An Analysis of the *Sewol-Ho* Ferry Disaster

by

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Abstract

This paper will analyze the actions made by the Korean government, Cheonghaejin Marine Company, and the crew of the MV *Sewol* leading up to the *Sewol-Ho* ferry disaster. The MV *Sewol* was a passenger and cargo-carrying ferry that operated along the Incheon-Jeju Island route in the waters of South Korea. To increase their profit margins, Cheonghaejin Marine unsafely renovated the ferry, allowing it to carry more passengers and cargo. In addition, the Korean government's regulatory agencies failed to notice these changes, allowing an unbalanced and unsafe ship to carry passengers. But these profits were not enough - Cheonghaejin Marine flouted regulations on the minimum amount of ballast to carry more cargo. On April 16, 2014, these factors coincided with a poorly-trained crew, leading to 304 deaths, a majority of whom were high school students. This paper will explain how unethical decisions on every level, from the government to Cheonghaejin Marine to the crewmembers, led to these 304 deaths. The government improperly regulated the shipping industry in the first place, causing an inherent conflict of interest between profit and safety. The Cheonghaejin Marine company cut corners and violated regulations in the name of profit. Finally, the crew ignored safety regulations and their own training to prioritize their own safety over the passengers'. Each of these would have led to fatalities in other accidents, but the *Sewol-Ho* accident was the perfect storm of factors. The crew were all convicted of various charges, with the captain currently serving a life sentence. As well, the shadow of this incident led to increased scrutiny of the President of South Korea, leading to her eventual impeachment by the legislature. The legislature also passed multiple bills after the accident, tightening safety regulations and closing loopholes so that an event like this would never occur again.

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An Analysis of the *Sewol-Ho* Ferry Disaster

Introduction

Cheonghaejin Marine Company Ltd. was a Korean shipping company located in Incheon, South Korea. The company originated as a Han River cruise business, but after gaining the exclusive right to sail between Jeju Island and Incheon, it grew into a shipping company with multiple routes (You & Park, 2017). To cover these routes, the company owned five ferries, including the ill-fated *Sewol-Ho*. On April 16, 2014, it made its final journey.

On the morning of April 16, 2014, the *Sewol-Ho* passenger ferry departed the northern city of Incheon, South Korea, carrying over six thousand tons of cargo towards Jeju-do, a southern island known for its tourism industry. The ferry would never reach its destination, sinking in the shallow waters of the Jindo province. Two hundred and ninety nine passengers died aboard the ship (Kee et al., 2017). Additionally, five emergency workers died while responding to the incident, bringing total fatalities of the disaster to 304.

Most of the passengers onboard the ferry were students from Danwon High School in Incheon, embarking on a school field trip to Jeju. After a sharp turn, the ship began to take on water. In the first minutes of the sinking, ferry officials ordered the passengers to stay in place as passenger areas began to flood. Shortly thereafter, the Jindo Coast Guard arrived at the scene to assist the crew with an evacuation. However, instead of issuing an evacuation order, the captain and crew chose to flee the sinking ship. They were followed by 160 passengers, leaving 299 aboard *Sewol-Ho* (Zhang & Wang, 2015). The coast guard was unable to save the passengers trapped on the ship, and 299 passengers drowned as the ship sank.

Investigators found that the combination of sharp steering, unsecured merchandise, and overloaded cargo caused the ferry to tilt to an uncorrectable angle. Ships usually cannot sustain a

tilt of ten degrees for an extended period; the MV *Sewol* passed forty-five degrees within minutes. Ferries also need ballast water - water stored near the bottom of the ship that improves the ship's stability. In order to accommodate the increased cargo, Cheonghaejin Marine chose to remove some ballast. Finally, the shipping company did not properly secure its goods. When the ship began to tilt to one side, the unsecured goods came with it, exacerbating the tilt, and causing a feedback loop that led to the ship's sinking (Kim, 2015).

There were also indirect causes of the *Sewol-Ho* ferry disaster. The Korean Shipping Association - the ferry and shipping regulatory agency in South Korea - also operated as a trade group for the industry. The association's inspectors are paid for by the ferry companies, leading to a conflict of interests between income and safety. Finally, there was frequent employee movement between the association and the ferry industry (known as revolving-door appointments) that led to relaxed regulation enforcement and legal approval of ferries. This self-regulatory structure created an environment where it was seen as safe by ship owners to overload their ships without fear of reprisal (You & Park, 2017).

The Sewol disaster is the third-most fatal disaster in modern Korean history (Kim, Kim, & Kim, 2018). Korean citizens began to protest for increased regulations on the industry as more information came out about the MV *Sewol*'s sinking. This unrest caused the passage of the *Maritime Safety Act*, creating an agency that must check every cruise and ferry before they depart (Maritime Safety Act, 2015). Additionally, it increased the penalties for disregarding safety regulations. The investigation of the disaster also highlighted Cheonghaejin's blatant disregard for safety and prioritization of profits, leading to the passage of the *Yoo Byung-Eun Law*, strengthening the government's investigatory powers into unethical dealings (Act on Regulation, 2014). Finally, the government amended the Shipping and Vessel Safety acts,

increasing liability for ship captains and preventing future revolving-door employment (Kim, 2015, p. 354-355). After the government attempted to cover up the disaster in the preliminary report, South Koreans protested President Park Geun-Hye, and the resulting media scrutiny contributed to her resignation in 2014 (BBC News, 2017).

This report opens with a discussion of the sinking of the MV *Sewol*, followed by the news coverage as it fell below the waves. Then, we discuss the aspect of the accident that increased its fatality rate: the crew's repeated incorrect decisions. After, we will discuss technical factors that led to the ship's sinking. There are multiple: a broken solenoid in the steering system, irresponsible modifications to the ship, improper loading of ballast and cargo, and an improper inspection all caused the accident to be much more devastating than it could have been. Finally, we will provide an ethics analysis of the Cheonghaejin Marine Co., the crew, and the Korean government's roles in the tragedy. The sinking of the MV *Sewol* can be attributed to unethical decisions from multiple parties: the negligence of the ferry captain who abandoned the ferry and ignored maritime law, Cheonghaejin Marine Co. who repeatedly violated building and maritime codes, and the Korean government who poorly enforced safety regulations.

Analysis of the MV *Sewol* Accident

The Sinking of the MV *Sewol*

Every spring, high schools in Korea offer students an opportunity to go on a yearly field trip. Though they would never reach it, the students from Danwon High School chose Jeju Island. At 8:49 a.m., the students felt a sudden 10° jerk to the right; minutes later, the MV *Sewol* tilted past 30°. Most ferries cannot sustain a tilt of more than 5°. Seeing water rush into the ship, a student called emergency services three minutes after the initial tilt, but over forty minutes

passed before the Korean Coast Guard arrived. By that time, the ferry was unsalvageable. A timeline up to this point is available below. As the ferry tilted past 50°, the crew and passengers were sitting ducks trapped aboard the ship. Then, the captain made the accident worse (Kim, Kim, & Kim, 2018).

Figure 1.

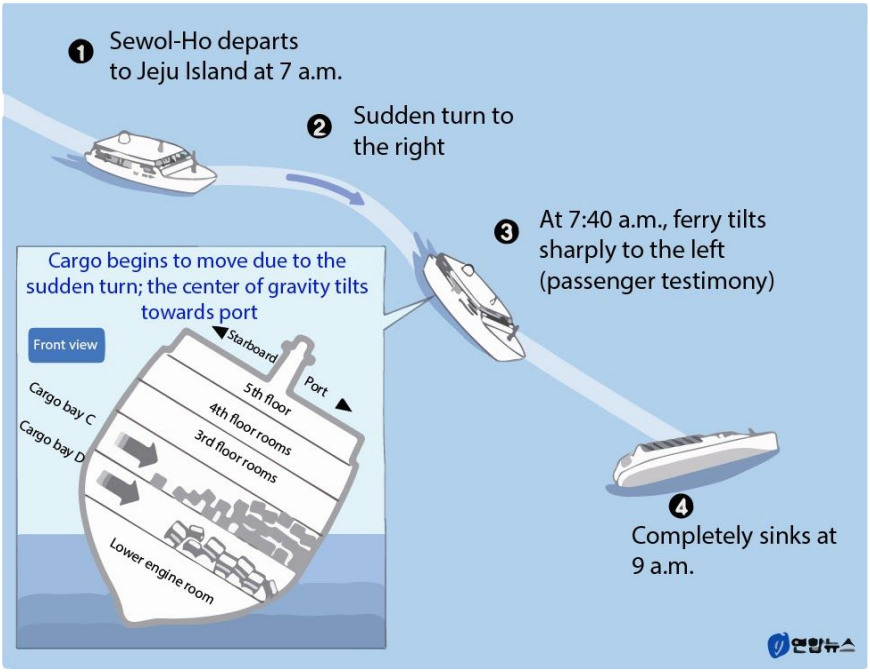

Figure 1. Early timeline of accident (Yonhap News, 2014, translated by authors)

The Wrong Call

When news of the accident first hit the air, it seemed as if most passengers would be rescued. The ferry sank at a rapid pace, but there was time for passengers to evacuate. However, two factors dramatically increased the number of casualties. First, of the forty-four life rafts aboard the ferry, only one worked properly. A single life raft can hold twenty-five people; if half of the life rafts had worked, all the passengers could have safely evacuated. Less than

twenty-five of the people aboard the ship were able to evacuate via raft - only one out of forty-four worked even though the rafts had previously passed inspection. Additionally, the captain ordered passengers to stay in their rooms instead of ordering an evacuation. Most students listened to the directions from the loudspeaker and stayed in their rooms as the ferry sank, even as water filled the lower compartments. Then, the crew and captain evacuated without notifying the passengers. The students were left to drown in a rapidly sinking ship. During an ordinary disaster like an earthquake or a typhoon, staying in place may have been the right choice. However, a maritime accident is a different situation. Evacuation is time sensitive due to the force of the water - it is easier to wade through a foot of water than swim through fifty. Since the ferry was rapidly sinking, the crew should have immediately called for an evacuation. After the passenger sections of the ferry fell below the water, it was too late for rescuers to save the remaining passengers. All further attempts to save the passengers failed; a few rescuers even lost their lives attempting to save the students (Kim, Kim, & Kim, 2018). The captain and crew were criticized because their irresponsible actions led to more casualties by an order of magnitude. The sinking was all the more devastating because it was entirely preventable.

Technical Issues

Steering System

After the incident occured, the public sought to blame something. To assuage this anger, the government opened the Sewol Investigation Commission (SIC). During the investigation of the salvaged ferry, the SIC discovered that the pilot valve was not in its neutral position. The pilot valve placement suggested that the solenoid valve, which is connected to the pilot valve, was malfunctioning. Thus, when the helmsman took the initial turn, the solenoid valve was stuck

and could not move. The stuck valve caused constant pressure on the rudder, which controls the direction of the ferry. The steering system became unresponsive and the ferry kept turning to starboard. The crew lost control of the ship due to this malfunction (Kim, Kim, & Kim, 2018). However, according to stability criteria for passenger ships, an abrupt turn due to a mechanical problem should not have caused the ferry to heel more than 10 degrees. There were other technical issues that led to the ferry's rapid heeling.

Irresponsible modification

In 2013, the Cheonghaejin Marine Company remodelled the *Sewol-Ho* ferry to increase the total capacity of passengers and cargo. Extra rooms were constructed at the top part of the ferry, which increased the capacity of passengers from 804 to 921 (Kang, 2014). The construction of additional rooms also increased the total weight of the ferry by 240 tons. To compensate for the higher gross weight of the *Sewol-Ho* ferry, an extra 1400 tons of ballast water were necessary. Ballast is a crucial fluid stored at the bottom of a seacraft to maintain the overall balance of a ship. However, carrying an extra 1,400 tons of ballast required removing weight elsewhere. The only place to cut down on tonnage besides ballast is the cargo. When the *Sewol-Ho* sank, the ferry only carried 1024 tons of ballast instead of 2400. Moreover, the remodelling raised the ship's center of gravity by 32.5 cm. And, the overall balance of a ferry decreases as its center of gravity rises (Kim, Kim, & Kim, 2018). As a result, the ship's ability to recover from changes in its direction, otherwise known as restoring power, was significantly weakened. With these combined factors, the ferry was extremely sinkable.

Ballast Water

As mentioned previously, the *Sewol-Ho* lacked an enormous amount of ballast water when the incident occured. The deficit of ballast worsened throughout the journey as the ship used its fuel and clean water. Due to the lack of ballast water and use of other ballast materials, the ferry's center of gravity rose once more. Accordingly, the ferry could not restore to its original position when it took a sharp turn. Worsening the plight of the passengers, the remaining ballast water began to leak as the ferry tilted more severely. In just five minutes, the fourth ballast tank emptied into the ocean, with another emptying fifteen minutes later (Kim, Kim, & Kim, 2018). Already lacking ballast water, the ferry could not stay upright because more and more ballast leaked as its heeling grew more severe. The ferry was unable to restore its balance and sank.

Improper Inspection

In February 2013, a government agency - the Korean Register of Shipping (KR) - inspected the *Sewol-Ho*. However, the ballast, restoring force, and cargo bays on the ferry were never inspected. Thus, the inspector overlooked the lack of securing devices for the ship's cargo and the ship's instability stemming from its lack of ballast (Kim, Kim, & Kim, 2018). Moreover, the KR concluded that only two life rafts out of the ship's forty-six were inoperable, but only one worked at the time of the accident. If a proper inspection were held, the accident could have been prevented and three-hundred lives could have been saved (Han-seung, 2016).

Overloaded and Unsecured Cargo

After the government salvaged the ferry, investigators found that the ferry was loaded with 2,142 tons of cargo by the crew, ordered to do so by Cheonghaejin Marine. However, the *Sewol-Ho* could carry no more than 1,077 tons of cargo. Moreover, the cargo was placed without proper securing devices. After the incident, the SIC reported that cargo in C and D decks were never properly lashed, and Brooks Bell, an international marine surveyor, reported that the unsecured cargo in the C and D deck began to slip at the heel angle of 18~20 degrees (Kim, Kim, & Kim, 2018). This initial slippage caused the other cargo to move en masse, which hastened the heeling of the ship. Thus, the lack of ballast water and surplus of unsecured cargo significantly worsened the slight tilt caused by the solenoid.

Impacts

The South Korean government created the Sewol Investigation Commission (SIC) to ensure an event such as this would never occur again. The SIC immediately began investigating the company, shipping crew, and government to determine their respective level of involvement and culpability.

The Sociopolitical Climate

Protests and Public Trauma

The media closely covered the government's response to the sinking of the MV *Sewol*. The public looked to their government officials to properly react to the situation but instead dealt with a slow and careless response. A majority of South Koreans were watching live updates on the ferry and witnessed firsthand the drowning of passengers even as the government claimed

everyone was saved (Cho et al., 2017; Seung-jun & Kam, 2018, 00:11:32). The government's first response to the news of the sinking was to claim that the situation was under control in order to calm the public rather than reveal the true situation (Jin & Song, 2017; Seung-jun & Kam, 2018, 00:14:42). When the reported casualties rose to two-hundred-plus, with more passengers missing, the public was astonished by the government's attempt to cover up the fatalities.

Of the three hundred passengers that died, about 250 were students from Danwon High School (Cho et al., 2017). The captain and crew had instructed these passengers to remain in place on the ship while they fled the ship themselves. The public was horrified by the captain's negligence and began to protest for his arrest and retribution. He was brought to trial, with the jury finding that he failed to assess the situation and make lifesaving calls. In addition, the court found him responsible for negligence, stemming from the initial sharp turn of the ship and the unsecured cargo. The judge sentenced him to life in prison on charges of murder (BBC News, 2015).

Political Corruption

However, the public wasn't satisfied with the prosecution of the captain. On the day of the accident, then-President Park Geun-hye presented her first statement at five o'clock pm, seven hours after the incident. It was later reported that she had remained in her bedroom for most of the morning instead of responding to the disaster (Seung-jun & Kam, 2018, 00:12:04). As this news spread through the media like wildfire, the public began to call for her resignation and investigations into the government.

Because of the increased scrutiny from the SIC and media, investigators found that President Park and other government officials were guilty of corruption, blacklisting and misuse

of power. In particular, President Park was accused of pressuring companies to give money and insider information to a close friend unrelated to the ferry incident. As a result, Park lost her legal immunity as president and is currently facing criminal charges for leaking documents and jeopardizing government security. Thus, in a resounding vote from the Korean Parliament and a unanimous decision made by a panel of eight judges, President Park was impeached, marking her as the first president in the history of South Korea to be removed from office (BBC News, 2017).

Direct vs. Indirect Accountability

Accountability in the Bureaucratic System

The Sewol disaster revealed the workings of the corrupt bureaucratic system. While investigating the disaster, the SIC found the mechanical and organizational causes; the overloading of cargo, reducing ballast, and lax inspections stemming from poor company management. Their review of the crew's actions found that their poor steering and negligence in improperly securing the cargo led to the direct sinking of the ferry. However, all these unlikely factors occurring on the same ship led the government-led SIC to look for a deeper cause. They found one very close to home - corruption in the government itself.

Cheonghaejin Marine made the aforementioned decisions - overloading the ferry, improperly training the crew, improperly restraining the cargo - for financial benefit (Wang et al., 2020, p. 4114). From a business perspective alone, their shortsighted decisions made sense, but they would not have committed them so blatantly if they were afraid of prosecution. This complete apathy toward the law meant the officials of the company were not solely responsible for the Sewol ferry disaster (Jin & Song, 2017).

In research from Jin and Song (2017), bureaucratic accountability can be conceptually divided into four categories: hierarchal, legal, professional, and political. Hierarchical accountability is common in the workplace, such as a manager supervising workers. Legal accountability deals closely with the direct rule of law, with a goal to create a system wherein officials comply with official mandates. Professional accountability is associated with expertise and specialization, consisting of professional advisors that act in accordance to proper ethics and regulation. Finally, political accountability refers to officials' responsiveness to citizens. Political officials hold power to change institutions but do so with a conflict of interest. It is important to understand that they each balance each other out like a system of checks and balances. In the *Sewol-Ho*'s case, professional accountability was at its lowest, allowing those who held political and hierarchical interests to take advantage and disregard legal accountability altogether. In the investigation, Chonghaejin Marine's close ties to the government surfaced through revolving door appointments, undermining the bureaucratic accountability of the government officials (Jin & Song, 2017).

Legislative Fallout

The sinking of MV *Sewol* sent a ripple of emotions among the South Korean population. Having witnessed the event replay in the news for weeks, South Koreans felt a combination of shock, anger and helplessness. Protests erupted against the government for new reforms and legal accountability; however, the public's collective loss brought them together in a state of mourning. These vast expressions of solitude would be reflected in what would later be known as candle-light protest - peaceful gatherings where parents and children alike would commemorate the loss of the two-hundred-fifty young and bright students of Danwon High School (Seung-jun & Kam, 2018, 00:21:41).

This tragic incident revealed how few regulations were enforced within the South Korean maritime industry. Some of the many standard safety procedures the industry lacked were: standard procedures for rescue communications, adequate training for disaster situations for the crew and first responders, and most importantly proper safety inspection (Wang et al., 2020, p. 4114). As a result, the Maritime Safety Act was passed, mandating inspections and extra safety protocol in the maritime industry.

Additionally, the Act on Regulation and Punishment of Criminal Proceeds Concealment, more commonly known as the *Yoo Byung-eun law* after the CEO of Chonghaejin Marine Company, was passed as a result of the Sewol incident (Act No. 12842, 2014). The *Yoo Byung-eun law* was created to grant the government more permissions to investigate possible corruption within companies. This law was created as a precaution for the future, and its goal was to prevent revolving door appointments and close involvement with the government, two factors that allowed the Sewol disaster to happen.

Ethical Decisions

The Law as a Code of Ethics

Davis (1991) defines a profession as a group "organized to help members serve others." Those who operate a ferry fall under this definition - ferries carry passengers and cargo, the "others" in Davis's definition. Davis also states that a profession creates a code of ethics so that they can perform their job better than they would without it. South Korean law acts as this code of ethics. At the time of this accident, the Korea Shipping Association (KSA) acted as a regulatory agency for ferries. This association was not run by the government but rather by a private coalition of companies - a sort of public-private partnership that allowed the ferry

industry to be self-regulating (You & Park, 2017). Thus, the structure of Korean law follows Davis's requirement that a code of ethics originates from the profession itself.

Ferries also rely on public trust - that one won't drown after boarding a ferry certified by the KSA. The KSA enforces the laws passed by the Korean government and it is generally accepted that the Association is responsible for ferry safety - after all, it is not the burden of every passenger to inspect the life rafts on the boat, the safety of the ferry is just given due to public trust in the KSA. Due to Cheonghaejin Marine skirting laws relating to the *Sewol-Ho*, the event stoked fear in prospective passengers that either ferries were improperly regulated or that regulation enforcement was ineffective. This fear hampered the ability of other ferries to do business as consumers' distrust of an entire industry makes it difficult to do business. Since a code of ethics makes it easier to do business with it than without, this reasoning proves that the law in this case acts as a code of ethics. In this case, Korean maritime law acts as a code of ethics due to its enforcement by the shipping companies and reliance on public trust.

Table 1. Criteria of Evaluation

Overview of Korean Maritime Regulation	
1. Korean Register of Shipping	Regulatory agency; dictates ship limitations and reviews ship designs
2. Safety of Life at Sea Convention	International code; regulates cargo loading among numerous other regulations
3. Seafarer's Act	Korean law; dictates protocols for navigation
4. Seaman's Act	Korean law; requires crew to know ship limitations
5. Marine Transport Act	Korean law; dictates inspection protocol for crew and Korean Shipping Association
6. Cheonghaejin Manual	Company document; states proper evacuation procedure

Cheonghaejin Marine's Decisions

Violation of the Korean Register of Shipping's Regulations

The Korean Register of Shipping (KR), like the Korean Shipping Association, is a non-governmental organization responsible for aspects of the shipping industry. In the MV

Sewol's case, the KR was responsible for signing off on renovation requests. The most recent remodelling's intention was to increase cargo and passenger space for increased profit. The KR signed off on a design authorizing a maximum of 1,077 tons of cargo and a minimum 2,418 tons of ballast. At the time of the accident, the ship carried 2,142 tons of cargo and 1,042 tons of ballast, flagrantly violating the basic requirements set out by the KR (Kee et al., 2017).

Violation of the Safety of Life at Sea (SOLAS) Convention

The SOLAS Convention is an international maritime code ratified by the Republic of Korea in 1980. From radiocommunication to construction codes, SOLAS governs how cargo ought to be secured and minimum safety measures taken during an accident (International Maritime Organization, 1974). In the *Sewol-Ho*'s case, the aforementioned renovation made it impossible for the company to properly secure a large amount of cargo. There were not enough mounting points to secure shipping containers and the floor mounts were not compatible with some of the vehicles aboard the ship. Additionally, Cheonghaejin Marine did not provide proper safety and lashing training to the crew, so it was impossible for most of the crew to ascertain whether they were operating properly (Kee et al., 2017). This combination of factors led to the tilting feedback loop discussed earlier and violated the SOLAS convention under regulation V-1 which states, " Cargo [...] shall be so loaded, stowed and secured as to prevent as far as is practicable, throughout the voyage, damage or hazard to the ship and the persons on board, and loss of cargo overboard." The manner in which the MV *Sewol* was loaded violates this code given that the improper lashing of the cargo led the ship to be unrecoverable, leading to the loss of both cargo and passengers.

The Crew's Decisions

The crew made several negligent decisions during loading, the initial turn, salvaging the ship, and evacuation which both violated Korean law and increased the fatality rate of the accident. While none of these were the sole cause of the accident, these actions made the ensuing events all the more devastating.

Violation of the Seafarer's Act

The third mate steered alone as the ferry sailed through the Maenggol Channel. At 8:48 a.m., the third mate turned ten degrees off-course, causing the ship to tilt rapidly. Even with a normal ferry, this would be an unsafe maneuver - ships such as the MV *Sewol* cannot sustain more than a five degree tilt for a short period of time. But, in an already dangerous situation with its unsecured cargo, a sharp turn had a much more devastating effect. As the third mate began to turn, the ship began to tilt. This tilt caused the unsecured cargo to shift in the same direction, making the ship unrecoverable as the uneven weight distribution caused additional tilting, leading to the MV *Sewol* taking on water. Such sharp turns violate common seaworthiness training even under normal circumstances. And, no higher-ranked officers observed the third mate - a requirement of the Seafarer's Act (Kee et al., 2017). Had a more experienced officer been present, the ship may have been recoverable with the correct maneuver. However, since there was no supervision, their actions violated the Korean Seafarer's act, and the ship sank. What could have been simple cargo damage quickly became the loss of hundreds of lives.

Violation of the Cheonghaejin Marine Instruction Manual

As the ship began to tilt, the crew quickly recognized the precarity of their situation, sending out a distress call to the Korean Coast Guard (KCG). However, they chose to handle it in a way that prioritized their own lives over those they were responsible for. The ship was equipped with an intercom system, making it easy for orders to be relayed to the crew and passengers - a perfect avenue for ordering an evacuation. But, the captain did the exact opposite; he ordered passengers to stay exactly where they were when the ship began to heel, not once, but seven times (Kim, 2015). The failure to issue a timely evacuation trapped passengers behind impenetrable walls of water as their quarters fell below the surface of the ocean. Under their own company's manual, the crew must assist in evacuations. Not only did they not assist, they actively prevented an effective evacuation and increased the number of fatalities from the accident.

When the KCG eventually came, the captain and crew chose to board the KCG's ship without identifying themselves before any passengers had escaped. Here is a surprising hole in Korean regulation - the crew has no direct legal obligation to help their passengers escape nor identify themselves in an evacuation (Park, 2014). However, they violated their company's manual requiring them to assist in evacuation, and the crew is required to follow their company's code (Kim et al., 2016). What made them unequivocally responsible for the deaths? Not a single crew member chose to warn the passengers and evacuate the ship as the crew themselves evacuated.

Violation of the Seaman's Act

Under the Korean Seaman's Act, the crew is required to know the limitations of the ship. The crew is responsible for knowing basic facts about the ship they operate: loading limits, ballast, hazards, etc (Kim et al., 2016). However, the actions taken leading up to the accident reveal one of two violations of the law. Either the crew did fully know the limitations of the ship and all associated attributes and therefore willingly violated the law by removing ballast and overloading cargo or the crew was negligent in their knowledge of the ship's seaworthiness. Either avenue leads to a legal and ethical violation; the ship was one-thousand tons overloaded by cargo and another one-thousand underloaded by ballast, a gross ignorance of safety procedure. If the crew did not know enough to protest against operating such a clearly unsafe ship, they were not qualified to operate it in the first place, an ethical violation in and of itself.

Violations of the Marine Transport Act

Under the Marine Transportation Act, a crewmember is responsible for inspecting the ship alongside an independent inspector. We will later discuss the true independence of this inspector. Regardless, a crewmember was responsible for checking ballast levels and cargo load. However, the person responsible for this never actually entered the cargo bay where this ignorance was blatantly obvious, signing off on it without independent verification. Instead, the inspector chose to visually inspect the outside of the ship. Since the weight of ballast drained was about equivalent to the additional cargo weight, the ship appeared to be loaded correctly, sitting in its proper level in the water (Kee et al., 2017). Even though the water level appeared visually correct, this weight inversion raised the center of gravity of the ship, making a heeling event

much easier to enter and harder to recover from. This lack of rigorous inspection ran against the spirit of the Marine Transportation Act, a blatant unethical act by the crew member.

The Government's Administrative Decisions

As mentioned earlier, the Korean Shipping Association is a private organization of companies that enforce public law as directed by the Korean government (You & Park, 2017). This private regulatory control represents an inherent conflict of interest. On one hand, the KSA has an obligation to the passengers aboard the ships it regulates; if one ship were to sink, it would call into question the veracity of safety reports for other ships. On the other hand, the KSA is run by companies that have an interest in making profit. These two goals run contrary to each other - one cannot both maximize profit and fully follow safety regulations. After all, inspections, renovations, and repairs to keep ferries in regulation cost money - money that could go back into the business instead. Over time, greed won over proper regulation, and ship inspectors tended to be more lax. A failed inspection would lead to a loss of profits either through paying for renovations or loss of business.

In the *Sewol-Ho*'s case, the inspector might as well been absent as he took the crew's word above all else. The ferry had a cargo in excess of one-thousand tons of its maximum regulation; the inspector wrote down a false tonnage he received from the captain over a phone call. Like the crewmember, the inspector solely performed a visual inspection, resulting in the same center of gravity issue stated earlier (You & Park, 2017). Had the inspector entered the cargo bay, they would have been able to see that cargo containers and vehicles aboard were not properly lashed to the deck. This culture of turning a blind eye among the members of the KSA was responsible for the *Sewol-Ho*'s sinking. Had inspections been more rigorously enforced,

companies such as Cheonhaejin would have thought twice before skirting regulations. The fines they would have faced in the past may have deterred them from doing it in the future. This inability to adequately enforce Korean law and ethics made it so that an event like the sinking of the *Sewol-Ho* was unavoidable, but this situation was a perfect storm of unethical behavior.

Conclusion

The sinking of the MV *Sewol* is marked as the most recent major disaster in South Korean history, leaving the Korean public in shock at the blatant disregard for public safety from the multiple parties involved. Had Cheonghaejin Marine prioritized safety over profits, the ferry would have a working solenoid valve and properly loaded cargo, preventing its sinking. And, even though those decisions were not the case, had the government properly regulated the shipping industry, these unethical decisions would have been caught. Lastly, the crew could have reduced the number of casualties by issuing proper evacuation instructions. Consequently, their inaction and orders to stay aboard the ship directly led to the deaths of 304 innocent passengers at sea.

These aforementioned decisions violated Korean law and ethics codes. The Cheonghaejin Marine Company flouted SOLAS and the Korean Register of Shipping when remodelling the MV *Sewol*, as well as failing to train the crewmembers. Moreover, the crewmembers violated the Seaman's Act, Seafarers' Act, and the Maritime Transport Act by improperly steering and loading the ship. Additionally, their failure to hold a proper investigation ran against both lawful and ethical decision-making. The resulting public backlash formed in heavy protests all across the country, leading to the investigation and removal of many political officials from government office.

After the tragedy, the Korean government tasked itself to new regulations to prevent future tragedies. As a result, the *Yoo Byung-eun law* and Maritime Safety Act were passed to mandate inspections, add safety protocols, and prevent bureaucratic corruption. However, the new regulations still raise questions: are the new regulations stringent enough to prevent future tragedies? What other companies took advantage of the KSA's blind eye? The answer to these and other questions will help prevent the next tragedy.

(Word Count: 5450)

Annotated References

Act on Regulation and Punishment of Criminal Proceeds Concealment, Act No. 12842 (2014). Retrieved September 29, 2020 from http://www.law.go.kr

This is the legal text of the *Yoo Byung-Eun Law,* which allows the government to investigate unethical business practices. We will use it to see how Korean law changed in response to the *Sewol-Ho* sinking.

BBC News. (2017, March 10). South Korea president Park Geun-hye ousted by court. Retrieved September 28, 2020, from https://www.bbc.com

This article is about the resignation of President Park - we plan to use it as a source on the political fallout of the Sewol disaster.

BBC News. (2015, April 28). Sewol ferry: S Korea court gives captain life sentence for murder. Retrieved November 11, 2020, from https://www.bbc.com

This article is about the prison sentence of the captain of MV *Sewol*. We plan to use it as a source to highlight the impacts of the disaster.

Cho, S. M., Jeong, A., Ha, J. H., & Kim, E. Y. (2017). Social relationship changes in victim families due to a social disaster: Experiences of student victims' families in the South Korean Sewol ferry disaster. *PLOS ONE*, *12*(12), e0188699. https://doi.org/10.1371/journal.pone.0188699

This journal article discussed the mental effects the public, victims, and their families experienced from the Sewol ferry disaster. We will use this source to analyze the mental impact the disaster had on those affected.

Davis, M. (1991). Thinking Like an Engineer: The Place of a Code of Ethics in the Practice of a Profession. *Philosophy & Public Affairs, 20*(2), 150-167. doi:10.2307/2265293

This journal article is about the need for a code of ethics in engineering, using the Challenger disaster as an example. We will use its explanation of why a profession needs a code of ethics in analyzing the ferry operator and business owner's actions.

Gwon, Y., I, D., Jang, B., Gim, C., Gim, Y., & Gim, C. (2018). *세월호 선체조사위원회 종합보고서*. Mokpo: Sewolho Seonche Josa Wiwonhoe. Retrieved September 28, 2020, from http://www.socialdisasterscommission.go.kr/

This is the official government report regarding the Sewol ferry disaster. It contains an English translation of the timeline of events later in the report that we can use to detail the event.

Jin, J., & Song, G. (2017). Bureaucratic Accountability and Disaster Response: Why Did the Korea Coast Guard Fail in Its Rescue Mission During the Sewol Ferry Accident? *Risk, Hazards & Crisis in Public Policy, 8*(3), 220-243. doi:10.1002/rhc3.12115

This article analyzes the bureaucratic accountability of the Sewol Disaster. We will use it to understand the full extent of involvement in the incident.

International Maritime Organization. (1974). International Convention for the Safety of Life at Sea (SOLAS), 1974. Retrieved October 26, 2020, from https://www.imo.org/

This article provides a summary of the 1974 SOLAS regulations which we apply to our analysis of the accident.

Han-Seung, L. (2016, May 18). 해경 최대 공기부양정 사고는 '인재(人災)'...부실선박 도입. Retrieved October 31, 2020, from https://www.yna.co.kr/

This discusses the improper inspection held in 2013 with a brief discussion of life rafts that were stored in *Sewol-ho* ferry. We will use this to discuss how the sinking of MV *Sewol* could have been prevented if a proper inspection was performed.

Jong-gu, K. (2014, April 17). 세월호 목포서 181명분 객실 증설(종합2보). Retrieved October 31, 2020, from https://www.yna.co.kr/

This discusses the illegal modification of the *Sewol-ho* ferry, and how the modification affected the overall safety of the ferry. We will use this to discuss how modification partially led to sinking of the MV *Sewol*.

Kee, D., Jun, G. T., Waterson, P., & Haslam, R. (2017). A systemic analysis of South Korea Sewol ferry accident – Striking a balance between learning and accountability. Applied Ergonomics, 59, 504–516. doi:10.1016/j.apergo.2016.07.014

This article contains a comprehensive analysis of the factors leading to the sinking of the MV *Sewol*: social, government, bureaucratic, and structural. As well, it contains a timeline of the event, which will be helpful in our paper. Its information will help us build the background of the disaster and discuss what caused it in all aspects.

Kim, C.J., Kim, Y.M., Kim, C.S. (2018, October 9). 세월호 선체조사위원회 종합보고서. Retrieved September 28, 2020, from http://teachsewol.org/

This is a final report written by Sewol Investigation Commission (SIC). It includes information starting from why it happened to what was wrong. We used this report to discuss the technical issues and the overall event.

Kim, S. K. (2015). The Sewol Ferry Disaster in Korea and maritime safety management. *Ocean Development & International Law, 46*(4), 345-358. doi:10.1080/00908320.2015.1089748

This article discusses the various failures of the Korea Coast Guard, Korean law, the ferry company, and ferry operators in the sinking of the MV *Sewol*. It has the best English translation of Korean law, so we will use it as part of our criteria.

Kim, T., Nazir, S., & Øvergård, K. I. (2016). A STAMP-based causal analysis of the Korean Sewol ferry accident. Safety Science, 83, 93–101. doi:10.1016/j.ssci.2015.11.014

This article uses a STAMP (an accident model) analysis applied to the sinking of the MV *Sewol*, covering the mechanical failures of the ship as well as the crews' failure. This will contribute to our understanding of the ferry captain's failures.

Kwon, Y., & Leveson, N. (2017). System theoretic safety analysis of the Sewol-Ho ferry accident in South Korea. INCOSE International Symposium, 27(1), 461–476. doi:10.1002/j.2334-5837.2017.00372.x

This article uses a STAMP-based safety analysis to discuss the causes of the MV *Sewol*'s sinking. This paper is particularly valuable to use because it provides an English summary of several South Korean reports.

Maritime Safety Act, Act No. 13386 (2014). Retrieved September 29, 2020 from http://www.law.go.kr

This is the legal text of the *Maritime Safety Act*. This law was passed to mend regulatory holes in Korean shipping law, most notably creating an authority to inspect vessels. We will use this in our analysis of Korean law in regards to ethics.

Park, J. (2014, June 17). Accused South Korea ferry crew say rescue was coastguard's job. Retrieved October 26, 2020, from https://www.reuters.com

This article discusses the legal defense the crew members used in court proceedings. We will use it when discussing the legality of the crew's actions.

Seung-jun, Y. (Producer), and Kam, G. (Director). (2018). *In The Absence* [Motion Picture]. South Korea: Bluebird Pictures.

This video documentary source provides recordings of calls between officials handing the Sewol ferry as it was sinking. We will use the recordings provided in this video as a primary source of information to discuss the actions and decisions made by these officials.

Wang, X., Zhang, B., Zhao, X., Wang, L., & Tong, R. (2020). Exploring the Underlying Causes of Chinese Eastern Star, Korean Sewol, and Thai Phoenix Ferry Accidents by Employing

the HFACS-MA. *International Journal of Environmental Research and Public Health*, *17*(11), 4114. https://doi.org/10.3390/ijerph17114114

This paper discusses the underlying causes of multiple maritime disasters. We will use this source for its specific research on the MV *Sewol*.

Yonhap News. (2014, April 17). 윤곽 드러나는 사고 원인 '변침'. Retrieved October 31, 2020, from https://www.yna.co.kr

This is an image that shows the ship's actions leading to its sinking. We have translated the text and included it in the paper.

You, J., & Park, Y. M. (2017). The legacies Of state corporatism in Korea: Regulatory capture in the Sewol ferry tragedy. *Journal of East Asian Studies, 17*(1), 95-118. doi:10.1017/jea.2016.32.

This paper discusses the history of Korean bureaucracy and how it led to the Sewol disaster. We plan to use it as a broader lens when discussing Korean law - it is extremely detailed and we only need to use its discussion of modern Korean law.

Zhang, S., & Wang, J. (2015). Analysis of South Korea Sewol sunken ferry accident based on behavioral safety. *Journal of Coastal Research, 73*, 611-613. doi:10.2112/si73-106.1

This discusses the mechanical causes of the ferry's sinking and has a brief discussion of bureaucratic failures. We will use this when we discuss why the MV *Sewol* sank.