
The Importance Of Decision Making In Weather

In a Pilot's career, they will encounter many different circumstances that require quick thinking and proper judgement, this is regarded as Decision Making. Circumstances such as poor weather require pilots to react and make a decision based on the environment around them. Pilots are required to provide adequate judgement calls for the safety of themselves and crew onboard. There is no secret that experience plays a significant role in decision making, decision making can be broken down into different categories that cater for an array of different judgement types. Weather plays a major role in many accidents around the world, it also dictates whether you leave or arrive at your chosen destination. Pilots are capable of improving their decision-making skills, but the correct steps need to be taken in order to do so.

Decision making is one of the most fundamental aspects to flying an aircraft. The ability to make judgment calls in certain situations is an essential part in a pilot's career. Decision making is the process of making logical selections based on information received in any particular environment. Decision Making can be broken up into multiple different steps that will allow you to make a judgement call, this involves choosing between possible solutions to a problem (Skillsyouneed, 2019). These decisions can be made with an intuitive approach or a reasoned process. Making decisions will involve taking specific information and attempting to make sense of the information to put it towards a solution to a problem or situation, the procedure will usually go through a process of receiving information, to actually making the decision, and eventually taking action to improve the situation. Different types of decision making will warrant different results. Natural Decision making (NDM) emerged in the 1980's and was implemented to discover how people make decisions in a real-world setting (G. Klein, 2008). Research found that people were using prior experience to inevitably categorize situations. This implied that people were relying on categories of prior experience to assess similar problems. Natural Decision Making shifted human decision-making from a domain independent general approach to a knowledge-based approach, which was emphasised by people using prior experience to evaluate similar situations encountered (G. Klein, 2008). The Natural Decision-Making method studied professionals from different areas of work, including Navy Commanders, jurors, nurses and most importantly pilots. Aeronautical Decision Making is one of the most relevant decision-making methods when it comes to analysing General Aviation pilot's judgement. Aeronautical Decision Making is a systematic approach to risk, this method also analyses how a person's attitudes can influence decision-making and how these specific attitudes can affect the environment on the flight deck (FAA, 2017). There are many important factors that influence decision-making, one significant factor is experience. In addition to experiences, there are more than one cognitive bias that influence any decisions made. Cognitive Biases are thinking patterns based on observations that may lead to memory errors or inaccurate judgement (C. Dietrich, 2010). In decision making, cognitive bias has a major effect because it influences people to rely on previous knowledge, while at the same time dismissing information from observations that are regarded as unimportant (C. Dietrich, 2010). This is relating to pilots as; the weather is sometimes uncertain and severe weather events can happen at any time. Although experienced pilots are very skilful, and their situational awareness is second to none, accidents can still happen. If a pilot is to use prior knowledge rather than situational awareness and observations while involved in an unexpected weather event, then the results can be severe.

Weather is a major part of Aviation; in some instances, it dictates whether you leave for your intended destinations or not. Weather systems will affect different aircraft and pilots in different ways, where commercial pilots in large airliners would not worry about rain or light thunderstorms. Every license and aircraft have different weather limitations that they are permitted to fly in, for example Recreational pilots are not permitted to fly in severe weather systems. Thunderstorms, and the rapid fluctuation of air pressure that is usually associated with them, creates a feeling of uncertainty amongst the air crew and passengers (airservices, 2017). Severe thunderstorms are not the only weather system that affects the operations of aircraft. Systems such as Fog and Low cloud, may present more of a threat to aircraft that are trying to arrive or depart a particular airport. Low cloud and fog impede the vision of pilots when they are attempting to land or when they are attempting to correct their situational awareness. Pilots who hold a Recreational Pilots license are permitted to operate under VFR operations during the day. This is because the licensing received does not cater for flying under IMC conditions, this means that VFR pilots that are operating under 10,000ft are to ensure they keep a minimum 5000m of visibility. Instrument meteorological conditions (IMC) is a category of flight that best describes weather conditions that require pilots to depend on their onboard instruments, they are required to exercise instrument flight rules (IFR) rather than VFR flight. Getting caught moving from VFR to IMC can be dangerous when there are severe weather systems in the area, an example of this would be the crash of aircraft ZS-OSD on October 5th, 2008 (Australianflying, 2010). The 21-year-old pilot was equipped with a CPL and Instrument Rating, was also accompanied by eight passengers and was operating at approximately 1000ft. The young pilot encountered thick mist that covered about one third of the mountain (Australianflying, 2010), unfortunately the aircraft ploughed through a pine tree plantation and killed all passengers on board the aircraft. The accident was a result of the pilot flying a VFR certified aircraft, who then encountered IMC conditions when attempting to operate a routine VFR flight. The thick mist encouraged the pilot to make a decision that unfortunately resulted in a controlled flight into terrain (Australianflying, 2010). The accident accurately portrays the dangers that arise when VFR pilots are affected by IMC conditions and how weather impacts a pilot's decision-making. Sudden changes in weather, as well as deteriorating weather present risks that directly affect the pilot. Although prior planning for the flight is mandatory, weather is always changing, and a pilot can be presented with multiple scenarios that require the pilot in command to make an adequate decision that warrants the best result. If this pilot had the correct training that included a decision-making curriculum, this accident may have been avoided.

Weather has a significant impact on a pilot's decision making, as weather is always changing it demands that the pilots are capable to make a decision in a short period of time. Pilot decision making in deteriorating weather has a significant impact on the percentage of fatalities over the last 2 decades (P. Madhavan, 2006). Adding the element of weather increases the likelihood that the pilot will find making decision more difficult. Authors attempt to evaluate existing experimental data on cognitive and affective processes that govern pilot decision making (P. Madhavan, 2006). The experimental data is used in relation to decision making in changing weather events, such as moving from VMC conditions into IMC conditions. Adequate prior planning that caters for a wide range of weather systems should always be implemented before the aircraft leaves the ground to ensure that all controllable variables are taken care of. Although weather will always be changing and can affect people in different ways, methods need to be implemented to ensure pilots are well equipped and well educated in regard to decision making. The Federal Aviation Administration (FAA) took steps in a direction that will result in training directly assigned to improving Aeronautical Decision Making to be implemented

into the pilots training course. Testing of the training programme started in 1987 with 6 decision making orientated manuals being published that cater to an array of licensed pilots. The manuals implemented by the FAA contained material that is designed to reduce the number of decision-making related accidents. Pilots who received ADM-training made fewer errors during flight than those who didn't receive the training, the statistics implied that the trainees were making 10 to 50 percent fewer judgement errors (FAA, 2017). The implementation of this training course is imperative because it presents pilots with methods to increase their personal capabilities. Experience will always be a significant part of decision making which is why obtaining as many hours flight time is crucial to ensure that pilots have the best chance to make decisions effectively. Using methods implemented by the FAA and using experiences pilots will have the opportunity to improve their decision-making skills.

Adequate training is required to ensure that pilots can effectively make decisions when they are placed in a challenging weather scenario that requires the pilots to make quick judgement calls. Decision making is a fundamental part of the aviation industry, it is a skill that is quite valuable in the cockpit. The Aviation industry operates with the factor of weather always imposing on operations, in some cases weather dictates the outcome of flights. There are specific methods such as ADM-training that will support pilots to improve their own decision-making skills, these methods directly aim at decision making in poor or deteriorating weather which is a statistical leader in aviation related accidents. Even with the implementation of a decision-making curriculum, improvements are still needed to ensure that pilots are able to continue developing their decision-making capabilities.