



EFFECTIVE IMPLEMENTATION OF SAFETY MANAGEMENT SYSTEMS (SMS) AND CHANGE OF CULTURE TO PRACTICE

Change of Culture to practice SMS

Abstract

Safety Management Systems (SMS) has become an important topic in the Aviation industry. Aviation authorities are emphasizing the aerospace companies to implement SMS. Current industry challenge is to implement the SMS effectively and efficiently in their companies. The most meritorious, yet complicated, way SMS can work in the organization is, by changing the culture of the way we work and think.

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Abbreviations

CAA	- Civil Aviation Authority
CEO	- Chief Executive Officer
DOA	- Design Organisation Approval
EASA	- European Aviation Safety Agency
FAA	- Federal Aviation Authority
HOA	- Head of Airworthiness
IT	- Information Technology
SMS	- Safety Management System

Introduction

This document solely involves understanding of cultural shifts to effectively implement and practice Safety Management System (SMS).

A brief explanation of SMS is necessary to understand this report further.

Safety Management is a systematic and proactive management of aviation safety. Safety management is for the total aviation system, empowering traditional risk based practices and ensuring that the safety risks are managed proactively and systematically. Safety management provides opportunities for innovation and flexibility. It is about, how to achieve safety rather than what to do.

Figure 1, shows statistics of air accident fatalities year wise from Statista website, (Statista, 2022),

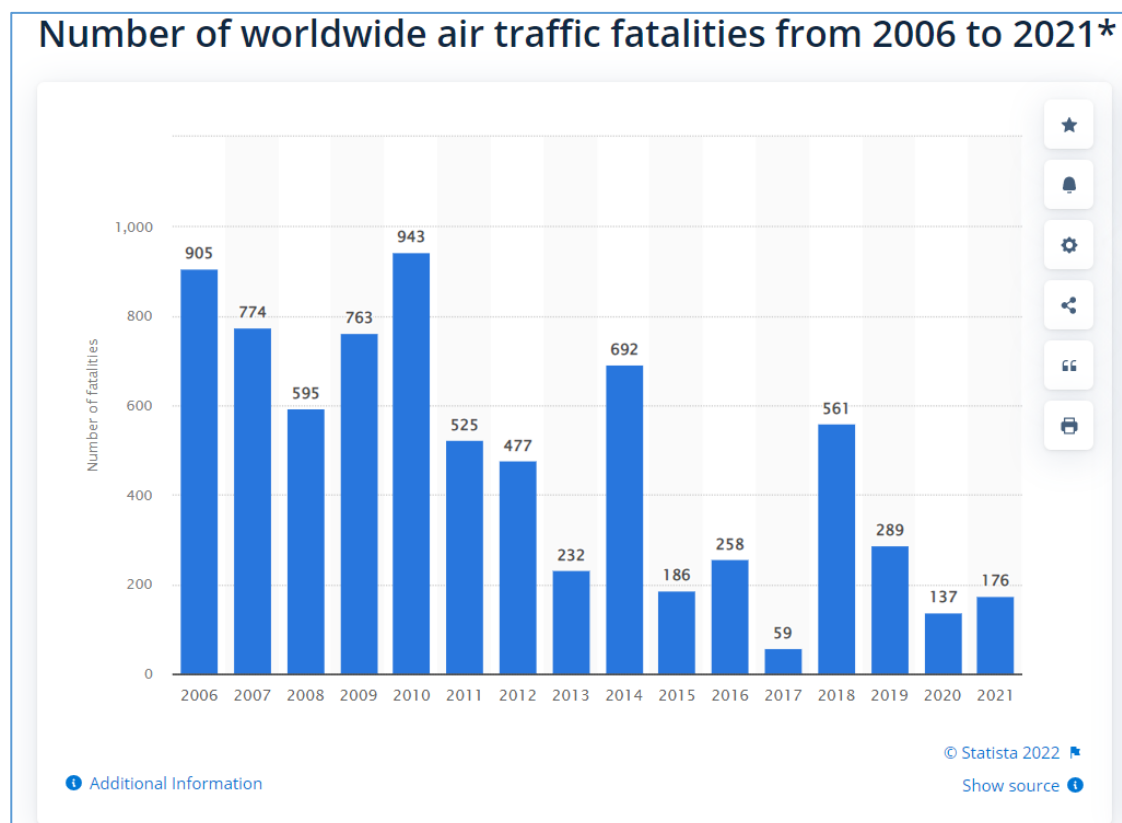


Figure 1

Fatality rate has fallen sharply since 2006 as per the trend shown in Figure 1. Air travel is becoming safer day by day because of the fact that the aviation industries are working towards making their products safe and fit to fly under the constant surveillance of regulatory bodies. Compliance to these regulatory requirements shall be followed and complied by all aerospace companies. With the implementation of SMS, the trend can go further lower.

Like any other industries, aviation is also subject to certain regulations and airworthiness requirements by the regulatory bodies like CAA's of all the countries, EASA for European Companies within European Union, FAA in the United States of America, etc.

SMS is in the process of becoming Aviation regulation in coming days in EASA. Aviation industries have been working very hard to reduce or eliminate the potential safety issues that could cause hazardous and catastrophic accidents or events.

A general rule of thumb is that, an event, if not addressed in a timely manner, could result in multiple events, leading to a catastrophic failure.

Regulatory bodies e.g. EASA, CAAs are constantly improving the existing regulatory airworthiness requirements (e.g. Part 21 requirements and Certification Specifications) and also are introducing new rules to address the safety issues. Regular audits, training sessions and workshops are all been part of these measures.

Over the last few years, EASA has framed regulatory requirements on the topic of SMS to address the safety issues at all levels, not just limited to product, design, manufacturing, maintenance but also at the organisation level.

Effective training, regular emphasis on safety and safety promotion initiative by the leadership of an organisation can have a positive impact in embracing the SMS and can bring a change in the culture.

Perhaps, there are a number of definitions for “Culture” across many books and journals, but definition per ***Changing Organisation Culture*** (Mats Alvesson, 2015) is more attractive and relevant to the context of this report, and the definition is as below,

“Culture most commonly refers to ways of thinking, values and ideas of things rather than the concrete, objective and more visible part of an organization.”

The implementation and practicing ideas of this report are very ambitious, but it is very important to change ourselves to improve the safety of a product or the work place. The growth of an organisation brings opportunities for growth of the employees.

It is highly difficult to bring in a change to culture as these may root back to the way we would have seen things during our upbringing, adaptation to a particular system of working, etc.

Change is exciting!

Change in Culture calls for change in behaviour or its driving factor, with a calculated risk.

The change in culture brings hope for progression.

Aims & Objectives

SMS can also be used in our day to day personal life to enhance and improve the quality of life.

The aims and objectives of this document is about how and what needs to be done, to change ourselves to practice SMS.

- A cultural change to report safety related issues, problems and promote safety at all levels of the organisation.
- Boost safety awareness across the organisation.
- Confidence to the customers regarding the products manufactured by the company.
- Abiding to regulatory requirements.
- Continuous improvement in product quality
- Improving the safety at the work place.
- Integration of technology in helping practice SMS e.g. smart button systems etc.

Challenges

Following are some of the primary challenges to be addressed during the implementation.

1. Resistance to new process or change to the process

The most important and challenging for the leadership team, is to overcome the resistance to a change.

Under common circumstances, when there is a change to improve, there is always a resistance from anyone and everyone. This is a normal human behaviour. Implementation of new processes are always subjected to a high degree of opposition by the employees irrespective of any grade. Hundreds of questions are raised as to why the change is needed when things are working smoothly. This always happens, as we always want to be in our comfort zones.

2. Sustainability

Once any system is implemented, it needs to be practiced and used daily. Majority of the times, when a system is implemented, it is never used unless it is essential to complete the work. SMS is no different! It may become evident in the audits that the processes are not practiced upon implementation leading to audit findings.

Therefore, once SMS is implemented, it is the responsibility of each and every individual of the company to practice and report problems and safety issues.

3. Reporting safety issues and problems

The safety issues or problems must be reported seamlessly to the relevant SMS representatives. There are high chances that we get carried away with our day to day work. As and when a problem or a safety issue arise, it must be reported. SMS manager alongside the HOA, will then report the incidents or safety issues to the regulatory body, e.g. EASA (Reporting-EASA, n.d.) for European Aerospace companies and aircrafts manufactured in Europe.

4. Risk assessment and mitigation

A biggest challenge to the management and to the SMS representatives to find out the risks, assess them and lay out a plan to mitigate them. It is important to anticipate or foresee the problems and perform a risk assessment to mitigate them.

5. One system for all

Multiple sites across different countries should easily understand and implement the SMS system. It becomes increasingly interesting to lay a procedure in a way where everyone can follow the same process with the same enthusiasm and with the same understanding.

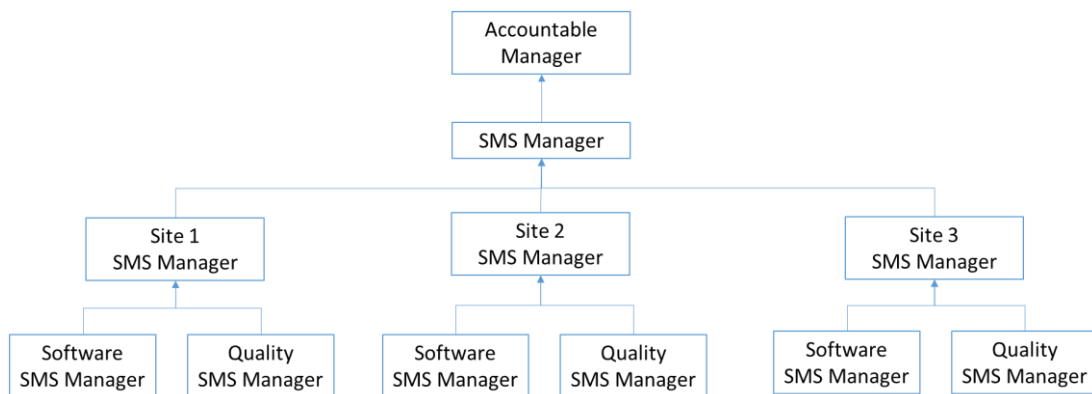
6. What's in it for me?

When a new process like SMS is introduced, another natural question that arises from any of us is, what's in it for me, why should I do it and how will I be benefitted? Personal benefits take precedence of all. We have to respect this and address very carefully. A plan to integrate SMS within their work with no extra efforts will be a good idea to start with. SMS is not just for the organisation. It is for the individuals benefit as well to avoid accidents, avoid undesired events in life. It helps increase maturity in our thinking.

Implementation and Practicing

It is highly interesting to make sure SMS is implemented in the organisation ensuring regulatory airworthiness requirements are met. A good organisation structure is very important to better control the practice of SMS.

Leadership has to layout a plan of implementation and appoint an organisation level SMS manager directly reporting to the Accountable Manager (CEO) of the Organisation. Accountable Manager is directly responsible for all the insights of SMS. Any safety issue at the aircraft level should be answered to the regulatory bodies by the SMS Manager and HOA, if questioned. Local SMS managers also need to be appointed for different sites and functions reporting directly to SMS manager as shown in the chart below.



The following aspects, although non-exhaustive, are to be considered to ensure practicing SMS.

a) Rational behind activity

A valid rational behind each and every feature on a design or for an activity should be thought of, by whoever is working on it.

This is the proactive approach to avoid any events or problems.

For example, a designer designing a mechanical component should think of the reason for creating each and every feature on that component. Unnecessary features or design should be avoided. This will bring in a culture of thinking, rationalising and avoiding unnecessary failures, accidents or events in the product or at the work place.

A simple logic in aviation, do I want to fly in the aircraft in which the product I have designed is assembled? The same logic can be applied to all industry sectors.

If we are not confident or comfortable of any work, talk to the managers or colleagues to get things right.

b) Reporting.

Any incidents or activities that are not safe must be brought into the notice of the SMS focal or managers. SMS focals will engage in the risk assessment or root cause analysis of such incidents and arrive at an appropriate solution to avoid such incidents and hence improve the product. Where necessary, depending upon the severity of the incident or the event, SMS manager along side HOA, shall ensure to contact relevant regulatory bodies.

A database to record such incidents and activities should be maintained and appropriately categorised to help address the issues or present them to the regulatory bodies or auditors, when requested during the audits.

For computer users, we have to consider simple button systems in outlook (or any other email system) like “**Report Safety Issue**”, which can accelerate the problem reaching the right people in the organisation. The SMS staff can immediately contact and attend the individual who raised it without a necessity to go in search of the SMS focals or managers or without writing an email to them.

Where people are working in a shop floor, manual push buttons reporting system could be considered, instead of going in search of SMS focals.

c) Continuous improvements

A continuous improvement approach narrows down the probability of the incidents. Hence, improvement activities should be conducted at regular intervals within the functionalities or at the individual levels. SMS focals should be involved in such improvement activities, so that the same can be propagated across other sites via sharing of knowledge.

d) Promoting Safety.

Implementation is not sufficient for the SMS to sustain. A proper training plan should be in place to train each employee of the organisation. The trainings must be simple and most effective. Trainings should be interactive, with interesting examples and engaging. Trainings should engage all the participants and should not be boring. Workshops must be conducted, when necessary to promote safety. Communication is an important tool in promoting safety. Any small incident or accident should be reported to make sure, it does not happen again. Target should be to improve the process of safety in all cases.

e) Leadership drive.

Lessons from NUMMI (Shook, 2010), **Impact of Leadership and Change management Strategy** (Ashkanasy, 2006) have proven that leadership and management drive can change the way the employees think and their culture of working. Leadership should drive and accelerate the implementation of the SMS until it becomes a culture and is practiced within the organisation seamlessly. The leadership team should make sure necessary trainings are facilitated for the employees. The change of culture must be gradual instead of a sudden shock. The management needs to bring the change in a very smooth transition. Shocks can lead to loss of skills and resources.

f) Willingness to change and “change starts from me” attitude

The attitude for willingness to change is very important to change the culture. Although, this cannot be taught in class, but this can eventually be overcome by continuous training, relentless efforts to promote SMS. Again, leadership plays an important role in changing the attitude towards practicing SMS.

g) Cybersecurity

Cybersecurity is become a huge threat across the industries. This can also be addressed as a part of SMS. Hence, an SMS focal for Information Technologies and Systems should also be appointed to oversee the threats faced by the organisation.

h) Regular internal audits

Internal audits at regular intervals need to be carried out to ensure the system is working and is practiced across all the functions of an organisation. The auditor should be independent to the SMS and should directly report to the Manager accountability.

i) Training

Training needs to be in place to promote SMS. Effective and regular training sessions needs to be conducted to make sure everyone understands the importance of the SMS and use it in day to day activities at work. Training materials must be easy to understand, in simple language. Where required,

when multiple sites and multiple countries are involved, if English is not the language of communication, the process can have the local language to help individuals of all levels of the organisation to understand better.

j) Use of IT tools or smart tools

Effective utilisation of IT tools or smart tools within an organisation can help speed up and involve all levels of employees. Computer users can be provided with a simplified button in the computer itself to report a safety issue or a problem that he is facing or any others. The issues can be addressed quickly and efficiently by the SMS focals. People working in the shop floor can be provided with a button system to report any safety issues. These are some ways and are not the only ways to follow. The leadership alongside IT experts and facility managers, should look into making use of smart tools.

These above aspects are illustrated in Figure 2.

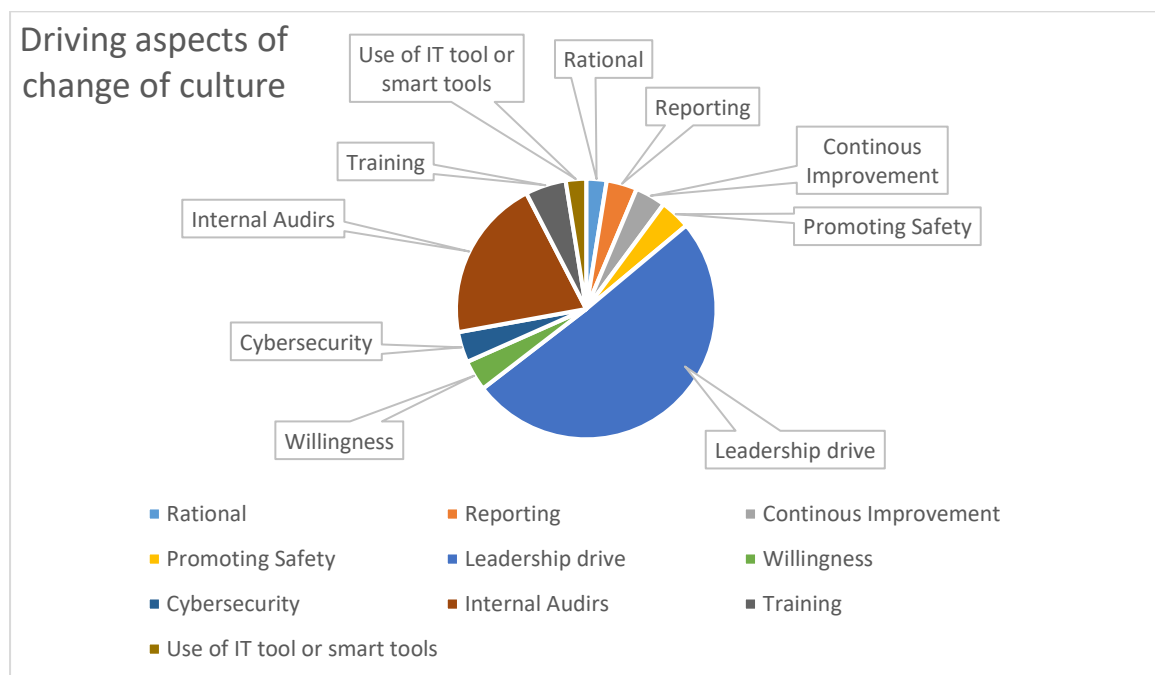


Figure 2

Background research

The aviation industries will be bound to implement SMS regulation in coming days. SMS is driven by the regulatory bodies e.g. EASA (SMS-EASA, 2016) for European Aerospace companies.

The implementation of SMS involves SMS Manual creation for the organisation defining various activities and functions.

A Safety Risk analysis and assessment should be discussed and improved at regular intervals like weekly or fortnightly. This will help tackle the safety issues and problems proactively.

There is a lot of material to read about SMS systems in (SMS-EASA, 2016). However, it is up to the companies to implement it in a right way and practice.

We can write the procedures, training materials and work instructions to train how to practice SMS systems. But, without an individual's interest and willingness to practice this in day to day activities, SMS may fail massively. Hence it should be discussed by the local functional managers daily at least for 5 to 10 mins with their direct reportees. When this becomes a regular activity, then things could go smoothly and more challenges arise to counter them.

(Shook, 2010) **Journal article “How to change a Culture-Lessons from NUMMI”** and (Ashkanasy, 2006) **Journal article, “The Impact of Leadership and Change Management Strategy on Organizational Culture and Individual Acceptance of Change during a Merger”** gives a great information about how the leadership and management have and can change the culture of the individuals by hitting the right chord of human behaviour or its driving factor.

An example of Nissan, the largest manufacturer of cars, quoted in the journal, **Organisational Culture and Change** (Mats Alvesson, 2015), when ran into a problem in 1980s, appointed a new CEO to bring in change. The new CEO put forward the motto that *“Management and the labour union should both discharge their duties properly”*. He also changed the culture by emphasising more about communications and the way to address all the employees regardless of their positions in the organisation shows how top management can be so powerful to bring in the change. He down played the hierarchical relations and put forward the organisations place in the market. The zeal to drive this initiative is highly commendable and impressive.

The sheer scale and size of the organisation, operating worldwide, with different ethnicities is an important topic to be considered in addressing the change in culture. Many companies share their work across different sites in one way or another, which demands an effective communication. Frequent travelling of the management or individuals is also involved in such projects. Communicating across different sites is one of the greatest challenge for the individuals involved in a project. For example, an UK or a French company having its branch in India or china or Mexico, could struggle to understand each other during communications via any interactive tools. Effective cultural trainings, communication, visiting the sites is very important to build the relationship and procedures translated to their local language will help in implementation and practicing of the SMS. Hence, SMS should work for multiple sites of different mind-set of people when implemented.

The existing procedures and processes that are followed for many years contribute to the culture. It becomes incredibly difficult to deviate from an existing procedure or a process, unless there is a will to embrace it and drive it. Leadership plays a major role in bringing this cultural shift.

Plenty of benefits are achieved by practicing SMS. A cultural change is absolutely necessary across all employees at all levels and this cannot happen without a drive from the leadership or the management team.

Benefits of SMS implementation, practice and cultural shift

The benefits listed below are not exhaustive. Below are some of the important benefits that can be achieved with the implementation and practice of SMS.

I. Safe workplace

This is the most important and highly desired by all companies. We can make our workplace safe by practicing SMS and regularly report any problems or safety issues as soon as it is noticed. The implementation and practice of SMS offers an improved and safe workplace. This will attract lot of people to join an organisation and also attracts lot of different customers to do business.

II. Safe products

Failures of the parts and products when assembled in the aircrafts are reduced or may be eliminated, sometimes. This can lead directly to eliminate or minimise the warranty claims on products in aftermarket business leading to Customer Satisfaction as described in para IV.

III. Safe Travel

The products manufactured by an organisation with effective utilisation of SMS procedures, are far more reliable and safe compared to other companies. These when installed on the aircrafts provide a high level of confidence to the customers flying those aircrafts resulting in safe travel.

IV. Customer Satisfaction

High reliability products leading to customer satisfaction and good customer rating. Customers may also grant additional privileges like reducing audit frequencies, reduced quality checks on their end, etc. It is a win-win situation for both company and the customer by reducing costs. This can also boost the business and win more programmes and projects from the existing customers.

V. Business attraction

With the implementation of SMS, other business opportunities open up and start coming through, based on the performance and ranking in the global market.

VI. Financial Benefits

Reduced insurance premiums, reduced maintenance can contribute directly to the profits of the organisation.

VII. Additional privileges granted by the Regulatory bodies

Based on the performance on the SMS additional privileges may be granted by the regulatory bodies, for example frequency of audits may be reduced, performance on Level of involvement may improve, etc.

VIII. Passenger safety

This is the primary motto of regulatory and airworthiness requirements. A part or a product that is used to manufacture an aeroplane, must be safe to install. These parts must be airworthy and safe. The SMS practice, will improve the product quality and reliability and hence, passengers safety.

Conclusion

The SMS is a great system, when implemented efficiently, effectively and with a great passion for Safety. The management should drive to implement this by introducing certain new processes and procedures, to practice in the organisation, unconditionally.

As seen in *Benefits of SMS implementation, practice and cultural shift*, there are numerous benefits that an organisation can achieve, when successfully followed in practicing SMS.

Change of culture and mindset is very important in making the SMS work for an organisation.

The response to all the problems or safety issues raised, should be addressed on priority to win over the confidence of the reporters and hence encouraging them.

Leadership drive is the most important factor that can bring change smoothly and drive to change the culture of the organisation effectively. Management plays a major role in achieving positive results of change in the implementation of SMS. Without Management initiative, nothing can be achieved and SMS is not an exception. Hence, leadership or management of any organisation should layout a strong foundation and lead the innovative approach to a change.

Question should be: why a change is required? Rather than a resistance to a change.

Safety of passengers and employees safety should be placed at the highest level and that the mind-set change starts from here.

Use of technology and smart ways to support practice of SMS should be considered. Ex. buttons in computers to report (MS Outlook can be customised to do this), manual button at each machine or workplace to report, should be considered.

Finally, we cannot expect others change, without me changing.

Recommendation

Implement this as soon as possible to incur all the benefits as explained in "***Benefits of SMS implementation, practice and cultural shift***" section.

A great information about leadership in the reference books is worth to read and understand how management should work to achieve goals that are high on stake.

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