

THE CONFLICT BETWEEN FLIGHT SAFETY AND PROTECTION OF PRIVATE LIFE: UNDER TURKISH PILOTS PERSPECTIVE^{1 2}

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ABSTRACT

The protection of the privacy of individuals is guaranteed by law as a result of the Universal Declaration of Human Rights. The National Transport Safety Board (NTSB) is an independent federal agency appointed to investigate transport accidents, identify possible causes and provide safety recommendations. The NTSB, after conducting an accident investigation, determines how the incident took place. It publishes recommendations to prevent future accidents. NTSB recommends installing a Cockpit Image Recorder (CIR) on most gas turbine-operated aircraft. The cockpit image recorder installed in addition to the sound and flight data recorders in the cockpit will provide additional information for the researchers. This idea was first proposed by the NTSB in 2000. Video cameras will provide researchers with critical information about “events in the cockpit before and during an accident”.

However, the pilots opposed proposal of NTSB for a cockpit image recorder on the grounds that there would be a breach of privacy. Because in the past accidents, voice and data records of the flights were leaked to the public. The pilots specifically rejected the idea of being tried in court based on a visual record.

Aviation safety is the primary goal of ICAO (The International Civil Aviation Organization) recommends that cockpit image recorders be standard equipment on commercial aircraft. ICAO also wants the newly designed aircraft to start using cockpit image recorders as standard equipment by 2023.

In the first part of this article, the current situation of flight recorders will be examined. In the second part, the need for a cockpit image recorder will be given due to the insufficiency of the existing flight recorders in accident investigations and investigations. In addition, face-to-face interviews were conducted in order to reveal the hesitations and concerns of the pilots against this device with intuitive analysis. As a result of the study, it was stated that the CIR system could increase safety for accident investigations. In this study, the possible effects of the cockpit imaging system on the pilots are tried to be learned in terms of privacy, security and developing technology. In the last part of the study, the advantages and requirements of the cockpit image recorder in ICAO aircraft will be mentioned and suggestions will be made.

Keywords: Cockpit image recorder, safety, cockpit, privacy

JEL Codes: L93 - Air Transportation, R41-Transportation, L98 Government Policy

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INTRODUCTION

In modern societies, human rights are guaranteed by constitutional and international regulations. One of the most important and comprehensive human rights is the right of privacy. Article 12 of the United Nations Declaration of Human Rights on 10 December 1948 makes it clearly that no one's private life can be arbitrarily violated: (UN, 1948)

“No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.”

The National Transportation Safety Board (NTSB) is a federal agency in the United States that is responsible for investigating aviation accidents and making safety recommendations for its conclusions (NTSB, 2019). It issues its safety recommendations to the Federal Aviation Administration (FAA), the aviation authority in the United States, and expects them to be translated into regulations. In a safety proposal issued Safety Recommendation A-00-030 in 2000 by referring to more than one accident, the NTSB requested that a cockpit imaging system be installed on aircraft used in air transport (Garvey, 2000). The reason for this was that the lack of pilot images disrupted many accident investigations, leaving a few inconclusive (Rapoport & Richter, 2005). This proposal received a negative reaction from the pilot trade unions with the belief that it would violate workplace privacy (Stewart, 2003); The potential benefit, cost and applicability of the proposal were questioned (NTSB, 2019).

The 4th industrial revolution draws a future in which large-scale data analysis by developing technology (Sedefçi, 2018), the Internet of Things, cloud computing and cyber-physical objects will dominate the processes of production of goods and services and daily life by self-deciding and autonomous functions (Tekergül, 2010). In this research, it was tried to learn the safety, privacy and reactions of the cockpit imaging device application on the axis of Industry 4.0 (Şen, 1996). The examination of the cockpit imaging device is presented together with the opinions of the airline pilots, the group most affected by the application.

1. PRIVATE LIFE AND WORKPLACE WATCHING

1.1 Private life

The boundaries of private life include areas of the person that cannot be entered, displayed and converted into commercial commodities without permission (Atkinson, 2018). Personal data, housing, communication and respect for family life are widely accepted as sub-components of ‘private life’ (Korkmaz, 2014).

However, the right to privacy, which constitutes a very important part of a person's daily life, does not mean to exclude others or to completely cut off their relationship with them (Santanan, 2019).

It means that only one person has the right to determine to what extent he will share his life with others (Yüksel, 2003).

Two basic principles of private living are independence and confidentiality. Independence, in a broad sense, refers to the right to choose one's way of life, behavior and relationships. Confidentiality, outside the curiosity of third parties; individual's personal, group and family living spaces to be protected against external interventions. Through the protection of the private living space as a personal being or value, individuals have the opportunity to develop a lifestyle and personalities according to their wishes, far from the gaze and pursuit of others (Purtova, 2018).

1.2 Workplace Surveillance

The concept of workplace which defines the application area of labor law is defined in İş Km.2/III'in Turkey: *"The workplace is a whole within the scope of the work organization created with workplace affiliates, add-ons and tools."* (Tekergül, 2010).

Although the rights and freedoms of the worker, who is under the authority of management and supervision of the employer with a labor contract, exist within the boundaries of the workplace, the rights of private life and the immunity of the person only tend to be narrowed (Chrysochou & Iglezakis, 2019). However, it should not be ignored that the employer does not have absolute authority over these rights and that the administration of such rights is transferred to the employer only to the extent necessary for the realization of the purposes of the workplace (West & Bowman, 2014).

The concept of surveillance can be considered in two different ways. In the first definition, surveillance refers to the accumulation of encrypted information about which it can be used to manage the behavior of the individuals it meets (Ajunwa, Crawford, & Schultz, 2017). In the second definition, surveillance involves the direct monitoring of the behavior of some individuals by other individuals who establish authority over them (Ball, 2010). It is possible to name the first of these by storing surveillance and the second by monitoring (Tekergül, 2010).

When using surveillance data, personal privacy is expected to be respected and legal regulations are in place. Surveillance at work can only be legal for certain purposes. These objectives were as follows: (Tekergül, 2010):

- Consent to the intervention of the private life of the worker
- Outstanding private benefit, the employer can rely on
- Exercise the authority granted by the law in terms of business relationship.

2. AVIATION SAFETY AND ACCIDENT RESEARCH

2.2 Aviation Safety

Commercial air transport is regulated by law in all aspects due to the benefits it provides to society and the size of its economic volume. Some of the existing regulations address safety-related issues. Aviation safety means that risks in aviation activities that directly or indirectly support the operation of an aviation are reduced to an acceptable level and controlled at that level (Gerede, 2018).

In order to meet the needs of the modern world, air transportation has to grow continuously. Large and new aircraft will be needed to support this growth. Society also wants this growth to be quieter and more environmentally friendly. However, tolerance to aviation accidents is also gradually decreasing (Graaff, 2001).

Air transport is one of the most important areas of activity affecting technological and social development. Transport activities require a lot of physical strength to provide time benefits. The nature of the risk in aviation activities lies in the severity of accidents. Therefore, it can be said that this mode of transport is strictly dependent on safety (Potente, Ragnoli, Tamasi, Vergari, & Di Mascio, 2018).

2.2 Accident Investigations

In the event of an accident, the most natural reaction before the authorities is to examine the accident and learn a lesson with the motivation to protect stakeholders. Investigating the accident in depth and identifying the possible causes is an important step in improving safety. When the root causes of the accident are determined, the effectiveness of the measures to be taken will increase with the information obtained. This information gap leaves investigators guessing as audio simply is not enough such as with EgyptAir Flight 990 and SilkAir Flight 185 (Timi, Shermin, & Rahman, 2017). Aircraft used in today's air transport have various flight voice and data recorders (Wiseman, 2016). Their purpose is to facilitate the investigation of incidents and accidents that are likely to occur at any time.

Cockpit Voice Recorder is the device that records and stores the sounds that occur in the cockpit of the aircraft. Today's CVR devices digitally record all voices in the cockpit, including conversations between pilots, intercom communications with pilots via intercom, radio conversations with pilots 'ground stations, and pilots' announcements to passengers (Nugroho, Nasution, & Azmi, 2017). Its occurrence is based on the lack of data encountered in accident investigations. Flight Data Recorder is a device which records the technical parameters of the flight in a relatively protected area of the aircraft. The enclosure is built to withstand impacts (Wiseman, 2016). The cockpit image recorder is a device recommended by NTSB for use in addition to voice and data recording, which may be useful in accident or incident reconstruction, as it may be useful in reconstruction of the accident or incident (Simmons & Forrest, 2005). On 11 April 2000 the NTSB issued a safety proposal on this issue. In this publication, the reason for the proposal and the proposal is explained with

reference to past accident investigations (EgyptAir Flight 990, Swissair flight 111, SilkAir Flight 185 and etc.)

3. METHODOLOGY

The research is based on the proposal of the Cockpit Imaging System made by the US National Transportation Safety Board in 2000. This text recommended to the US Federal Aviation Administration that the use of the Cockpit Imaging System should be made compulsory for aircraft used in commercial air transport.

Unions representing airline pilots in the United States have reacted strongly to this proposal. The response was criticized in many ways. The study examines how pilots approach the idea of implementing such a system in the workplace cockpit in terms of safety, and privacy. The scope of the research is limited to active officer's airlines pilots in Turkey.

The research aims to learn how airline pilots approach the Cockpit Imaging System. A questionnaire was used as a method. Airline pilots were asked to evaluate the cockpit imaging system for privacy, safety and advancing technology.

4. FINDINGS

Pilots between the ages of 30-49 are equally distributed among 38.9%, on the other hand, 21.1% of the pilots were 50 years or older. The answers are 15.6% seen in the average age of 20-29 and relatively less pilots of experience. Here, the group represented him, with pilots aged 30-40 showing weight (Table 1).

Table-1 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
20-29	14	15,6	15,6	15,6
30-39	35	38,9	38,9	54,4
Valid 40-49	22	24,4	24,4	78,9
50&>	19	21,1	21,1	100,0
Total	90	100,0	100,0	

Table-2 Total flight experinece (in hours)

Hours	Frequency	Percent	Valid Percent	Cumulative Percent
0-1.000	15	16,7	16,7	16,7
1.001-3.000	17	18,9	18,9	35,6
Valid 3.001-5.000	12	13,3	13,3	48,9
5.001&upper	46	51,1	51,1	100,0
Total	90	100,0	100,0	

51.1% of the respondents have over 5000 hours of experience. In the remaining distribution, 0-1000 hours of experienced pilots were 18.9% and 1001-3000 hours of experienced pilots were 19.4%. The smallest portions are pilots with 13.3% to 3001-5000 hours of experience. The responding group consists mainly of experienced pilots, but each segment is represented (Table 2).

Table-3 Duty

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid First officer	35	38,9	38,9	38,9
Captain pilot	38	42,2	42,2	81,1
Instructure pilot	1	1,1	1,1	82,2
Instructure captain pilot	16	17,8	17,8	100,0
Total	90	100,0	100,0	

42.2% of the pilots who received an answer are in the rank of captain pilot in the airline where they work. While the ratio of co-pilots was 38.9%, the response was 17.8% from the instructor captain pilots. From these results we can see that the answers are mainly from pilots experienced in terms of flight time. In addition, the responses in terms of position in the cockpit were distributed in almost 3 equal groups (Table 3).

Table-4: I feel myself under the pressure of an employer in a cockpit with an image recording.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	1	1,1	1,1	1,1
Somewhat disagree	5	5,6	5,6	6,7
Neither agree nor disagree	7	7,8	7,8	14,4
Somewhat agree	18	20,0	20,0	34,4
Strongly agree	59	65,6	65,6	100,0
Total	90	100,0	100,0	

In the graphical survey shown in Table 4, the pilots were asked about the relationship between the employer's pressure and the cockpit imaging system. A 5-point Likert scale was used. 65.6% of the respondents absolutely agree. In addition, 20.0% of them have indicated that they agree. This may adversely affect the performance of the pilots. In addition to this, it can be said that the social impacts of this proposal are in the forefront, as this proposal put forward in the name of safety is received negatively by the pilots (Table 4).

Table-5: I think that my airline operator should respect the workplace privacy in the cockpit

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	3	3,3	3,3	3,3
Somewhat disagree	5	5,6	5,6	8,9
Neither agree nor disagree	3	3,3	3,3	12,2
Somewhat agree	20	22,2	22,2	34,4
Strongly agree	59	65,6	65,6	100,0
Total	90	100,0	100,0	

It relates to the fact that the cockpit imaging as seen in Table 5 is considered as a breach of privacy by the pilots. The ratio of the pilots who think that their privacy will be violated if the image is recorded in the cockpit is 65.6%. As already mentioned, some of the arguments against the idea of a cockpit imaging device converge on privacy. The source of this privacy concern is CVR records that

have easily leaked to the press and the Internet in the past. For CVR, the subject of recording sound and accessing the resulting recording should be considered separately. In the past, listening to the sound recording is a vital safety-enhancing measures. If CVR had not been used, perhaps the unsafe situations in the cockpit that had led to many accidents would have not been noticed and the necessary measures could not have been taken. The same pattern is considered to apply to the cockpit imaging device.

The NTSB's cockpit imaging system proposal arose from the need for data on aviation incidents and accidents. According to the relevant safety proposal, this need has been determined by the experience of previous accident investigations. In the light of this information, it can be seen that the organization, whose duty is incident and accident investigation, wants more data in order to make safety recommendations more effective. The idea that US pilot unions, APA and ALPA, will push researchers to conclude that cockpit imagery suggests that more data will undermine the efforts of accident investigators to find the root cause. The fact that the data directly related to the accident makes it difficult to repair the safety performance is not possible as long as the aim is to determine how and why the accident occurred. The data show that the idea that the cockpit imaging device will increase safety is adopted by the pilots.

Table- 6 I think private life has been conflicting when flying in a cockpit with a video record.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	3	3,3	3,3	3,3
Somewhat disagree	5	5,6	5,6	8,9
Neither agree nor disagree	8	8,9	8,9	17,8
Somewhat agree	17	18,9	18,9	36,7
Strongly agree	57	63,3	63,3	100,0
Total	90	100,0	100,0	

The ratio of pilots who think that their privacy will be violated if the image is taken in the cockpit is 63.3%. As already mentioned, some of the arguments against the idea of a cockpit imaging device converge on privacy. More specifically, the images that can be recorded via the camera can leak into the media in case of any accident or incident. It has been argued that this situation may have bad effects for the remaining relatives and for human dignity. Another argument put forward on the same axis emphasizes that the recorded images will violate the privacy of the workplace and that these images can be used against the pilots for various reasons even if there are no accidents or incidents. In the past, the way CVR and FDR recordings are used and emerged after accidents and incidents have been the basis for these ideas. FDR is only related to flight in terms of the technical quantities it records, but the situation differs for CVR. Since pilots record all sounds in the cockpit, which is the workplace, CVR is more concerned with privacy. Confidentiality, even if limited in the workplace, will be violated if the CVR records are used out of purpose

Table-7 I can improve my decision-making habits to replay cockpit image recordings.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	33	36,7	36,7	36,7
Somewhat disagree	23	25,6	25,6	62,2
Neither agree nor disagree	17	18,9	18,9	81,1
Somewhat agree	9	10,0	10,0	91,1
Strongly agree	8	8,9	8,9	100,0
Total	90	100,0	100,0	

The idea of improving the decision-making mentioned in the statement by means of images is actually implemented through simulator controls in the airline operating environment, usually every 6 months, and evaluators in line-oriented flight trainings. Such use of the cockpit imaging system, other than accident and incident investigations, is not recommended by NTSB. However, it is possible to use the imaging system for debriefing after unusual situations in the flight operation and thus to contribute to increasing safety (Table 7).

Table-8 More detailed analysis of accidents / incidents can be done if images are recorded alongside CVR and FDR in the cockpit

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	19	21,1	21,1	21,1
Somewhat disagree	15	16,7	16,7	37,8
Neither agree nor disagree	25	27,8	27,8	65,6
Somewhat agree	15	16,7	16,7	82,2
Strongly agree	16	17,8	17,8	100,0
Total	90	100,0	100,0	

The cockpit imaging system provides more detailed data for the investigation of accidents and incidents. As can be seen only 17.8% of the responses received are definitely agree. The NTSB's cockpit imaging system proposal arose from the need for data on aviation incidents and accidents. According to the relevant safety proposal, this need has been determined by the experience of previous accident investigations. In the light of this information, it can be seen that the organization, whose duty is incident and accident investigation, wants more data in order to make safety recommendations more effective. The claim that the data obtained from the cockpit imaging will not provide significant data for accident investigations emphasizes that the CVR and FDR devices currently in use are sufficient. The ValuJet 592, SilkAir 185, Swissair 111, and EgyptAir 990, which are given in the relevant safety recommendation, indicate that these two devices are not sufficient for both aviation safety and aviation safety. Especially the ValuJet 592 and SwissAir 111 disasters brought to light the need for cockpit images to fully understand what happened before the accident (NTSB, 2019).

CONCLUSION AND DISCUSSIONS

The cockpit imaging system proposal has come up mainly due to the need for data in accident investigations. In the study, it was stated that this system can increase safety through the facilities provided for accident investigations. In this research, possible effects of the cockpit imaging system on pilots are tried to be learned in terms of privacy, safety and developing technology. Within the scope of the research, it can be concluded that in terms of privacy, pilots may be disturbed by video recording and may even see this as a violation of their most basic rights. Apart from the office and most workplace employees whose work place is continuously registered, it can be said that the pilots do not favor the cockpit imaging system on the privacy axis. It can be concluded that privacy-based concerns over the cockpit imaging system proposal are in fact related to the place of the data in legal practice. It can be said that an application that is thought to increase the security will result in a breach of privacy that can be prevented by law, instead of being negatively considered, it will be said that focusing on the protection of the data will increase the gains. Pilots naturally have the most operational information about the flight, and there are negative as well as positive responses to the idea that developing technology will provide unmanned cockpits.

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