International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Effects of Cultural Differences Across the Globe in the Aviation Industry

Suhana Yasmin

Student of BBA in Aviation Management, School of Business, Galgotias University

Abstract

There are numerous factors contributing to the ineffective collaboration of multicultural flight crews. This study presents an overview of Crew Resource Management history, CRM training courses, and communication challenges among flight crews. The national, organizational, and professional cultures of crew members have a significant impact on flight safety. Although the primary focus is on Saudi Arabian Airlines, the findings are applicable to any multicultural airline. Research has demonstrated the effectiveness of CRM training for pilots and flight attendants in foreign flying environments when considered separately. The authors examine accidents resulting from inadequate communication between pilots and flight attendants. A survey involving 30 pilots and 30 flight attendants working for Saudi Arabian Airlines was conducted which revealed that the participants recognized the importance of cultural differences as crucial aspects addressed in safety training and cooperation among crew members. Additionally, it was disclosed that effective communication significantly influences teamwork efficiency and safety outcomes. As a recommendation, it is suggested that the airline should establish an annual joint CRM training program for both pilot and cabin crew groups.

Keywords: Crew Resource Management, multicultural flight crews, communication challenges, flight safety, national culture

1. INTRODUCTION:

Error is a common occurrence in the human experience. The ancient Roman thinker Cicero (Circa 50 A.D.) emphasized the concept of human fallibility, stating that "To err is human." While errors are widespread, advancements in aviation have led to a reduction in these mistakes over time. This improvement can be attributed directly to enhanced technologies and the enforcement of stringent regulations and procedures that guide our operations, ultimately promoting safer travel for all.

1.1 Background and Significance

For many years, culture has been a prominent concern within the aviation community's safety framework. The globalization of the airline industry is now a tangible reality and is anticipated to persist(Liao, 2015). As airlines from different countries continue to integrate their operations and expand their international routes, cultural considerations will become increasingly significant. These new global air carriers are likely to form a blend of cultures among cabin attendants that align with the expected passenger demographics(Digital, 2019). Commercial airline aircraft are divided into two distinct sociological and geographical environments, namely the cockpit and the cabin, each with its own set of responsibilities resembling separate cultural contexts within the aircraft (Martin, 2020). The two cultures are structured into separate divisions, with pilots being coordinated under flight operations with an emphasis on safety.

Cabin crews are commonly part of the marketing departments in many airlines, where passenger service is prioritized. Aircraft manufacturers are currently developing aircraft that can accommodate over 800 passengers. A growing number of international airlines now recruit cockpit and cabin crews from different countries and diverse cultures, resulting in a need for inter-cultural Crew Resource Management training. Additionally, (Kim & Park, 2013)due to the rising use of multinational crews by major international airlines, there is an increasing demand for universal inter-cultural training programs.

Analysis of airline industry incidents indicates that the integration of flight deck and cabin crew significantly impacts cabin safety. In the context of globalization, it is important to consider how multiculturalism affects aviation safety and efficiency. Saudi Airlines provides a noteworthy example as a multi-cultural airline with employees from over 35 nationalities in the flight deck and 50 nationalities in the cabin. Introducing mixed Crew Resource Management training will enhance human factors skill development, ultimately improving crew collaboration and effectiveness on board aircraft.

Culture shapes an individual's perception of the world, influenced by language, education, religion, and customs. These factors yield positive and negative effects. Culturally diverse crews offer advantages such as varied interpretations of information and diverse problem-solving approaches among crew members (Martin, 2020). Conversely, if these cultural distinctions are not managed effectively, the misinterpretation of information can result in misunderstandings that may diminish crew effectiveness or even lead to an accident(Anca, 2019). Each airline needs to assess how its own culture influences decision-making concerning flightConversely, failure to effectively manage these cultural disparities can lead to misinterpretation of information and result in misunderstandings that may decrease crew effectiveness or even lead to accidents. Each airline needs to assess the impact of its own culture when making decisions about integrating flight crews. To mitigate any adverse multicultural implications and capitalize on the positive aspects for enhancing cabin and cockpit safety, most airlines rely heavily on comprehensive training and standardization methods(Martin, 2020). Different cultures may interpret the same situation differently, so standardized training like mixed CRM can help align crew members' understanding. Two key safety responsibilities of flight attendants are accident prevention by communicating hazardous conditions to the cockpit and maximizing survivability if an accident occurs(Kolander, 2019). Effective communication between work areas is essential for both roles, as well as standardization of communication to avoid cultural misunderstandings among multi-cultural crewmembers. The use of non-standard words or phrases has a similar effect to using slang in English-speaking countries with diverse crews(Liao, 2015).

The implementation of CRM marked the start of humanizing the responsibilities of flight crews. However, its current scope is seen as limited, with accidents still occurring due to insufficient interaction between cabin and flight deck crew. Conversely, there have been instances where effective communication among CRM-trained cabin and flight deck teams has either averted an accident or reduced its impact during emergencies (Barnes, 1996).

Mixed Crew Resource Management training is effective in enhancing the collaborative functioning of cabin and flight deck crews by focusing on human factors rather than traditional training approaches. What may be successful in a single-culture organization may not necessarily work as effectively in a multicultural environment(Robertson et al., 1994). The emphasis is placed on fostering collaboration by focusing on collective responsibility rather than individual accountability, while also promoting respect for diverse backgrounds and viewpoints. Participating in mixed CRM courses enables crew members to appreciate varying cultural perspectives, facilitating improved communication and adaptability to

different working styles. Attending such courses equips multi-cultural airline crews with valuable human factor skills that can be applied during real-life flight operations(Orlady & Orlady, 2002);(Cromie et al., 2015).

1.2 Problem Statement

Today, the effectiveness of multi-national crew and cross-cultural CRM instruction provided to pilots and flight attendants is crucial for most foreign airlines. However, issues such as the lack of standardization and restrictions on personnel receiving training pose a risk to the program's success in meeting safety objectives. This research aims to highlight the importance of implementing a combined CRM training program for cockpit crew and flight attendants from diverse cultural, geographical, and linguistic backgrounds.

2. REVIEW OF THE LITERATURE

Culture refers to the values and customs shared by a group, which help distinguish them from others. It shapes the beliefs, behaviors, and norms of the people within the group and serves as a unifying force while also providing guidance on behavior in different situations (Martin, 2020)

2.1 History of Crew Resource Management

The errors stemming from human interaction with technology are quite restricted. In fact, technology has attained high levels of reliability and effectiveness in most of its functions. However, human interaction with technology still stands as the primary source of errors. Crew Resource Management presents a prevalent challenge related to human involvement in flight operations within an airline setting. In 1984, Dr. John Lauber, A member of the National Transportation Safety Board described CRM as utilizing all accessible resources - information, equipment, and personnel - to accomplish safe and effective flight operations(Peksatici, 2018).The Federal Aviation Administration has described CRM as the effective use of all accessible human, information, and equipment resources to ensure a safe and efficient flight (FAA, 2001).

A report by the U.S. Air Force Inspector General in 1951 analyzed data from a study on major accidents occurring between 1948 and 1951. The findings indicated that most aircraft accidents stemmed from human errors such as personnel mistakes, inadequate organization, and ineffective teamwork. As a result, the IG suggested implementing training programs focused on teamwork to decrease the accident rate.

The aviation community became aware of human factor issues following the tragic crash of a United Airlines DC-8 in Portland, Oregon in December 1978. The accident was triggered when the pilot's attention shifted from flying the aircraft to a suspected landing gear problem. Despite confirmation that the landing gear was down and locked, the aircrew allowed the aircraft to exhaust all its fuel while circling near the airport on a clear night. The flight engineer had alerted the captain multiple times about their dwindling fuel supply (NTSB, 1999).

The history of CRM program development highlights the significant role played by human factors. Over the past nine decades, there has been a gradual evolution in the analysis of human factors, placing it at the forefront of aviation training and research. Training in this field is now central to addressing various issues related to aircrew teamwork performance and pilot error(Adkins et al., 2015).

In 1979, NASA organized a workshop on resource management for the flight deck after conducting research into air transport accidents. This led to the official naming of Cockpit Resource Management as a formal training program focused on human factors in aviation. The goal was to train crews to minimize

"pilot error" by enhancing their understanding and utilization of human resources during flights deck (Lauber,, 1980).

Airlines observed that while pilots had strong technical abilities, they lacked interpersonal skills. For instance, a captain might execute a flawless instrument approach but struggle to collaborate effectively in a team setting to complete a task ((Jaiswal et al., 2018). In this perspective of the pilot being the primary focal point, CRM was originally developed for their benefit, hence Cockpit Resource Management. This term has faced criticism from both pilots and flight attendants who not only occupy different roles but also traditionally represent different genders. Pilots, predominantly male, function as individuals and require training on teamwork. Conversely, flight attendants are largely female-dominated in their profession. Despite a gradual increase in gender diversity within both groups over recent decades, there remains considerable tension between them (Chute & Wiener, 1995). According to (Kolander, 2019),Gender, stereotypes, and national culture are some of the psychosocial factors present in the information transfer model Communication and coordination within the cabin can have significant effects.

In 1993,NASA arranged a different appointment(Cooper, 1994)They came to the realization that the need for CRM would diminish as it becomes integrated into flight training and operations. The scope of training expanded to encompass not only pilots, but also flight attendants, mechanics, dispatchers, and all individuals involved in ensuring safe flights. As a result, a new set of CRM courses emerged under the name Crew Resource Management to include all members of the flight team, both within and outside the aircraft. One key principle of CRM in flight operations is promoting shared responsibility for safety among all crew members.

There have been instances of breakdowns in communication between these two groups. In 1989, 24 An Air Ontario crash during takeoff from Dryden, Ontario resulted in the tragic deaths of passengers and crew members, including both pilots. The cause was attributed to snow and ice accumulation on the aircraft's wings. During taxiing, several passengers reported the presence of ice to the flight attendants. Regrettably, the flight attendants chose not to relay this information to the pilot as they thought that operational input from cabin crewmembers was not well received by the pilots ((Metscher et al., 2009);(Naeem, 2018); (Martin, 2020).

Another instance of communication breakdown occurred when a pilot, copilot, and flight engineer experienced an abnormal situation after one hydraulic system failed following takeoff. The crew addressed the issue using CRM in the cockpit - with the first officer flying while the captain and flight engineer performed checks. Without informing the flight attendants about the situation, the captain decided to return to the departure airport for landing and kept them isolated until after landing (M. Smadi, personal communication, January 17,2005). The examples provided highlight the challenges faced by the airline industry, particularly in foreign airlines where flight crew members come from diverse cultural backgrounds and speak different languages. Cultural influences play a significant role in the operations of both domestic and foreign airlines, especially impacting the flight crew due to their proximity and critical safety responsibilities. Understanding these cultural influences is essential for airline managers to ensure overall operational success and safety.The international aviation community's culture conceals diversity through extensive information sharing, advanced technology, and the "language of aviation. (Martin, 2020) The aviation industry has seen significant technological advancements in the past ten years, leading to a decrease in individual workload and a lower likelihood of human error. The impact of improved technology on aviation safety has become more pronounced with the introduction of new aircraft models like the Boeing 777 and the Airbus A340 by major airlines worldwide. Embracing change is essential as

the increased reliance on technology is transforming how all crew members operate, requiring them to acquire new skills to replace outdated ones that were effective in the past.

Human factors focus on addressing practical issues in the work environment, emphasizing the interactions between individuals and their surroundings. This encompasses aspects like interpersonal communication and behavior within both individual and group contexts, involving verbal (speaking, reading, writing) as well as non-verbal cues(Helmreich, 2000). Repetitive and initial education in the aviation industry has paid limited attention to communication between the cockpit and cabin, except for extreme situations like hijacking or evacuation. The adequacy and efficiency of communication is primarily influenced by individuals' comprehension of the information being conveyed. As a result, human factor training aims to enhance communication abilities and minimize errors in communication (Chute & Wiener, 1996).

Each flight team consists of a cockpit and cabin crew, both requiring seamless coordination, especially in unusual or emergency scenarios. As previously stated, differences exist in their respective responsibilities; the primary contrast lies in priorities. The cockpit crew focuses on technical aspects of aircraft control and system operation, while the cabin crew's emphasis is less on technical matters and more on passenger care. Their roles involve extensive communication and coordination efforts (Göv & Erbay, 2021). Problems may arise in time-sensitive scenarios, raising the question of whether both teams truly comprehend each other's overall responsibilities, capabilities, and concerns. Have they had the chance to undergo joint training during high-pressure or time-critical situations? Is it necessary to train together in these instances, or can they assume that everything will proceed smoothly?

When analyzing the feedback from crew members following an in-flight emergency that required close coordination between both crews, it becomes evident that there is a requirement for training in human factors. Consider a typical Boeing 747 crew consisting of approximately 20 members. In certain airlines, these 20 crew members may originate from multiple countries and each one will have varying values, expectations, beliefs, behaviors, attitudes, backgrounds, cultures, national identities and religions. Even within individuals from the same country there exist tribal or regional distinctions(Al-Wardi, 2016). It is not uncommon to observe cultural variances in different parts of the same city within a single culturally diverse nation. Some days, the only shared aspect among crew members is their collective responsibility for the task at hand. The highest level of safety is achieved when all crew members contribute their utmost efforts toward a common objective. Each member has an assigned role in the aircraft, which must be clearly defined and communicated so that everyone knows what is expected of them and others. Both cockpit and cabin crews need to take specific actions to build an efficient team. These two groups have different cultures, with flight deck crews primarily focusing on flying the aircraft and operating systems while cabin crews prioritize cabin safety and passenger service, emphasizing communication and coordination as essential elements of their culture (Metscher et al., 2009).

The varying focus of each team often leads to a sense of disconnection between them. This disconnect typically starts before the teams board the aircraft as their schedules result in limited interaction time, with cockpit and cabin crews usually only briefly crossing paths due to different reporting times and the flight deck crew's need to attend initial briefings(Flight Preparation and Conducting Effective Briefings, 2023). As a result, both crews may not see each other until they reach the aircraft. Upon entering the aircraft, while the flight crew is occupied with pre-flight tasks, cabin attendants are also busy tending to their individual responsibilities. With both groups focused on their own priorities, it's common for the captain to only brief the cabin supervisor. This creates a situation where communication may be ineffective. If the captain fails to inform the rest of the cabin attendants, they might not understand their responsibilities

and will have to rely solely on past experience. This could lead to problems during emergency situations when crew members need to collaborate as a team (Chute & Wiener, 1996). The cockpit crew and cabin attendants must be familiar with the fundamental guidelines for interacting as a team. Without established ground rules, barriers can arise, but mixed Crew Resource Management training between these two groups may alleviate negative multicultural effects by focusing on task accomplishment rather than individual correctness. Cultural differences pose significant impacts in aviation, particularly during flight operations. The national, professional, and organizational cultures within the airline industry can have both positive and negative influences on flight safety. It is the responsibility of organizations to minimize the adverse aspects of each culture type while emphasizing their positive contributions (Metscher et al., 2009)(Safety Culture in ATM, 2023) Pilots and flight attendants encounter three different cultures: their own national culture, the professional pilot culture, and the organizational culture. These cultures can influence the safety of flights in both positive and negative ways.

An individual's exposure to national culture starts as soon as they become aware of the world around them, and this influence persists throughout their life. It significantly impacts the operational environment by representing the collective aspects of a nation's heritage. ((Sexton & Helmreich, 2000); (Impact of culture on aviation safety, 2015)JAR TEL, 1998). In the field of aviation, certain elements of national culture such as individualism, collectivism, uncertainty, and power distance have been recognized to influence behavioral norms, attitudes, and values. Collectivists tend to prioritize their primary groups while individualists concentrate on personal interests. Professional culture plays a role in shaping feelings of accountability and commitment to performing one's job with utmost efficiency. Professional pilot culture embodies the attitudes and values that are linked with the specific profession ((Sexton & Helmreich, 2000); (Naeem, 2018)). Pilots have a strong sense of professional identity and take great pride in their work, being highly motivated to perform at the highest level of skill and expertise.

Organizational culture refers to the way in which an organization impacts individuals within its ranks. This influence is often exerted through both official and unofficial rules and processes, and typically remains quite stable over extended periods. The organizational culture serves as a framework for national and professional cultures to function within, playing a crucial role in shaping behavior (Martin, 2020);(Wang, 2018)). In today's organizations, there is an increasing mix of cultures. In the aviation industry, for example, people from different countries are collaborating in teams. This diversity can lead to challenges with language and communication between pilots and flight attendants. Each organization has its unique strengths and weaknesses that impact safety. When two separate crews work together on an airliner, problems can arise. A significant issue between pilots and flight attendants is their ineffective communication, stemming from differences in job functions and responsibilities within the aircraft. Communication between the two parties is carried out via an impersonal intercom system (Nilsson, 2003). The only occasions when these two groups would come into physical contact are during pre-flight briefings, in emergency situations, or when pilots require assistance from the flight attendants, such as with meal service. Furthermore, the barrier to communication was exacerbated by the reinforced cockpit door requirement following the events of September 11th, 2001 (Anca, 2019). Another obstacle to efficient communication between the two parties is the sterile cockpit policy, which was introduced in 1981 under 14 CFR Part 121. This regulation aimed to minimize non-essential communication among pilots themselves and between them and the cabin crew during crucial stages of flight like taxiing, takeoff, and approach. (Naeem, 2018)However, this policy increased uncertainty for flight attendants regarding what

should be conveyed to the cockpit and the potential repercussions if they make a mistake even when they believe that the information is vital.

In a research on the distinct personality traits of pilots and flight attendants, American West CRM facilitators discovered that pilots tend to be focused on tasks and prefer a cognitive approach to problem solving based on logic and system-oriented reasoning. In contrast, flight attendants lean towards an affective-cognitive style and orientation in their decision-making process (Chute & Wiener, 1995). Pilots tend to consider their role as a long-term career, while many flight attendants often see their work as temporary. The pilot is responsible for operating the aircraft and delegates cabin management to the flight attendants. It's evident that, unless an issue arises requiring the pilot's intervention, the crews typically work together in harmony (Chute & Wiener, 1995).

Chute and Wiener also observe that communication among flight crew members may not always be ideal. The divergence between these two groups can be traced back to various cultural, historical, environmental, organizational, psychosocial, and regulatory influences according to research (Chute & Wiener, 1996). The two teams are from different cultural backgrounds, with one focusing on technical expertise and proficiency in operating complex machinery, while the other is skilled in social interaction and public service ((Chute & Wiener, 1996), p. 2 13). The two distinct teams are typically structured into different divisions for administrative purposes. Pilots are often part of the flight operations department, where safety is prioritized, while cabin crews are generally associated with the marketing department, which focuses on providing service (Chute & Wiener, 1995). The division could result in "discrepancies such as conflicting details in their individual guides and processes... which cause confusion and difficulties in organizing and communicating for airline staff while carrying out their responsibilities." ((Chute & Wiener, 1995)p. 258).

CRM includes instruction for pilots and flight attendants on evaluating communication abilities, interpersonal responsibilities such as leadership and coordination, efficient team building, problem-solving, decision-making, and upholding situational awareness. The airlines aimed to acquaint both cockpit and cabin crew with these elements to enhance their collaborative performance. Nevertheless, a persistent divide between these two groups has been observed during regular operations and emergencies (Chute & Wiener, 1996).

Many airlines take the CRM program very seriously, while others only give it minimal attention. Unfortunately, in certain instances, CRM did not acknowledge the diversity in programs. Some were thoughtfully crafted to align with their organization's culture, while others were simply efforts to meet regulations. The method of teaching the CRM course has varied depending on the airline (Chute & Wiener, 1996).The primary training aimed to increase awareness of human factors issues and promote a shift in attitude. This was followed by yearly refresher courses, which offered an opportunity to address specific issues that may have arisen in the previous year while reinforcing the key messages from the initial training. All airlines share a mutual goal - ensuring safe and efficient flights while generating profits for their parent organizations. When they work toward this common objective, collaboration is effective during normal operations. The CRM program is designed to pursue these goals explicitly focusing on error management and building trust between pilots and flight attendants.

Today, all airline operations mandate CRM training in accordance with Advisory Circular 120-51D (FAA, 2001). Several airlines are utilizing a pre-existing CRM program from another organization. It appears that off-the-shelf CRM programs from other organizations may not yield positive results if they are not customized to align with the cultural and organizational context of the borrowing organization. An

illustrative example highlights varied responses to CRM across different cultures. For instance, when a Japanese airline adopted a U.S.-style CRM course, questions arose about its applicability to Japanese thought processes, particularly in addressing human behavior issues. The observation was made that U.S. pilots prioritize task orientation and individualism over group dynamics, while their Japanese counterparts lean towards group harmony and modesty, being more inclined to accept differing opinions for the sake of preserving unity within the group (Sexton & Helmreich, 2000).

The issue has also been raised with the cabin crew, and between the cabin crew and the pilots. Both groups receive distinct training throughout their careers, and in many international airlines, separate CRM training is provided to each group. This approach has been considered effective for both parties. The CRM skills of pilots offer strategies to mitigate risk and errors through trust-building, error identification, avoidance, detection, and management; meanwhile, flight attendants' CRM focuses more on safety procedures and teamwork training(Anca, 2019).

During an actual flight, pilots and flight attendants collaborate in a shared workspace. Various physical and cognitive elements impact the efficiency of both groups, particularly in critical scenarios like emergencies. These two groups exhibit different responses in emergency situations due to variations in their CRM training. The fundamental objective of CRM training is to promote teamwork by encouraging crews to acknowledge each other's roles, communicate effectively and promptly, stay informed, and provide support through regular updates(Safer air travel through crew resource management, 2014).

Pilots and flight attendants in various global airlines represent diverse nationalities, each bringing their unique language and mindset. Despite this diversity, they are required to collaborate closely and operate as a cohesive team within their professional roles. Across the Middle East, airline crews frequently consist of individuals from different cultural backgrounds. In the Persian Gulf region specifically, all airlines maintain multicultural staff. This trend is evident in Saudi Arabia where its principal carrier, Saudi Arabian Airlines, hires employees from numerous other nations.

3. RESEARCH METHODOLOGY

Participants

Pilots and flight attendants from Saudi Arabian Airlines were selected as the main participants for this research due to the multicultural nature of the airline crew. The selection process involved random sampling from the current population of pilots and flight attendants based in Jeddah, Saudi Arabia, which provided a detailed insight into their interactions. A simple random sample was used to gather data on participants' perceptions and attitudes towards mixed Crew Resource Management training within the airline, reflecting individual viewpoints from both participants and observers.

Instrument

Pilots and flight attendants working for Saudi Arabian Airlines were surveyed using a data collection tool to assess the issue at hand. The survey had two parts: the first section collected demographic information such as age, area of expertise, and work experience. The second part contained 15 questions aimed at gathering specific details about their understanding of CRM, cultural barriers between the two groups, and their views on mixed CRM training. In order to ensure impartiality and obtain permission to conduct the surveys, the general managers of both flight operation and flight training departments for pilots and flight attendants were approached to provide assistance in administering the surveys. Each of these supervisors delivered the survey questionnaires to around 150 pilots and flight attendants in their mailboxes at the Saudi Arabian Airline flight operation, out of a total of approximately 3000 flight crew members. All

communication with the researcher was written and anonymous, with no collection of names or identification numbers to ensure anonymity and confidentiality. Each questionnaire was accompanied by a cover letter explaining the purpose of the study, and an envelope with a return address was provided for each one.

Design

The survey instrument was specifically created for this research and a descriptive research approach was employed. The raw data, gathered through the completion of questionnaires by participants, underwent analysis and assessment using statistical tools like the Statistical Package for Social Sciences and Microsoft Excel 2003. The findings were scrutinized and an elaborate portrayal of the participant groups was generated.

4. RESULTS

The survey designed for this research project collected data on participants' views about the potential impact of mixed Crew Resource Management on enhancing aviation safety within airline operations with multicultural flight crew members. Out of 150 surveys distributed randomly to cockpit and cabin crew, 30 responses were received from each group and analyzed separately.

Demographic Data

This section outlines the subject's age, area of expertise, professional background, and whether they have participated in integrated CRM training.

Table 1: Respondents Age

	(N)	(%)
	Cockpit crews	
20-30 years	5	20
31-40 years	9	30
41-50 years	12	40
Over 50 years	3	10
Total	30	100
	Cabin crews	
20-30 years	9	30
3 1-40 years	9	30
4 1-50 years	6	20
Over 50 years	6	20
Total	30	100

Table 1 provides an overview of the age distribution among both cockpit and cabin crews. Among the cockpit crew members, 6 pilots (20%) were aged between 20 and 30 years, 9 pilots (30%) were aged between 31 and 40 years, 12 pilots (40%) fell within the age range of 41 to 50 years, and 3 pilots (10%) were over 50 years old. Regarding the cabin crew, 9 members (30%) were aged between 20 and 30 years, 9 members (30%) were aged between 31 and 40 years, 6 members (20%) were aged between 41 and 50 years, and another 6 members (20%) were over 50 years old.

Table 2. Field Specialization

	(N)	(%)
Cockpit crews	30	50
Cabin crews	30	50
Total	60	100

Table: 2 illustrates the field specialization of both cohorts. The initial group comprised 30 cockpit crew members, constituting 50% of the total, whereas the subsequent group comprised 30 cabin crew members, also making up 50% of the total.

Table3: Work Experience

	(N)	(%)
Cockpit crews		
1-10 years	4	13
11-20 years	15	15
21-30 years	7	24
Over 31 years	4	13
Total	30	100
Cabin crews		
1-10 years	8	27
11-20 years	8	27
21-30 years	6	19
Over 31 years	8	27
Total	30	100

Table 3 presents the years of experience for both cockpit and cabin crews within the aviation industry. The range of experience spans from 1 year to over 31 years. The data reveals that among the cockpit crew, 4 pilots (13%) had less than 10 years of experience, 15 pilots (50%) had between 11 and 20 years of experience, 7 pilots (24%) had between 21 and 30 years of experience, and 4 pilots (13%) had over 31 years of experience. Similarly, among the cabin crew, 8 members (27%) had less than 10 years of experience, 8 members (27%) had between 11 and 20 years of experience, 6 members (19%) had between 21 and 30 years of experience, and 8 members (27%) had over 31 years of experience in the aviation industry.

Table 4: Training

	(N)	(%)
Cockpit crews		
Yes	23	77
No	7	23
Total	30	100
Cabin crews		
Yes	14	47
No	16	53
Total	30	100

Table 4 outlines the presence or absence of mixed Crew Resource Management (CRM) training or any relevant training aimed at enhancing communication and collaboration for both cockpit and cabin crews. Among the 30 pilots surveyed, 23 pilots (77%) had undergone this type of training, while 7 pilots (23%) had not received any such training. Conversely, among the cabin crew, 14 members (47%) reported having undergone this type of training, while 16 members (53%) indicated that they had not received any training of this nature.

5. DISCUSSION

The findings from the survey questionnaire indicated support for both cockpit and cabin crews benefiting from mixed CRM, with favorable views expressed by members of both groups. Moreover, the survey responses demonstrated that mixed CRM contributes to enhanced inter-crew communication and is associated with improved safety. Overall, respondents generally identified CRM and mixed CRM as advantageous; however, variations in perceptions regarding the most useful aspects were observed(Merritt & Maurino, 2004). While cockpit crew members' responses were marginally more positive than those of cabin crewmembers, it is worth noting that a higher proportion of cockpit crew have undergone CRM training compared to their counterparts in the cabin crew with 77% of cockpit members participating and only 47% of cabin crew members participating. This difference may be related to the cockpit crew's longer years of experience compared to the cabin crews. It could also reflect a bias from airline management, who may prioritize investments in training for cockpit crew over cabin crew. Notably, there were no questions with a response difference greater than ten percent between the two groups.

Cockpit crew members expressed the greatest concern about safety-related issues, and provided the most emphatic feedback on questions related to safety and effectiveness of crews(Gao et al., 2015). They rated questions regarding communication and communication procedures as highly important, potentially offering significant enhancements in CRM training. The survey effectively captured predominantly positive attitudes towards integrated CRM as a valuable component of training across various aspects within the aviation industry, particularly in areas concerning safety and collaboration among crew members(Crew Resource Management (OGHFA BN), 2023).

6. CONCLUSION

The survey findings reveal that most cockpit and cabin crews consider CRM courses to be advantageous. Specifically, they highly rate the mixed CRM courses for their effectiveness in enhancing communication and teamwork among crew members.

A noteworthy revelation from the survey results is that the opinions of cockpit crews about CRM were nearly as positive as those of cabin crews, and even ranked higher on at least five different aspects(CRM, 2013). This contrast with existing research indications that pilots are typically less likely to excel in interpersonal skills and more inclined towards technical problem-solving comes across as surprising. It could have been expected that cockpit crews would show greater reluctance towards participating in CRM or exhibit a preference for technical tasks over team dynamics lower opinion of it(Choudhry, 2018). Cabin crews exhibited a slightly less favorable outlook towards CRM compared to cockpit crews, but overall, there was substantial similarity in their positive assessments. This could be attributed to the perception that cockpit crews have a greater requirement for communication skills and thus perceive CRM programs as less valuable in mixed situations. However, both cabin and cockpit crews considered briefing procedures as beneficial and significant(Pratama et al., 2018).

6.1 Recommendations

The survey findings indicated that a majority of employees in both cockpit and cabin crews view CRM favorably, and all airline employees would consider it to be a beneficial aspect of job training. It is recommended that the airline incorporate CRM training as a standard component of job training, such as through an annual program or one required every two years.

Research indicates that integrating CRM training for both cockpit and cabin crews can lead to more favorable outcomes in uniting the members of the two groups. However, it may also be beneficial to conduct distinct CRM training programs for each crew less frequently than the integrated training. Conducting separate training sessions offers certain advantages, including addressing crew-specific concerns and facilitating open discussion about their particular issues. For instance, it is probable that a blended CRM approach would need to incorporate more shared elements among the teams, rather than focusing on issues specific to each individual team. The survey suggests that mixed CRM sessions are highly valued by nearly all respondents. Both those who have taken part in CRM and those who haven't generally believe that there are advantages to participating in training sessions where positive communication occurs, concerns can be raised, and members from different teams can interact outside of the formal work setting and procedures of the typical workday.

Airlines should consider conducting mixed CRM training at least once every two years. Scheduling such courses can be challenging due to the geographical separation of employees and the ongoing need for them to perform their duties, even during holidays and weekends. In order to involve all employees in CRM, the airline may need to host a minimum of three different training sessions each year. This would enable a mix of cockpit and cabin crew members to participate in mixed CRM training at least once every two years.

References

1. Adkins, J Y., Adams, K M., & Hester, P T. (2015, January 1). How System Errors Affect Aircrew Resource Management (CRM). Procedia Computer Science, 61, 281-286. https://doi.org/10.1016/j.procs.2015.09.216
2. Al-Wardi, Y. (2016, June 16). Arabian, Asian, western: a cross-cultural comparison of aircraft accidents from human factor perspectives. International Journal of Occupational Safety and Ergonomics, 23(3), 366-373. https://doi.org/10.1080/10803548.2016.1190233
3. Anca, J. (2019, January 1). Cultural Issues and Crew Resource Management Training. Elsevier eBooks, 539-552. https://doi.org/10.1016/b978-0-12-812995-1.00020-8
4. Barnes. (1996, August 8). Barnes,RB.,Orlady,H.W., &Orlady,L.M.(1996).Multi-culturaltraininginhumanfactorsfor transportaircrajicertzjkation. Paper presented at the meeting of the International Civil Aviation Organization(ICAO). https://www.icao.int/Meetings/SUSDEV-AT/Documents/ATConf6_10009.pdf
5. Choudhry, S A. (2018, January 1). Cultures in Aviation: Identification and Management of Cross-Cultural Factors in Multi-Cultural Aviation Maintenance Organizations. American international journal of contemporary research, 8(3). https://doi.org/10.30845/aijcr.v8n3p6
6. Chute, R D., & Wiener, E L. (1995, July 1). Cockpit-Cabin Communication: I. A Tale of Two Cultures. Taylor & Francis, 5(3), 257-276. https://doi.org/10.1207/s15327108ijap0503_2
7. Chute, R D., & Wiener, E L. (1996, July 1). Cockpit-Cabin Communication: II. Shall We Tell the Pilots?. Taylor & Francis, 6(3), 211-231. https://doi.org/10.1207/s15327108ijap0603_1

8. Cooper. (1994, April 28). Resource management on the flight deck In Proceedings of a NASAllndustry Workshop. (NASA CP-2120). Moffett Field, CA: NASA-Ames research cent. https://www.researchgate.net/publication/316641831_Resource_Management_on_the_Flight_Deck
9. Crew Resource Management (OGHFA BN). (2023, January 1). https://skybrary.aero/articles/crew-resource-management-oghfa-bn
10. CRM. (2013, December 7). The effects of Crew Resource Management (CRM) training on flight attendants' safety attitudes.. https://www.sciencedirect.com/science/article/pii/S0022437513001680
11. Cromie, S., Ross, D., Corrigan, S., Liston, P., Lynch, D., & Demosthenous, E. (2015, February 26). Integrating human factors training into safety management and risk management: A case study from aviation maintenance. SAGE Publishing, 229(3), 266-274. https://doi.org/10.1177/1748006x15572498
12. Digital, N. (2019, May 26). Can cultural differences impact passenger satisfaction?. https://airport.nridigital.com/air_dec18/can_cultural_differences_impact_passenger_satisfaction
13. FAA. (2001, February 2). Crew resource management advisoty circular. https://www.faa.gov/avr/afs/acs/l20-51d.pdf
14. FAA. (2001, February 8). Crew resource management advisoty circular (120-51D . https://www.faa.gov/avr/afs/acs/l20-51d.pdf
15. Flight Preparation and Conducting Effective Briefings. (2023, January 1). https://skybrary.aero/articles/flight-preparation-and-conducting-effective-briefings-oghfa-bn
16. Gao, Y., Bruce, P J., & Rajendran, N. (2015, August 1). Safety climate of a commercial airline: A cross-sectional comparison of four occupational groups. Journal of Air Transport Management, 47, 162-171. https://doi.org/10.1016/j.jairtraman.2015.05.010
17. Göv, S A., & Erbay, N. (2021, September 2). An Evaluation of Flight Attendants' Safety Attitudes. , 4(2), 264-274. https://doi.org/10.33712/mana.937940
18. Helmreich. (2000, February 3). Culture, error, and crew resource management.. https://psycnet.apa.org/record/2001-00823-014
19. Impact of culture on aviation safety. (2015, October 30). https://en.wikipedia.org/w/index.php?title=Impact_of_culture_on_aviation_safety&printable=yes
20. Jaiswal, K., Al-Mahadin, A., Verma, S., & Singh, B. (2018, February 1). Safety culture in aircraft maintenance organizations of United Arab Emirates. 2018 Advances in Science and Engineering Technology International Conferences (ASET). https://doi.org/10.1109/icaset.2018.8376809
21. Kim, Y., & Park, H. (2013, December 7). An Investigation of the Competencies Required of Airline Cabin Crew Members: The Case of a Korean Airline. Journal of Human Resources in Hospitality & Tourism, 13(1), 34-62. https://doi.org/10.1080/15332845.2013.807393
22. Kolander, C K. (2019, January 1). Flight and Cabin Crew Teamwork. Elsevier eBooks, 407-420. https://doi.org/10.1016/b978-0-12-812995-1.00014-2
23. Kolander, C K. (2019, November 5). Flight and Cabin Crew Teamwork. https://www.sciencedirect.com/science/article/pii/B9780128129951000142
24. Lauber,, C W &. (1980, January 4). Resource Management on the Flight Deck. https://www.researchgate.net/publication/316641831_Resource_Management_on_the_Flight_Deck
25. Liao, M. (2015, November 1). Safety Culture in commercial aviation: Differences in perspective between Chinese and Western pilots. Safety Science, 79, 193-205. https://doi.org/10.1016/j.ssci.2015.05.011

26. Martin, W. (2020, March 1). Meeting Report. Hogrefe Verlag, 10(1), 46-49. https://doi.org/10.1027/2192-0923/a000182
27. Merritt, A C., & Maurino, D E. (2004, January 1). 5. CROSS-CULTURAL FACTORS IN AVIATION SAFETY1. Advances in human performance and cognitive engineering research, 147-181. https://doi.org/10.1016/s1479-3601(03)04005-0
28. Metscher, D S., Smith, M., & Al-ghamdi, A M. (2009, January 1). Multi-Cultural Factors in the Crew Resource Management Environment: Promoting Aviation Safety for Airline Operations. Embry–Riddle Aeronautical University. https://doi.org/10.15394/jaaer.2009.1423
29. Naeem, S. (2018, January 1). Comparison of Various Safety Management Systems and Perceptions of Safety Management and Safety Culture in Pakistani Aviation Industry. https://doi.org/10.4172/2169-026x.1000237
30. Nilsson. (2003, April 16). Cockpit door safety. Retrieved February 18,2005, from Lund University, School of Aviation https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=9141772&fileOId=9141868
31. NTSB. (1999, December 30). NTSB. https://www.ntsb.gov/investigations/AccidentReports/Reports/AAR7907.pdf
32. Orlady, H W., & Orlady, L M. (2002, June 1). Human factors in multi-crew flight operations. Cambridge University Press, 106(1060), 321-324. https://doi.org/10.1017/s000192400009607x
33. Peksatici, Ö. (2018, January 1). Crew Resource Management (CRM) and Cultural Differences Among Cockpit Crew - the Case of Turkey. Embry–Riddle Aeronautical University. https://doi.org/10.15394/jaaer.2018.1742
34. Pratama, G B., Widyanti, A., & Sutalaksana, I Z. (2018, January 1). Incorporating Hofstede' National Culture in Human Factor Analysis and Classification System (HFACS): Cases of Indonesian Aviation Safety. MATEC web of conferences, 154, 01063-01063. https://doi.org/10.1051/matecconf/201815401063
35. Robertson, M M., Taylor, J C., Stelly, J W., & Wagner, R. (1994, October 1). Evaluating a Maintenance Crew Resource Management Training Program; Effects on Attitudes, Behaviors, and Performance. Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 38(18), 1242-1246. https://doi.org/10.1177/154193129403801822
36. Safer air travel through crew resource management. (2014, February 1). https://www.apa.org/topics/safety-design/safer-air-travel-crew-resource-management
37. Safety Culture in ATM. (2023, January 1). https://skybrary.aero/articles/safety-culture-atm
38. Sexton, J B., & Helmreich, R L. (2000, October 1). Analyzing Cockpit Communications: The Links Between Language, Performance, Error, and Workload. , 5(1). https://doi.org/10.7771/2327-2937.1007
39. Wang, H. (2018, October 1). Perception of safety culture: Surveying the aviation divisions of Ministry of National Defense, Taiwan, Republic of China. Safety Science, 108, 104-112. https://doi.org/10.1016/j.ssci.2018.04.022