

## Article

# Recovering from a Major Aviation Disaster: The Airlines' Family Assistance Centre

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**Abstract:** An aviation disaster with mass fatalities can overwhelm an organisation and impact the lives of thousands. The response to such crises can determine the future of the organisation and, more importantly, it can have a lasting effect on the victims' friends and families. This paper identifies and analyses airlines' legal requirements and duty of care in relation to the operation of a family assistance centre (FAC). The case study of flight MH370 was used, and interviews with key figures in the aviation industry who have experienced disaster first-hand were conducted. The study highlighted that subtle differences in response significantly impact the quality of care provided. The research also outlined the importance of training and preparedness. Choosing the right people to work in the FACs and to care for friends and families is integral. The study concluded that the speed and accuracy of communication with friends and family are critical factors in the success of any response.

**Keywords:** aviation accidents; aviation disaster; family assistance centre; crisis communication; emergency response training; brand recovery



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## 1. Introduction

On any given day, over 100,000 flights take to the sky and land safely and without incident [1]. Flying is part of everyday life, yet the rare occasions on which airline incidents occur highlight the industry's high level of vulnerability to crises [2]. In 2018, there were 15 fatal airliner crashes resulting in 556 deaths; this figure represents one fatal crash for every quarter of a million flights [3]. Where there are accidents with mass fatalities, the lives of thousands are impacted, and it is the airline's responsibility to manage that impact. Like all industries, aviation is vulnerable to external shocks and disasters [4–6]. However, it is a relatively safe way to travel (see [7] for data on safety occurrences since 1919) and a highly regulated industry with comprehensive risk management, emergency response and recovery arrangements in place [8]. Effective emergency management covering training, effective communication, and tested plans for all areas of crisis operations, including family support, are now required. Family Assistance Centres (FAC) are centres that provide services and information to address the concerns and the needs of the aircraft accident victims and their families [9]. The victims' friends and families often remain in these centres until they are repatriated with the bodies of their loved ones.

If emergency response is so highly regulated with extremely detailed guidelines, how, in recent years, have we witnessed airlines handling crises in different ways and with varying degrees of effectiveness? What do airlines do differently where they are able to manage the disaster without further distressing the victims' families? Few researchers have addressed the intricate detail distinguishing success from failure in this extremely sensitive situation. Previous work has focused on the reasons for the crash [10], crisis management [11], and crisis-response effectiveness [12]. In this paper we aim to examine the best practice for running FACs. More specifically, we discuss the legal requirements of an airline in the event of a crash, explain how the FAC works, and provide recommendations to practitioners through the case study.

The remainder of the paper is structured as follows. Section 2 provides a contextual setting. It summarises the relevant literature on disaster and crisis management, the legal requirements for airlines in the event of an incident and explains how FACs should operate. Section 3 outlines the methodology followed. Results are presented and discussed in Section 4, and the last section concludes the paper.

## 2. Literature Review

### 2.1. Disaster and Crisis Management

The scale and complexity of a disaster often dictate the response required. Aviation disasters tend to be catastrophic, often overwhelming the airline, government and emergency services' capacity to respond [13]. When such an incident happens, it highlights the industry's vulnerability to crisis. Due to this vulnerability, the industry is generally well prepared to deal with such incidents at short notice [2]. There is no universal agreement on disaster/crisis terminology. Some use disaster, crisis and emergency interchangeably, while others differentiate based on factors such as scale and origin. Crises have an internal trigger and can be somewhat controlled, while disasters are caused by external factors and are generally far more catastrophic [14]. The differentiation between crisis and disaster is that humans cause a crisis by omission, commission, accident, ignorance or negligence, while disasters are larger scale and associated with natural hazards or other entities that are out of the control of governments or organisations [15]. The loss of an aircraft during a thunderstorm may be considered a disaster, whereas a terrorist attack or a human factors error [9] is classified as a crisis. Whatever the definition, it is clear that both crises and disasters share many of the same features, and both create victims. For the purposes of this paper, crises will be defined as accidents where blame is attributed to an error, while the term disaster will be used where the cause of the incident is considered what would have been termed "an act of God" in the insurance industry. Something triggered by a "natural" hazard that could not have been easily foreseen or prevented. The term emergency management will be used to cover all phases of preparedness, response and recovery, irrespective of cause or scale.

Although disasters produce victims, they tend not to attract the same blame and bad press as a crisis unless the airline or responders react negatively or carelessly [15]. The Chinese expression for crisis, 'wei ji', combines the symbols for danger and opportunity. While no company would purposely expose itself to the dangers that come with a crisis, an organisation that handles a crisis well can discover that opportunities can come out of adversity [16].

Aircraft disasters and crises with mass fatalities will involve multi-agency intervention and cooperation. Caring for the victims' families with this complex response network can be challenging [17]. Creativity is an imperative part of effective emergency management. While advance planning and preparedness are the backbones of any response, creativity ensures an organisation adapts to the demands put upon staff and organisations and encourages improvisation in new social and physical settings [18]. Local organisations and government agencies will have their own emergency response plans [19]. Each stakeholder will feel responsible for handling the victims, so collaboration and excellent communication are needed. Extensive, over-constrained planning can get in the way of an effective response to a crisis or disaster with mass fatalities; some flexibility is vital, and people must rely on their instincts to a certain degree [20].

While there is a certain level of acceptance that crises and disasters will happen, there is an increasing expectation that airlines and other organisations will be ready to respond when things go wrong. Crisis communications should reduce the negative impact on the business and on victims' friends and family; and limit the focus to public safety and the organisation's reputational erosion [21]. However, the dynamism of aviation means it cannot be covered effectively by traditional concepts of communication due to its chaotic and turbulent nature [22]. It is essential in crisis communications that organisations can

manage, control and respond in the first 60 min after the incident [15]. Organisations should learn about crisis communication by examining case studies [23].

Multiple agencies are involved in the response when an air accident occurs, which means multi-channels of communication need to be open. No communication is more important than communication with the friends and families of the victims. The victims' friends and families in the FAC should be the first to hear any new developments [17]. The CEO of Swissair at the time of the 1998 crash into the ocean of flight LX111, when all 229 passengers and crew on board were killed, was Jeffrey Katz. His statement to the press is used as an example of how airlines can get it right—he stated he had a plan and communication was the top priority of his plan, he promised to give all the facts as they were verified, and that would be done in a timely manner [24]. The IATA document, “Crisis communication and reputation management in the digital age: A guide to best practice for the aviation industry” [25], is summarised in Table 1. The guidelines suggest the airline should define the event.

**Table 1.** Guidelines: best-practice communication and time flow for airlines (adapted from [25]).

Time	Action by Airline
T + 15 min	Issue initial social media post confirming preliminary details of the incident. As new details emerge, update social media.
T + 60 min	Draft a more detailed account of the incident and release it via all media, including the organisation's website and social media. Keep all employees briefed. Maintain a flow of information as new details are confirmed. Use a combination of short social media messages and more detailed accounts released via traditional media and the website.
Continued T + 60 min	Review website content to eliminate content that may now appear inappropriate or crass—including promotions, straplines etc. Activate the Dark Site. Keep all sources updated simultaneously.
T + 3 h:	Prepare for site visits and first to camera piece by the CEO, or other senior figures from the organisation. The organisation may also wish to prepare a professionally filmed statement or statement by the CEO.
T + 6 h:	Host first press conference with CEO and other airline executives—at airline headquarters or a relevant airport.
T + 6–24 h:	Further press releases, conferences and interviews should take place when new information is available. These may include joint events with emergency services, response agencies, airport operator, government representatives or investigating body.

(T is the point at which the airline was first notified).

## 2.2. Legal Requirements on Airlines in the Event of a Crash

In 1997, the National Transportation Safety Board (NTSB) assembled a task force on how to assist families impacted by aviation disasters and crises. Federal state government officials, airlines and their employees, lawyers, members of the media, a survivor of an aviation disaster/crisis, and the families of victims of aviation disasters/crisis worked together to find ways to improve the treatment of families by all stakeholders involved in an aviation disaster/crisis. Their report contained 61 recommendations and focused on the training of the airline and third-party staff who will be in contact with the families. The report alludes to the fact that airlines should consider a third-party contractor to provide better services than the airline [26].

The recommendations from this task force led to a revision of Annex 9 and the production of the International Civil Aviation Organisation (ICAO) Policy on Assistance to Aviation Accident Victims and their Families Doc 9998 [27] that incorporates Assembly resolution A32-7 (Cir 285, to be reissued as DOC 9973). ICAO policy on Assistance to Aircraft Accident Victims and their Families incorporates the requirements for state readiness, family assistance plans, timeliness of family assistance, family assistance providers,

government, state of occurrence, aircraft accident investigation authority, civil aviation authority, non-government organisations, air operator, airport operator, third parties and family associations.

EU Council Regulation 2027/97, as amended by Regulation (EC) 889/2002, imposed equivalent provisions to the Montreal Convention 1999 regarding the carriage of passengers and their baggage by air. This regulation was then transposed into law by member states. In Ireland, for example, the Montreal Convention, which was implemented by the Air Navigation and Transport (International Conventions) Act 2004 as required by EU law, imposes strict liability on airlines in the event of death or injury to passengers up to a maximum of the equivalent of 113,100 Special Drawing Rights (SDRs—approximately USD 160,000 as of 4 November 2020) per passenger.

Under the Montreal Convention, in the event of an accident resulting in the death, wounding, or any other bodily injury of a passenger, the airline is obliged to make an advance payment as soon as possible. This payment to the next of kin must be made no later than 15 days after the identity of the person entitled to compensation has been established. This payment is made in a timely manner in order to meet immediate costs which those impacted may face. This payment is calculated in proportion to the hardship suffered by the person entitled to the payment. For example, in the event of death, the payment must not be less than 16,000 SDRs per passenger (approximately USD 22,500 as of 4 November 2020). The mechanism for payment is determined at a local level. It is important to note that this advance payment does not constitute recognition of liability on the part of the airline and may be offset against any subsequent sums paid based on the airline's liability. The advance payment is not returnable, except in cases outlined by Article 20 of the Montreal Convention.

### 2.3. Family Assistance Centres (FACs)

In the event of aircraft accidents, airlines need to dispatch their 'go' teams to the crash site. Depending on the location of the accident, they may have numerous centres and whether it occurred in a third country that was not the country of departure or the arrival destination of the flight [28]. The airline has many functions and responsibilities at this time, one of which is setting up the FACs. The airline's Family Assistance Management Team runs the FAC. Their responsibility is to ensure that survivors, friends and families receive practical assistance and information. The Special Assistance Team will provide information to the families about recovery, identification and repatriation of their loved ones, plus the return of personal effects. Families requesting site visits and memorial services will be accommodated there too, and the Family Assistance Management Team will make the necessary arrangements.

Kenyon International provides an interesting insight into the circumstances which prevail within the FAC. The families are distraught and shocked. They are most likely culturally, geographically and religiously diverse and, therefore, staffing the centre (including the call or helpline function) with experienced personnel is critical. The atmosphere can be very emotionally charged and full of tension. In the immediate aftermath, the families may have received very little information; other than knowing that something has happened to their loved ones, they will have many questions.

#### 2.3.1. Location of the FAC and Airline Staff Roles

Family and friends of passengers involved in a crash may arrive at numerous locations; the departing airport, the arrival airport, or airports in their own countries. All airport-based airline staff must be trained to deal with such situations so that the families are protected from the media and kept isolated until transport is arranged to the FAC. The FAC location should be chosen based on the availability of facilities required to provide support for the families, rather than on proximity to the disaster [17].

FACs are often located in a hotel, or similar facility, as there is a need for accommodation for a period of possibly weeks; and access to conference rooms from which the airline

or local authorities may provide daily updates. Aside from physical space and amenities, other considerations must be considered [17]. The location should be far enough away from the crash site that families are not exposed excessively to the scene. It should be located in a building that can be secured, and the building must be available for several weeks as it is not ideal to move families every few days. The management of the Family Assistance Team will endeavour to identify the next of kin of the passengers in the incident. Still, all who show up, subject to verification, are welcome. It is not always the next of kin that is best placed to identify a body if there are bodies available for identification. For example, in the case of tattoos, a partner or close friend may know more detail.

Under ICAO Policy on Assistance to Aviation Accident Victims and their Families Doc 9998, airlines must have an emergency response plan. This plan includes the FAC and the roles involved in managing the FAC. The team should encompass a number of FAC managers responsible for different aspects of the centre and Special Assistance Team members (SAT members) assigned to each family in the centre. All staff involved in the emergency response should have received training and have an individual checklist for their role. Team members should keep this checklist with them at all times as an aide-memoire.

### 2.3.2. Support Services

Within the FAC, there is a requirement to cater to all attendees' needs. The FAC manager should ensure that a space is set up for the various agencies which will provide services to the victim's friends and families. Based on the work of Teahen [17], the key stakeholders are outlined in Table 2.

**Table 2.** Family Assistance Centre Support Services.

FAC Service Type	Service Description
Health service	First aid agency/health service manager Provision of onsite physical health and workplace safety services
Mental health Services	FAC mental health manager Provision of emotional support
Spiritual care	FAC spiritual care manager Emotional and spiritual support Space for prayer
Security	Police/army/airline security/hotel or building security Keeping all persons safe Keeping all confidential documents secure
Logistics	Logistic staff To provide basic provisions: Toothbrushes and hygiene accessories, chargers, phone credit, clothes
Communication room	A space big enough for the police or airline management to address everyone in attendance of the FAC
Childcare	Play area Childcare providers
Catering	24-h food supply
Insurance company	For the airline to seek permission to spend

As difficult as a situation may be, people still need their basic and immediate needs to be met. They still need to eat, have access to clean clothes, may require assistance with childcare or attending to sick family members and some may require support with household or other expenses while being at FAC. Staff in the centre should cater to all these needs and, in doing so, should ensure the families feel taken care of by the airline and help build a sense of connection and loyalty [29]. A bond is often formed between the people who attend the FAC as they are all in a similar situation. Emotions are high,

tempers can flare, however, and there is a need for everyone to be treated equally in terms of support and receiving information simultaneously [30]. The intensity and duration of the support provided depends on the type of incident. Therefore, there is no timeframe for the operation of the FAC set out in international guidelines or national legislation.

### 2.3.3. In-House Versus Contracting a Disaster Management Company

There are three options for airlines when it comes to most elements of disaster management, including the establishment and management of the FAC. They may keep all elements in-house, outsource completely or adopt a hybrid approach, contracting some elements to a private company that will work with the airline to train their staff and assist in the event of an emergency. One of the recommendations of the NTSB task force on assistance for families was for airlines to consider hiring the expertise if they can provide a better service than the airline itself [26]. However, this approach is not without risk (e.g., damage to reputation and quality of care) and airlines should evaluate and monitor outsourcing from a risk management perspective.

Outsourcing is an everyday occurrence in business and in government and not-for-profit organisations, where outsourcing may be used to deliver services and gain expertise [31]. Many private companies deliver disaster management services—Kenyon International, Lantech, Blake Emergency, IEM and Tidal Basin, to name a few. Disaster Management companies deal not only with aviation incidents but also with all types of disasters. These companies are engaged in disaster management on an ongoing basis worldwide. Airlines need a robust, company-wide plan to deal with crises and often require external companies who possess the expertise needed in a disaster to ensure appropriate preparation is made and to support them during an incident [32].

Most agreements between a client company and an outsourced agency involve fixed payments to the provider in the form of a retainer, plus an agreed fee structure for a set of services, which the client company may invoke in the event of an incident [33]. Such an arrangement allows the airline to have a greater awareness of the financial obligations it may have in the future and provides a basis on which they can plan effectively.

Each airline pays Kenyon International to have them on retainer. The retention fee is modest, and it covers their operating expenses for the organisation and their small permanent staff. The Kenyon international experts used on activation are on a retainer contract. When activated, they pay the experts very well and do not pay anything otherwise. Kenyon does not use risk-based pricing or the size of an airline to determine costs as an analysis of accident data indicates there is no correlation between the size of an airline and the accident rate; the regulatory environment and the area of the world are more significant.

Kenyon International makes its money when activated, and it is always busy. They are used by nations/states during the response to flooding, tsunami, earthquakes, etc. Every time a major tragedy happens, they are deployed by a government, an insurance company, or a transport company. Airlines pay separately for Kenyon to deliver courses to their staff on topics such as communications and special assistance, and the airline has access to Kenyon International's research base.

## 3. Methodology

To analyse the legal requirements of airlines in the event of a crash, we used extensive document analysis. We conducted in-depth, semi-structured interviews with seven key experts to evaluate the strengths and weaknesses of airlines outsourcing the FACs to a disaster management company. Details of the seven interviewees and the rationale for selection are recorded in Table 3.

**Table 3.** Interviewees and Topics Covered.

Interviewee	Reason for Selection—Line of Questioning
Peter Bellew, former CEO of Malaysia Airlines	Peter Bellew served as CEO at Malaysia Airlines soon after the two crashes. He experienced first-hand what it is like to deal with the families and friends of victims. The media portrayed Malaysia Airlines as having failed the families of the victims, and the authors wanted to hear from Peter what were the lessons learned from this case and how could Malaysian Airlines' experience help guide other companies facing a similar situation. The questions were designed to establish what, in his opinion, led to such a negative outcome of the recovery of flight MH370.
Conor McCarthy, Dublin Aerospace and Emerald CEO	Conor McCarthy is the co-founder of Air Asia. We wanted to get his insight into what made the Air Asia response to the QZ8501 crash, recognised as representing good practice in taking care of families in the aftermath, so successful. The questions were designed to ascertain what precisely contributed to the successful handling of the victims' family and friends.
Captain Colm Wynn, Aer Lingus Director of Emergency Response	Captain Colm Wynn was selected to discuss the Aer Lingus plan for the management of FACs, in the event of an incident with mass fatalities.
Otibho Edeke-Agbareh, Humanitarian Service Manager with Kenyon International	Otibho Edeke-Agbareh works with the friends and families of disaster victims daily. The questions were designed to establish what laws should change to facilitate better care of families and also to explore what are the key things organisations could do to be better prepared for a disaster with mass fatalities
Mohd Fuad Sharuji, Crisis Director at Malaysia Airlines	Mohd Fuad Sharuji is the head of Malaysia Airlines' Post-Accident Office and the airline's crisis director for the MH17 and MH370 disasters/crises. His insights have been critical for this research.
Mike Seear, Crisis Consultant	Mike Seear is a Security and Emergency Response Planning Manager, Kenyon International Emergency Services Senior Associate and Nordic Crisis Management Senior Advisor. The questions focused on FAC and outsourcing.
Dr Mazem Bekdash, VP for Business Development at Kenyon International	Dr Mazem Bekdash is a vice president for business development at Kenyon. The interview questions focused on the importance of retainer and training.

A case study of Malaysia Airlines flight MH370 is also used to analyse further the support given to families of the victims. A case study can be described as an empirical inquiry to examine a topic within its real-life context [34]. A case study is most appropriate when the researcher is looking for the "how" and "why" and when the issues being researched need context to explain why they need to be explored [34]. Research by single case studies has been widely conducted [35–39]. Flight MH370 has been selected due to its attention in the media and the way it was handled by Malaysia Airlines and the government authorities.

Due to the topic's sensitivity, there were constraints in terms of the depth and scope of the questions and interviewee selection (e.g., victims' family members or survivors were not selected). Appropriate ethical approval was obtained for the study from the University.

#### 4. Analysis and Discussion of Findings

##### 4.1. The Case Study of Malaysia Flight MH370

Malaysia Airlines (MAS) has faced two big tragedies in quick succession, the loss of flight MH370 and of flight MH17 [40]. MH370 is maybe the most discussed and known non-terrorist related aviation disaster. On the 8 March 2014, flight 370 (MH370/MAS370) was travelling from Kuala Lumpur International Airport to Beijing Airport. The aircraft crew last made contact with air traffic control shortly after take-off while the flight was over the South China Sea. Shortly after, it was lost from the flight radar screen, but it was tracked by military radar for 60 min. It deviated westwards from its flight path, crossing the Andaman Sea, where it vanished northwest of Penang Island. The flight had 227 passengers and 12 crew on board, all of whom are presumed dead. The search for the missing aircraft, which became the most expensive in aviation history, focused first on the South China Sea

and the Andaman Sea before analysing the aircraft's automated communications with a military satellite identified a possible crash site somewhere in the Indian Ocean.

Twenty-six countries were involved in the search, which covered an area of more than 710,000 km<sup>2</sup> and lasted for more than four years. In the absence of a confirmed crash site, many conspiracy theories appeared in the media [41]. Some of the media reports blamed pilot error, aircraft defects or terrorism [41]. The lack of official information in the hours/days after the aircraft disappeared prompted criticism from the Chinese public (the majority of the passengers were Chinese), especially from the friends and relatives of the passengers. Table 4 shows that seven and a half hours after the aircraft went off the flight radar, MAS confirmed the aircraft was missing. Following loss of contact, it took MAS 4 h and 44 min, almost an hour after the scheduled arrival time, to confirm that the aircraft went missing.

**Table 4.** Timeline (in Local Time) of Missing MH370 (source: [42]).

Time (In Local Time)	Action
12:41 a.m.	MH730 departs KLIA
02:40 a.m.	Subang Air Traffic Control loses contact with MH370
06:30 a.m.	MH370 scheduled to land in Beijing International Airport, never arrives
07:24 a.m.	MAS confirms MH370 missing
08:30 a.m.	Estimated time of fuel depletion on MH370
09:00 a.m.	MAS begins contacting next-of-kin
10:44 a.m.	MAS denies rumour MH370 made emergency landing at Nanming, China
01:46 p.m.	Vietnamese media reports MH370 crashed near Tho Chu Island
02:30 p.m.	Transport Minister denies the crash report, says awaiting military confirmation

The emergency response staff at MAS were the same for both the MH370 and MH17 crashes; a disaster management company did not support the staff. The missing MH370 was in the media non-stop for weeks, and the government gave updates every half hour for the first two days. Sharuji stated that many politicians were very eager to appear in the media despite not knowing any facts about the crisis. He stated that the Malaysian authorities were not ready to handle the media, especially the international ones. Government communication then dwindled as time went by as there was no progress to share. A lack of information from the airline made the families increasingly upset, and they looked to the media to fill the void. The families gave interviews to the media about how badly they were being treated by the airline, explaining that they were initially advised by text message that their loved ones were dead. The message read, 'Malaysia Airlines deeply regrets that we have to assume beyond any reasonable doubt that MH370 has been lost and none of those on board survived. As you will hear in the next hour from Malaysia's Prime Minister, we must now accept all evidence suggests the plane went down in the Southern Indian Ocean.' [43]. Sharuji stated that *'the airline was pushed back and asked to keep quiet'*. He said that the authorities took over and there was bad coordination and many controversies. Seear argued that this should have never happened.

The families felt they had to fight for information; they looked to the airline and the Chinese and Malaysian governments for answers. Sharuji stated that the Chinese government had stepped back and did not engage, whereas the Dutch authorities led the accident handling of MH317. Bekdash stated that in the case where a company is state-owned or state influenced, the airline's CEO has little or no freedom to handle the situation in a different way than the one deemed by the government authorities.

Overall, there was no closure for the friends and families of the victims, no bodies to bury, no personal items to treasure, and there is still mystery surrounding the disappearance of the aircraft. In March 2019, five years after the tragedy, 50 emotional family members of the victims gathered outside the foreign ministry in Beijing, lobbying for the search to resume. The report states they had spent a year trying to get an audience with the foreign minister but had only been granted an audience with low-level officials and stated they felt they were and still are living a nightmare [44].

MAS struggled in the aftermath of the disaster, their stock price plummeted and travel agents in China were boycotting the airline [40]. In an attempt to regain custom, they dropped their seat price and ran advertisement campaigns based at winning new markets; one such ad campaign was called “Bucket List” and was taken by the friends and families of the victims of MH370 as MAS making a joke of death [45].

MAS had no disaster management company to support them. As a result, they delayed in making any communication about the disaster. Interviewee Peter Bellew postulates that MAS was far from rapid with their response, stating: *“they actually pretended it didn’t happen, almost. And nearly to this day there has been very little information put out about it”*. The delay in MAS responding led to the Malaysian and Chinese governments stepping in and taking control. In the interview with Peter Bellew, he stated that: *“in Asia there is a sense of losing face, so the government controlled it, and there was also another government crisis going on at the time so the Prime Minister jumped on it. This is happening a lot, like with German wings, there was no reason for Angela Merkel and the French and Spanish Prime Ministers to be flown to the crash site. It was a media opportunity. The airline needs to be aware that they will only get air time for 2–3 h, and then it is hijacked by the government”*.

The friends and family of the victims turned against the airline as they lost trust due to lack of information and care. Interviewee Colm Wynn noted that he had seen a MAS presentation at a conference in 2018 where they displayed defensiveness; like they felt to blame. He also said they looked worn out. Peter Bellew confirmed that MAS did have the same staff in both crashes on their emergency response team and that he felt that was a mistake. In particular, he referenced one man, stating that he was an amazing man, but these accidents have become all his life is about, as if they defined him. Bellew also claims that what they experienced during the aftermath of an accident is beyond traumatic. MAS did not have a disaster management company on retainer and did the emergency response with their own staff. Sharuji mentioned that the retainer can cost from USD15,000–50,000 and if you are on the retainer, you have preferred treatment and an immediate response, otherwise, they may not be able to support you. Bekdash brought the example of Ukrainian airlines that did not have a disaster company and *“it ended up costing them more”*.

Bellew stated in his interview that if MAS had support from a disaster management company such as Kenyon International, that would have made a difference in the FAC. The fact that the disappearance was such a mystery meant the worlds’ media were focused on it for a much longer period of time than other plane crashes and the world was scrutinising the actions of MAS. Conspiracy theories led to further distress to families, and scenes of families being escorted off the premises by armed guards were shown worldwide, further adding to the negativity building towards MAS. Peter Bellew said when he joined MAS, they made plans to do memorials, and that he felt these went a long way to help both the staff and the friends and families of the victims find closure. He also said that he apologised to everyone by saying: *“it’s a terrible tragedy, we apologize and we feel empathy with the people”*. He went to China and Australia and made public apologies that had not happened up to that point.

#### 4.2. Key Areas Identified by Interviewees

The interviewees focused on three main themes: (a) communication, (b) emergency response training and the use of a disaster management company and (c) brand recovery.

##### 4.2.1. Communication

There needs to be a rapid response and appropriate media communication while also managing the internal communication channels carefully at the same time. In the interview with McCarthy, he said that the main element that Indonesia’s Air Asia got right after the crash of flight 8501, killing all 162 people on board in 2014, was the prompt response. They reacted with a degree of urgency and deployed the maximum number of resources on the ground as possible. In his interview, Bellew also mentioned Air Asia, comparing the media outcome of MAS and Air Asia accidents that happened within a short space of time. He

stated: “Air Asia had an accident that was completely and utterly their fault in Indonesia, you will see they very rapidly put information out on it”. Bellew postulated how MAS became good at the prompt response after MH370, having to deal with MH17, a subsequent attempted hijacking, and a series of other serious incidents. Wynn argued that airlines should update their communication plan on a regular basis. He said that “you don’t want the reason you get good at rapid response being that you had practice”. McCarthy suggested that Air Asia had a mass media reaction spearheaded by the CEO and social media and website teams; they made their website a dark site and used it to post all the information they were releasing to the media. They posted next information times and always stuck to these times even if there was no information to post. Bellew also said, “There are two things that the families and friends of victims want: *information and assistance, but information is the single most important thing*”. Wynn stressed that the information must be accurate to build trust. McCarthy concurred with this sentiment, stating that: “you must be the source of solid information, the place they turn to for the most up to date information”. Bellew advised airlines to have a pre-scripted communication run by all the stakeholders so there is no delay in getting an initial response out to the media and, ultimately, the friends and family.

Agbareh, in her interview, suggested that the best person to give the official communications is the CEO. Wynn concurred and added that if the CEO is not a good public speaker or has no empathy or charisma, then the second in command should be the lead for communication. McCarthy mentioned the TWA crash in JFK, where the CEO was in Paris at the time of the crash, and it was 12 h before he arrived in JFK to give the communication. He had been in “a communication black hole” and was destroyed by the media for having no information. Therefore, flexibility on who gives the communication is necessary in some situations. McCarthy stated that you should apologise straight away; Bellew concurred, adding that “*some companies think that is admitting liability, but the Montreal convention will have you covered from liability, you should just apologise and show empathy*”. Bellew highlighted that the media turned against MAS due to a lack of information. McCarthy said: “*the truth is, the media learn to rely on us to give them the latest updates as well, so building that position of trust with the media and recognise that even though the news media can be adversary, we immediately wrapped our arms around them and made it easier for them to do their jobs. They felt that we were helping them to get the job done, and they didn’t go on the offensive like some do*”.

Agbareh, in her interview, highlighted the importance of internal communication in the FAC. She suggested that a company like Kenyan International would use a Conference Bridge for staff in the FAC to communicate with friends and family who cannot make it to the FAC. This ensures all friends and family hear the information at the same time. There are translators available from the disaster management companies and local embassies to ensure smooth communication with all.

McCarthy stated there can be an assumption that the staff know what is going on, and the media can be given information before the caregivers in the FAC. Airlines should ensure that the communication plan outlines clearly that the FAC staff are the first to hear new information. Bellew suggested that you need to remember your own people and communicate with urgency.

Wynn said that all staff company-wide should be aware that only official communications from the approved source can go out to the media. Staff should not speak to the media. The media will often approach staff in the front line, and their words may be portrayed as coming from the company. General staff are not media trained, and a simple, innocent quote that they are sad for the crew on board could be misconstrued and lead to the friends and family of the victims becoming upset.

#### 4.2.2. Emergency Response Training and the Use of a Disaster Management Company

To the question “what are the benefits of having a disaster management company for the FAC”, Agbareh stated that one of the most important things is not managing the incident, but the training provided to airlines in advance of any incident. Bekdash recommends training every two years. Agbareh stated that the disaster management

company, given their experience, should assist companies in designing their emergency response plans and provide a basic understanding of what would happen if an incident occurred; the harsh reality as they have lived it with other disasters. Wynn suggested that airlines very much rely on this critical training where lessons learned and best practices are shared. He also said that these companies could tailor the training to an airline's operation. For example, they will know the national and international regulations and ensure the airline's emergency plans and staff are prepared for a disaster in any state to which they fly. Wynn suggested that an airline can have up to 22 emergency response plans, and the majority of those plans are about care and communications. He also stressed the importance of using a disaster management company to test the plans, with regular exercises to ensure that the communications plan remains updated. The retainer fee that a disaster management company charges will only cover an airline on standby; all training and assistance with exercises is an additional cost.

Agberah stated that disaster management companies can provide airlines with training on how to communicate effectively with the media; this is one of the most important parts of the training. Bellew argued that: *"all the training in the world won't train you to deal with the media . . . the immediacy of the new media; so, you need to choose people who are cut from the right stone"*.

Choosing the right people to work in the FAC is an imperative component of the running of the Centre. Agberah and Sear stressed that you must train the staff that will be facing the families. It is not enough to have good customer service skills; they must be professional and empathetic to the fact that this is a very distressing situation. They must be able to deal with the care of families at a traumatic time and also have the ability to perform the data collection that is needed to repatriate them with their loved ones. Bekdash highlighted the need for efficient data management. He advised to have a clear data collection process to avoid information (and incorrect information) being shared in an inappropriate way. Sharuji stated that an emergency management company has the competencies to deal with a crisis and airlines while airlines remain on their core business. He also stressed the importance of comprehensive training in soft skills in order to be equipped to handle grief, respect cultural diversity and sensitivities and be aware of the regulatory requirements.

Wynn stated that they train their own staff to work with friends and families as they will be with them from 0 to 4 h post-accident until the disaster management company arrives. He posited that it is imperative that the staff work with the disaster management company; it is not a case for the disaster management company to take over. Airline staff will be responsible as the airline's brand and reputation are at stake. McCarthy agreed that the airline staff should be the ones dealing with friends and families. He stated that the airline should use all the cabin crew and ground staff to assist. He highlighted that employers have a responsibility to care for their staff, so, in these situations, there must be someone whose only responsibility is to look out for the staff.

Within the FAC, when people are going through different phases of grief, it can be exhausting and staff can get too close to the family, according to Sear and Agberah. Unlike McCarthy, Bellew argued that not everyone is cut out to work in the FAC, and it would be wrong to send all your staff into this situation. From his experience, he has seen people who manage these situations, only to have their own lives destroyed. He stated it is a very special person who can deal with unremitting and unrelenting grief from others: *"I don't know if many people under 35 have the resilience anymore, it's a cliché to call them snowflakes, but people of that age have not been through rough times. The people I have seen dealing with this the best are people, who have had serious illness themselves, they are built of stronger stuff"*.

Bellew explained how staff in MAS were still very emotionally scarred when he joined the company. He said that *"management had not adequately engaged with staff, and there was a tremendous amount of hurt. People would cry, and it was still raw"*. He confirmed: *"There needs to be proper counselling for staff, and it is a mistake to use the same staff again if you have another tragedy. MH did that, and it was a mistake. There was one man after MH17 who had to buy the*

bodies back from soldiers in the Ukraine; they were bribed for the bodies. This will stick with them for the rest of their days". Wynn also highlighted the level of stress placed on staff and the need for counselling after such an event.

Like McCarthy, Agberah suggested that you do not have the luxury of being overly restrictive about who you send to work in the FAC; the reality is that between the location and time of the incident you could ultimately just need to utilise all the resources you have available.

All interviewees concurred that each family should be matched with a pair of staff rather than one person. This pairing helps to mitigate some of the common issues staff in this situation face, e.g., fatigue and becoming too attached to the family involved. Agberah advised that you should try, where possible, to pair an experienced disaster management staff member with an airline employee. Wynn, however, postulated that it could be a challenge merging airline staff with another organisation like a disaster company, as the staff can become territorial.

The traits that Agberah identified as important in staff that work in the FAC can be summarised as follows:

- Good verbal communication skills: effective communication with families is essential;
- Good written communication: The information they collect from families is needed to identify their loved ones and must, therefore, be clear and precise. They also need to complete a daily brief; these briefings can be used in a court of law during the investigation stage;
- Empathy: They must try to understand what these people are going through;
- Tolerance: They will be dealing with people from all walks of life and all cultures and must have the highest respect for everyone.

Being culturally aware is vital to the proper running of the FAC. Ref. [46] stressed the importance of the cross-cultural nature of crisis communications for companies with a global market (e.g., airlines) in the events of crashes in order to sustain the airline's positive public relations. Agberah stated: *"We do try to be as culturally sensitive as possible when we are repatriating the bodies. We ask the family about cultural and religious beliefs and how they would like the body prepared. In the FAC we try to pair families with people who speak their language and provide translators and prayer rooms"*. Bellew also highlighted the need for cultural awareness training. Sharuji said that a passenger could have three to four different nationalities, be the 'bread winner' of the family or be in a complex family situation. He stated that it is important that support is provided to the passenger's family. Agberah emphasised the importance of providing practical assistance, especially concerning accommodating and resolving issues with visas. Disaster management companies should be helpful in this regard as they have established contacts in embassies built from years of experience with similar situations.

McCarthy stated that: *"there are so many cultures within the FAC and one person could be on their own, another could be a big family group who are using humour to get through the day, or there can be fighting between families and it can be quite surreal. By day 3, Air Asia was filtering out some of the people who showed up to the FAC as there was a Mardi Gras Atmosphere in some areas. Two to three family members are all that is required after the information has been taken"*.

#### 4.2.3. Brand Recovery

The airline can struggle as a business in the aftermath of a crash, and the brand damage can have a significant impact on the future of the business. Bellew stated that the MAS brand still has not recovered from MH370, and feels the lack of apology was to blame. Wynn postulated that organisations should be responsible for their actions as ultimately their actions and their reputation are at stake. McCarthy listed the following elements of the Air Asia response that he feels were prudent in protecting the brand:

- A caring response;
- Prompt communication;
- Changing the website colours to grey as a sign of mourning;

- Gradually moving the accident site away from the main site;
- Management staff attending the funerals.

Airlines put a lot of effort into their brand recovery after an accident. Shortly after Germanwings flight 9525 crashed in the Alps, it was rebranded to Eurowings. After the British Airways Boeing 777 crash in 2008, where there were no fatalities, BA took steps to protect their brand. Even though the crash was due to a technical issue, BA controlled the media by using the captain as the face of the airline and praising his ability to control the situation and saving the lives of all on-board [31].

## 5. Conclusions and Recommendations

This research found that aviation is a highly regulated industry with a legal requirement on airlines to have detailed plans in the event of an incident. All of the industry experts that were interviewed concurred that the current laws were sufficient to take care of the friends and family in the aftermath of an incident. Despite having strict guidelines in ICAO Annex 13 [47], airlines have delivered mixed results (e.g., positive for Air Asia and negative for MAS). The research results highlighted the need for FACs to be flexible as well as prepared for the response to a disaster. The main goal of the FAC is to protect the friends and family, keep them close, keep them safe, and keep them updated. There were three main areas of improvement for Malaysia Airlines MH370 handling as outlined in Table 5.

**Table 5.** Malaysia Airlines Areas of Improvement.

Actions	Consequences
Delayed communication	<ul style="list-style-type: none"> <li>• Friends and family looked to media for information;</li> <li>• Government took control and used the silence for political gameplay;</li> <li>• Many conspiracy theories filled the silence and caused further distress to the friends and families;</li> <li>• A loss of faith and trust in MAS.</li> </ul>
No assistance from a disaster management company	<ul style="list-style-type: none"> <li>• No professional guidance on how to regain control of the situation;</li> <li>• Staff became defensive as they were too emotionally connected;</li> <li>• With limited guidance available, poor judgements on how to communicate with the friends and families were made e.g., texting all the friends and family confirming the deaths of their loved ones.</li> </ul>
No apology	<ul style="list-style-type: none"> <li>• No closure for the victims' friends and families;</li> <li>• Building anger and resentment, so any attempt to make peace was met with cynicism;</li> <li>• No public sympathy or support evident;</li> <li>• Damaged reputation.</li> </ul>

To deliver the best outcomes, the findings of this research indicate that the airline should run the FAC collaboratively with a disaster management company. Ideally, the airline will lead the response with their trained staff and be supported by the disaster management company. Taken together, the results of the literature review and the interviews suggest that training the airline staff in all areas of emergency response is imperative, particularly the staff in the FAC. Training for an emergency can become a tick box exercise if the staff feel that they will never experience a disaster. Bringing in someone with real-life experience of managing disasters will add a depth and realness to the training that is necessary for productive, impactful learning.

The research results suggest that airlines should carefully choose the people who care for the friends and families in the FAC. It should be their own staff who are directly caring for the families as this will connect them with the airline and help to build a positive relationship. A key finding, that is not currently documented but was very obvious from

the interviews, was that every staff member should be paired with an experienced member from a disaster management company as this will ensure there are no attachment issues and the best level of care is provided to the families. Sharuji said that in the case of the MH317 disaster, the Dutch grieve in private and did not use the four vouchers provided to the family for the memorial ceremony. Still, in the case of the Chinese (where there was a single child policy), they used them all. There were three different hotels booked in Amsterdam to accommodate all the victim's family members, but only 40 people used them, whereas 1500 people came from China in the case of MH370. Staff should also be trained to take care of the needs of a diverse mix of cultures. The embassies should be used for support where there is a lack of knowledge or language skills.

In the FAC, airlines should be as sensitive as possible when matching caregivers and families. They should be aware of who the family has lost so as not to allocate a caregiver that resembles their lost loved one, and try to get the best cultural and language match so the family can feel safe and relate to the caregiver. Moreover, if the airline has to deal with a mass fatality incident, the staff in their emergency response team should be stood down and, where possible, not be used for future events. They should also receive post-incident support and counselling.

The evidence from this research pointed to the importance of communication, prompt, accurate communication delivered by the CEO or someone of similar status. The airline should communicate as soon as possible and apologise to everyone impacted by the tragedy. The airline should bring the media close; they should set up an area for the media near to the FAC. This should foster a positive relationship with the media and help to minimise the negative conspiracy theories, which often fill a communication void. Communication within the organisation should also be a priority, this will also help to ensure the friends and families of the victims are first to hear of any new developments before they are released to the media.

This research suggests being transparent and doing all you can do for the victims' friends and family in the aftermath of a crash will lead to the best outcome for the airline. In addition, management attending victims' funerals has proven to go a long way in gaining back some of the trust lost after an accident. The research reveals that airlines should seek guidance from a professional disaster management company to guide all their communications. However, as long as airlines ensure everything they do is in the best interests of the friends and family of the victims, the brand should be protected.

Companies must train their emergency response teams. It is too difficult and costly to train all airline staff in emergency response. However, airlines should consider training all frontline staff in line with three key principles: (i) demonstrate empathy in all you do, (ii) only the communications department should speak to the media, (iii) know the importance of data collection and documentation. This training should help ensure frontline staff can assist in the FAC during an emergency.

The above recommendations are not exclusive to aviation; they may be used in many disaster/crisis contexts. For every disaster or crisis with fatalities, the care of the friends and family of the victims should be a priority. This people-centric focus will help ensure that the human aspects of a disaster are handled appropriately and, in turn, help safeguard the survival and future growth of the organisation.

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## References

1. IATA. Safety. 2022. Available online: <https://www.iata.org/en/programs/safety/> (accessed on 10 March 2022).
2. Ray, S.J. *Strategic Communication in Crisis Management: Lessons from the Airline Industry*; Greenwood Publishing Group: Westport, CT, USA, 1999.
3. Ranter, H.; Aviation Safety Network Releases 2018 Airliner Accident Statistics—ASN News. ASN News. Available online: <https://news.aviation-safety.net/2019/01/01/aviation-safety-network-releases-2018-airliner-accident-statistics/> (accessed on 20 June 2019).
4. Akyildirim, E.; Corbet, S.; Efthymiou, M.; Guiomard, C.; O’Connell, J.F.; Sensoy, A. The financial market effects of international aviation disasters. *Int. Rev. Financ. Anal.* **2020**, *69*, 101468. [[CrossRef](#)]
5. Corbet, S.; O’Connell, J.F.; Efthymiou, M.; Guiomard, C.; Lucey, B. The impact of terrorism on European tourism. *Ann. Tourism Res.* **2019**, *75*, 1–17. [[CrossRef](#)]
6. Warnock-Smith, D.; Graham, A.; O’Connell, J.F.; Efthymiou, M. Impact of COVID-19 on air transport passenger markets: Examining evidence from the Chinese market. *J. Air Transp. Manag.* **2021**, *94*, 102085. [[CrossRef](#)] [[PubMed](#)]
7. Aviation Safety Network. ASN Aviation Safety Database. Available online: <https://aviation-safety.net/database/> (accessed on 15 March 2022).
8. Murphy, G.; Efthymiou, M. Aviation safety regulation in the multi-stakeholder environment of an airport. *J. Air Transp. Stud.* **2017**, *8*, 1–26. [[CrossRef](#)]
9. Skybrary. Family Assistance. Available online: <https://skybrary.aero/articles/family-assistance> (accessed on 20 March 2022).
10. Kelly, D.; Efthymiou, M. An analysis of human factors in fifty controlled flight into terrain aviation accidents from 2007 to 2017. *J. Safety Res.* **2019**, *69*, 155–165. [[CrossRef](#)]
11. Chang, Y.H.; Yeh, C.H.; Wu, P.S. Evaluating airline crisis management performance: The cases of flights GE222 and GE235 crash accidents. *J. Air Transp. Manag.* **2018**, *70*, 62–72. [[CrossRef](#)]
12. Gerken, F.; Van der Land, S.F.; van der Meer, T.G. Crisis in the air: An investigation of AirAsia’s crisis-response effectiveness based on frame alignment. *Public Relat. Rev.* **2016**, *42*, 879–892. [[CrossRef](#)]
13. Coppola, D.P. *Introduction to International Disaster Management*; Elsevier: Amsterdam, The Netherlands, 2015.
14. Faulkner, B. Towards a framework for tourism disaster management. *Tour. Manag.* **2001**, *22*, 135–147. [[CrossRef](#)]
15. Lukaszewski, J.E. *Lukaszewski on Crisis Communication: What Your CEO Needs to Know about Reputation Risk and Crisis Management*; Rothstein Publishing: Brookfield, CT, USA, 2013.
16. Weiner, D. Crisis communications: Managing corporate reputation in the court of public opinion. *Ivey Bus. J.* **2006**, *70*, 1–6.
17. Teahen, P.R. *Mass Fatalities: Managing the Community Response*; CRC Press: Boca Raton, FL, USA, 2011.
18. Kendra, J.M.; Wachtendorf, T. Elements of resilience after the world trade center disaster: Reconstituting New York City’s Emergency Operations Centre. *Disasters* **2003**, *27*, 37–53. [[CrossRef](#)]
19. McLoughlin, D. A framework for integrated emergency management. *Public Adm. Rev.* **1985**, *45*, 165–172. [[CrossRef](#)]
20. Waugh, W.L. *Living with Hazards, Dealing with Disasters: An Introduction to Emergency Management: An Introduction to Emergency Management*; Routledge: London, UK, 2015.
21. Coombs, W.T. *Ongoing Crisis Communication: Planning, Managing, and Responding*; Sage Publications: New York, NY, USA, 2014.
22. Russell, R.; Faulkner, B. Entrepreneurship, chaos and the tourism area lifecycle. *Ann. Tour. Res.* **2004**, *31*, 556–579. [[CrossRef](#)]
23. Fearn-Banks, K. *Crisis Communications: A Casebook Approach*; Routledge: London, UK, 2016.
24. Mitchell, T.L.; Griffin, K.; Stewart, S.H.; Loba, P. We Will Never Ever Forget’: The Swissair Flight 111 Disaster and its Impact on Volunteers and Communities. *J. Health Psychol.* **2004**, *9*, 245–262. [[CrossRef](#)] [[PubMed](#)]
25. IATA. IATA Communication Guidelines in the Digital Age. 2018. Available online: <https://www.iata.org/en/publications/crisis-communications-guidelines/> (accessed on 12 January 2022).
26. NTSB. *Task Force on Assistance to Families of Aviation Disasters*; Final Report; Department of Transportation: Washington, DC, USA, 1997.
27. ICAO Policy on Assistance to Aircraft Accident Victims and Their Families. Doc 9998 A/N499. Available online: [https://www.icao.int/Meetings/a38/Documents/DOC9998\\_en.pdf](https://www.icao.int/Meetings/a38/Documents/DOC9998_en.pdf) (accessed on 23 March 2022).
28. Häty, H.; Hollmeier, S. Airline strategy in the 2001/2002 crisis—the Lufthansa example. *J. Air Transp. Manag.* **2003**, *9*, 51–55. [[CrossRef](#)]
29. Lofland, L.H. Loss and Human Connection: An Exploration into the Nature of the Social Bond. In *Personality, Roles, and Social Behavior*; Springer: New York, NY, USA, 1982; pp. 219–242.
30. Grundy, M.; Moxon, R. The effectiveness of airline crisis management on brand protection: A case study of British Airways. *J. Air Transp. Manag.* **2013**, *28*, 55–61. [[CrossRef](#)]
31. Kremic, T.; Tukul, O.I.; Rom, W.O. Outsourcing decision support: A survey of benefits, risks, and decision factors. *Supply Chain Manag.* **2006**, *11*, 467–482. [[CrossRef](#)]
32. Lockwood, N.R.; Sphr, G. Crisis management in today’s business environment. *SHRM Res. Q.* **2005**, *4*, 1–9.
33. Schniederjans, M.J.; Schniederjans, A.M.; Schniederjans, D.G. *Outsourcing and Insourcing in an International Context*; Routledge: London, UK, 2015.
34. Yin, R.K. *Qualitative Research from Start to Finish*; Guilford Publications: New York, NY, USA, 2015.

35. O'Connell, J.F.; Avellana, R.M.; Warnock-Smith, D.; Efthymiou, M. Evaluating drivers of profitability for airlines in Latin America: A case study of Copa Airlines. *J. Air Transp. Manag.* **2020**, *84*, 101727. [[CrossRef](#)]
36. Efthymiou, M.; Usher, D.; O'Connell, J.F.; Warnock-Smith, D.; Conyngham, G. The factors influencing entry level airline pilot retention: An empirical study of Ryanair. *J. Air Transp. Manag.* **2021**, *91*, 101997. [[CrossRef](#)]
37. Khan, N.; Efthymiou, M. The use of biometric technology at airports: The case of customs and border protection (CBP). *Int. J. Inf. Manag. Data Insights* **2021**, *1*, 100049. [[CrossRef](#)]
38. Hiney, N.; Efthymiou, M.; Morgenroth, E. Regional airport business models: Shannon Group as a case study. In *Air Transport and Regional Development Case Studies*; Routledge: London, UK, 2020; pp. 86–120.
39. Efthymiou, M.; McCarthy, K.; Markou, C.; O'Connell, J.F. An Exploratory Research on Blockchain in Aviation: The Case of Maintenance, Repair and Overhaul (MRO) Organizations. *Sustainability* **2022**, *14*, 2643. [[CrossRef](#)]
40. Corbet, S.; Efthymiou, M.; Lucey, B.; O'Connell, J.F. When lightning strikes twice: The tragedy-induced demise and attempted corporate resuscitation of Malaysia airlines. *Ann. Tourism Res.* **2021**, *87*, 103109. [[CrossRef](#)]
41. Zafra, N.; Maydell, E. Facing the information void: A case study of Malaysia Airlines' media relations and crisis communication during the MH370 disaster. *Asia Pac. Public Relat. J.* **2018**, *19*, 41–65.
42. Chinese Relatives of MH370 Passengers Protest. 2014. Available online: <https://www.abc.net.au/news/2014-03-20/chinese-relatives-of-mh370-passengers-protest/5332852> (accessed on 12 January 2022).
43. MH370 Disappearance Over Water May Hamper Search. 2014. Available online: <https://www.malaymail.com/amp/news/malaysia/2014/03/08/mh370-disappearance-over-water-may-hamper-search/631359> (accessed on 16 March 2022).
44. Emotional MH370 Families Demand Answers, Five Years on. 2019. Available online: <https://www.france24.com/en/20190308-emotional-mh370-families-demand-answers-five-years> (accessed on 2 January 2022).
45. Weintraub, M. *Killer Facebook Ads: Master Cutting-Edge Facebook Advertising Techniques*; John Wiley & Sons: Hoboken, NJ, USA, 2011.
46. Pinsdorf, M.K. Flying different skies: How cultures respond to airline disasters. *Public Relat. Review* **1991**, *17*, 37–56. [[CrossRef](#)]
47. ICAO Annex 13 To the Convention on International Civil Aviation Aircraft Accident and Incident Investigation. Available online: [https://www.emsa.europa.eu/retro/Docs/marine\\_casualties/annex\\_13.pdf](https://www.emsa.europa.eu/retro/Docs/marine_casualties/annex_13.pdf) (accessed on 10 January 2022).