

Saudi Crane Collapse Masjid al-Haram (Lack of Safety)

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Abstract: This study provides a national profile of major work safety accidents in Masjid al-Haram, There have been many major incidents during the Hajj over the years, causing the loss of thousands of lives.¹, intended to provide scientific basis for prevention measures and strategies to reduce major work safety accidents and deaths.

Methods: Data from 1990-2015 Census of major work safety accidents were collected International Business Times. We analyzed the frequency of accidents and deaths, caused by insufficient safety measures. Additionally, we discussed the causes and preventions by types of accidents.^{2,3}

Results: On occasion, the Hajj and events surrounding it have been marred by accidents and tragedies, such as today's stampede near Mecca.

Here's a look at some deadly hajj-related incidents:³

2015: At least 107 people are killed and scores wounded when a crane collapses in bad weather, crashing onto the Grand Masjid in Mecca, Islam's holiest site.

2006: More than 360 pilgrims are killed in a stampede at the desert plain of Mina, near Mecca, where pilgrims carry out a symbolic stoning of the devil by throwing pebbles against three stone walls.

The day before the Hajj began, an eight-story building being used as a hostel near the Grand Masjid in Mecca collapsed, killing at least 73 people.

2004: A crush of pilgrims at Mina kills 244 pilgrims and injures hundreds on the final day of the hajj ceremonies.

2001: A stampede at Mina during the final day of the pilgrimage ceremonies kills 35 Hajj pilgrims.

1998: About 180 pilgrims are trampled to death in panic after several of them fell off an overpass during the final stoning ritual at Mina.

1997: At least 340 pilgrims are killed in a fire at the tent city of Mina as the blaze was aided by high winds. More than 1,500 were injured.

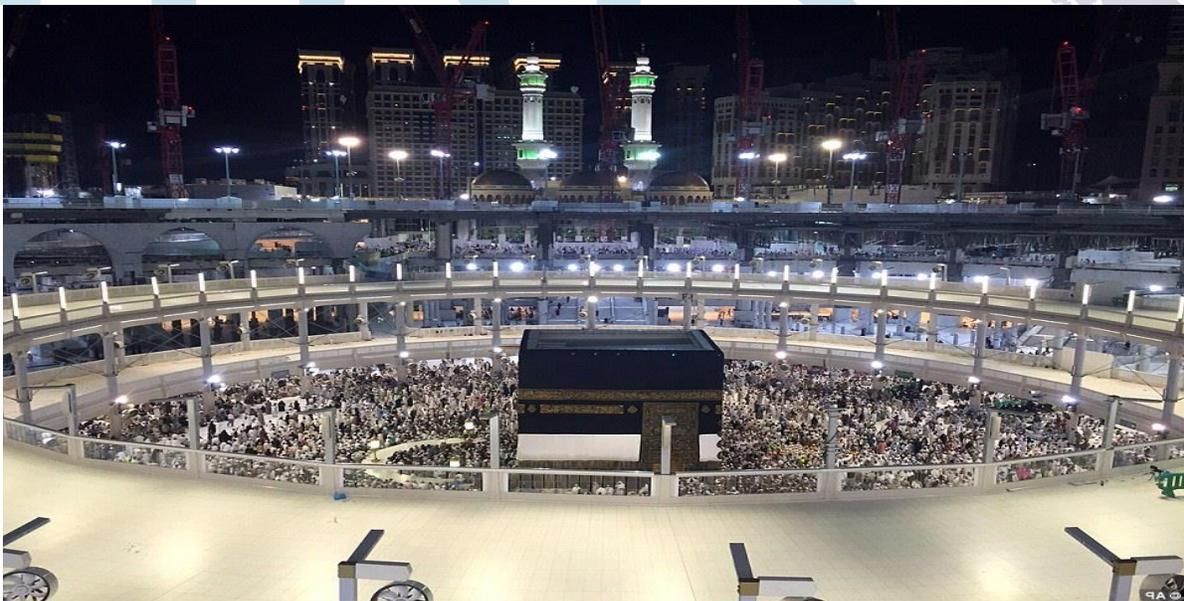
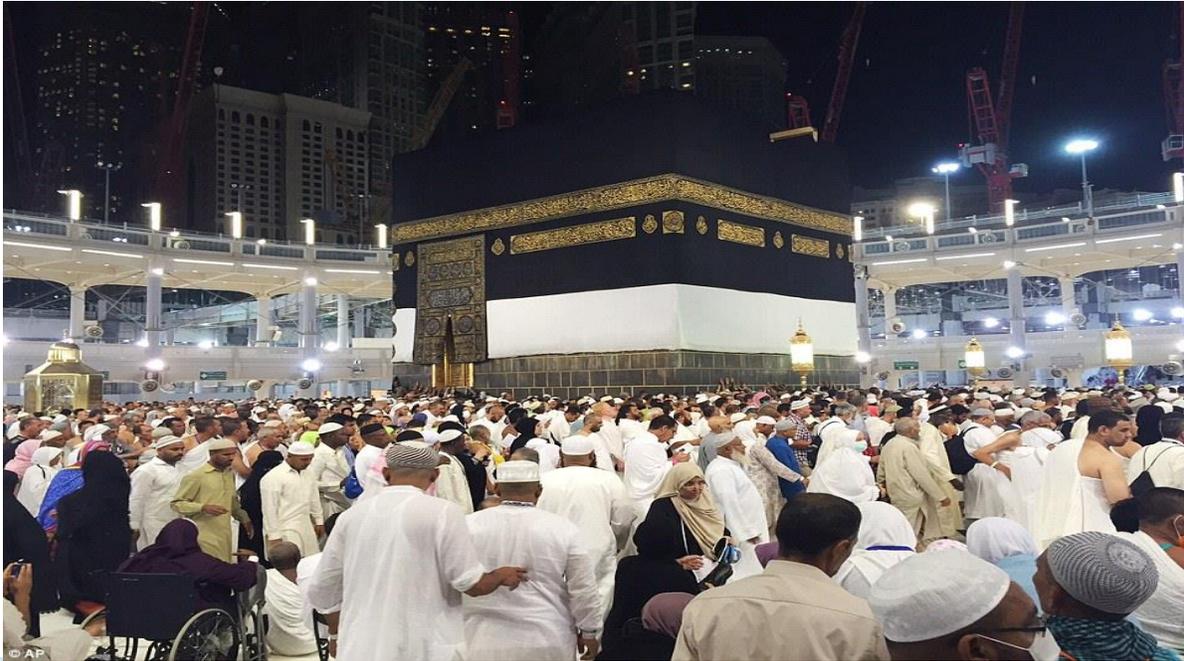
1994: Some 270 pilgrims are killed in a stampede during the stoning ritual at Mina.

1990: The worst hajj-related tragedy claims the lives of 1,426 pilgrims in a stampede in an overcrowded pedestrian tunnel leading to holy sites in Mecca.

Conclusion: Ten years' major work safety accident data indicate that the frequency of accidents and number of deaths was declined and several safety concerns persist in some segments.

Keywords: Work safety, Major accident, Prevention

Introduction:



The Masjid al-Haram is the largest Masjid in the world and surrounds Islam's holiest place, the Kaaba, in the city of Mecca. Muslims face in the direction of the Kaaba while performing obligatory daily prayers. One of the Five Pillars of Islam requires every Muslim to perform the Hajj pilgrimage at least once in his or her lifetime if able to do so, including circumambulation of the Kaaba.^{3, 4}

Originally built during the reign of Caliph Omar Ibn al-Khattab (634-644), the Masjid has seen many renovations and expansions, especially in the 8th and 14th

centuries. The current Masjid mainly dates to 1571.⁵ the Masjid itself was built around the Kaaba, also known as the House of Allah. It's a structure that Muslims believe predates Islam and was first built by the prophet Ibrahim and his son Ismail as a place of worship. During the time of the Prophet Mohammad (570-632) the Black Stone, which is in the Kaaba became a holy Muslim relic.⁵

With a total area of 356,000 square meters (3,831,952 square feet) the Masjid can accommodate up to 770,000 worshippers. One of the five pillars of Islam states that every Muslim is obligated to perform hajj once in their lifetime if they have the financial means. During the week of the hajj, an annual pilgrimage of Muslims around the world to Mecca, Muslims converge on the city to perform a series of rituals, including the circling of the cube-shaped Kaaba, praying and holding vigil at Mount Arafat, and performing the symbolic stoning of the devil by throwing pebbles at the three pillars in Mina. Prayers on and around the mount are a climactic emotional and spiritual moment in the hajj. The faithful believe that on that day the gates of heaven are open.⁵

All male pilgrims, regardless of wealth or status, wear seamless terry white cloths to symbolize equality before God during the hajj. Women cover their hair and wear long loose clothing, forgoing makeup and other adornments to help them detach from worldly pleasures and outward appearances. It was on Mount Arafat, marked by a white pillar, where Islam's Prophet Muhammad is believed to have delivered his last sermon to tens of thousands of followers some 1,400 years ago, calling on Muslims to unite. While following a route that the prophet once walked, the rights are believed to ultimately trace the footsteps of the prophets Ibrahim and Ismail.^{4,5}

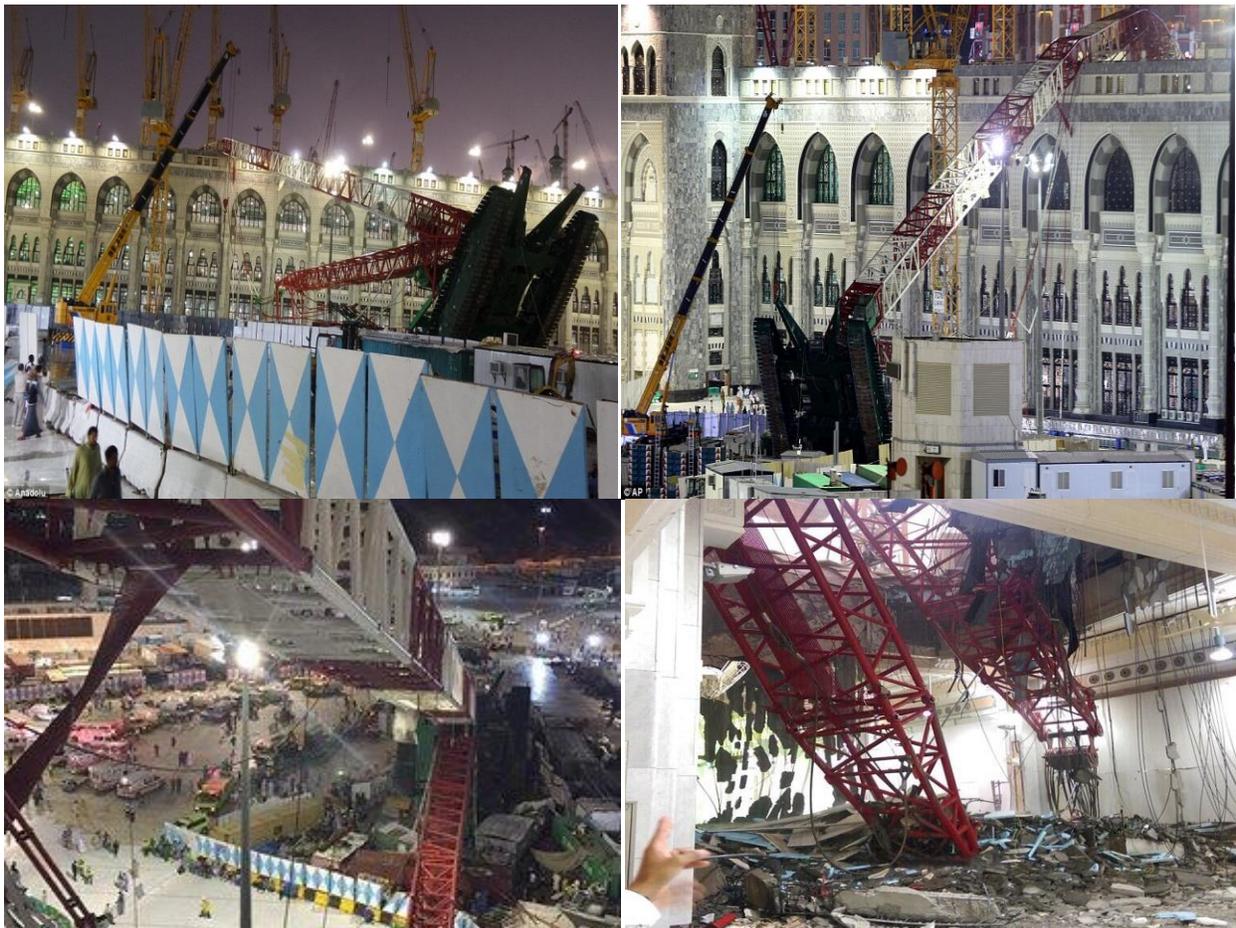


sAccident:

The Saudi Civil Defense Directorate confirmed that a crane collapsed through the ceiling of the Masjid, Strong winds are believed to have caused the crash. The collapse killed at least 111 people, injured 394, and trapped many pilgrims under the debris on 11-September-2015.^{6, 7, 8}

Richard Angwin, Al Jazeera's senior weather presenter, said the autumn period is when half of Mecca's thunderstorms occur so "it was no great surprise that there were thunderstorms in the area". "The area of low pressure which brought sandstorms across the Levant region moved further south allowing hot, moist air to develop into thunderstorms along the mountains bordering the Red Sea, and some of those drifted northwards across Mecca."⁹

The incident reportedly occurred shortly before 5:20 p.m. on Friday, one of the busiest times of the week. The mosque was packed even though the incident happened before the 6.30pm prayer. The crane fell into the east side of the Masjid, with its boom crashing through the roof. One witness reported that the crane fell on the third floor above Al-Safa and Al-Marwah at 5:45 p.m. local time.⁹



"The crane collapsed near Al-Salam gate on the upper side of Al-Masaa area and that caused the collapse of a small part of Al-Masaa and another section of Al-Mataf, the bridge area around the holy Kaaba," Major General Suleiman Al-Amro, director-general of Saudi's civil defense authority, told Saudi TV that a storm with severe rain and wind speeds as high as 83kmh caused the tower crane to collapse. "This whole place is already a giant construction site. What made it worse is that around 5.30pm there was severe rain and it was just gushing down the road.⁹ Indonesian and Indian pilgrims were among those killed when the crane collapsed, while the injured included Malaysians, Egyptians, Iranians, Turks, Afghans and Pakistanis.

Nationalities of victims

| Nationality | Killed | Injured | Ref. |
|--|--------|---------|----------|
|  Bangladesh | 25 | | [10] |
|  Egypt | 23 | | [10] |
|  Pakistan | 15 | 51 | [11][10] |
|  Indonesia | 11 | 42 | [12] |
|  India | 11 | 15 | [20][13] |
|  Turkey | 8 | 21 | [14][15] |
|  Malaysia | 6 | 10 | [16][10] |
|  Nigeria | 6 | | [17] |
|  United Kingdom | 2 | 3 | [13][18] |

Nationalities of victims

| Nationality | Killed | Injured | Ref. |
|---|------------|------------|--------------|
|  Iran | 11 | 32 | [20][10][19] |
|  Algeria | 1 | | [10] |
|  Afghanistan | 1 | | [10] |
| Total | 111 | 394 | [21][22] |

After receiving the report on the investigation into the incident, Custodian of the Two Holy Mosques King Salman ordered that all members of the board and senior executives be prevented from travelling abroad after an investigation into last week's incident showed the crane had been erected in a way that deviated from manufacturer's instructions, causing it to crash in high wind. The report pinned the blame for the accident partially on the construction company. A royal court announcement carried by the Saudi Press Agency (SPA) said the king was reviewing the report of the Accident Investigation Committee, which suggested negligence on the part of the Saudi Binladin Group, but concluded that it found an "absence of criminal suspicion". The report said "the main reason for the accident is the strong winds while the crane was in a wrong position".^{23, 25, 27}

Bandar Al Hajjar, Saudi Hajj minister at the time, stated that the Hajj that year would be the last to be affected by reductions in pilgrim quotas due to construction work, saying "Starting from next Hajj season, the number of pilgrims will increase to 5 million and then to 30 million in the coming five years".^{24, 25, 26}



Crane and Construction Company:

The German-made Liebherr Group crawler crane LR 11350 involved in the incident is operated by the Saudi Binladin Group and has a maximum lifting capacity of 1350 tons and is thus designed for applications need to be where very heavy loads moving. He is one of the strongest crawler cranes Libeler's and was developed in 2006 at the Echingen factory and built since then also there. According to Beringer are around 30 crawler cranes of the type in use worldwide.²⁸ The Saudi Binladin Group are heading the expansion of the Grand Masjid and also responsible for a large amount of major building contracts in Saudi Arabia. Saudi Binladin Group is the second largest construction company in the world and was founded by billionaire Mohammed Bin Laden.²⁹



Causes of Accident:

The Liebherr Group responded to the accident by sending local engineers and engineers from their crane manufacturing plant in Echingen, Germany to help in the investigation of the accident and to assist on site.²² an investigation has been launched, to probe claims that the health and safety standards at the Masjid were insufficient. Some critics have claimed that the authorities were negligent in allowing a series of cranes to tower over the site, as hundreds of thousands of Muslims converge at the holy site for the annual hajj pilgrimage.³¹

Liebherr Group experts who participated in the investigation of the collapse found no structural flaws in the crane. Their report stated that the crane's 190 meter long boom was not sufficiently secured by its operators so as to withstand the high winds present on the day of the collapse, and that use of that crane in those 80–105 kph winds was well outside the manufacturer's recommended operating parameters.²⁹ The *Saudi Gazette* reported that Khalid Al-Faisal, the Emir (Governor) of Mecca, had ordered the Binladin Group to relocate the crane from pedestrian areas and to deploy safeguards to prevent pilgrims entering the construction zone, eleven days before the accident.^{22, 30}

An engineer for the group said that the crane was erected in "an extremely professional way", and the accident was an "act of God". Al Jazeera's Omar Al Saleh said bad weather was thought to be the cause of the accident - western Saudi Arabia has been hit by strong sand storms in the last few days.



Proposed Solutions and Results:

The Binladin Group should consider the Safety measures properly for parking Crane in public area as per Safety and Security protocols in stormy weather as they were aware and ordered by Governor of Mecca as mention below:

“The Saudi Gazette reported that Khalid Al-Faisal, the Emir (Governor) of Mecca, had ordered the Binladin Group to relocate the crane from pedestrian areas and to deploy safeguards to prevent pilgrims entering the construction zone, eleven days before the accident”^{22, 23}

Their report stated that the crane's 190 meter long boom was not sufficiently secured by its operators so they should make sure to secure Crane against high power wind.

The management of Masjid al-Haram should also consider Safety measures as the weather was bad and it was in there knowledge that the Cranes were parked nearby so they have to provide alternative ways for people to pass and perform their prayers so that in case of any unexpected event because of stormy weather life's can be saved.

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