

Piracy in the Horn of Africa and its effects on the global supply chain

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Abstract This article explores how maritime piracy impacts international business and disrupts the global supply chain. Piracy has increased exponentially near the Horn of Africa and this article examines the vessels attacked, methods of attack, and the types of weapons used by the Somali pirates. Evaluated are current anti-piracy measures that are used by commercial vessels to prevent and defend against pirate attacks. There is a symbiotic relationship between globalization and technology and if the increase in piracy continues, it will adversely disrupt this dependency.

Keywords Supply chain management · Maritime piracy · Shipping industry · Countermeasures · Logistics · Globalization

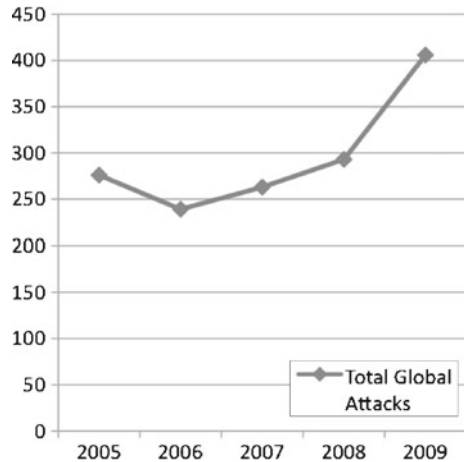
Introduction

Maritime piracy has become an increasingly prominent issue throughout the world. The number of pirate attacks has increased steadily since the early 1980s, tripling during the 1990s then tripling again during the first few years of the new millennium (Bumstead 2009). As shown in Figure 1, global pirate attacks increased modestly from 2005 through 2008 and then dramatically from 2008 to 2009, going from 293 to 406 total attacks (IMB 2010).

Piracy is not only a major issue to the shipping industry, but also to any companies that manufacture goods and transport them internationally. Pirate attacks are not random and do not happen by chance. Pirates use the latest technology to target highly valuable ships in highly trafficked waters. The waters surrounding the Suez Canal and the Horn of Africa are traveled by many ships and are frequently attacked by the Somali pirates. In the majority of these attacks, the pirates hold

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Figure 1 Total global pirate attacks, attempted and successful (2005–2009). ICC International Maritime Bureau (2010) Piracy and Armed Robbery Against Ships Annual Report 2009



victims hostage with guns but do not actually kill them showing that they are driven by monetary reasons, not violence.

According to Thomas Friedman, globalization can be traced to 1492 (Friedman 2005). It gained major popularity as technology increased exponentially during the late 20th century and as the world continues to get flatter and technology more advanced, international business will increase along with the number of pirate attacks. As the piracy problem continues to grow, its effect on the global supply chain will grow more severe. Companies that currently conduct or are looking to conduct international business in the future must make themselves aware of the threat of piracy and what action must be taken to address it.

What is piracy?

As defined by The International Maritime Bureau (“IMB”), piracy is “the act of boarding any vessel with an intent to commit theft or any other crime, and with an intent or capacity to use force in furtherance of that act”. While the IMB is a division of The International Chamber of Commerce (“ICC”), its definition of piracy is not backed by international law.

The International Maritime Organization (“IMO”) provides a more detailed definition of piracy that is contained in article 101 of the 1982 United Nations Convention on the Law of the Sea (“UNCLOS”):

- (a) any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed:
 - (i) on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft;
 - (ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State;

- (b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft;
- (c) any act inciting or of intentionally facilitating an act described in sub-paragraph (a) or (b) International Maritime Organization (2010).

The distinction between the two definitions is that according to IMO, an act must occur “outside the jurisdiction of any State” in order to be considered piracy. This means that if the act occurs within the jurisdiction of a State, it is only classified as piracy if the nation’s penal code distinguishes it as such (Lorenz 2010). Since piracy is an international crime, pirates are considered to be enemies of all States and therefore, can be brought to justice anywhere (Abeyratne 2010). The purpose of this article is to describe the drastic effects of maritime piracy on the global supply chain, not to determine whether these attacks are considered to be piracy on a country-to-country basis. Therefore, the context of this article will refer to the IMB definition of piracy.

Piracy in the Horn of Africa

Although maritime piracy is a worldwide problem, there are several areas that track particularly high levels of pirate activity. These areas are the Gulf of Aden, near Somalia and the southern entrance to the Red Sea, the Gulf of Guinea, near Nigeria and the Niger River delta, the Malacca Strait between Indonesia and Malaysia, and the Indian subcontinent, particularly between India and Sri Lanka (Hanson 2010). Figure 2 provides a visual description of these areas.

Of these highly pirated locations, the Gulf of Aden attracts the most pirate activity and most traffic passing through the Gulf of Aden is going to or coming from the

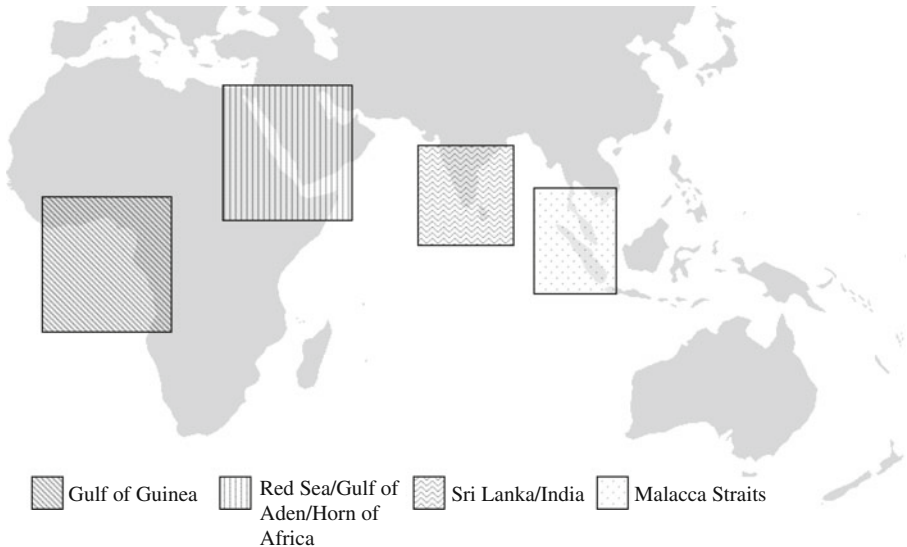


Figure 2 Map of highly pirated areas worldwide. Map image from http://commons.wikimedia.org/wiki/File:Blank_map_of_world_no_country_borders.PNG

Suez Canal. This analysis refers to the “Horn of Africa” as the Gulf of Aden and the surrounding area, specifically the Gulf of Aden, the Red Sea, the Arabian Sea, the Indian Ocean, and Oman, all of which have been heavily affected by Somali pirates (IMB 2010).

Unlike their counterparts in the Malacca Straits, the Somali pirates target large vessels on international voyages instead of smaller vessels on shorter journeys (Bateman et al. 2006). There are four major groups of Somali pirates, the most powerful and sophisticated of which is the Somali Marines, an organized military faction that mirrors a real navy (globalsecurity.org 2009). According to estimates from The East African Seafarers’ Association, at least five pirate gangs totaling 1,000 armed men comprise the Somali pirates.

Vessels attacked

There are five categories of ships that account for most of the world’s maritime activity: container ships, bulk carriers, tankers, ferry boats and cruise ships, and special ships, which include tugs, ice breakers, and research vessels (Marisec 2009). Of these five types of ships, the bulk carrier and tanker ships are most affected by maritime piracy worldwide. Bulk carriers often transport solid raw materials such as coal and iron ore. In fact, coal comprises 24% of bulk carriers’ cargo. Tankers carry liquid raw materials such as petroleum products, which account for 32% of its cargo, chemicals, and crude oil (Gilkey 2009).

Table 1 shows the number of bulk carriers and tankers that were attacked in the Horn of Africa between 2005 and 2009. It also provides this number as a percentage of the total attacks on bulk carriers and tankers worldwide. 109 of the 406 ships that were attacked by pirates and reported to the IMB in 2009 were bulk carriers, 68 of which were traveling through the Horn of Africa at the time of attack. 116 of the 409 were tankers, 58 of which were attacked in the Horn of Africa.

Types of attack

In order to understand more about the Somali pirate attacks, it is critical to understand the types of attack that are common among pirates. Table 2 shows the number of people that were attacked in the Horn of Africa compared to the total number of people attacked worldwide during 2009. Overwhelmingly, the majority were held hostage as opposed to any other type of attack. In fact, over 98% of the people affected by pirate attacks in the Horn of Africa during 2009 were held

Table 1 Bulk carriers and tankers attacked in Horn of Africa (2005–2009).

Ship Type	2005	% Total	2006	% Total	2007	% Total	2008	% Total	2009	% Total
Bulk Carrier	81	29%	57	24%	32	12%	48	16%	109	27%
Tanker	70	25%	48	20%	83	32%	91	31%	116	29%
Total	276		239		263		293		406	

Table 2 Number of people affected by piracy in Horn of Africa compared to world.

	Horn of Africa	Global total	% Global total
Hostage	867	1,052	82%
Threatened	0	14	0%
Assault	0	4	0%
Injured	10	68	15%
Killed	4	8	50%
Missing	1	8	13%
Kidnapped	0	12	0%
Total	882	1,166	76%

ICC International Maritime Bureau (2010) Piracy and Armed Robbery Against Ships Annual Report 2009

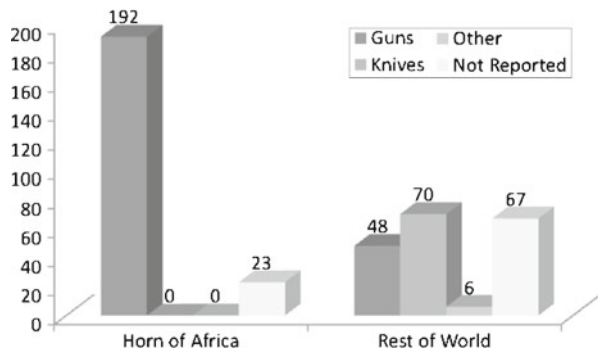
hostage; the rest were injured, killed, or went missing. Table 2 also highlights the abundance of piracy in the Horn of Africa when compared to the rest of the world; 76% of the victims of pirate attacks in 2009 were attacked in the Horn of Africa.

Weapons used

Understanding what types of weapons the Somali pirates use helps determine the severity of the attacks. In 2009, 406 pirate attacks worldwide were reported to the IMB. Of these attacks, 215, or 53%, occurred in the Horn of Africa. Pirates used guns in 192 of the 215 attacks, approximately 89%. No attacks using knives or guns were reported and the remaining 11% of attacks in the Horn of Africa did not report the type of weapon used. These statistics differ drastically from attacks in the rest of the world, as shown in Figure 3. Of the 191 attacks that occurred throughout the rest of the world, only 48 were attributed to guns while 70 were attributed to knives.

The article has defined the most common characteristics of Somali pirate attacks in the Horn of Africa. Bulk carriers and tankers are the most commonly attacked vessels and the Somali pirates are usually carrying guns as opposed to other types of weapons. They rarely kill any of their victims, but do hold them

Figure 3 Weapons used in Horn of Africa compared to rest of world. ICC International Maritime Bureau (2010) Piracy and Armed Robbery Against Ships Annual Report 2009



hostage for up to months at a time (Sanders and Barnes 2009). It is clear that shipping companies must take measures to combat piracy, especially those that frequent the Horn of Africa.

Piracy and the global supply chain

The severe increase in maritime piracy in the past 5 years has grasped much of the world's attention, especially that of shipping companies and logistics departments. But as the problem continues, it will become a concern for more than just the shipping industry. We must examine the implications of piracy on the business world, specifically, the international business world.

Pirates are often more interested in ransom than in the goods onboard the ships they hijack. Further, the hijackings often occur immediately after discharging the cargo in Somalian ports (Hastings 2009). However, this is still a very risky situation for shipping companies and manufacturers alike. Ports in Somalia may not have been the cargo's final destination and there is no guarantee that Somalian port authorities will ensure that goods reach their proper final destinations. In addition, most shipping companies and manufacturers will not likely risk the fate of their goods in the care of Somalian port authorities, especially given that Somalia ranked last on the 2009 Corruption Perceptions Index (Transparency International 2009).

At present, 90% of goods travel by sea, which represents 65% of the total value of goods traded (G4S 2009; Logistics 2009). However, according to the Suez Canal Authority 2009 Yearly Report, southbound goods registered a decrease of 14.2 million tons, or 4.6%, and the northbound goods decreased by 149.5 million tons, or 36.2%. This represents a \$1.09 billion loss to Egypt's economy due to piracy and the global recession. According to Egyptian officials, revenue lost from piracy equated to 10%, or \$109 million.

Maritime piracy is especially common because ships have the ability to carry a large volume of goods and it is a cost-effective means of transportation (Harrison 2010). However, if piracy continues to drastically increase, international trade could become too costly, especially for developing nations, to participate in. Table 3 shows the potential monetary effect that piracy could have on global trade based on 2009 figures. Approximately \$463 billion goods travel through the Horn of Africa annually. In 2009, pirate attacks potentially disrupted 2% of traffic through the Suez Canal, which directly affected \$7.4 billion worth of goods. This is more than the individual GDPs of 75 economies worldwide, including those of Montenegro, Aruba, Liechtenstein, and Somalia.

In his article "Technology and Globalization as Mutual Reinforcers in Business: Reorienting Strategic Thinking for the New Millennium", Raj Aggarwal argues that technology enables globalization and globalization makes technology more profitable; therefore, they comprise a mutually reinforcing cycle. It can also be said that technology fuels international trade, which facilitates globalization, which is fueled by technology. But piracy hinders this process; if globalization facilitates technology but technology hinders international trade by contributing to piracy, then it fuels de-globalization. These three cycles are displayed in Figure 4.

In this way, piracy could disrupt, and potentially reverse, globalization and the flattening of the global marketplace. Therefore, all companies participating in the

Table 3 Potential monetary effect of piracy on supply chain.

Total Number of Vessels Traveling Suez Canal	17,228
Total Tonnage Cargo Traveling Suez Canal	559,245,000
Total Revenues from Suez Canal Tolls	\$4,289,500,000.00
Average Tonnage per ship	32,461
Average Revenue per ship	\$248,984.21
Average Revenue per ton	\$7.67
Cargo that must pass through Horn of Africa	78%
Revenues Directly Exposed to Piracy in Horn of Africa	\$3,345,810,000.00
Number of Ships Exposed to Piracy in Horn of Africa	13437.84
Pirate Attacks in Horn of Africa	215
Percentage of Suez Canal Traffic Attacked	2%
Estimated Value of International Trade Goods by Sea	65%
Percentage of Global Ship Traffic through Suez Canal	7%
Value of World Exports:	\$12,140,000,000,000.00
Estimated Total Value by Sea	\$7,891,000,000,000.00
Total Tonnage of Shipping by Sea - 2008	8,170,000,000.00
Total Tonnage of Shipping by Sea - 2009	7,434,700,000.00
Suez Canal Tonnage	559,245,000.00
Percentage of Global Total moving through Canal	7.52%
Average Dollars per Ton	\$1,061.37
Value of Tonnage through Suez Canal	\$593,568,307,396.40
Value of Tonnage through Horn of Africa	\$462,983,279,769.19
Possible Value Exposed to Piracy (Total Suez Traffic)	\$9,496,852,625.89
Possible Value Exposed to Piracy (Moving through danger zone)	\$7,407,545,048.19
*All data from 2009 unless otherwise noted	
Suez Revenue 2008	\$5,381,000,000.00
Suez Revenue 2009	\$4,291,000,000.00
Suez Decreases	\$1,090,000,000.00
Percentage attributed to piracy	10%
Suez Losses to piracy	\$109,000,000.00

Data used from The World Factbook 2009, World Trade 2008, Prospects for World 2009, Business Monitor International 2010, Ports and Maritime Trade 2010, UN Review of Maritime Transport 2009

global economy must take piracy seriously. Failure to do so will result in a lack of efficiency that is unaffordable for many companies, defeating the purpose of a flattened global economy.

Possible countermeasures

Some of the most effective countermeasures to pirate attacks in the Horn of Africa include rerouting, arming ships with unconventional, nonlethal weapons, increasing insurance coverage, online privacy management, and arming ships with security

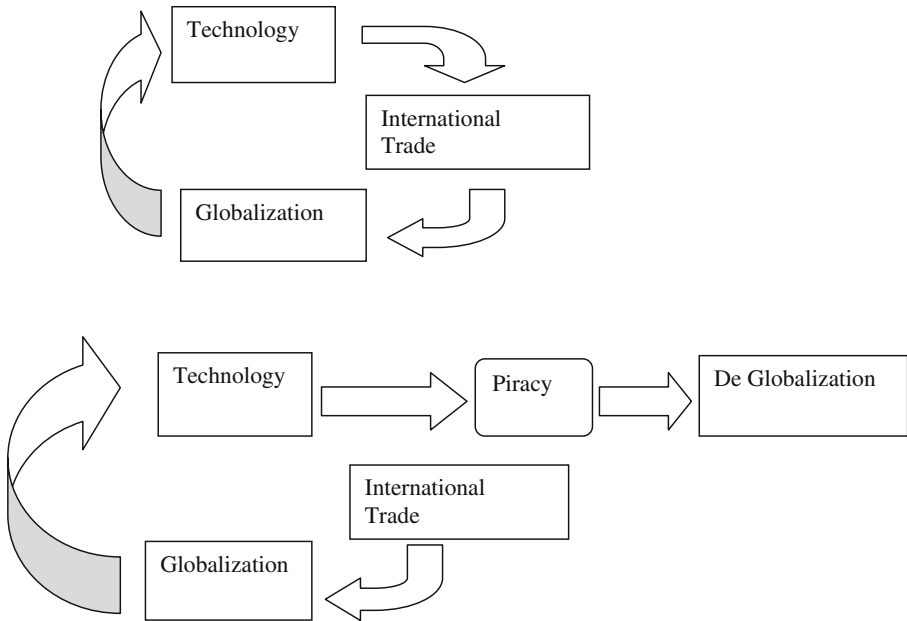


Figure 4 Technology, globalization, international trade, and piracy. Aggarwal, R. (1999) Technology and Globalization as Mutual Reinforcers in Business: Reorienting Strategic Thinking for the New Millennium. *Management International Review* 39 (No. 2), pp. 92–104

teams or mercenaries. Each of these methods can be effective but comes with consequences that must be considered prior to implementation.

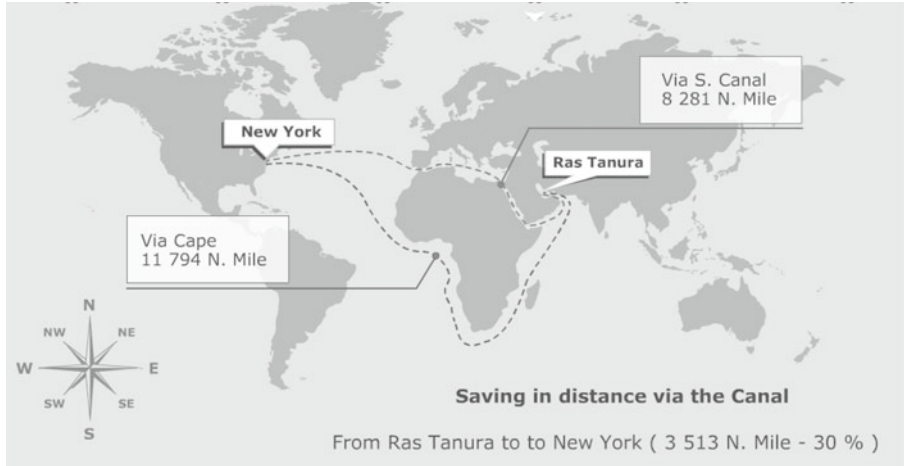
Rerouting

Shipping companies may choose to reroute their ships so as to avoid the Suez Canal entirely. This proactive approach allows ships to explicitly avoid hazardous areas, protecting the crew as well as the cargo on board. Companies will also enjoy paying lower insurance premiums than if they were to travel through the Suez Canal and have a higher likelihood of a successful voyage.

However, because the Suez Canal is such a convenient route for many international voyages, rerouting often forces a ship to take a more indirect route, which is much more expensive and takes more time. Depending on the rest of the voyage, rerouting to avoid the Suez Canal adds 23–86% more distance onto a voyage (Struwe 2009). Figure 5a and b show two common international shipping routes, from Ras Tanura, Saudi Arabia to New York, New York and from Ras Tanura to Rotterdam, Netherlands, respectively. On each map, one dotted line represents the distance from Ras Tanura to the final destination via the Suez Canal; to New York, this distance is 8,281 miles and to Rotterdam, it is 6,436 miles. Rerouting to utilize the Cape of Good Hope and avoid the Suez Canal, as represented by the other dotted line on each map, added 3,513 miles from Ras Tanura to New York and 4,733 miles onto the voyage from Ras Tanura to Rotterdam.

Furthermore, rerouting a ship from Saudi Arabia to the United States around the Cape of Good Hope can add \$3.5 million in annual fuel costs per ship (Siemens et

a



b

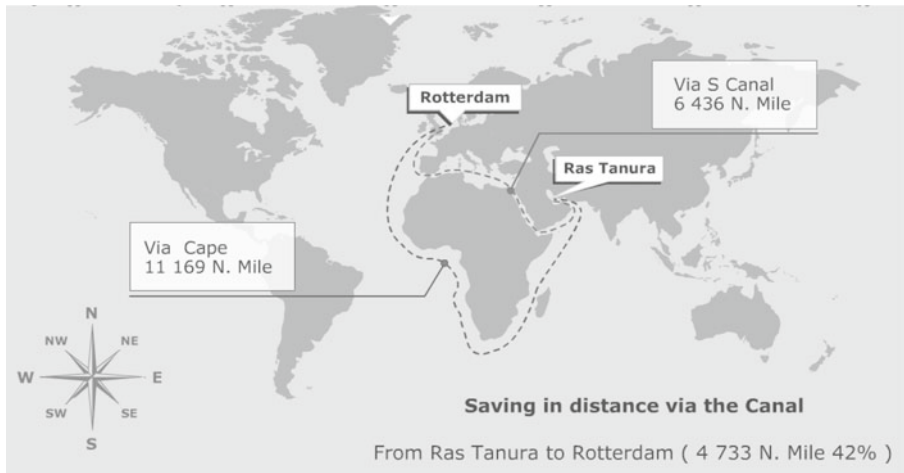


Figure 5 **a** Rerouting to avoid the Suez Canal: from Ras Tanura to New York. Suez Canal Authority (2010) Annual Report 2009. **b** Rerouting to avoid the Suez Canal: from Ras Tanura to Rotterdam. Suez Canal Authority (2010) Annual Report 2009

al. 2009). Rerouting also forces a ship to use different ports and waterways, which takes away from local economies and tolls. The Suez Canal’s revenues in 2009 were down 20% from 2008 revenues (Salam 2010), directly affecting Egypt’s economic state. Additionally, the longer a ship is out at sea, the more risk it has of a natural disaster striking and endangering its crew, goods, and the chances of a successful voyage.

For most companies and goods, rerouting the ship is not worth the increase in time it takes for goods to arrive and expense that will get passed off to customers in the form of higher prices. However, rerouting should be considered as a potential

countermeasure if the goods are value-added in a production process. This would include finished goods as opposed to raw materials, such as gasoline instead of crude oil or finished laptops as opposed to the plastics and metals that go into making them. Additionally, it is worth rerouting the ship if it is carrying weapons due to the increased danger involved should the ship be attacked.

Arm ships with unconventional weapons

Shipping companies can also arm their ships with unconventional, nonlethal weapons, such as long-range audio devices (L-RAD), magnetic acoustic devices (MAD), electric fences, and holographic radars (BBC News). Since the crew can use these devices themselves, there is no need for additional security teams. Calling for additional security takes time but when the crew is armed with weapons, they can instantaneously attack when in danger. But because this approach is reactive, it prolongs the piracy problem rather than eliminating it. It is also expensive because the shipping company must purchase the weapons and train its crews to use them properly. L-RAD costs approximately \$175,000 and MAD costs \$6,000 to \$150,000 (Cowhig 2010; The Sentinel 2009).

While sound weapons create loud, uncomfortable noises, pirates are not deterred by these weapons. For example, the pirates that carried out the second attack on the Maersk Alabama in November 2009 seemed to ignore the painful screeching sounds from the ship's L-RAD system. They were only driven away by gunshots fired by an onboard security team (Thompson 2009). Since pirates carry lethal weapons themselves, trying to counter them with nonlethal weapons is rather ineffective.

Increase insurance coverage

Another option is for shipping companies to increase their insurance coverage. This proactive approach provides a larger safety net for the company in the event of an attack. It also provides increased flexibility for the company to travel hazardous zones and avoid the extra expense and time it takes to reroute. However, this option is expensive; according to Lloyd's List, London brokers estimate that shipping companies will pay \$400 million in extra insurance costs with premium levels estimated at \$20,000 per vessel per transit in the Gulf of Aden (Gilkey 2009). The added expense will be passed on to consumers in the form of increased prices. Some shipping companies and manufacturers do not report piracy incidences because they cannot afford the more expensive insurance premiums and often prefer to pay manufacturers for damaged and stolen goods in the event of an attack (Sakhuja 2005).

A shipping company should increase its insurance coverage to account for piracy but insurance is intangible so the company should pair it with an additional countermeasure. Increasing insurance coverage may be a proactive method but it does not provide physical protection to the crew and goods so they are still at risk. The increased coverage might replenish production costs but nothing can replace the time put into production, which is often just as valuable. Perhaps most importantly, customers could lose orders due to the increased time associated with reproduction and the company could lose customers due to the price increases that will occur to offset the added expense.

Online privacy management

Shipping companies must remember that whatever technology a company is using to enhance its business, pirates have it available too and can use it to hurt the company's reputation, supply chain, and employees. The Internet appears to be a safe haven for people to share information but in reality, it is a dangerously easy method for people to access information and is used to facilitate an international network of criminal gangs. Pirates thrive on the unsecure nature of the information posted on the Internet, using it in conjunction with satellite phones to select lucrative targets for attack (Crilly and Bremner 2008). Information-sharing websites can help track maritime shipping companies by monitoring their activities overseas. *Marinetraffic.com* and *sailwx.info* provide real time ship location information, vessel details, and historical information and *vesseltracker.com* provides more detailed information like whether or not a ship is moored in a certain port. However, because these websites are accessible to the public, pirates have access to this information and can use it for malicious intent. Furthermore, the Internet's vulnerability to deliberate attacks and security lapses compromises physical international security (Pellegrino and McAlum 2009). Therefore, it is possible for online information to actually hurt companies that are too connected and lack effective privacy measures.

Similarly, social media started out as a personal phenomenon that has now taken the business world by storm. But social media and other interactive technology can be just as harmful to a company as helpful, especially if privacy is disregarded. Only 20% of companies worldwide have a formal policy regarding employee use of social networking sites (Axon 2010). The absence of a formal policy allows employees to post whatever they want about the company without the company's knowledge. Shipping companies must put into place a policy that creates a standard of privacy that employees must abide by in corporate and personal social media use regarding work-related issues. This should be monitored in a way that is similar to how companies now manage their online reputations and crises.

Arm ships with security teams

Lastly, shipping companies can arm their ships with security teams or mercenaries who are trained to protect. An increasing number of companies now maintain a presence in Africa and, due to feelings of insecurity, commercial private security companies have expanded exponentially. In fact, hiring private security is a now considered a standard practice for many companies. Non-state authorities help regulate and change existing trade activities and practices so that they correspond with dominant economic standards (Abrahamsen and Williams 2007). Advanced economies like the United States have started to recommend that ships embark with private security guards on board, as they may deter pirates from attacking (Miller 2010).

However, this reactive approach is very expensive and it is a hassle to always have security teams stationed, especially on routine shipments. Additionally, because security teams are motivated by money rather than protection, they may be quick to jump overboard when the ship is attacked, making this method unreliable (Rossmeier 2008). Laws on whether lethal weapons are allowed while ships are

docked vary by port and because most ships stop at many ports during international travel, it is very difficult to comply with the different laws at each stop (Bradsher 2009). Despite the expensive costs, arming ships with security teams is the most effective option, especially for those vessels that carry valuable goods that cannot be reproduced easily. Private security teams are trained to protect and as pirates become increasingly violent, it only makes sense for vessels to be armed accordingly.

Conclusion

The opportunity to reach new markets through global business is very appealing for many manufacturers and is the reason that shipping companies are in business. In facilitating global business, many of these shipping companies travel through the Suez Canal and today's technology-driven marketplace has made this process very efficient. But it also ensures pirates' accuracy and opportunities for success, making them all the more threatening.

As the multitude and violence of pirate attacks continue to grow, companies that are currently or would like to start conducting global business must concern themselves with supply chain security. While a variety of countermeasures against piracy exist, arming ships with private security teams that are trained to defend the vessels is truly the most effective option. In addition, it is extremely important for shipping companies and manufacturers to understand the dangerous nature of the Internet and how a lack of online management will transform virtual danger into physical danger for sailors, ships, and cargo alike. Furthermore, if we fail to address the piracy problem then we can be sure that the efficiency of globalization will decrease, perhaps to the point where it is no longer worth the expense. In a society that relies so heavily on innovation and "the next big thing", moving backwards in globalization is not something we want to toil with.

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