IJBES
Business Ecosystem & Strategy

Business Ecosystem & Strategy

IJBES VOL 3 NO 1 ISSN: 2687-2293

Available online at www.bussecon.com
Journal homepage: https://www.bussecon.com/ojs/index.php/ijbes

Examining the relationship between burnout and job satisfaction of flight crew: An analysis on the critical fatigue risk factors in the aviation industry

Engin Ozel [(a)*] *Umit Hacioglu* [(b)]

[(a)] *Master of Science in Air Transport Management, School of Graduate Studies, Ibn Haldun University, Istanbul, Turkey*
[(b)] *Professor, School of Management, Ibn Haldun University, Istanbul, Turkey*

ARTICLE INFO

Article history:
Received 09 July 2021
Received in rev. form 29 Sept. 2021
Accepted 03 October 2021

Keywords:
Fatigue, Burnout, Job Satisfaction
Flight Crew, Flight Safety, Aviation Industry

JEL Classification:
O15, O19, M12

ABSTRACT

Fatigue as an emerging flight safety issue in the aviation industry requires an elaborate understanding and critical approach for proactive aviation management practices. The level of flight crew stress and fatigue must be critically managed to prevent flight accidents. Additionally, stress and fatigue have a negative influence on job satisfaction levels. This paper aims to examine the critical fatigue risk factors that affect the performance and safety of airline pilots and crew in the aviation industry. This paper also analyses the relationship between burnout and job satisfaction sub-dimensions. A factor analysis with a target population of 254 international flight crew has been conducted using the Minnesota Job Satisfaction Survey and Maslach Burnout questionnaire. The main findings of the study demonstrate that (i) cockpit and cabin crews' job satisfaction and performance have been affected by stress and fatigue, (ii) psychological depression, anxiety and personal problems of the flight crew are the main causes of emotional fatigue, (iii) extensive flight hours and dealing with problematic passengers increase flight crew fatigue, (iv) personal achievements concerns and depersonalization increase flight crew fatigue.

Introduction

When employees start to have negative and destructive thoughts about their job, the institution they work for, and their private lives, they should be able to comment that something is wrong with a skeptical attitude. In this case, before it is too late, he should be able to realize whether the source of this is individual or organizational and should determine the style of struggle accordingly. Persons who want to be a cockpit and cabin crew should set attainable and realistic targets by knowing the working conditions and hours, the wages, communication skills and abilities with people well. Otherwise, they may experience burnout to the extent that their sense of personal accomplishment decreases. Employees who are in face-to-face relationships with people in a busy working tempo are often exposed to emotional exhaustion, so it may be beneficial for them to get away from this environment physically for a while, in a way, to isolate themselves and rest.

During the flight operation, many negativities that can trigger exhausting, wearing, stressful and burnout can be encountered, such as trying to cope with problematic passengers, ensuring the safety of passengers in an emergency, flying for long periods in various time zones or serving a wide variety of people with cultural differences. In order to minimize their impact, it is useful to have a perspective that will evaluate them positively as much as possible. There have been researchers investigating the relationship between job satisfaction and burnout. Both concepts stem from the emotional responses of employees(Bendak & Rashid, 2020). A service employee who has a feeling of burnout has a hard time communicating and dealing with passengers at work. This situation, which

* *Corresponding author. ORCID ID: 0000-0003-2840-7120*

http://dx.doi.org/10.36096/ijbes.v3i1.246

has a negative effect on efficiency and profitability, will be to the detriment of the company whilst the efficiency and profitability of airlines are key success factors (Dincer et al. 2017). In addition, the energy and performance of the employees are reduced. In companies that reduce the level of burnout by taking preventive measures, the job satisfaction of the employees will increase and positive results will be obtained. Long flights, jetlag caused by local time differences, and frequently changing flight schedules affect the cabin crew as well as the cockpit crew. Cabin crews, who have been separated from their families and friends for a long time and suffer from a lack of social life, face especially physiological disorders and mental fatigue(Cabon et al., 2012). Over time, this situation can lead to family conflicts, family conflicts, tension and work stress, and tension and work stress can cause burnout syndrome in a short time. As a result of the burnout suffered by cabin crews, nervousness, unnecessary and violent discussions, depression and related health problems may occur in the workplace. Therefore, organizational success, which is vital for the business, is also seriously reduced(Boksem et al., 2006).

Could providing quality and friendly service to airline passengers consume energy of cabin crews and cause insensitive and rude attitudes because of fatigue? Airline operating activities, which gradually increase in the intense competitive environment, require long working hours, thus increasing work-related fatigue and stress levels on employees. This situation can lead to emotional exhaustion, depersonalization and feeling of personal failure, in short, fatigue syndrome, especially in employees who have to establish “face-to-face” relationships with people for a long time. "Job satisfaction", which makes it easier for these employees to catch fatigue syndrome and has a meaningful and inverse relationship with burnout, is a very important concept that should be emphasized and should not be ignored in fatigue studies. It is seen that fatigue syndrome studies, which are also expressed as the feeling of burnout, are mostly concentrated in the education and health sector in public institutions and private enterprises in our country. It is seen that the number of academic studies on job satisfaction and fatigue in the aviation sector both in our country and abroad is very limited. Cockpit and cabin crews perform an emotionally intense profession that has to act in line with company service policies and often have to provide quality service without revealing their negative feelings in their inner world. This situation can easily expose them to fatigue syndrome. Unlike other occupational groups, cockpit and cabin crews have to serve in the same environment with the same people, without a break, on long-term flights that can take up to fifteen hours.

It is seen that the source of stress is more diverse compared to other sectors. Responsibility for the fulfillment of flight safety procedures, including the possibility of fights and attacks in the aircraft, infectious diseases caused by breathing the same air as many people living in different geographical regions, the company's programs to fulfill the maximum legal mandate with the intention of minimizing costs, disrupting the biorhythm balance of day and night shifts(FAA, 2009a). Factors such as the conditions that are not ideal for working can be listed as sources of stress specific to this profession. All these factors create physical, emotional, mental and work-oriented stress in cabin crews. The constant state of this stress, combined with other negative factors, causes the road to fatigue. It is a great responsibility for cabin crews to serve passengers at high altitudes, trying to meet their needs and desires, and also to deal with troubled passengers. From time to time, many events from smoke alarm to fights can be experienced in the aircraft. Determining the job satisfaction and burnout levels of cabin crews who are faced with such problems is of vital importance in terms of the competitiveness and sustainability of companies in the air transportation sector built on “safety, trust and quality”(ICAO, 2016).

Especially in terms of managerial approach and communication skills, it is an inevitable necessity to determine the factors that cause job satisfaction and fatigue in cockpit and cabin crews. The decrease in the effectiveness of the management, the failure to set the standards of behavior in the events faced by cockpit and cabin crews and the lack of management support can cause discomfort and more psychological pressure among cockpit and cabin crews. In particular, trying to please the passengers who are angry with the delays, being subjected to anti-social behavior and verbal attacks by the passengers cause excessive stress and tension in cockpit and cabin crews (Choy, 2002). The success of an airline depends on its ability to attract new customers and retain existing customers by improving its service quality. For this reason, companies renew their aircraft and improve the skills of crew. Service quality directly affects customer satisfaction in airline companies that provide transportation services. The quality of the service provided by cabin crews stands out as the most important factor determining job performance, passenger satisfaction and loyalty. If the service quality on the flight determines the efficiency of the cabin crew, it is important to investigate the factors that affect their job satisfaction.

The intense competitive conditions of airline companies operating in the air transport sector require high performance and efficiency in all activities that support flight and flight. These activities, which require intense work pace and sensitivity, can increase work stress and cause some negative emotions and behavioral changes in employees(Maslach et al., 2001). Extremely sensitive and strict rules brought about by the high risks inherent in the airline industry are intended to prevent unsafe and poor-quality practices, most of which are caused by human factors. Psychological factors (workload, irregular and insufficient rest, stress, personality structures, management pressures, responsibility level, etc.) that affect cockpit and cabin crew members in terms of their job characteristics will easily force them to make mistakes and improve their communication and job performance.

This paper aims to examine the critical fatigue risk factors that affect the performance and safety of airline pilots and crew in aviation industry. This paper also analyses the relationship between burnout and job satisfaction sub-dimensions of cockpit and cabin crews working in airline companies, which carries passengers on domestic and international lines. This paper provides benefits for academics, employees and businesses, and offering suggestions to airline company managers and cabin crews are the targeted sub-goals.

This research was carried out by adopting a "positivist" approach, with an "instant" method in terms of the time it covers and a "descriptive" method in terms of its purpose. The "survey" method was used to obtain the data. The target population of the research is the cockpit and cabin crews of the scheduled and non-scheduled airlines operating in the Turkish civil aviation sector. For the reasons stated under the scope and limitations of the research, the cockpit and cabin attendants of the airline companies that are not named as the research sample, but that perform scheduled and non-scheduled domestic and international passenger transportation flights. Although the number of cockpit and cabin attendants working in the companies is tens of thousands, 254 people answered the questionnaire. A total of 48 questions consisting of the Minnesota job satisfaction questionnaire, Maslach burnout questionnaire and demographic information questions were applied to the cockpit and cabin crews forming the sample.

This paper organized as follows: Following the introduction part, a literature review has been developed based on theoretical and empirical background. In the following part, information related to data, data collection process and analysis under research and methodology. Following the results and findings section, this paper concludes with limitations and future research directions.

Literature Review

Theoretical and Empirical Background

Burnout, known as one of the important phenomena of modern times, was first used in America in the 1970s to express the professional crisis experienced by people working in customer service. However, the British Writer Graham Greene published in 1961, "A Burn-Out Case", which tells about an architect who suffered a mental breakdown and was disappointed and escaped to the African forests, was also included in his novel, defined as "the exhaustion of idealism with great weariness and devotion to one's work". Burnout was previously expressed as a "social problem" by social critics before it was not an important study subject by researchers(Maslach et al., 1996). Burnout as an academic concept was first included in the article "Staff Burn-Out" written by the German psychologist Herbert J. Freudenberger in 1974. This article provides information on what burnout is, its physiological and behavioral symptoms, who are more susceptible, how to prevent burnout and how to deal with burnout, and how to help someone who is exposed to this condition. Freudenberger (1974) expressed the definition of burnout in its simplest form as “fatigue and failure as a result of exhaustion of energy, power or resources due to excessive demands” in the article in question, and stated that this situation varies from person to person and started to show itself especially about a year after starting work. Looking at the above definitions, Freudenberger describes burnout as a condition that can happen to every professional group; Maslach and Jackson described it as a disadvantage that can be encountered in jobs that require one-on-one communication with people. Studies on burnout are mostly focused on human services, health and education sector where the human factor is at the forefront. However, burnout is a negativity that can occur in all other sectors and professions. Hence, Maslach, Jackson, and Leiter rearranged the definition of burnout in 1996, focusing more on human-work relationships than on interpersonal relationships.

There are different definitions of burnout that vary according to the interests and perspectives of researchers in the academic field. Social psychologist Christina Maslach, one of the first names that come to mind about burnout, says that burnout is “physical exhaustion, prolonged fatigue, helplessness, hopelessness and a sense of uselessness seen in those who work in professions that require face-to-face interaction with people and it is an emotional, mental and physical condition that includes negative attitudes towards other people(Maslach et al., 2001).

Pines (2003) defines burnout as the physical, emotional and spiritual exhaustion of people who start to work with great ambitions and cannot achieve the success they want.

The authors define burnout as "a state of physical, emotional, and mental exhaustion that occurs as a result of long-term situations that require emotional effort." Here, "physical exhaustion" means low energy, chronic fatigue and weakness; "Emotional exhaustion" means feelings of helplessness, despair, trapped; "Mental exhaustion" refers to the state of developing negative attitudes towards self, work and life itself.

As can be seen, many different definitions have been made to the concept of burnout in academic literature depending on different perspectives and approaches. Although this situation makes the subject multidimensional, there are some common points in most definitions. The most obvious issues that are commonly accepted; It is seen in idealistic professionals working in service businesses or in environments where emotional effects are experienced more. It is mentioned in many definitions that burnout is a process that expresses emotional, mental and physical fatigue and develops insidiously over time(Laub et al., 2020). Studies conducted on various occupational groups reveal that employees become insensitive to problems in the work environment, withdraw themselves and spend less and less time on their jobs. It has been observed that the employees' tendencies such as not coming to work, being late and getting reports, in addition to encountering health problems, have increased. The impact of all these problems on work quality and productivity is undeniable. Burnout emerges as a social problem that starts with the harm of the individual in the center, affects the social environment accordingly, causes financial damages such as productivity and quality for the organization and also in the social dimension(Englebienne & DeMeirleir, 2002).

In the first studies, interview and observation method was generally used, especially in the 1980s, survey studies measuring the level of burnout were started. In these years, more research has begun to be done thanks to the clearer understanding of the importance of the subject in the scientific world and the developed scales. During this period, Maslach Burnout Inventory (MBI) was developed by

Maslach and Jackson, which is still widely used today. This inventory contains items that are only defined for professional interactions with other people. Some later studies focused on burnout dimensions in a broader framework. For example, the feeling of exhaustion that emerges without pointing to other people as the source of one's exhaustion, cynicism, which indicates a generally distant or unrelated attitude towards work without relation to other people, and professional self-efficacy, which includes both social and other aspects of work success, are other factors that emerge in this context(Maslach et al., 1996).

The second trend in burnout studies is the research on the concept of work engagement, which indicates the opposite of burnout. In this framework, the sense of attachment, which consists of the sub-dimensions of being energetic, devotion and assimilation, shows a situation that shows positivity and satisfaction about work in an organizational context. In this context; The concept of job attachment is seen as a positive reflection of the concept of burnout(Englebienne & DeMeirleir, 2002).

The effects of organizational factors on burnout led to the creation of various research models. Thanks to these models, the factors that cause burnout are better understood; The effect of employee interaction with the work environment on burnout has been revealed more clearly.

There are many models that introduces burnout/fatigue in the literature. Meier, Perlman and Hartman, Cherniss and Maslach Burnout Models are the most discussed models.

Burnout/Fatigue Models

Meier Model

Meier Model means that; the positive reinforcer expectations about the job are very low and the punishment expectations are very high. According to this model, personal competence to have low expectations of being able to control existing reinforcers, to do the necessary behaviors to control reinforcers and the pressure of punishment develops burnout syndrome(Le et al., 2018). The three dimensions of this model are:

i. Lack of controllable life expectancy: The employee faces hopelessness especially in situations where the employee avoid punishment. Personal behaviors and performances are no longer important because both punishment and reward will be recognized through external forces.

ii. High expectation or low reward of punishment: Related to the employees' past experiences about their job leads them to burnout because they have high expectation of punishment or low expectation of reward.

iii. Lack of sense of personal competence: The employee's lack of personal skills in exhibiting the behaviors which necessary for control causes burnout.

Pearlman and Hartman Model

Perlman and Hartman (1982) tried to create a concept of burnout based on a synthesis and content analysis of the definitions made in the process until they came to them. According to this, burnout is "a response to chronic emotional stress and consists of three components. Perlman and Hartman's (1982) model has a cognitive or perceptual focus that interprets personal variables and the individual's environment. According to this model, the three dimensions of burnout reflect the three basic symptom categories of stress. These are:

Physiological dimension (physical exhaustion) focusing on physical symptoms: This is a stage that shows which situation is causing stress. There are two major factors that cause stress; First, the skills and abilities of the individual, which may not be sufficient to meet perceived or real organizational demands. Second, an individual's job may not meet his own expectations, needs, and values. In short, the degree of stress determines the degree of incompatibility between the individual and the organizational variables.

Emotional-cognitive dimension (emotional exhaustion) that focuses on attitudes and emotions (Perceived Stress Level): Many situations that causes stress do not result in a person perceiving themselves under stress. The transition from the first to the second stage depends on the variables of the role and organization, the personalities of the individuals and their "backround" characteristics.

The behavioral dimension that focuses on symptomatic behaviors (Response): This stage includes 3 main response categories given in response to stress. Personal and organizational variables determine which of the physiological, cognitive and behavioral symptoms will appear. At this stage, burnout is caused by chronic emotional stress. As a result of burnout, job satisfaction or a change in work level may occur. A deterioration in psychological and physiological health may occur. The individual may quit work or be fired.

The model is quite extensive and includes almost all the variables considered in burnout studies(Naeeri et al., 2019). According to this model, the characteristics of the individual, work environment and social environment are very effective in coping with burnout. The model has four stages. There are four stages in the burnout model of Perlman and Hartman (1982): "the degree of stress caused by the situation, the perceived stress level, the response to stress and the result of the reaction to stress".

Cherniss Model

Cherniss described burnout as "the sickness of devotion". According to the Cherniss model, burnout is a process that spreads over time, begins as a response to the stresses experienced in the workplace and results in emotional dismissal. In Cherniss's (1989) research on the service sector; Inconsistencies in employees' roles in the workplace can lead to burnout. According to this model; Some characteristics of the work environment affect the factors that cause stress, leading to behavioral changes in employees. This model also revealed that role ambiguity and complexity affect burnout. According to Cherniss, burnout syndrome is caused by the inconsistency in the roles of employees in the service sector. The person who realizes that he / she is experiencing burnout first tries to eliminate the source of stress. If he fails to do this, he will resort to methods of coping with stress. If he is not successful in this step, he tries to cut his psychological connection with the job in order to relieve his emotional burden. The work environment both activates sources of stress and causes attitude changes. Individuals try to cope with the resulting stress sources in different ways.

Edelwich and Brodsky Model

People who start the business world with great enthusiasm and hope usually have certain ideals for the beginning of their working life and for their business careers. Employees who are enthusiastic, enthusiastic and dynamically recruited begin to lose their enthusiasm, enthusiasm, dynamism and efficiency over time when they cannot find the working environment and conditions they expect(Deveci & Demirel, 2018). Some of the reasons that push them to this negativity can be listed as workload, long working hours, low wages and staying far from their ideal goals. When he starts to think that he will not be able to reach his initial goals, his goals begin to change. These employees, whose point of view to their work and future are changing, enter into a process that leads to burnout and consists of certain stages. Edelwich and Brodsky (1980) argued that burnout passes through successive and determinable stages, and that it occurs at the end of a process, and they often explain these stages that come to mind when the "Development Process of Burnout" is called "idealistic enthusiasm, stagnation, frustration and apathy":

i. Idealistic Enthusiasm: This stage, which can also be called as enthusiasm, enthusiasm or enthusiasm and commitment to the profession, is generally seen in individuals who have just started working life; It is the stage where there is excess energy, high expectations and hopes, and a strong motivation to achieve the goals in the chosen profession.

ii. Stagnation: At this stage, the individual is no longer able to show the effort he has shown towards his job in the first stage, as a result of which his energy level decreases, his motivation decreases, he experiences disappointments about his job-related expectations and the result of this is getting colder from his job. At this stage, the individual's interest is much more than his ideals. He turned to non-work activities such as making money, living better, and making better use of his free time.

iii. Frustration: As time passes, the employee starts to think that he is being blocked in order to achieve his professional goals. Frustration; It takes place in two ways: preventing the employee by failing to meet the needs of the people he / she serves, and the employee sacrificing his / her own needs in order to satisfy the needs of the people he / she serves. As time passes, the individual who thinks that his efforts to be successful are insufficient begins to question whether he can continue his profession at this stage.

iv. Apathy: They are typical symptoms of apathy, expressed as "a natural defense mechanism used against frustration" and reflected in every aspect of the relationship of the service provider with the people they serve. Emotional detachment occurs in the form of loss of beliefs, despair, coming to work late, shortening the meetings with the service providers, giving up everything, mechanization and preserving routines

Maslach Model

Although Maslach was not the first researcher to introduce burnout into the literature, she made great contributions to the subject and collected her research in a work published in 1982 called "Burnout: The Cost of Caring". At the same time, she developed the Maslach Burnout Inventory, which was also used as a data collection tool in this study, with Jackson in 1986. The Maslach burnout model is known as the "multidimensional burnout model" or "three-dimensional burnout model" in the literature. According to this model, burnout; It has been expressed as a syndrome in which individuals feel emotionally exhausted, insensitive to the people they encounter due to their jobs, and a decrease in their personal sense of accomplishment in professions where people work face to face. According to Maslach, burnout is a constant response to chronic emotional and interpersonal stressors related to the job and is defined in three dimensions as emotional exhaustion, depersonalization and low personal accomplishment(Maslach et al., 1996). These dimensions, in a sense, express the changes that take place in the life of the individual experiencing burnout. According to this; the individual experiences chronic fatigue; he is relieved of his job, withdrawn into his own shell, and increasingly feeling incapable of his job(Maslach et al., 2001).

Emotional Exhaustion

Considered as a process, emotional exhaustion can be considered as the first phase of burnout. At this stage, the individual faces emotional wear. Emotional exhaustion, which occurs due to the frustration and stress experienced by the individual who interacts with the organization, gaining strong impressions that their expectations are not met, may deepen if no measures are taken. Emotional exhaustion is the first reaction to the stress of job demands and changes. This dimension of burnout is mostly seen in professionals

who have intense and face-to-face relationships with people. In emotional exhaustion, the first dimension of burnout, people both experience emotional and physical fatigue. They feel like they are out of energy and cannot get out of this negative situation(Maslach et al., 1996). Emotional demands of other people who are served or have a mutual relationship with can create stress. When this situation is continuous, employees cannot find the energy to deal with other people and projects. Employees who experience burnout syndrome face the most emotional exhaustion among the three sub-dimensions of burnout. However, the fact that the emotional exhaustion dimension is a basic and necessary criterion for burnout does not mean that it will be sufficient alone in making the diagnosis of burnout. Focusing only on the individual burnout dimension of burnout means losing the holistic view of this syndrome.

Depersonalization

The depersonalization component represents the interpersonal dimension of burnout. Desensitization refers to negative, rigid attitudes towards customers and unresponsiveness to work (Maslach et al., 2001). According to Maslach, the depersonalization dimension constitutes the most serious dimension of burnout. In the dimension of depersonalization, people try to keep other people away from themselves, display indifferent attitudes and even hostile behaviors as much as possible, tend to react negatively to events and people. Desensitization, defined as "displaying a harsh, cold, indifferent, and even un-humanly negative attitude towards those served" is a result of a significant decrease in idealism for work. In this dimension, negative changes are observed especially in the attitudes towards people served in the workplace(O'Hagan et al., 2018). A desensitized service employee begins to treat customers as an item or an insignificant entity, rather than as a human being. Employees in this situation have a distant and careless attitude towards the business they work with as well as to the customers. Other signs of depersonalization include using rude language without courtesy in their discourse, and approaching the people they serve in different non-standard ways(Boksem et al., 2006). In today's world where the importance of customer satisfaction is getting more and more looser and the competition ground is getting looser, businesses operating in the service sector should adopt more understanding, constructive and motivating policies in their approach towards their employees (Dincer, 2013). Because for an employee who becomes insensitive, business profit and customer satisfaction are the concepts that lose their importance. It should not be forgotten that an employee who starts to lose interest in his colleagues, business environment and environment will not only have a profit but also a loss. In the long run, it might have some reflections also on the investors' perception for industry selection (Dincer, 2016)

Reduced Personal Accomplishment

Personal success is defined as overcoming your problem successfully and finding yourself competent. Personal failure is perceiving oneself as inadequate and unsuccessful at work. As a result of negative thoughts about other people, the individual also develops negative thoughts about himself. Feelings of guilt, unloved and failure can reduce self-esteem and depress the person(Maslach, 2003). When a person feels inadequate, a great deficiency occurs. He thinks he can't handle anything. According to these people, everything they have accomplished is too pointless and too small. When they lose their self-confidence, other people also lose their trust in them. Later, the person starts to think that he / she is inadequate and unsuccessful in his job and that no one in the workplace likes him and does not respect his work. These thoughts seem so convincing and real to them that the person begins to lose self-esteem(Plieger et al., 2015). These negative thoughts experienced in the inner world of the person grow and become an even more corrosive and impossible psychological pressure to fight. All these things significantly reduce the capacity, desire to work, effort and creativity of people.

Research and Methodology

Population

The target population of the research is the cockpit and cabin crews of the scheduled and non-scheduled airlines operating in the Turkish civil aviation sector. For the reasons stated under the scope and limitations of the research, the cockpit and cabin attendants of the airline companies that are not named as the research sample, but that perform scheduled and non-scheduled domestic and international passenger transportation flights. Although the number of cockpit and cabin attendants working in the companies is tens of thousands, 254 people answered the questionnaire.

Data

This research was carried out by adopting a "positivist" approach, with an "instant" method in terms of the time it covers and a "descriptive" method in terms of its purpose. The "survey" method was used to obtain the data.

A total of 48 questions consisting of the Minnesota job satisfaction questionnaire, Maslach burnout questionnaire and demographic information questions, detailed below, were applied to the cockpit and cabin crews forming the sample.

In order to answer the questionnaires, firstly, a web link address was created from the internet. Considering that there may be those who do not want to fill out the questionnaire on the web or cannot use the internet for various reasons, questionnaires containing the same questions were also printed. Although the number of cockpit and cabin attendants working in the companies is tens of thousands, 254 people answered the questionnaire.

Data Collection Tools

Minnesota Job Satisfaction Survey

Minnesota Job Satisfaction Survey was developed by Dawis, Weis, England, and Lofquist in 1967 to determine the level of job satisfaction, and it was adapted into Turkish by Baycan (1985) and a validity-reliability study was performed (Cronbach Alpha= 0.77).

The scale used in the Minnesota job satisfaction questionnaire is a five-point Likert-type job satisfaction scale scored between 1 and 5. In the scoring, I am not happy at all 1 point, not satisfied 2 points, undecided 3 points, satisfied 4 points, very satisfied 5 points. The questionnaire consists of individual (internal) and organizational (external) job satisfaction sub-dimensions and 20 questions that determine the general job satisfaction level of employees.

In the individual (internal) dimension, satisfaction consisted of questions 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16 and 20. It consists of elements related to satisfaction related to the intrinsic nature of the job, such as success, recognition or recognition, the job itself, the responsibility of the job, promotion and reassignment due to promotion. Individual job satisfaction score is obtained by dividing the scores obtained from the questions of this dimension by 12.

Satisfaction in the organizational (external) dimension consisted of questions 5, 6, 12, 13, 14, 17, 18 and 19. It consists of elements of the business environment such as business policy and management, mode of supervision, relations with managers and subordinates, working conditions, wages. The organizational job satisfaction score is found by dividing the sum of the scores obtained from the questions of this dimension by 8. The score ranges that determine the level of job satisfaction are shown in Table 1.

Table 1: The Score Ranges that Determine the Level of Job Satisfaction

High	Medium	Low
3,35 and up	1,68 – 3,34	0 – 1,67

Source: Baycan, 1985.

Maslach Burnout Survey

In Turkey, the Maslach Burnout Questionnaire was preferred in most of the studies on the measurement of employee burnout. In Ergin' study (1992), consisting of 22 questions was adapted to Turkish and used. Ergin pre-tested the questionnaire with a group of 235 people (doctors, nurses, teachers, lawyers, police, etc.), and some changes were made as a result of the analysis of the data obtained from this group. Its original form consists of 7-digit answer options. In this study, the scale consisting of 5-digit answer options such as "never, very rare, sometimes, most of the time, always" was used in the Turkish version.

In the factor analysis applied for the construct validity of the MBI, first, 5 natural factors emerged and it was seen that they were collected in three sub-dimensions. The result was re-evaluated by performing varimax rotation. Thus, it was concluded that the burnout syndrome consists of three sub-dimensions: emotional exhaustion, depersonalization, and personal achievement. High scores on the mentioned scale indicate a high level of burnout. The 1st, 2nd, 3rd, 6th, 8th, 13th, 14th, 16th and 20th questions in the questionnaire indicate the level of emotional exhaustion; Questions 5, 10, 11, 15 and 22 measure the level of depersonalization, while questions 4, 7, 9, 12, 17, 18, 19 and 21 measure the level of personal achievement. The answers corresponding to the questions were scored between 0 and 4 points. The highest and lowest scores of the total burnout questionnaire and its sub-dimensions are shown in Table 2.

Table 2: Scoring Range of the Burnout Questionnaire

	Min. Point	Max. Point	Question Count
Total Burnout	0	88	22
Emotional	0	36	9
Personal Achievement	0	20	5
Depersonalization	0	32	8

In this study, in order to compare the subscales with each other, the arithmetic averages of the subscale and total burnout scores were calculated and the analyzes were made according to the arithmetic averages. First of all, each individual received from the subscale. The score is divided by the number of items in the subscale. Then, these averages obtained for each individual were summed and divided by the number of individuals, and these obtained values were interpreted by considering the intervals in Table 3. The dimensions of emotional exhaustion and depersonalization consist of negative expressions, and the dimension of personal achievement consists of positive expressions. For this reason, the score of each sub-dimension was evaluated separately. While the increase in emotional exhaustion and depersonalization scores indicate that burnout is high, the decrease in the personal achievement score explains the burnout.

In Table 3, the weight scores of the answers to the questions in the burnout questionnaire and the burnout levels corresponding to the arithmetic averages of the total scores are indicated.

Table 3: Burnout Level Score Ranges According to Arithmetic Averages

Point	Choice	Point	Burnout Level
0	Never	0 – 0.79	Very Low
1	Very Rarely	0.80 – 1.59	Low
2	Sometimes	1.60 – 2.39	Medium
3	Often	2.40 – 3.19	High
4	Always	3.20 – 4.00	Very High

Source: Ergin, 1992

The reliability of the scale was examined by Ergin (1992) with two methods. The first is the calculation of the internal consistency of the scale. The internal consistency (Cronbach's Alpha) coefficients of the data obtained from the group consisting of a total of 552 doctors and nurses are as follows: Emotional exhaustion 0.83, Depersonalization 0.65, personal success 0.72.

Reliability was also examined with a test-retest method. For this, 99 subjects were reached 2-4 weeks after the first application. Test-retest reliability coefficients for the sub-dimensions of the scale are: Emotional exhaustion 0.83, Depersonalization 0.72, and personal success 0.67.

Analysis and Findings

Distribution of Survey Responses

In order to talk about the normal distribution, the significance value of the statistics testing the normal distribution should be greater than 0.05. It is seen in Table 4 that the significance values (sig.) of the Kolmogorov-Smirnov and Shapiro-Wilk tests used to test the normal distribution are less than 0.05.

Table 4: Data Distribution Analysis of Surveys

	Kolmogorov - Smirnov			**Shapiro - Wilk**		
	Statistic	df	Sig.	Statistic	df	Sig.
Job Satisfaction	,101	237	,000	,973	237	,000
Burnout	,081	237	,001	,979	237	,002

In this case, "non-parametric" analysis techniques were applied as the variables were not suitable for normal distribution.

Reliability of the Questionnaires

Burnout questionnaire Cronbach Alpha values are given in Table 5. It is seen that the reliability is high with the sub-dimensions.

Table 5: Burnout Questionnaire Reliability Analysis Values

	Cronbach Alpha	**Question Quantity**
Total Burnout	.872	22
Emotional Burnout	.723	9
Personal Achievement	.731	5
Depersonalization	.618	8

As a result of the reliability analysis for the job satisfaction questionnaire applied to cabin crews in this study, Cronbach Alpha values are shown in Table 6 According to the values found, it is seen that the reliability of the job satisfaction questionnaire is high, together with its sub-dimensions.

Table 6: Job Satisfaction Survey Reliability Analysis Values

	Cronbach Alpha	Question Quantity
Total Job Satisfaction	.878	20
Individual Job Satisfaction	.638	12
Organizational Job Satisfaction	.489	8

Findings on Job Satisfaction

At the Individual Level

These are the findings regarding the questions 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16 and 20 in the questionnaire.

Table 7: Minnesota Q1 Analyze

I am…	Frequency	Percentage	Cumulative Percentage
Not Happy at All	7	2,8	2,8
Not Satisfied	43	16,9	19,7
Undecided	79	31,1	50,8
Satisfied	104	40,9	91,7
Very Satisfied	21	8,3	100,0
Total	254	100,0	

The question 1 is "I am…..in terms of keeping me busy." When Table 7 is examined, it is seen that more than half of the cockpit and cabin crews answered as either satisfied or very satisfied. The number and rate of those who are satisfied is 40.9% with 104 people; those who are very satisfied are 8.3% with 21 people. Those who were undecided were 31.1% with 79; dissatisfied is 19.7% with 50 people.

The question 2 is "I am…in Terms of the Suitability of the Working Environment." When the responses are examined, it is seen that the answers given by the cockpit and cabin crew are very close to the number and ratio of the answers given to the previous question, which is too busy. The rate of those who are not satisfied at all is 18.1% with 46 people; undecided with 128 people 50.4%; those who are satisfied are 31.5% with 80 people.

The question 3 is "I am…in Terms of Having the Chance to do Different Things from Time to Time." When the responses are examined, it is seen that 35% were able to catch this opportunity and were satisfied. Those who were not satisfied at all were 36.6% with 93 people; undecided with 72 people 28.3%.

The question 4 is "I am… in Terms of Giving Me the Chance to be a "Respected Person" in Society." The proportions of the answers given by the cockpit and cabin crew who evaluated their profession in terms of being a respected person in the society. Accordingly, it is seen that mostly positive answers are given. Unsatisfied with 20 people, 7.9%. To this question, where the rate of undecided people is also high (28.3%), the majority of 162 people and 43.8% answered positive.

The question 7 is "I am… in Terms of the Fact that My Work does not Force Me to Act Contrary to My Conscience." When the responses are examined, those who were not satisfied at all were 15.4% with 39 people; undecided people make up 25.6% with 65 people. The rate of the dissatisfied and undecided corresponds to a minority rate of 40.9% in total. According to the answer given by the majority, there is no situation in the cockpit and cabin crew that leads the person to act against conscience. Because those who are satisfied are 59.1% with 150 people.

The question 8 is "I am… in Terms of Providing Me with a Stable Job." When the responses are examined, those who are not at all satisfied with this situation are 22.8% with 58 people; undecided people are at the rate of 28.7% with 73 people. The rate of those who think that they have a stable job opportunity in this profession is in the majority. Satisfied with 123 people 48.4%.

The question 9 is "I am… in Terms of being able to do Something for Other People." The answers given to the possibility of doing something for other people, which can also be expressed as being able to serve others. Naturally, 111 people and 43.7% were given a very high level of satisfaction in terms of professional requirements.

The question 10 is "I am… in Terms of Having the Chance to Tell People What To Do." When the responses are examined, it is seen that the answers given to the situation of having the chance to tell people what to do are similar to the answers given to the previous question. Those who answered this question with satisfaction are as high as 47.3%, with a total of 120 people. The rate of undecided is 33.5% with 85 people; The rate of dissatisfied people is 19.3% with 49 people in total.

The question 11 is "I am… in Terms of Having a Chance to do Something with My Own Abilities." According to the answers, those who were not satisfied at all were 22.0% with 56 people; those who are undecided are at the rate of 26.0% with 66 people; those who are satisfied are 51.9% with 132 people.

The question 15 is "I am… in Terms of Giving Me the Freedom to Apply My Own Decisions." The answers given by the cabin crew to the freedom of implementation of their own decisions demonstrate that despite the issues mentioned in the previous paragraph, nearly half of the respondents answered the question as satisfied. 42.6% of 108 people are satisfied. Undecided with 73 people 28.7%; dissatisfied is 28.7% with 73 people.

The question 16 is "I am… in Terms of Giving Me the Chance to Use My Own Talents." According to answers, those who are not satisfied at all are 21.2% with 54 people; undecided with 73 people at the rate of 28.7%; those who are satisfied are 35.0% with 89 people, and those who are very satisfied are 15.0% with 38 people.

The question 20 is "I am… in Terms of the Feeling of Success that I Feel for the Work I do." The answers given to the sense of achievement in return for the work done demonstrate that the vast majority of cabin and cockpit crews are satisfied with the sense of accomplishment they feel in return for the service they provide. Those who are very satisfied are 46.5% with 118 people; undecided 26.8% with 68 people; Those who are not satisfied are 26.8% with 68 people.

Findings of Job Satisfaction in Organizational Dimension

These are the findings regarding the 5th, 6th, 12th, 13th, 14th, 17th, 18th and 19th questions in the job satisfaction survey. Job satisfaction is a very important factor about personal motivation and personal happiness in people's work life. The answers given by the cockpit and cabin crew about the way their managers manage themselves are shown in Table 8.

Table 8: Minnesota Q5 Analyze

I am…	Frequency	Percentage	Cumulative Percentage
Not Happy at All	13	5,1	5,1
Not Satisfied	60	23,6	28,7
Undecided	96	37,8	66,5
Satisfied	69	27,2	93,7
Very Satisfied	16	6,3	100,0
Total	254	100,0	

The question 5 is "I am… in Terms of Management Style of My Managers and Supervisors." According to this, those who were not satisfied at all were 28.7% with 73 people; those who were undecided were 37.8% with 96 people; those who are satisfied have a rate of 33.5% with 85 people.

The question 6 is "I am… in Terms of My Superior's Ability to Make Decisions." Evaluating the decision-making abilities of their supervisors, the flight crew were not satisfied at all with 83 people which means 32.6%; undecided at the rate of 31.9% with 81 people; They stated that they were satisfied with a rate of 35.4% with 90 people.

The question 12 is "I am… in Terms of Putting Business-Related Decisions into Practice." According to the answers given to the implementation of work-related decisions, results demonstrate that those who were not satisfied at all were 23.3% with 59 people; those who are undecided are 28.7% with 73; those who are satisfied represent 48.0% with 122 people.

The question 13 is "I am… in Terms of the Wages I Receive for My Work." When the responses are examined, findings show that those who were not satisfied at all were 20.1% with 51; undecided with 75 people 29.5%; those who are satisfied represent 50.4% with 128 people.

The question 14 is "I am… in Terms of Having the Opportunity to be Promoted in the Job." When the responses are examined, results show that those who are not at all satisfied with the possibility of promotion are 64 people, 25.2%; those who are undecided are 27.6% with 70 people; those who are satisfied have a rate of 47.2% with 120 people.

The question 17 is "I am… in Terms of Working Conditions." The answers given by the cockpit and cabin crew by evaluating the working conditions and when the responses are examined, results show that those who are satisfied constitute the majority. Among them, those who were not satisfied at all were 20.8% with 53 people; undecided are the ones who answered this question with the highest rate and they make up 28% with 71 people.

The question 18 is "I am… in Terms of My Colleagues Agreeing with Each Other." There are answers of the cabin crew who filled out the questionnaire evaluating the agreement of their colleagues with each other. When the results are examined, it can be mentioned that the cockpit and cabin attendants are mostly in good relations and compatible with each other. The rate of those who are not satisfied is 27.2% with 69 people. Those who are satisfied are 44.1% with 112 people. The rate of undecided people is 28.7% with 73 people.

The question 19 is "I am… in Terms of Being Appreciated for a Good Job that I Do." The ratio of the answers given by the cockpit and cabin crew to this question, in which the managers' appreciation of the good work done is evaluated. Accordingly, it is seen that half of the respondents are satisfied. The rate of those who are not satisfied at all is 18.5% with 47 people. The rate of undecided

people is 24.8% with 63 people. Among the answers given to this question, the highest rate was those who said that they were satisfied with 144 people with a rate of 56.7%.

Findings of Fatigue / Burnout Syndrome

These are the findings regarding the emotional burnout, signs of desensitization and signs of personal feelings of failure.

Findings on the Emotional Fatigue / Burnout Findings

These are the findings regarding the 1st, 2nd, 3rd, 6th, 8th, 13th, 14th, 16th and 20th questions in the burnout questionnaire. Emotional fatigue and its level are very important for a flight crew because it may cause to emotional and psychological depression, anxiety or other problems.

Table 9: MBI Q1 Analyze

	Frequency	Percentage	Cumulative Percentage
Never	12	4,7	4,7
Very Rare	51	20,1	24,8
Sometimes	56	22,0	46,9
Most of the Time	112	44,1	90,9
Always	23	9,1	100,0
Total	254	100,0	

The question 19 is "I Feel Cold from My Job." Table 9 shows the answers given by the cockpit and cabin crew about how often they feel cold about their work. 4.7% of 12 people who never felt cold; 51 people who rarely feel cold; 20.1%; sometimes 22 percent with 56 people; It is 44.1% with 112 people who feel most of the time and 9.1% with 23 people who always feel.

The question 2 is "I Feel Mentally Tired After Work." The number and rate of those who feel mentally tired after returning from work are have been assessed. According to this, those who never felt tired were 2.8% with 7; those who rarely felt tired were 41 with 16.1%; those who sometimes felt tired were 43.3% with 110 people; Those who feel tired most of the time are 29.5% with 75 people and 8.3% with 21 people who always feel tired.

The question 3 is "I Feel Tired When I Get Up in The Morning and Have to Face a New Work Day." In Table 4.26, the answers given to the feeling of tiredness caused by encountering the situation of going to work again when getting up in the morning are seen. It is striking that the rate of mental work fatigue felt when getting up in the morning is less than feeling mentally tired after the end of work. 4.3% of 11 people who never felt tired; those who feel very rare with 75 people 29.5%; those who sometimes feel 28.7% with 73 people; those who feel most of the time are 23.6% with 60 people and those who always feel are 13.8% with 35 people.

The question 6 is "It is Really Weary for Me to Deal with Problem People All Day." Results show the ratio of cockpit and cabin attendants who think that dealing with problematic people on flights is exhausting. Those who say it is never abrasive are 3.5% with 9 people; those who think that it is abrasive very rare is 22.0% with 56 people; those who say it is sometimes abrasive are 28.0% with 71 people; Those who say it is often abrasive is 33.1% with 84 people, and those who say it is always abrasive are 13.4% with 34 people.

The question 8 is "I Feel so Tired of My Work". As the answers given to feeling tired of the work are examined, findings should that those who never give up were 2,8% with 7; those who rarely feel intimidated by 53 with 20.9%; those who think they sometimes get discouraged are 27.2% with 69 people; those who think that they are often intimidated are 32.3% with 82 people, and those who always feel intimidated are 16.9% with only 43 people.

The question 13 is "I Feel that My Job Constrains Me." The answers given by the cockpit and cabin crew to feeling that the job restricts them. Those who say that they never restrict are 2.8% with 7 people; 18.5% with 47 people who say that they restrict it very rarely; those who say that they sometimes restrict it with 67 people, 26.4%; Those who think that they restrict most of the time are 34.6% with 88 people and 17.7% with 45 people who say that they always restrict. According to these results, the rate of those who state that they do not have much problems with restriction (21.3%) is quite low compared to the rate of those who say that they generally restrict it (52.3%).

The question 14 is "I Feel Like I'm Working Above My Strength in My Job." The proportions of those who think that they are working beyond their power are evaluated in the questionnaire. Those who think that they are not working above their strength constitute a small group of 4.7% with only 12 people. Those who think that they work beyond their power, although very rarely, have a rate of 18.9% with 48 people. 62 people marked sometimes that they work in a job that is beyond their power, and this number is 24.4%. Those who think that they work beyond their power most of the time are as high as 29.9% with 76 people. Those who claim that they always work above their power have a rate of 22.0% with 56 people.

The question 16 is "Working Directly with People is Causing Me a Lot of Stress." The answers given to the fact that working directly with people causes too much stress are evaluated. According to this, those who have never experienced stress are 3,5% with 9 people; those who rarely experienced stress was 16.5% with 42 people; those who sometimes experience stress is 27.6% with 70 people;

Those who think that they are stressed most of the time are 34.3% with 87 people, and those who think that they are always stressed are 18.1% with only 46 people.

The question 20 is "I Feel so Helpless." As the answers given to the question of feeling very helpless are evaluated, results show that those who have never felt helpless have a very low rate of 7.9% with 20 people. Those who rarely felt helpless were 53 people with a rate of 20.9%; those who sometimes feel are 28.0% with 71 people; Those who often feel it is 27.2% with 69 people, and those who think they are always helpless are 16.1% with only 41 people.

Findings on the Depersonalization

These are the findings related to the 5th, 10th, 11th, 15th and 22th questions in the burnout questionnaire.

Table 10: MBI Q5 Analyze

	Frequency	Percentage	Cumulative Percentage
Never	6	2,4	2,4
Very Rare	41	16,1	18,5
Sometimes	108	42,5	61,0
Most of the Time	85	33,5	94,5
Always	14	5,5	100,0
Total	254	100,0	

The question 5 is "I'm Treating the People as a Different Entity Whom I Come Across as Part of My Job." Table 10 shows the answers given to the question of perceiving people in the workplace as a different entity and acting accordingly. Those who never behaved in this way were 2.4% with 6; those who act very rarely 16.1% with 41 people; those who act sometimes, with 108 people, 42.5%; those who act most of the time are 33.5% with 85 people, and those who always see people differently and act accordingly are 5.5% with 14 people.

The question 10 is "Ever Since I Started Working in this Business I Feel Like I'm Getting Hard on People." Those who think they have never hardened are 4.7% with 12; 15.0% with 38 people who think that they rarely get hard; 28.7% of 73 people said that they sometimes get hard; those who feel hardened most of the time are 34.6% with 88 people and 16.9% with 43 people who feel hardened all the time. The question 11 is "I'm Afraid This Job will Harden Me." According to the responses, those who indicated that they never solidified were 3.9% with 10; those who felt stiffened very rarely were 16.5% with 42 people; sometimes solidified 28.7% with 73 people; those who feel solidified most of the time are 32.3% with 82 people and 18.5% with 47 people who are always solid now. The question 15 is "I Feel Like I don't Care about the People Whom I Meet for My Job." The answers given to the question of not caring about people are almost the same as the answers given to the last few questions. Those who do not care about people are 4.7% with 12; those who rarely don't care 19.7% with 50 people; sometimes they don't care 26.4% with 67 people; those who don't care most of the time are 33.5% with 85 people and 15.7% with 40 people who don't care anymore.

The question 22 is "I Feel that the People I Meet as Part of My Job Acting as I Created Some of Their Problems." The cockpit and cabin crews answered the question that the people they met at work felt that they acted as if they had created their own problems, and they mostly replied that they had such a feeling. According to the results, 10 people who never felt such a feeling were 3.9%; those who feel very rarely are 20.5% with 52 people. Those who felt sometimes were 28.0% with 71; those who often feel it is 36.2% with 92 people and 11.4% with 29 people who always feel this way. When we look at the ratios, it is seen that approximately 50% of the population is in distress about this issue.

Findings on the Personal Achievement

These are the findings regarding the 4th, 7th, 9th, 12th, 17th, 18th, 19th and 21st questions in the burnout questionnaire.

Table 11: MBI Q4 Analyze

	Frequency	Percentage	Cumulative Percentage
Never	8	3,1	3,1
Very Rare	26	10,2	13,4
Sometimes	64	25,2	38,6
Most of the Time	101	39,8	78,3
Always	55	21,7	100,0
Total	254	100,0	

The question 4 is "As a Matter of My Job I Immediately Understand What the People Feel Whom I Met While Working." Table 11 shows the answers given to the question about understanding how people feel. When the table is examined, it is understood that the majority gave a positive answer. Those who always understand are 21.7% with 55 people; those who understand most of the time

make up the majority with 101 people at the rate of 39.8%. Sometimes those who can understand are 25.2% with 64 people; those who understand very rarely are 10.2% with 26 people, and those who do not understand at all are 3.1% with only 8 people.

The question 7 is "As a Result of My Job I Find the most Appropriate Solutions to the Problems of the People I Encounter." What is expected from cabin crew is to provide the most appropriate service to solve the wishes, needs and problems of the passengers who prefer them. Results demonstrate that those who always find it are 14.6% with 37 people; most of the time, 37.8% with 96 people; sometimes 28.0% with 71 people; Those who find it very rarely are 16.5% with 42 people and 3.1% with only 8 people who can't find it at all. It is understood from this table that cabin crew mostly think that they are successful in what they do.

The question 9 is "I Believe that I Contribute to People's Lives by the Work I Do." Air transport provides fast transportation, which is one of the most important needs of people due to its feature. Thus, it is a business sector that contributes to people's lives. Since this job is a team job and one of the most important contributions is made by the cabin crew by serving the passengers, it is expected that the answers given to this question will be mostly positive. When the responses are examined, results show that the answers given to this question are as expected. Those who think they always contribute are 16.5% with 42 people; mostly contributors 35.8% with 91 people; those who think they sometimes contribute are 22.4% with 57 people. 52 people who think they contribute very rarely have 20.5%, and only 12 people who think they don't contribute at all have a rate of 4.7%.

The question 12 is "I am Strong Enough to do so many Things." According to results, those who always feel strong are 24.4% with 62 people; those who feel strong most of the time are 65 with 25.6%; those who sometimes feel are at the rate of 23.6% with 60 people. Those who rarely feel this power are 21.7% with 55 people and 4.7% with 12 people who do not feel it at all. The reason why they feel capable of doing a lot can be thought of as the fact that most of the cockpit and flight attendants who answered the questionnaire are young and energetic, as well as the hope of a long future that awaits them.

The question 17 is "I Create a Comfortable Atmosphere with the People I Meet as a Part of My Job." Answers given to the question asked about the characteristics of creating a comfortable atmosphere with people. Those who always create a comfortable atmosphere are 19.3% with 49 people; most of the time the creators are 28.0% with 71 people; sometimes the creators are 28.0% with 72 people. Those who answered very rarely were 20.5% with 52 people, and 3.9% with 10 people said that they could not create a comfortable atmosphere at all.

The question 18 is "I Feel Revitalized After Working Closely with People." The answers given by the cabin attendants who participated in the survey to make them feel alive when they have a dialogue with people. According to this, those who always feel revitalized are 14.6% with 37 people; those who felt refreshed most of the time were 31.1% with 79; those who feel sometimes are 31.5% with 80 people. Those who rarely felt revitalized were 19.3% with 49 people, and 3.5% with 9 people who never felt this way.

The question 19 is "I had a lot of Remarkable Success in this Business." The answers given by the cockpit and cabin attendants who evaluated the achievements of many remarkable achievements are evaluated. According to this, those who think that they have always achieved significant success are 21.7% with 55 people; those who think this way most of the time, 32.7% with 83; those who say sometimes is 24.8% with 63 people. Those who think that they rarely achieve significant success are 16.5% with 42 people and 4.3% with 11 people who think that they have no significant success. Nearly a quarter of them have negative thoughts in terms of sense of achievement.

The question 21 is "I Approach to Emotional Problems in my Job with Calmness." The answers given to approaching emotional problems calmly are evaluated. Those who can always approach calmly are 22.8% with 58 people; 29.1% of 74 people are cool-headed most of the time; sometimes it is 28.0% with 71 people who can achieve this. Those who rarely manage to be cool are 15.0% with 38 people, and 5.1% with 13 people who can't approach at all.

Findings on the Relationship between Job Satisfaction and Burnout

Table 12: The Relationship between Job Satisfaction and Burnout

		Job Satisfaction	**Burnout**
Job Satisfaction	Spearman Correlation	1	.348*
	Sig. (2-tailed)	.	.000
	N	254	254
Burnout	Spearman Correlation	.348*	1
	Sig. (2-tailed)	.000	.
	N	254	254

* Correlation is significant at the 0.01 level (2-tailed)

When the findings in Table 12 are examined, it is seen that there is a negative relationship between total job satisfaction and total burnout. The relationship between the sub-dimensions of burnout and job satisfaction is shown in Table 13. According to this table, it is seen that all of the sub-dimensions are in a significant relationship with each other at the 0.01 level.

According to the findings in Table 13, "personal job satisfaction" and "organizational job satisfaction" sub-dimensions are positively related to each other and to the "personal feeling of failure" sub-dimension of burnout; There is a negative relationship with the sub-dimensions of "emotional burnout" and "depersonalization". There is a positive relationship between the "emotional burnout" and " depersonalization " sub-dimensions of the burnout questionnaire and a negative relationship with the sub-dimensions of job satisfaction. It is seen that there is a negative relationship between the "personal achievement" sub-dimension and the sub-dimensions of "emotional burnout" and " depersonalization ", which are among the sub-dimensions of burnout, and a positive relationship with the sub-dimensions of job satisfaction. No significant relationship was found between demographic factors and job satisfaction and burnout.

Table 13: Relationship between Burnout and Job Satisfaction Sub-Dimensions

		Organizational Job Satisfaction	**Personal Job Satisfaction**	**Emotional Burnout**	**Personal Achievement**	**Depersonalization**
Organizational Job Satisfaction	Spearman Correlation	1.000	.438*	.202*	.236*	.101
	Sig. (2-tailed)		.000	.001	.000	.109
	N	254	254	254	254	254
Personal Job Satisfaction	Spearman Correlation	.438*	1.000	.314*	.324*	.211*
	Sig. (2-tailed)	.000		.000	.000	.001
	N	254	254	254	254	254
Emotional Burnout	Spearman Correlation	.202*	.314*	1.000	.483*	.538*
	Sig. (2-tailed)	.001	.000		.000	.000
	N	254	254	254	254	254
Personal Achievement	Spearman Correlation	.236*	.324*	.483*	1.000	.507*
	Sig. (2-tailed)	.000	.000	.000		.000
	N	254	254	254	254	254
Depersonalization	Spearman Correlation	.101	.211*	.538*	.507*	1.000
	Sig. (2-tailed)	.109	.001	.000	.000	
	N	254	254	254	254	254

* Correlation is significant at the 0.01 level (2-tailed)

Discussion

The importance of human resources, especially in the air transportation sector, where the quality expectations of the customers are increasing and making a positive difference in the service offered in order to maintain the competitive power, is increasing day by day. The fact that the leading customer representatives of airline companies, in other words, cockpit and cabin crews, who are the face of the company in the field, have not been sufficiently studied in business science, leaves the steps to solve the problems they experience in the background. However, cockpit and cabin crew, where human relations are extremely important in the quality of service delivery (Dincer et al., 2018), is a profession that brings efficient and profitable results (Hacioglu and Aksoy, 2021) to the company only if high job satisfaction and sufficient motivation are provided to its employees. However, at the beginning of the steps to be taken in order to solve the problems that cockpit and cabin crews working in the aviation sector are facing today, these problems should be scientifically revealed and discussed. The results obtained by evaluating the job satisfaction and burnout questionnaires applied to cockpit and cabin crews in this study are explained below with their sub-dimensions.

Job Satisfaction at the Individual and Organizational Level

It has been observed that the answers given by the cockpit and cabin crew to the questions about the degree of occupation of the job, the suitability of the working environment and the ability to do different jobs from time to time regarding individual job satisfaction are very close to each other. People in an intense working environment where the same tasks are repeated may experience both physical and mental fatigue with boredom after a certain period of time. This can lead to job dissatisfaction and burnout in the future. Despite the fact that the same things are always repeated in the cabin crew job, meeting different passengers from different cultures, flying to different destinations, different cabin crew members in most missions, and most importantly, the satisfaction and pride of achieving a job are the factors that reduce the effect of uniformity in the job. These factors are considered to be the most important reason why the majority of cabin crews gave positive answers to the above-mentioned individual job satisfaction questions. Therefore, the perceived individual job satisfaction level is positively supported.

In parallel with the rapid acceleration in the aviation industry in recent years, increasing the need for cockpit and cabin crew of companies, it has also increased the interest of people who are looking for a profession in this profession. In addition to its prestige

in the society, the attractiveness of flights to many touristic centers makes this profession especially popular among young people. The fact that the cockpit and cabin crew, who evaluate their profession in terms of being a respected person in the society, mostly gave positive answers, shows that they have adopted the job they do and understand its importance. The continuous growth and continued growth of the national civil aviation sector for the last 19 years, especially with the effect of liberalization in domestic routes in 2002, brought along the need for qualified personnel. The risk of being unemployed has also decreased at a time when companies are almost competing with each other in order to avoid shortages not only in the cockpit crew but also in the cabin crew. It is highly likely that a flight attendant who continues to do his/her job well will continue to stay within the company. Therefore, it can be evaluated that the cabin attendants who answered the questionnaire were not very worried about this issue.

Cockpit and cabin crews try to help passengers by providing services and trying to meet their needs. Due to this feature, it can be thought that those who gave a negative or undecided answer to the question among the people who were asked to evaluate their jobs in terms of "providing the opportunity to help others" in the job satisfaction survey experienced job dissatisfaction in their profession. It is considered that the main reason for this negative thought is that they are exposed to mental fatigue due to tiring and stressful service delivery. Because the main element of the profession is to serve others, namely passengers, and the fact that the question asked is clear, understandable and clear strengthens this possibility. It tries to help passengers by providing service and trying to meet their needs. Due to this feature, it can be thought that those who gave a negative or undecided answer to the question among the people who were asked to evaluate their jobs in terms of "providing the opportunity to help others" in the job satisfaction survey experienced job dissatisfaction in their profession. It is considered that the main reason for this negative thought is that they are exposed to mental fatigue due to tiring and stressful service delivery. Because both the fact that the main element of the profession is to serve others, namely passengers, and the question asked is clear, understandable and clear, strengthens this possibility. It tries to help passengers by providing services and trying to meet their needs. Due to this feature, it can be thought that those who gave a negative or undecided answer to the question among the cabin attendants who were asked to evaluate their jobs in terms of "providing the opportunity to help others" in the job satisfaction survey experienced job dissatisfaction in their profession. It is considered that the main reason for this negative thought is that they are exposed to mental fatigue due to tiring and stressful service delivery. Because both the fact that the main element of the profession is to serve others, namely passengers, and the question asked is clear, understandable and clear, strengthens this possibility.

It is seen that the answers given to the situation of having the chance to tell people what to do are similar to the answers given to the previous question. Because cabin crews that perform the service have to tell the passengers about their course of action and what to do in which situation due to the characteristics of the working environment. In answering this question with dissatisfaction or indecision, the cabin attendants' thinking about the problematic and belligerent passengers they encountered during the service delivery may have been effective. The most frustrating and tiring factors for the aviation profession are the aggressive behaviors and impossible and irrational demands of the problematic, incompatible and belligerent passengers. When such passengers are told about their behavior during travel, negative reactions can be received as stated above. These negative situations are the situations that cabin crew come across very often and they have to make great efforts to overcome. In the face of these well-known situations, flight attendants' feeling helpless and lonely leads to professional attrition.

The autonomy of the cockpit and cabin crew is very limited. Because there are standards and policies determined by the airline company regarding service delivery. It is often not possible to go beyond these standards. They do not have a chance to take the initiative in the face of sudden situations. In addition to the obligation to comply with company standards and policies, they must obtain the approval of the captain in charge of the aircraft. Because the responsibility of maintaining the flight operation safely and smoothly belongs to the captain. Therefore, the fact that cabin crews cannot find the freedom to easily implement their own decisions and use their special talents as they wish in their job are the issues that affect individual job satisfaction relatively negatively. It was seen in the survey that the answers given to the questions related to these were similar and almost half of the cabin crew were either dissatisfied or undecided on this issue

When the answers given to the questionnaire are evaluated, it is concluded that the main factors that positively affect the individual level of job satisfaction of cockpit and cabin crew are as follows:

i. Less affected by work uniformity

ii. Being aware of the prestige and value of their profession in society

iii. With the rapid and continuous development of the civil air transport sector, the decrease in the concern of being unemployed due to the increase in the need for personnel

iv. Emotional pleasure due to the ability of the work to help others

In addition to the high level of job satisfaction in general, the limited autonomy and the inability of approximately one-third of the cabin crew to express their satisfaction with their personal sense of accomplishment are considered as a situation that should be considered institutionally.

From the beginning of their business life, employees feel the need to make a career plan in order to guarantee and shape their future, as well as meeting their immediate basic vital needs. They want to know what they may encounter over time within this career plan

and what they need to do to reach their goals. Having a promotion system that will enable them to become better socially and economically on the way to their goals is a factor that positively supports organizational commitment as well as increasing the motivation and productivity of employees. It is an important human resources management policy that should be implemented in the business world, regardless of the sector, through fair and encouraging promotion practices. Working conditions in today's digital transformation age are one of the most important factors affecting the choice of employees to change jobs (Hacioglu, 2019; Hacioglu and Sevgilioglu, 2019; Hacioglu, 2020). After the salary, one of the most questioned situations when choosing a job is working conditions. In addition to the negative answers given to the question about working conditions in the survey, there are also those who are satisfied with the working conditions and even very satisfied. This situation leads to the conclusion that there is a need for the management to examine the working conditions together with the cabin crew and to implement the possible improvements. Employees should be interviewed and remedial steps should be taken in order to turn the ideas of the undecided into a positive direction, since the issue that will most affect the people who have just started the cockpit and cabin crew job will be the working conditions. The harmony of colleagues with each other and the quality of communication are undoubtedly a factor that affects the peace at work, work performance and satisfaction with the work done. The flight crew is not just the pilots who are in the cockpit and manage the aircraft. Very important duties such as the safety, control and supervision of the passenger cabin, which is behind the cockpit section and which constitutes a very large part of the aircraft, meeting the needs of hundreds of passengers, directing the passengers in emergency situations and evacuating them, if necessary, are among the responsibilities of the cabin crew. The smooth and safe execution of all these activities depends on the agreement of the cabin crew working as a team and their ability to communicate effectively. Like all employees, flight attendants want their managers to appreciate them in return for their superior performance, quality and friendly service and efforts. Spiritual satisfaction is as important as material satisfaction in the work done. People who are financially satisfied in many business areas, but who do not feel emotionally attached to their job or the company they work for, and therefore cannot experience moral satisfaction, can easily quit their job. For this reason, it is extremely important that the reward-punishment mechanism is applied fairly in airline companies as in other businesses.

According to the result obtained by calculating the averages of the scores of the answers given when the values in the job satisfaction level scoring table are taken as a criterion, it is seen that the flight attendants have a "moderate" organizational job satisfaction with an average of 3.04 points. It is evaluated that the factors affecting the lower level of organizational job satisfaction compared to individual job satisfaction are as follows:

i. Although cabin crew are generally satisfied with their supervisor's management style and decision-making abilities, they are not as satisfied with the implementation of the decisions made

ii. Discomfort caused by remuneration policy and low wages, which is one of the most important motivational tools

iii. Approximately half of the cockpit and cabin crews evaluate promotion opportunities as insufficient

iv. Discomfort at not being appreciated enough for good job performance

In the light of all the above-mentioned data, it is seen that the job satisfaction level of cockpit and cabin attendants is at a "moderate" level with a score of 2.88.

Fatigue Factors in the Effect of Job Satisfaction and Burnout

While about half of the cockpit and cabin attendants do not experience much difficulty in cooling off from work, the fact that the ratio of those who live most of the time and always corresponds to a total rate of 53.2% should be considered as a problem that should be questioned. In addition, the 22% group, who marked that they were undecided, may easily start to feel cold very often due to some negative factors such as the management's approach, frequency of flights, being away from the family, and low wages may go towards mental and physical fatigue. Those who are exposed to mental fatigue most of the time and all the time after returning from work constitute a remarkable 37.8% in total. It is considered with a high probability that those who feel tired sometimes start to feel fatigued more often due to the fact that the work conditions do not change or get more intense. Being physically and mentally rested, energetic and dynamic is a necessity, especially for those who do high-paced and stressful jobs. On the contrary, employees who feel tired by starting work "in the morning before they even start" will not be able to show their determination and will to deal with stressful and difficult situations during the working hours, and will get even more tired. If this is repeated continuously and frequently, after a while, the employees will show signs of mental fatigue. Approximately 37.4% of cockpit and cabin attendants responding to the survey experience this feeling frequently. The fact that cockpit and cabin crews experience such a feeling of fatigue, even if they are a minority, requires that the issue be examined institutionally and that the problem should be revealed and resolved. More than half of the cockpit and cabin crew (51.9%) think that they are overworked. If we add the undecided to this rate, there is a very high rate (76.3%) of cockpit and cabin crew who think that they are working beyond their power. Factors that may cause them to think in this way can be listed as irregular working hours, comparison of the wages according to the work they work, excessive time spent away from home, and very busy flights. If this is repeated continuously and frequently, after a while, the employees will show signs of excessive physical and mental fatigue. The issues that negatively affect the mental fatigue level of cockpit and cabin crews can be summarized as follows:

i. Being away from home for a long time due to frequent and long flights, physical and mental fatigue after returning from work, low wages and coldness from work as a result of poor management styles

ii. Thinking that you are being overworked

iii. Mental fatigue felt when starting work

It is seen that the behavior of the majority of crew members towards people does not change depending on the time they spend in the profession. However, it is understood that a portion of 39% tend to approach passengers as if they are a different entity apart from the natural behavior they should have. About 51.5% of them state that they feel tougher towards the passengers, and 50.8% of them clearly feel that they are getting tougher. In addition, it can be concluded that 47.6% of the crew, who do not care about the passengers and feel as if they have created some of their problems, experience burnout at the level of insensitivity. Considering the fact that this situation can create a crisis that may result against the company at any time, it is considered to be a result that should be carefully considered as a fatigue factor.

In general, although they do not cool off from their work, they feel mentally fatigued after returning from work; The fact that they feel they are working on their strength due to the intense flight tempo and the variability of the working hours drags the cockpit and cabin crews to emotional fatigue. The low rate of cabin crew, whose attitudes and thoughts towards passengers are becoming increasingly rigid and who see them as a different object rather than as customers to whom quality service will be provided, keeps the level of fatigue in the dimension of depersonalization at low levels.

Although many of the cockpit and cabin crews, as the most visible and prominent employees of the aviation industry, which is the favorite of the transportation world, understand the importance and value of the work they do, the negative thoughts of some of them negatively affect the feeling of personal failure.

Accordingly, if the issues that disturb the cockpit and cabin crew, who have a moderate level of emotional fatigue and a sense of personal failure, the level of fatigue will likely increase. Accordingly, it is considered that the company may be adversely affected by the increase in customer dissatisfaction and personnel turnover rate. However, it should not be forgotten that the emotional fatigue and burnout of cockpit and cabin crews does not mean that they will definitely quit their job. Because there are many factors that force them to do this job. For example, factors such as being above the minimum wage, the popularity of the profession and its value in the eyes of the public may outweigh the salaries, even if they are well below expectations. Regardless of the occupational group, the most important and effective method to be followed in the fight against fatigue is the ways of coping with stress, which are largely similar to burnout. For this reason, it would be appropriate to apply scientific methods on the subject. These can be summarized as follows:

i. First of all, there should be a serious desire to cope with stress and make some positive changes in life

ii. “Recent Life Events List”, which determines how often negative events are experienced and the degree of their impact on life; “Stress Source Scale”, which determines the source of stress; It is necessary to determine which methods are appropriate in the fight against stress by applying the "Stress and Anxiety Scale" applications that reveal the bodily response during stress

iii. The correct breathing technique should be learned because of its relaxing, oxygenating and relaxing properties

iv. Among bodily relaxation techniques, biofeedback (biological feedback), autogenic (self) relaxation, progressive relaxation and physical exercise practices should be learned and applied

Airline company managers need to meet with the employees at regular intervals, know their thoughts and needs, in order to learn the elements that help increase the level of organizational commitment, motivation and job satisfaction in cockpit and cabin crews. Using verbally motivating statements, rewarding those with high job performance, and flexible flight schedules are important for the perception of company support. When evaluated from this point of view, the communicative identities of the managers come to the fore so that the employees do not experience burnout.

The level of fatigue is determined not only by the relations with the customers, but also by the social relations and communication style among the employees within the company or between the employees and the management. Although it is impossible to completely eliminate fatigue in today's intense competitive environment, practices that will increase the job satisfaction of flight attendants and reduce their fatigue should be tried to be included. For this purpose, airline company managers should communicate with expert academicians and support studies to determine methods that will have a positive impact on flight attendants. The fact that the job performance and service quality of cabin attendants is a very important factor contributing to the commercial success of the national air transport sector as well as the company they work for should be well known by the national civil aviation authority. In this context, the aviation authority should take radical decisions and include the job satisfaction and fatigue levels of sector employees as flight safety multipliers among the company evaluation criteria.

Conclusions

Small mistakes caused by fatigue accumulates and become more difficult in the future that causes serious errors and resultant accidents or massacres. A difficulty encountered in studies of measuring fatigue is that the perception of fatigue is mostly subjective and relative. Although exact findings are not obtained as much as a blood test, it is necessary to try to make an objective measurement as much as possible. Fatigue is not a disease, but because it is as problematic as the disease, the word "cure" is used to cure it. Methods used in the treatment of fatigue; to reduce physical strain and stress, to create opportunities for mental and physical rest, and to take measures to increase the motivation of employees. In this study, it is aimed to be a guide to the managers who have to take the necessary precautions by mapping the fatigue-oriented problems.

Unfortunately, we should accept that flight crew fatigue literature has certain limits. Most experimental studies were not conducted with cockpit and cabin crew or conducted only with cockpit crew. Several studies have proved that fatigue can significantly impair people's ability to perform duties and tasks that requires manual dexterity, high concentration and complex thinking. Fatigue is not only an uncomfortable sensation to be suffered because fatigue reduces peoples' performance. Fatigue is an experience of physical or mental weariness that results in reduced alertness(Boksem et al., 2005). For most people, the major cause of fatigue is having insufficient rest and recovery from previous activities. In a simple term, fatigue mainly results from insufficient quantity or quality of sleep because both factors mean equal importance to recover from fatigue and to maintain normal alertness and performance. An insufficient quantity or quality sleep series of nights causes a sleep debt which results as increased fatigue.

This research was carried out by adopting a "positivist" approach, with an "instant" method in terms of the time it covers and a "descriptive" method in terms of its purpose. The "survey" method was used to obtain the data. The target population of the research is the cockpit and cabin crews of the scheduled and non-scheduled airlines operating in the Turkish civil aviation sector. For the reasons stated under the scope and limitations of the research, the cockpit and cabin attendants of the airline companies that are not named as the research sample, but that perform scheduled and non-scheduled domestic and international passenger transportation flights. Although the number of cockpit and cabin attendants working in the companies is tens of thousands, 254 people answered the questionnaire. A total of 48 questions consisting of the Minnesota job satisfaction questionnaire, Maslach burnout questionnaire and demographic information questions were applied to the cockpit and cabin crews forming the sample.

People in an intense working environment where the same tasks are repeated may experience both physical and mental fatigue with boredom after a certain period of time. This can lead to job dissatisfaction and burnout in the future. Despite the fact that the same things are always repeated in the cockpit and cabin crew job, meeting different passengers from different cultures every day, flying to different destinations, different cockpit and cabin crew members in most missions, and most importantly, the satisfaction and pride of accomplishing a job are the factors that reduce the effect of uniformity in the job.

Although it is impossible to completely eliminate burnout in today's intense competitive environment, regulations should be tried to be included that will increase the job satisfaction of cockpit and cabin crews and reduce their burnout. For this purpose, airline company managers should communicate with expert academicians and support studies to determine methods that will have a positive impact on cockpit and cabin crews.

This study has some limitations as the issues that the researcher cannot control during the research process are as follows:

i. Commercial concerns brought about by intense competition between businesses in the airline industry

ii. The opinion of the management that the image of the company will be negatively affected due to the research on the employees

iii. The company's name is not included in the research text due to company privacy policies

iv. Differences in the perceptions of cabin crews who have a different understanding of culture

The findings obtained as a result of the research are limited to the cockpit and cabin attendants who applied the burnout and job satisfaction questionnaires. It is assumed that the cockpit and cabin attendants participating in the research are at the level of education to comprehend the importance of the subject, and therefore give realistic and accurate information about fatigue, burnout and job satisfaction. The number of studies conducted to determine the fatigue factors of airline cockpit and flight attendants is very limited. The research application covers a period of approximately two months.

Acknowledgement

Part of Engin Ozel's thesis entitled "*Factors contributing to the risk of airline pilot and crew fatigue*" submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Science in Air Transport Management. Umit Hacioglu is supervisor of the thesis

References

Baycan, A. (1985). An analysis of the several aspects of job satisfaction between different occupational groups (Unpublished PhD Thesis. Istanbul: Bogazici University, Social Sciences Institute.

Bendak, S., & Rashid, H. S. J. (2020). Fatigue in aviation: A systematic review of the literature. International Journal of Industrial Ergonomics, 76(November 2018), 102928. https://doi.org/10.1016/j.ergon.2020.102928

Boksem, M. A. S., Meijman, T. F., & Lorist, M. M. (2005). Effects of mental fatigue on attention: An ERP study. *Cognitive Brain Research*, *25*(1), 107–116. https://doi.org/10.1016/j.cogbrainres.2005.04.011

Boksem, M. A. S., Meijman, T. F., & Lorist, M. M. (2006). Mental fatigue, motivation and action monitoring. *Biological Psychology*, *72*(2), 123–132. https://doi.org/10.1016/j.biopsycho.2005.08.007

Cabon, P., Deharvengt, S., Grau, J. Y., Maille, N., Berechet, I., & Mollard, R. (2012). Research and guidelines for implementing Fatigue Risk Management Systems for the French regional airlines. *Accident Analysis and Prevention*, *45*(SUPPL.), 41–44. https://doi.org/10.1016/j.aap.2011.09.024

Cherniss, C. (1989). Career stability in public service professionals: A longitudinal investigation based on biographical interviews. American Journal of Community Psychology, 17 (4)

Choy, D. (2002). Job satisfaction, and some explanatory variables, among flight attendants. A Dissertation of Doctor of Business Administration. Florida: The University of Sarasota (Argosy University)

Deveci, M., & Demirel, N. Ç. (2018). Evolutionary algorithms for solving the airline crew pairing problem. *Computers and Industrial Engineering*, *115*(September 2017), 389–406. https://doi.org/10.1016/j.cie.2017.11.022

Dincer, H., & Hacioglu, U. (2013). Performance evaluation with fuzzy VIKOR and AHP method based on customer satisfaction in Turkish banking sector. Kybernetes.https://doi.org/10.1108/K-02-2013-0021

Dincer, H., Hacioglu, U., Tatoglu, E., & Delen, D. (2016). A fuzzy-hybrid analytic model to assess investors' perceptions for industry selection. Decision Support Systems, 86, 24-34. https://doi.org/10.1016/j.dss.2016.03.005

Dincer, H., Hacıoglu, U., & Yüksel, S. (2017). Balanced scorecard based performance measurement of European airlines using a hybrid multicriteria decision making approach under the fuzzy environment. Journal of Air Transport Management, 63, 17-33. https://doi.org/10.1016/j.jairtraman.2017.05.005

Dincer, H., Hacioglu, Ü., & Yüksel, S. (2018). Strategic design and innovative thinking in business operations. Series: Contributions to Management Science. Publisher: Springer International Publishing. https://doi.org/10.1007/978-3-319-77622-4

Edelwich, J., Brodsky, A. (1980). Burn-out: Stages of Disillusionment in the Helping Profession, Human Scinces Press, New York

Englebienne, P., & DeMeirleir, K. (2002). Chronic fatigue syndrome. In *CRC Press*

Ergin, C. (1992). Doktor ve hemşirelerde tükenmişlik ve Maslach tükenmişlik ölçeğinin uyarlanması. VII. Ulusal Psikoloji Kongresi Düzenleme Kurulu ve Türk Psikoloji Derneği Yayını

FAA. (2009a). Flight Attendant Fatigue , Part I : National Duty , Rest , and Fatigue Survey. *DOT/FAA/AM-09/24*, *December*. www.faa.gov/library/reports/medical/oamtechreports

Freudenberger, H.J. (1974). Staff Burn-Out.Journal of Social Issues, 30 (1),Gawron, V. J. (2016). Overview of Self-Reported Measures of Fatigue. *International Journal of Aviation Psychology*, *26*(3–4), 120–131. https://doi.org/10.1080/10508414.2017.1329627

Hacioglu, U. (2020). Digital business strategies in blockchain ecosystems. *Springer International Publishing*, https://doi.org/10.1007/978-3-030-29739-8

Hacioglu, U., & Sevgilioglu, G. (2019). The evolving role of automated systems and its cyber-security issue for global business operations in Industry 4.0. International Journal of Business Ecosystem & Strategy, 1(1), 01–11. https://doi.org/10.36096/ijbes.v1i1.105

Hacioglu, U. (Ed.). (2019). *Handbook of research on strategic fit and design in business ecosystems*. IGI Global. https://doi.org/10.4018/978-1-7998-1125-1

ICAO. (2016). Manual for the Oversight of Fatigue Management Approaches. *Doc 9966*, *Second Edi*.

Laub, T., Mendonca, F. A. C., Wolfe, S., & Keller, J. (2020). An analysis of self-reported sleepiness and fatigue measures from collegiate aviation pilots. *Collegiate Aviation Review*, *38*(1), 148–164. https://doi.org/10.22488/okstate.20.100209

Le, X., Roberts, R. L., Duva, A. W., & Connors, H. (2018). An integrated active learning approach for understanding fatigue theory. *ASEE Annual Conference and Exposition, Conference Proceedings*, *2018-June*. https://doi.org/10.18260/1-2--29791

Lee, S., & Kim, J. K. (2018). Factors contributing to the risk of airline pilot fatigue. *Journal of Air Transport Management*, *67*(July 2017), 197–207. https://doi.org/10.1016/j.jairtraman.2017.12.009

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). The Maslach Burnout Inventory Manual. *The Maslach Burnout Inventory*, *May 2016*, 191–217. https://www.researchgate.net/publication/277816643

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). *Job Burnout*. 397–422

Naeeri, S., Mandal, S., & Kang, Z. (2019). Analyzing pilots' fatigue for prolonged flight missions: Multimodal analysis approach using vigilance test and eye tracking. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *63*(1). https://doi.org/10.1177/1071181319631092

O'Hagan, A. D., Issartel, J., McGinley, E., & Warrington, G. (2018). A pilot study exploring the effects of sleep deprivation on analogue measures of pilot competencies. *Aerospace Medicine and Human Performance*, *89*(7), 609–615. https://doi.org/10.3357/AMHP.5056.2018

Ono, Y., Watanabe, S., Kaneko, S., Matsumoto, K., & Miyao, M. (1991). Working hours and fatigue of Japanese flight attendants. *Journal of Human Ergology*, *20*(2), 155–164. https://doi.org/10.11183/jhe1972.20.155

Perlman, B. ve Hartman, A. E. (1982). Burnout: Summary and future research. Human Relations

Pines, A. M. (2003). Occupational burnout: A cross-cultural Israeli Jewis-Arab perspective and its implications for career counselling. Carrier Development International, 8 (2)

Plieger, T., Melchers, M., Montag, C., Meermann, R., & Reuter, M. (2015). Life stress as potential risk factor for depression and burnout. *Burnout Research*, *2*(1), 19–24. https://doi.org/10.1016/j.burn.2015.03.001

Publisher's Note: Bussecon International stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.