Floyd et al., 2014) and extreme ratings, which many safety hazard reports are, have a disproportionately large effect on consumer perceptions (Fileri et

al., 2018). Regardless of their veracity, these reviews could therefore discourage purchases of that item or that brand, or embolden customers contemplating a product return, thus prompting additional costly refunds.

By identifying and characterizing the possible product risks from this research, Korean companies can use the findings as a guideline to improve their product quality throughout the PDLC processes. Ultimately, by looking thoroughly at customer feedback and eWom from popular online channels, Korean companies can work to prevent negative actions (e.g. product returns, additional bad reviews, or lawsuits) from dissatisfied customers, or costly regulatory enforcement actions from government agencies. Hence, Korean companies can improve their brand reputations overseas by assuring their international customers of their product's safety and quality, as well as their responsiveness to customer needs.

We employed established “smoke-term” mechanisms to identify reviews that mentioned potential risks. Many English words are polysemous (have multiple meanings) and can thus be found in different contexts with different meanings. “Smoke terms” are also highly category-specific, with some terms being significantly associated with safety concern reports in some product categories, but not others. False positives are thus common and warrant further investigation to determine how to mitigate false positives (reduce the number of false positives). Table 4 itemizes a representative list of common **false positives**, with smoke term matches highlighted in **bold**, and suggests strategies for mitigating these false positives in future research. In all cases, we recommend manual review by human coders as a false-positive mitigation strategy, since humans are more accurate at distinguishing true from false positives than current machine intelligence approaches. Various parallel-user collaborative tagging systems – such as Amazon Mechanical Turk, Amazon Sage Maker Ground Truth, Figure Eight (formerly CrowdFlower), CloudFactory, LabelBox, Datasaur.ai, Heartex, DefinedCrowd, and Virginia Tech's PamTag – allow large teams of humans to be employed at a relatively low cost, with managed inter-rater reliability, to label data (e.g. mark items as false positives after a further manual review). With sufficient human-labeled data, deep learning artificial intelligence techniques can potentially be employed to reduce false positives further.

Our current approach uses literal tokens, so it matches only exact phrases. Thus, the smoke phrase “cut my finger” would match “it cut my finger”, but would not match sentences with similar semantics, such as “it cut *her* finger”, “it cut *his* finger”, “it cut my *toe*”, or “it cut my *lip*” (italics indicate semantically similar entities that are not exact literal token matches). Furthermore, the current approach looks for exact spellings, so it would overlook misspellings, such as “fnger” or “cutt”. Misspellings are common in online postings. This limitation leads to false negatives, where actual hazards may not be detected due to strict literal matching. To reduce false negatives, future work should employ additional strategies, such as word embeddings and automated spellchecking. Word embeddings, e.g. Glove (Pennington et al., 2014), would allow us to computationally discover words in the same category (*my/his/her* are pronouns referring to a person; *finger/toe/lip* are human body parts), so that the semantic entity may be used in matching, rather than just the literal token. Automated spellcheckers (including open-source options, such as Hunspell, GNU Aspell, and JOrtho) would allow us to determine if a particular word is a misspelling of a matching token. This would allow matching to be done on tokens that are similar but not identical and reduce false negatives. Spellcheckers are imperfect, though, so they could also create false positives. Achieving an acceptable balance between false-positives and negatives during the introduction of spellchecking requires further research.

Table 6. Illustrative List of False Positives and Potential Mitigation Strategies

False Positive Example	Potential Mitigation Strategies
<p>“makes my car look sick.” “hurt to look at”; “it hurts so good!” “mic [microphone] cut in and out.” “scared to death” (of spicy food) “it’s a good spicy and a good fire.” (spicy food) “Beware! These noodles are... used for... The Fire Noodle Challenge”; “fire in my mouth”, “fire in my tongue.” “they aren’t kidding on the spicy front. Tissues were immediately needed as my sinuses were cleared out by fire.” “she fell in love with it.” “I was lead to believe.”</p>	<p>Employ Word Sense Disambiguation, for example, using Harvard General Inquirer, as in Abrahams et al. (2012), to distinguish, for instance, the literal from the figurative sense of the word. The figurative sense is more likely to be a False Positive.</p> <p>Multiple false positives result from a consumer using “fire” to describe spicy Korean food.</p> <p>Distinguish the noun (“lead” ingredient) from the verb (“lead” to).</p>
<p>“you have to cut it to fit”, “I cut it to match the center tooth”, “I cut that piece off”, “I cut meat”, “my mom... is using [this mandolin] for almost all types of cutting”, “I always cut my pieces up when juicing”, “I cut my drying time in half”, “I cut down my coffee intake.” “Great cutting board.” “The apple [logo] is cut out perfectly!” “get a piece of cardboard to cut.” “cheap filters that may hurt your machine.” “It is beautifully made and all the cut outs are in the correct positions to operate the controls.” “I started having problems with it”, “I started having poor signals”, “will burn and stick.”</p>	<p>Employ Part of Speech Tagging and Named Entity Recognition to determine which type of item is the linguistic object of the verb. If a human or human body part is the object of the harm-related verb (e.g. “cut”), the item is more likely to be a True Positive. If an inanimate object is the linguistic object of the harm-related verb (e.g. “it cut the apple beautifully”), the item is more likely to be a False Positive.</p> <p>Distinguish common use (“will burn and stick”) for cookware, versus unreasonable risk and a substantial product hazard (US CPSC, 2012).</p>
<p>“if I cut myself shaving it shows the blood”, “if I am in an emergency and someone needs to call my family”, “I’m not sure if I can handle this...! yes you can, unless you’re allergic to the fish listed.” “I got these... for 20 bucks... retail price states 70... If I had paid 70 bucks for these things, I would have used them to cut my own wrists”, “would cut my fingers.”</p>	<p>Identify hypotheticals (e.g. “if”, “unless”, “would”); not the same as actuals.</p> <p>Estimate severity of the hypothetical situation: multiple reports of “would cut my fingers” are likely to be a minor discomfort and not necessarily a substantial incision risk.</p>

Table 6. (Continued)

False Positive Example	Potential Mitigation Strategies
“wrist doesn’t hurt anymore”, “not hurt your skin”, “it’s NOT a deathtrap ”, “many safety features to prevent accidental cuts ”, “came with... cut resistant gloves”, “I chose it because it does not have plastic parts that a baby can chew off and choke on .” “I love this lotion. It is one of the few I am not allergic to .”	Identify negations (e.g. “not”, “doesn’t”, “prevent”, “resistant”) that reverse the meaning of harm-related words.
“My old juicer hurt my ears!” “I’m allergic to latex... this is definitely the best latex free brand.”	Determine if the linguistic subject of the complaint is the current focal product, or another product (e.g. previous product that the customer owned). Filter complaints unrelated to the focal product.
“the edges”	Remove phrases generating vast volumes of innocuous false positives in the target product category from the smoke-term dictionary (e.g. “the edges” appears in many reviews for phone cases).
Video post-dates product recall announcement.	Compare the video date, manufacturer, and product type to the CPSC product recall database. Demote the ranking of videos that are posted directly subsequent to the recall announcement, since these videos are likely to be in direct response to the recall announcement, and thus do not cover a previously unknown risk.
“Another well built fake is available that you should beware of.”	Video is a review of a counterfeit item. Though it’s not a legitimate product hazard, counterfeits damage revenue and the brand, cannibalize the export sales of the Korean OEM manufacturer, and subvert post-manufacture safety inspections and certifications.

Finally, using the word “Korea” as a filter is insufficiently precise – for example, some products in our dataset use a Korean-inspired recipe. Future work should explore additional techniques for determining whether the product is manufactured in, or distributed to, Korea.

6. Limitations and Future Work

Expanding the data sources to cover more modalities is still needed in future work. Consumer hazard claims may appear on corporate product discussion forums⁴ or on third-

⁴ For example consumer hazard claims like the following have appeared on Samsung’s corporate product community forums:

- a front loader making a “bang” and emitting “smoke” (<https://us.community.samsung.com/t5/Washers-and-Dryers/Front-Load-Washer-Bang-and-then-moke/td-p/238421/page/10>)
- “NE58F9500SS Range fire hazard... knobs will turn with the slightest bump... had multiple fires and melted plastic on my stove due to this defect” (<https://us.community.samsung.com/t5/Kitchen-and-Family-Hub/NE58F9500SS-Range-fire-hazard/td-p/143698>),

party consumer complaint websites⁵. Though these claims may or may not be legitimate, the ability to scour rapidly for their existence and rapidly counter their legitimacy, or launch investigations into their veracity, is important for risk management.

The mass-scale transcription of online videos, via automated Artificial Intelligence or managed human transcription teams, may also be a fruitful path of future research, since smoke terms can appear in the audio narrative, rather than in the textual video title or description typed by the person posting the video.

A further potential data source for emergent risks is internet user search queries – see Fig. 2. Dotson et al. (2017) contend that search query data “holds promise for assessing brand health”. Panel (a) in Fig. 2 – a screen capture from the Google Trends web search query analysis tool – shows a large user query spike for “Samsung recall” around September 2016. This spike indicates a potentially severe impact on the Samsung brand due to the September 2016 Samsung Galaxy Note 7 recall. Major search engines also provide consumers with “related search” suggestions that may be helpful to manufacturers for detecting new risks. For example, in Fig. 2, Panel (b), related searches on Google for the key phrase “Samsung recall” indicate that consumers had been searching not just for existing recalls (such as Samsung’s phone recall and top-loader recall), but also to determine if there have been recalls for Samsung’s washer mold, washer DC errors, and washer rust – all potential new areas of risk. Aside from the consumer-facing “related search” suggestions, major search engine providers – such as Google Ads, Microsoft Advertising, and so on – all provide keyword selection tools for merchants and manufacturers that show advertisers-related keywords and search volumes in more detail. These advanced, professional advertiser tools could help manufacturers to find recall-related searches. For instance, by typing in “[trademark name] recall” in the advertiser tool, the manufacturer can see a detailed list of related search terms and volumes and conduct a more sophisticated risk assessment of the nature (related topics) and severity (topic search volumes) of the risks. Yom-Tov (2017) contends that web searches can predict recalls, though tests this hypothesis only on medical drug recalls.

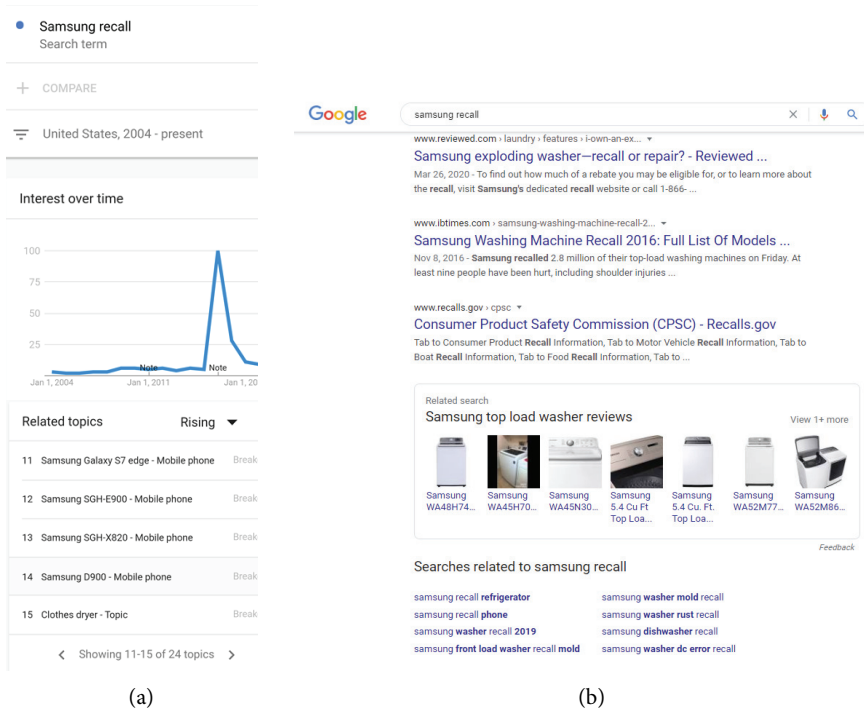
For consumer products, we expect that web searches may predict recall advocacy, if not actual recalls. For example, Panel (a) in Fig. 2 indicates that “clothes dryer” is a related topic for “Samsung recall” and Panel (b) indicates that “washer rust” is a related topic for “Samsung recall”. Though we were unable to find an official recall for these issues, Panel (c) reveals that consumers or consumer advocacy groups have been agitating for recalls for both issues, and class-action lawsuits have been either filed or are under consideration. For the topic “samsung washer dc error recall”, Panel (d) indicates that multiple consumers reported their shared frustration on Facebook, and these consumers could potentially push either individually or collectively for eventual civil lawsuits or regulatory action. Future work is needed to examine the extent to which search engine queries and related links can be useful in both risk identification and characterization.

“Very dangerous stove turns on just leaning to get something... very dangerous appliance?! NE58k9430SS” (<https://us.community.samsung.com/t5/Kitchen-and-Family-Hub/Fire-hazard-stove-recalled-yet/td-p/811453>).

⁵ For example, claims like the following have appeared on a third-party consumer complaint site:

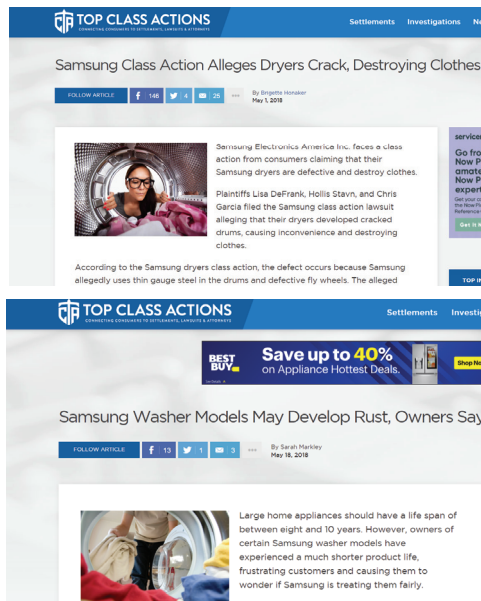
- “Fire hazard - burners turn on too easily”, “fire/burn hazard. If you just bump the burner controls they immediately go to high heat”, “I have melted multiple plastic bags and set several things on fire because all the time the knob gets bumped on when you walk by it”, “At least twice we have had dishes explode due to the knobs turning from just leaning against them”,
- “Turned on the broiler element ... less than 5 min later there was an explosion”, “After a little over a year the top glass exploded” (See multiple pages of reviews at: <https://www.consumeraffairs.com/homeowners/samsung-stove-oven-range.html>)

Fig. 2. Potential Alternative Web Search Query Data Sources for Emergent Risk Discovery



(a)

(b)



(c)

Fig. 2. (Continued)

Mark Muchoney • Samsung Support
January 3, 2017 at 1:40 PM · 📍

I have a Samsung washer affected by the recent recall. I was issued a new Cycle Setting label to apply to washing machine and I had a technician secure the top to my washer. Somehow, I doubt applying a new Cycle Setting label really fixes the problem and I doubt a new label will address the root cause of the problem for my washer. After the Tech secured my washer top my washer still does not function. When loaded with clothing the washer will attempt to balance the load prior to starting the Spin cycle. At this point the washer will bounce and bang around, until the machine senses that it must re-distribute the load. So, at this point the washer will re-start back to 17 minutes of wash time and start the rinse cycle over. This process repeats itself for several hours until a "DC" error code is displayed, indicating an "unbalanced load". Brilliant, I say. Keep in mind this will occur if I try to wash a full load of towels or just one T-shirt.

I suspect, (from all the internet traffic) that the suspension rods and springs have worn out and need to be replaced. Thus, as the rods were out, the tub in the machine bounces and bangs around until low and behold the top of the washer disengages from the washer.

Tom Wiggins
Samsung Support. I have the same problem with my machine and it is listed in the recall. When I called 1-855-291-6351 (recall number) I was told the repair only covers securing the top to the frame. It does not include replacing the suspension rods with a sturdier rod. Obviously it's the weakened rods that are causing the problem as reported to me by the repairman that looked at it. And by the way, the new heavy duty rods are available on Amazon! Go figure

10 mos Like Reply More

Samsung Support
Tom Wiggins Hi Tom! Welcome to our support page and thanks for reaching out to us! I'll love to look into this for you to see if we're able to provide the right directions towards the best solution to your case. Would you mind sending us a DM with the Model and Serial number of the unit? ^Yes <http://m.me/samsungsupport>

Samsung Support
10 mos Like Reply More

Sarah Conrad
I am having the same problem. We already dealt with the recall from our machine, and having the top secured. It literally just took me 8 hours of "rebalancing" the load myself to get one load of laundry done. Please help!

10 mos Like Reply More

Samsung Support
Sarah Conrad Hello Sarah! I hope you're fine today. I'm following you up to see if you can send us a private message with the information requested. We're here to assist you! ^Ruty

10 mos Like Reply More

Samsung Support
Sarah Conrad Here is the link: <http://m.me/samsungsupport> ^Ruty

Samsung Support
10 mos Like Reply More

Erin Jennifer
Samsung Support we have been dealing with this issue for over 2 yrs and we are at our whits end! We can afford a new washer so we basically have to babysit our washer everytime we use it. We are wasting countless

(d)

7. Conclusions

Our research employed smoke-term dictionaries and hazard discovery text-analytic procedures, which were adapted from established methods to filter large volumes of online review data for products associated with Korea, from both textual and video sources. Our research demonstrates that social media sources can be a fertile reservoir of early warning signals that could be used to detect emergent product risks for Korean-labeled products. Our analysis of multiple false positive cases indicates that both human- and machine-based mitigation strategies can be effective in reducing irrelevant matches and reducing the data review burden for product risk managers. The automated methods that we have demonstrated and proposed here can help Korean manufacturers to save time, decrease the risk of injuries, recalls, and reputation damage, as well as more efficiently resolve product problems.

Our methods may help to safeguard Korean export trade and export in multiple ways. Promptly identifying and mitigating product risks can maintain consumer confidence in Korean products: quality surveillance protects the reputation of both the specific Korean manufacturer and Korean manufacturers in general as producers of high-quality products. In addition to facilitating premium pricing, safeguarding Korea's quality reputation could avoid negative trade policy decisions, global consumer confidence issues, and export trade declines that, for instance, Liu, Kerr, and Hobbs (2009) found befell Chinese manufacturers after the occurrence of severe Chinese product recalls. Finally, hazard incidents may point to the existence of counterfeit products that are cannibalizing Korean OEM export sales, and Korean export trade may be safeguarded by the delisting of these counterfeits from popular online marketplaces, or simply by actively discouraging non-OEM purchases by highlighting the risks of non-OEM products. Social media surveillance of Korean-labeled products thus presents a novel and promising means of safeguarding Korean export trade.

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