

International Journal of Advance Research in Computer Science and Management Studies

Research Article / Paper / Case Study

Available online at: www.ijarcsms.com

Global Issues and threats of E-Commerce on counterfeit batteries

Narayanan. SDepartment of Electronics and Communication Engg
Renganayagi Varatharaj College of Engineering
Sivakasi - India

Abstract: *E-Commerce stands for electronic commerce. It is a platform for buying and selling goods, services and funds transferring through the electronic medium such as internet, mobile and computer network. E-Commerce platform creates marketplace for battery products selling national and international markets. On the dark side, lots of counterfeit and substandard battery products are selling through E-Commerce platform from one country to another country. Particularly, Chinese E-Commerce sites selling lots of counterfeit battery products globally. These counterfeit battery products are highly explosive, causes device damage and human injury. This paper analyzes issues and threats of counterfeit battery products and role of E-Commerce platform.*

Keywords: *E-Commerce, Counterfeit Battery, Samsung S3, Nokia, Li-ion, Nokia, BL-5C.*

I. INTRODUCTION

Any manufacturing or trade that operates today reaches consumers and sellers by using the platform of E-Commerce. E-Commerce trade can reduce time, non-maintaining paper documents, door-door delivery and easy way of collecting money from traders and consumers. The availability of leading brands, Variety in choosing, rapid of changes in the way of life, globalization, increases the buying capacity of consumers and easily accessibility of internet which all contributes to the growth of the E-Commerce industry. The Internet and E-Commerce provides manufacturers and sellers to reach worldwide buyers and sellers at cheap rate, price comparison and also make available all around the clock. In 2013 E-Commerce sales expected to reach globally will over \$ 2 trillion dollars.

Chinese manufacturers and traders are entered in this E-Commerce market in 2005. In 2006, 50 billion batteries are manufactured by globally every year in which Chinese manufacturers done covered 32.5% in battery manufacturing. The Chinese manufacturers alone currently cover over 90% in total market in mobile batteries sales. After their entry in to this the Counterfeit and substandard manufacturers and sellers, in china used this channel of E-Commerce worldwide communication to progress their sales too globally. Counterfeit battery products cause harm in many ways. When counterfeit goods are purchased, the consumers are put at risk of device ruin, loss of money and human injury.

II. OBJECTIVES OF THE STUDY

- Role of E-Commerce in counterfeit trade
- Issues of counterfeit products
- Role of E-Commerce service provider (ESP)
- Issues and threats of counterfeit batteries
- Identifying counterfeit batteries
- Human injury by counterfeit batteries

III. METHODOLOGY

The study methodology of this paper is based manual on Suspect/Counterfeit and the awareness training regarding the counterfeit products by U.S. Department of Energy Health, Safety and Security Office of Corporate Safety Analysis,

1. Charles Lewis, Director, Office of corporate safety programs,
2. Tom Williams, Office of analysis,
3. Mark Petts, SCI training coordinator, and office of analysis,
4. Roger moerman, Technical service associates.

The key way to of identify the counterfeit products were done by the following steps are

- ✓ Unbelievable lower priced than market price
- ✓ The manufacturer is not identified.
- ✓ Country of origin marking different from the genuine manufacturer's source
- ✓ Look-alike product is sold on under a slightly altered brand name
- ✓ Unusual or inadequate packaging
- ✓ Typed labels
- ✓ Hand writing stickers
- ✓ Overlapping stamps
- ✓ No specification number
- ✓ Missing serial number
- ✓ Different color or shape of over current devices

IV. ISSUE OF E-COMMERCE AND COUNTERFEIT PRODUCTS

A. Rapid growths of E-Commerce

According to the world customs organization (WCO) estimated in 2005, around \$500 billion in counterfeit goods were traded on online through E-Commerce annually. It was extremely tough and difficult to find out the amounts of the sales in counterfeit market. The counterfeit survey estimates that one among the five transactions online considered being a counterfeit one. In China, counterfeit and substandard products from their ports were not strictly monitored by the customs and police officials.

B. E-Commerce providers and counterfeit battery products

E-Commerce platform has provided vital and easy way for selling counterfeit battery products globally. This network allows manufacturers of counterfeit products to reach unlimited global buyers and sellers with attractive low price and price comparison offers. E-Commerce platform were misused by manufactures and wholesalers for distributing the counterfeit batteries globally. The sale of counterfeit goods in the E-Commerce platform is largely damaging and making harmful to brand owners, original equipment manufacturers (OEM), providers of E-Commerce services, Intellectual Property rights (IPR), high quality manufacturers, retail traders and most importantly consumers. The counterfeit battery products are often made by substandard raw materials; not involving quality control tests and not even done any basic safety testing.

C. Alibaba's counterfeit battery sales

Chinese E-Commerce leader alibaba.com and its founder jack ma suffered and setback from the counterfeit traders. Large number of Chinese manufacturer and export suppliers registered with alibaba.com, to selling their company's products through the business-to-business (B2B) sector. As on December 31, 2011, alibab.com have a total of 76.3 million listed operators, 10.0 million products listings in every year and 765,363 paying members. The counterfeit manufacturer are also registered in alibaba.com sites and selling their counterfeit products globally. Alibaba.com never sells any products but it's only provides its E-Commerce platform as an internet service provider (ISP) that supports the sellers and the buyers selling their products. Alibaba.com is unable to controls their counterfeit sellers on its E-Commerce platform because of more than 800 million products were listings in their E-Commerce portals.

It was not easy for the E-Commerce providers to identify counterfeit sellers. But alibaba.com has been continuously finding out the way to vanish out the counterfeit sellers. In 2011, alibaba.com and Jack Ma made an internal investigation on their company about the counterfeiter's listings. Investigation result had found that more than 2,300 sellers on Alibaba.com are counterfeit sellers; they sell their product with the help of some Alibaba.com company employees. Alibaba.com also had shorted out all 2,300 counterfeit sellers from its E-Commerce portal. In the counterfeiter once again entered the alibaba.com portal by changing their company's name and the started list their products. All E-Commerce providers are still facing stiff challenge, to identify and remove the counterfeit items through online portals. It's not an easy task easy service to the providers to monitor the thousands of sellers listing their products in a day.

D. Chinese counterfeit battery manufacturer

China produces high quality manufacturer as well as counterfeit manufacturer. In china , many or a few of the manufacturers also produce counterfeit models of batteries brands like Nokia, Black berry, Samsung, LG, Sony, I phone , Panasonic, and other leading brand names. These manufacturers do not care about intellectual property rights (IPR), patents versions and trademarks rules. Chinese manufacturers produce many third party replacement batteries that are popular with cell phone users because of low price. Most of these batteries don't provide the same quality and safety standard as original equipment manufacturer (OEM) brand provide. China continues to be the number one source country for producing counterfeit and fake battery products. When globally scrutinized, 62 percent of seizures Counterfeit battery products are produced and sold by Chinese e-commerce sellers at prices much lower than genuine products. Main Reason for the success of counterfeit product is it gives attractive profit margins for the counterfeit manufacturer, Wholesalers and retail sellers.

V. ISSUES AND THREATS OF COUNTERFEIT BATTERY

A. Qualities of counterfeit battery

When poorly designed and assembled, these counterfeit battery products are able to outflow the electrolyte chemicals solvents. Battery electrolytes are potentially harmful to body tissues. Battery solvent chemicals are also potentially damaging to the motherboard and circuits assembly's in devices. Quality and reputable battery makers take great care of quality manufacturing and safely testing so that any leakage is their essentially prevented.

B. Human injury

Another serious issue about the counterfeit batteries is they cause serious explosion named of thermal run away. Counterfeit battery products are dangerous, if you use this type of battery in your mobile phone, camera and any other devices, these counterfeits can produce excess heat and they result either melting, or exploding. Counterfeit batteries can produce human injury. Here are a few incidents where human are injured using counterfeit battery package.

B.1. FBI police officer injury

In March 2010, an FBI police officer was injured involving on his duty site in Arizona USA. The injuries and damages were the result of a flashlight which exploded in the hand. The on-duty police officer was seriously injured and admitted to a hospital for emergency treatment. The exploded battery pieces hit his forehead causes injury on his face (fig.1). Immediately investigation taken by FBI officials finally concluded CR123A counterfeit battery cell caused the explosion. This exploded battery was manufactured in china and also it was a counterfeit one too.



Fig.1

B.1.2 Samsung galaxy S3 explosion

In June 2013, a Swiss youngster namely Fanny Schlatter suffered third degree burns on his right thigh as a result of a Samsung mobile phone model of Galaxy S3 that exploded in her jeans pocket. She was in his work place at the time and mobile phones in her jeans pants caught fired (fig.2). The phone was completely ruined due to this explosion. Samsung investigated about this property damage and mobile explosion. Samsung finally established that the battery used in Fanny Schlatter mobile was a counterfeit manufacturer battery not OEM battery. The battery in Fanny Schlatter mobile was not purchased by Samsung authorized retail battery seller.

Swiss Federal Laboratories for Materials Testing and Research (SFLMTR) in Dubendorf, researchers in this Laboratory also have confirmed same conclusion. According to them, the battery was not supplied by Samsung; it was not purchased by company authorized retailer. This is not mobile explosion it is battery explosion



Fig.2

C. Samsung galaxy s3 counterfeit battery

Counterfeit battery products harm the brand name of the electronic device manufactures. Original equipment manufacturer (OEM) branded batteries have to follow quality manufacturing, capacity storage specification that are expected to meet consumer beliefs for performance, safety, durability and quality. Counterfeit products, manufacturers are planned to mislead information to make it look like original, giving low price to consumers to think that they are buying original equipment manufacturer battery.

Above the counterfeit battery was manufactured in china, it is sold globally by Chinese e-commerce sites. Leading Chinese e-commerce sites like ALIBABA, ALIEXPRESS, TVC-MALL, DHGATE, SUNSKY-ONLINE, listed that these sellers are exporting these batteries globally. These batteries are mixed with genuine batteries and sold at unbelievable low prices. In ALIBABA and ALIEXPRESSES nearly 400 sellers sell these batteries globally in price range 2\$ to5\$. Nearly all the sellers export their batteries to third world countries like India, Pakistan, Bangladesh, Thailand, Philippines, and African countries. They never sell these batteries local retailers and consumers.

D. Issues about the battery

- No manufacturer details
- No BIN (Battery Identification Number)
- Excessive storage capacity
- Counterfeit Manufacturer location



Fig.3 Front and Rear side of the Samsung S3 counterfeit battery

These gold type batteries are selling in the name of business batteries. This battery does not contain any information about the manufacturer and manufacturing details. The sellers list in selling product in e-commerce platform they are manufacturer and sellers. But nobody is indicating their manufacturer stickers and their logos in these batteries too. These sellers are nominated it is good replacement battery for Samsung s3 on their selling store sites , but manufacturing battery image they gives its compatible for SAM PHONE, not for SAMSUNG PHONE.

In globally any country consumers are tremendous belief about any products they are made by Japanese manufacturer. All Japanese products are manufactured by high quality, durability, and safety. Counterfeiter uses this trust to sell their products by simply labeling as made in Japan. All the 400 listed traders are having manufacturing unit in Guangdong, mainland china. Not even a single seller indicates their manufacturing plant in Japan. This indicates that these batteries are confidently counterfeited.

VI. COUNTERFEIT BATTERY WITHOUT LABEL**A. Battery without label**

Another very dangerous issue the sellers create is the new technique of selling counterfeit batteries without manufacturer labels. These batteries are available attractive low price to wholesalers. These batteries are available from \$0.16(less than 10 rupees). These manufacturers are capable of supplying 50000 Pieces per day. Most of these batteries are shipped from Chinese port to third world countries. This manufacturer also supplies outer case label's to their wholesalers.

Above battery model number BL5C manufactured from Guangdong, provenience China (Mainland). This battery is compatible for more than 40 models of NOKIA mobile phones. There are numerous amount of Chinese mobile phone manufacturer are using these BL5C battery on their products. This battery manufacturer clearly sells this BL5C type battery only without outer casing wrappers and labels. Also simply hand writing stickers are patched in battery outer case. To Suspect Counterfeit Item manuals handwritten stickers are patched any product that was surely a counterfeit one.

If any consumer using these battery will surely face problems on performance degradation. Most cases the outer case wrappers and labels product consumers from battery explosion. Wrappers and labels tightly covered the battery and reduce amount of explosion. OEM batteries can generate normal heat while the charging and discharging, but counterfeit batteries produce abnormal heat on their charging and discharging periods. The most of the counterfeiter will be make weak outer aluminum casings. These aluminum casings are unstable they immediately generate extreme amount of heating charging and discharging periods. The chemical solvents inside the battery are also heated in these processes. Extreme heat formed inside the battery and the result of battery can catch the fire or serious explosion. Technically it was called by the name thermal runaway. The explosion chemical solvents are really harmful to customer's devices and safety. The outer case aluminum is a negative terminal of battery In any case this aluminum casings are connected internal parts are such us SIM card, memory card trays, charging pins, and motherboards which may results in catching fire, explosion and ruins the mobile phones.

B. Counterfeit Indian scenario

According to Indian Cellular Association (ICA), estimated in India required 45 million replacement batteries in every year Indian mobile market, but battery sold in India 80% are counterfeit and dangerous for consumers. Indian rural area consumers have not enough awareness about these batteries. Most of the rural area consumers thinking that they are purchasing original batteries for their replacement. These batteries are selling in local prepaid recharging booths, metro stations, road side sellers, and local electronic spare parts sellers. These batteries are simply sold by cash and carry system. Sellers won't provide any bills and guarantee or warranty card to consumers.

VII. RESULTS AND FINDING

- ✓ Counterfeited battery products are extremely profitable for manufacturer
- ✓ E-commerce is an easy platform for counterfeit trading
- ✓ Counterfeit batteries are available at attractive low price to the consumers
- ✓ Counterfeit batteries are not provide good performance
- ✓ Explosion of battery causes injuries to the consumer such as tissue burns
- ✓ Governments and customs officials are unaware of about importing counterfeit battery packs
- ✓ It can rupture and cause leakage and in extreme cases it may also causes explosion or fire
- ✓ Battery packs are capable of product malfunction
- ✓ Consumers have lack of awareness about these counterfeit products.

- ✓ Cost is the deciding factor battery production
- ✓ Counterfeit batteries are available for world wide
- ✓ China is the major country that produces counterfeit batteries
- ✓ Mobile manufacturers are not focused on battery replacement policy.

VIII. CONCLUSION

E-commerce is the vital platform for selling counterfeit batteries globally. E-commerce providers are unable to either control or remove these kinds of manufacturer or sellers on their platform. Currently third world and south Asian countries retail sellers and consumers unaware about this counterfeit battery issues. Leading mobile manufacturers like Samsung, Nokia are to unable creating awareness about the replacement batteries. The collective experience of this paper indicates serious threats in battery manufacturing, marketing and selling segments. The governments have to closely watch and avoid import of these batteries. Low Cost is the serious factor for importing these batteries. Still now these batteries give minor injury and burns and property damage to the consumers. Continued this way it will surly threaten consumers life too.

References

1. Andrew b.Whinston and Ravi Kalakota, Electronic commerce a manager guide; chapter 8, Electronic commerce and retailing Tata McGraw-Hill (2006) Page.No(217-249)
2. David whitely, E-commerce strategy, Technology and application, Tata McGraw-Hill. (2001) Page. No.(71-74)
3. N Andrews, The global market for power supply and power management integrated circuits by -Conference and Exposition, APEC 2002. - ieexplore.ieee.org (2002)
4. J.-M. Tarascon & M. Armand, Issues and challenges facing rechargeable lithium batteries, Nature 414, pp359-367 (15 November 2001)
5. Michael Pecht, Sanjay Ttiku, Electronic manufacturing and consumers confront a rising tide of counterfeit electronics, May 2006
6. Shirley Georgi, Counterfeit Cell Phone & Laptop Batteries Caution, Credibility, Causes and Cures
7. Federal Bureau of Investigation intelligence bulletin Los Angeles field office 7 June 2012
8. Kevin M. Reichelt, Avoiding Counterfeit Goods: A How-To Guide for Consumers
9. Krysten Oates, Lithium-ion Batteries: Commercialization History and Current Market, February 23, 2010
10. Valance Comparative safety study of Lithium ion Batteries March 2013
11. <http://online.wsj.com/news/articles/SB10001424127887323968704578649394254345564>
12. http://glc.en.alibaba.com/product/955264521218445648/BI_5c_battery_for_nokia_1150mAh_3_7V_lithium_battery_made_in_China.html
13. Camera & Imaging Products Association. Raising awareness about counterfeit batteries on International Consumer Protection Day in China. 2008
14. Suspect counterfeit items awareness training U.S. Department of Energy Health, Safety and Security Office of Corporate Safety Analysis , June2007 ,Revision 6
15. <http://trade.indiamart.com/details.mp?offer=6179530146>
16. Kevin M. Reichelt, Avoiding Counterfeit Goods: A How-To Guide for Consumers, 2007
17. <http://www.ebay.co.uk/gds/A-warning-about-FAKE-Batteries-and-illegal-Batteries-/1000000002638505/g.html>

AUTHOR(S) PROFILE



Narayanan Sukumar is currently pursuing bachelor degree in Electronics and Communication Engineering in Renganayagi Varatharaj College of Engineering, Sivakasi. Previously he has completed his Diploma education in VSVN polytechnic College, Virudhunagar.

His area of interest includes Performance analysis, Wireless power transmission System, Embedded Systems, Automation and Control Systems, Operating System Analysis, E-Waste management, Wireless Sensor Networks.