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# The impact of organisational commitment on the safety climate among airline employees: the mediation effect of collective gratitude and risk perception

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**Abstract:** The rates of human factors in air accidents are approximately 75% in the world, and the second reason for the accidents is organisational issues. It is important to examine organisational and individual causes of aircraft accidents. In this study, 334 people working in the aviation industry constitute the sample. In the research, descriptive analysis was performed with SPSS. Correlation analysis was performed to determine the relationship between the scales. In the Amos program, the model was created by performing path analysis and moderator analysis. Although some of the sub-dimensions of organisational commitment (continuous, normative) directly affect the safety climate, when the whole organisational commitment is considered, it is seen that it indirectly affects the safety climate. It was found that organisational commitment affects both risk perception and collective gratitude. The serial mediation effect and full mediation effect of risk perception and collective gratitude were determined.

**Keywords:** safety climate; risk perception; organisational commitment; collective gratitude; airline employees.

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**Biographical notes:** Ahmet Ebrar Sakallı completed his bachelor's, master's and doctorate degrees in occupational health and safety. His research fields include human behaviours, health behaviours, culture and accident analysis.

Seçil Ulufer Kansoy has obtained two separate bachelor degrees in English Language and Literature, as well as Aviation Management. Additionally, she holds two separate master's degrees in Business Management and Aviation Management, and has completed her doctorate in the field of Business Management.

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## **1 Introduction**

Studies show that since the beginning of the 21st century, the probability of air accidents due to aircraft equipment failure has decreased from 80% to 3% (Boeing Commercial Airplane Group, 2020; Li et al., 2021). In addition, they found that human factors contributed to approximately 75% of air accidents and incidents in commercial air transport accidents and incidents around the world from 2000 to 2016 (Kharoufah et al., 2018). In the Aviation Safety Report of the International Air Transport Association (IATA, 2018), it is stated that human factors are still the weakest link in aviation safety management. In a study examining the causes of the Tenerife aircraft accident, which is the biggest aircraft accident in the world, it was determined that the main cause of the accident was the human factor and the second main reason in organisational reasons (Öztürk et al., 2024). Looking at the studies done in recent years, there has been a shift in emphasis from individual-level factors that may be responsible for accidents and incidents to organisational factors such as the safety climate (Neal et al., 2000). For this reason, it is very important to examine the organisational and individual causes of aircraft accidents. In this study, the effect of organisational bond, collective gratitude and risk perception, which is considered as an individual element, on the safety climate will be examined.

### *1.1 Organisational commitment*

In order for organisations to survive under the changing competitive conditions with globalisation, it is necessary to keep their employees in the organisation and to review their current relations (Çöl, 2004). Organisational commitment is expressed as the loyalty attitude of the employees towards the organisation and the bond strength they feel. It is accepted that the commitment and interest of the employees towards the organisation they work for affects the organisational success positively (Bayram, 2005; Becker et al., 2018).

It is not enough for the employees in the organisation to be present in the organisation to contribute to the organisation, this is possible by the employees doing the given jobs in the desired way. In other words, in an intensely competitive environment, it is desired that the contribution to be provided by the employees to the organisations is at the maximum level. From this point of view, organisational commitment can be defined as giving priority to the interests of the organisation rather than their own interests (Ergün and Çelik, 2018; Korkmaz, 2020).

In this framework, the employee's acceptance of the job while being satisfied with the organisation will increase organisational efficiency, as it will eliminate negative situations such as irresponsibility, coming to work late and leaving the job (Çöl, 2004). In the light of this information, organisations should try to increase the level of organisational commitment of the employees in order to perform at high efficiency and effectiveness, to achieve organisational goals and to keep up with changing competitive conditions.

When the organisational commitment literature is examined, no consensus has been reached for the definition of this concept. Although the direct relationship between the employee and the organisation is accepted, it is seen that there are different perspectives on the structure and formation of these relationships and connections (Gül, 2002). For this reason, there is no accepted common definition of organisational commitment.

Organisational commitment is 'the union of power that a person forms by entering into an identity union with a particular organisation'. Another definition is the degree to which employees identify with the organisation they work for, the degree of commitment they show, and whether they are willing to leave (Greenberg and Baron, 2008). Organisational commitment is defined as 'the desire of the employees to stay in the organisation, identification with all the effectiveness, interest and success of the organisation, the loyalty attitude of the employee towards the organisation and the interest shown for the success of the organisation he works for' (Bayram, 2005).

## *1.2 Sub-dimensions of organisational commitment*

Although there are many sub-dimensions related to organisational commitment, the most accepted dimension in the literature is the three-dimensional approach, which Allen and Meyer (1990) considered as affective commitment, continuance commitment and normative commitment. The common aspect of these three approaches is that the employee plays a major role in the decision whether to continue working with the organisation (Meydan and Basım, 2015; Taşkın and Dilek, 2010). The elements of organisational commitment are explained as follows (Allen and Meyer, 1990; Meyer et al., 2002; Yıldırım et al., 2021).

*Affective commitment:* Employees with Affective Commitment, whose theme is desire and desire, base their desire to stay in the organisation on a voluntary basis. Employees working in Affective Commitment, which is the best form of employee's commitment to the organisation, are loyal to the organisation, have adopted the goals and objectives of the organisation, and are willing to show their best self-sacrifice for the organisation.

*Continuance commitment:* The employee who has constant commitment claims that he should stay in the organisation because he thinks he needs it because of his personal investments. The employee thinks that he spends too much time and effort on the organisation, therefore he has to stay in the organisation. When he thinks to leave the job, he continues to stay in the organisation, thinking that the cost of this situation will be high unless there is an alternative employment opportunity.

*Normative commitment:* Employees with normative commitment think that they have to stay in the organisation voluntarily. The employee intends to be loyal to the organisation with a sense of responsibility. The most important phenomenon in this commitment is loyalty and gratitude. He perceives his commitment to the organisation as a duty and thinks that continuity to the organisation is a right and moral obligation.

### *1.3 The importance of organisational commitment in airline businesses*

As a result of globalisation, the perspective of organisations towards their employees has changed over time. In an increasingly competitive environment, employees have become an important factor on the efficiency and effectiveness of organisations (Yangınlar and Karacan, 2018). As in other sectors, the commitment of employees to their organisations in the aviation sector, where communication is very strong and plays a key role, benefits the organisation (Korkmaz, 2020).

The need for qualified manpower in the aviation industry, which is one of the sectors showing the level of development of the countries, is constantly increasing. For this reason, businesses in the aviation sector should ensure that their employees operate effectively and efficiently in the organisation by increasing their organisational commitment in order to survive in the competitive environment (Dalmış, 2019).

The high job satisfaction of the employee causes the feeling of trust, sense of belonging and commitment to the organisation to increase. The high job satisfaction of the employees in the aviation industry plays a major role in meeting customer expectations, service quality and customer satisfaction. For this reason, it is very important to determine the factors that will reduce the job satisfaction of the employees in the aviation sector and affect the organisational commitment negatively in order to prevent undesirable situations. Considering the working conditions of the aviation industry, these elements are; shift work system, unsuitable and unsafe working environment and conditions, high employee turnover rate, time pressure, unsuitability for work, etc. (Doğan et al., 2020). In this context, aviation organisations should develop methods and strategies that will improve the working conditions of employees and increase their job satisfaction levels without compromising the safety concept.

### *1.4 Safety climate*

The concept of safety climate was first introduced by Zohar (1980). According to Zohar (1980), safety climate is defined as ‘a summary of the shared perceptions of employees about safety in the organisation they work as a sub-dimension of organisational climate’.

In the studies, safety climate was explained as a subset of organisational climate and organisational climate as a subset of organisational culture (Neal and Griffin, 2006; Barbaranelli et al., 2015). Therefore, the safety climate is accepted as a sub-dimension of organisational culture. The safety climate is defined as the instantaneous individual views of the employees in the organisation about safety, turning into a common organisational value over time (Zohar, 2010; Griffin and Curcuruto, 2016).

According to another definition; The safety climate is considered as the whole of the perceptions of the employees about the safety in the physical environment where they work within the framework of the organisational vision, strategy, policy and rules (Griffin and Neal, 2002; Yule, 2003). express the risks they perceive regarding working conditions (Ayyıldız and Çam, 2020; Ceyhun, 2014).

While the safety climate expresses the employees' shared perceptions about safety within the organisation, it prepares a basis for the daily work that needs to be performed. These perceptions that employees share about the organisation arise from different factors that show organisational commitment to safety, including management's decisions, organisational safety rules and expectations, safety practices, policies and strategies (Seçer, 2012).

Zohar (1980), in his study, determined the dimensions of the safety climate as follows (Coyle et al., 1995): 'perceived management attitudes on safety, effect of safe work practice on promotion, social status of individuals, status of safety officer, status of safety committee, importance/effectiveness of safety training, risks at the workplace, enforcement versus guidance'. In other studies on the sub-factors of the safety climate; Dedobbeleer and Beland (1991) identified two main factors as management's commitment to safety and employee involvement in the safety-related process. In the study of Williamson et al. (1997), five factors are; personal motivation for safety, positive safety practices, risk justification, fatalism and optimism. On the other hand, Flin et al. (2000) determined management's attitudes and behaviours related to safety, safety system (procedures, practices and tools), attitudes towards risk taking, work pressure and competence in terms of education.

It can be seen that there are many different perspectives on the dimensions of the safety climate. The reason of this; research on safety climate in different sectors and in different cultures. However, in a general framework, the sub-dimensions of the safety climate are considered as 'management commitment, safety communication and employees' attitudes towards safety' (Er, 2016).

The performance of the employees in the organisation and the sense of belonging are very important in terms of having a safe work environment. Employees having an idea about the risks in the business environment, expressing their thoughts and considering their suggestions create a positive perception. In this way, it is ensured that the processes are interpreted and a climate of trust is formed by conducting studies and inspections on safety risks in the organisation (Kılıç and Acar, 2019).

### *1.5 Collective gratitude*

Studies show that the concept of gratitude, which is a useful and constructive emotional state, is a very important element for organisations within the scope of human factors. Adler and Fagley (2004) defined gratitude as 'recognising and accepting the benefit provided by a person or transpersonal factor as an aspect of appreciation'. Since the concept of gratitude is defined as 'a moral virtue, an attitude, an emotion, a habit, a personality trait', the feeling of gratitude in the personal dimension cannot be explained as an organisational phenomenon (Yıldız et al., 2017). For this reason, the concept of gratitude at the organisational level is stated as 'collective gratitude' (Müceldili et al., 2015).

Collective gratitude ensures that the employee has a positive attitude within the organisation (Yıldız et al., 2017). Employees who have an intense sense of collective gratitude and are aware of overqualification tend to exhibit innovative behaviour and establish emotional bonds. For this reason, employees who establish emotional bonds with the organisation intend to ensure continuity in the organisation by developing a sense of belonging (Allen and Meyer, 1990).

With the increase in the sense of gratitude in the organisation, it is seen that the attitudes of the employees to help each other and the bond between the employees are getting stronger. As a result, collective gratitude plays a role in employees' displaying positive attitudes and behaviours within the organisation (Yıldız and Arda, 2018).

The sense of gratitude that occurs in individuals affects the productivity, productivity and loyalty of the employee (Grant and Wrzesniewski, 2010). Collective gratitude is the gratitude of employees towards their organisations as a result of the management of an organisation with an understanding that values its employees (Habib and Szakaya, 2019). Studies show that grateful people work more efficiently, are happier and more reliable, and are more supported (Bekmezci and Yıldız, 2019).

### *1.6 Risk perception*

The concept of risk is a dynamic concept that develops, changes and diversifies in changing world conditions. The concept of risk can be explained as dangers that will prevent reaching a goal or cause to miss an opportunity (Uludağ, 2017). According to another definition, risk is the probability of encountering an undesirable outcome (Benligiray, 2005, p.216).

When considered in terms of the aviation industry, the concept of risk is defined as 'the combination of the probability of encountering the result of a potential hazard and the severity of the impact it will create when this result occurs' (Gerede, 2016, p.13). Potential danger deals with the potential for undesirable situations to occur, and risk deals with the possibility of occurrence of these undesired situations and their impact.

The concept of risk perception was first discussed by Bauer (1960). Risk perception is defined by individuals as the perception of a situation or danger of a risk. Perception of risk is 'persons' subjective evaluation of risk characteristics and size'. The risk perception status of each individual varies from person to person (Yavaş, 2020). Studies show the following as the reasons for this: Cultural differences, cognitive characteristics, education level, age, gender, environmental factors, beliefs, past experiences, personality traits, family effects, etc. (Hunter, 2002; Özer and Gölpinar, 2005; Uludağlı and Sayıl, 2009). Perception of risk comes first among the factors that affect insecure behaviours (Fung et al., 2012). Decreased risk perception increases insecure behaviours (Xia et al, 2020).

### *1.7 Research hypotheses*

*H1: There is a correlation between organisational commitment sub-dimensions, collective gratitude, risk perception and safety climate sub-dimensions in airline employees.*

*H2: Organisational commitment in airline employees directly affects risk perception.*

*H3: Organisational commitment in airline employees directly affects collective gratitude.*

*H4: Organisational commitment in airline employees directly affects safety climate.*

*H5: Risk perception in airline employees directly affects collective gratitude.*

*H6: The risk perception of airline employees directly affects the safety climate*

*H7: Collective gratitude in airline employees directly affects safety climate.*

*H8: The effect of collective gratitude on the safety climate is greater for women.*

*H9: The effect of collective gratitude on the safety climate differs according to age.*

## **2 Method**

### *2.1 Sampling*

Looking at the general sample size recommendations in Structural Equation Model (SEM) studies, it was mainly determined by the number of observable variables or the number of data points in the variance-covariance matrix. Gorsuch (1983) stated that there should be at least 5 participants for each variable and at least 200 participants in total. Considering the variables in this study, it was determined that the sample consisting of at least 235 people was sufficient. For the purpose of the research, 334 people working in the aviation industry constitute the sample of the study. Relevant scale forms were created and sent to volunteers via Google Form and received ethics committee approval from Istanbul Aydın University ethics committee (No. 25307).

### *2.2 Data collection tools*

#### *2.2.1 Organisational commitment*

The organisational commitment scale consisting of 18 questions made by Meyer et al. (1993) was used. The Turkish validity of the scale was done by Dağlı et al. (2018). The scale used has three sub-dimensions: affective, continuance and normative commitment. Items 3, 4, 5 and 13 of the scale are reverse items. The statements in the scale were measured with a 5-point Likert scale (1=strongly disagree, 5=strongly agree).

#### *2.2.2 Risk perception*

The risk perception dimension scale developed by Olcay (2021) was used. The scale consists of 3 questions and all questions are reverse coded. The statements in the scale were measured using a 7-point Likert scale (1= strongly disagree, 7=Strongly Agree).

#### *2.2.3 Collective gratitude*

Akgün et al. (2016) 12-item scale was used. The statements in the scale were measured with a 5-point Likert scale (1= strongly disagree, 5=strongly agree).

#### *2.2.4 Safety climate*

Developed by Choudhry et al. (2009) and Türen et al. (2014) adapted into Turkish, the scale consisting of 14 questions was used. There are 2 sub-dimensions in the scale: 'management perspective and rules' and 'co-workers and safety training'. The statements in the scale were measured with a 5-point Likert scale (1=strongly disagree, 5=strongly agree).



### 2.3 Analysis of data

In accordance with the purpose of the research, primarily descriptive analysis was performed with SPSS V25. Then, correlation analysis was performed to determine the relationship between the scales. In the Amos v21 program, the model was created by performing path analysis and moderator regression analysis.

Information about the fit indices used in the path analysis is given in Table 1.

**Table 1** Fit indices

Assessment Indication	Fit indices	Description	Offset value
Inferential fit indices	$\chi^2 / sd$	It is sensitive to sample size.	$0 < \chi^2 / sd \leq 3$ : Acceptable fit
Fit indices based on residuals	GFI	Likewise, similar to $R^2$ in regression analysis comparison of the square of residuals obtained from estimation with actual data.	$0.95 \leq GFI \leq 1.00$ : Good fit $0.90 \leq GFI < 0.95$ : Acceptable fit
	SRMR	Standardised gap of the observed covariance with the estimated covariance.	$0 < SRMR \leq 0.05$ : Good fit $0.05 < SRMR \leq 0.10$ : Acceptable fit
Fit indices based on independent model	CFI	Logic of comparing a suggested model with null model by assuming no relationship between measures.	$0.97 \leq CFI \leq 1.00$ : Good fit $0.95 \leq CFI < 0.97$ : Acceptable fit
Fit indices based on information criterion	NFI	It is calculated by associating the difference of $\chi^2$ -value for the proposed model from $\chi^2$ -value for independent or empty model.	$NFI > 0.90$ : Acceptable fit

Note:  $\chi^2 / sd$ : Rate of the chi-square degree of freedom, GFI: Goodness of fit index, CFI: Comparative fit index, SRMR: Standardised root mean square residual, NFI: Normal fit index Reference: (Bayram, 2010; Hsu et al., 2012; Mokarami et al., 2019).

## 3 Findings and discussion

### 3.1 Demographic information

Demographic information of the people participating in the research is given in Table 2. According to this information, 105 participants (31.4%) are in the technical team, 68 (20.4%) are in the ground-operations team and 161 people (48.2%) are in the flight crew.

### 3.2 Correlation analysis

As given in Table 3, it has been determined that there is a correlation between risk perception, sub-dimensions of safety climate (management perspective and rules, co-workers and safety training), sub-dimensions of organisational commitment (affective, continuance, normative) and collective gratitude. Correlation values above 0.5 are expressed as strong correlation, and values below 0.5 are expressed as weak correlation

(Ural and Kılıç, 2005). Within the scope of the research, between risk perception, continuance commitment and collective gratitude; between management’s perspective and rules sub-dimension and co-workers and safety training, continuance commitment, normative commitment and collective gratitude; between co-workers and safety training sub-dimension and management’s perspective and rules, continuance commitment and collective gratitude; between affective commitment sub-dimension and normative commitment and collective gratitude; between continuance commitment sub-dimension and risk perception, management perspective and rules, co-workers and safety trainings and collective gratitude; between normative commitment sub-dimension and management’s perspective and rules, affective commitment and collective gratitude; It has been determined that there is a strong correlation between collective gratitude sub-dimension and risk perception, sub-dimensions of safety climate, sub-dimensions of organisational commitment and collective gratitude. H1 hypothesis was accepted.

**Table 2** Analysis of demographic information

<i>Variable</i>		<i>Frequency (N=334)</i>	<i>%</i>
Gender	Male	202	60.5
	Female	132	39.5
Age	21–28	84	25.2
	29–36	105	31.4
	37 and older	145	43.4
Education status	High school	55	16.5
	University (Bachelor’s degree and an Associate’s degree)	257	76.9
	Postgraduate	22	6.6
What is your job?	Technical crew	105	31.4
	Ground-operation team	68	20.4
	Flight crew	161	48.2
For how many years are you working at the company you are working for?	Less than 6 years	117	35.1
	Between 6–12 years	108	32.3
	7 years or more	109	32.6

**Table 3** Correlation analysis between variables

		<i>F1</i>	<i>F2</i>	<i>F3</i>	<i>F4</i>	<i>F5</i>	<i>F6</i>	<i>F7</i>
F1	Pearson Correlation	1	.467**	.432**	.243**	.623**	.136*	.568**
	Sig. (2-tailed)		.000	.000	.000	.000	.013	.000
F2	Pearson Correlation	.467**	1	.861**	.460**	.515**	.543**	.812**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
F3	Pearson Correlation	.432**	.861**	1	.395**	.505**	.481**	.744**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
F4	Pearson Correlation	.243**	.460**	.395**	1	.233**	.761**	.610**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000

**Table 3** Correlation analysis between variables (continued)

		<i>F1</i>	<i>F2</i>	<i>F3</i>	<i>F4</i>	<i>F5</i>	<i>F6</i>	<i>F7</i>
F5	Pearson Correlation	.623**	.515**	.505**	.233**	1	.258**	.544**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
F6	Pearson Correlation	.136*	.543**	.481**	.761**	.258**	1	.635**
	Sig. (2-tailed)	.013	.000	.000	.000	.000		.000
F7	Pearson Correlation	.568**	.812**	.744**	.610**	.544**	.635**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	

Notes: \*\* The correlation is significant at the 0.01 level.

\* The correlation is significant at the 0.05 level.

(F1: Risk perception, F2: Management's perspective and rules, F3: co-workers and safety training, F4: affective commitment, F5: continuance commitment, F6: normative commitment and F7: collective gratitude)

### 3.3 Path analysis for mediator model

#### 3.3.1 Evaluation over sub-dimensions

Looking at the table (see Table 4)  $\chi^2/df$  is not within the acceptable range. However,  $\chi^2/df$  is affected by the sample size (Bayram, 2010). When we look at other fit indices, SRMR, GFI, NFI show that the model is in good fit, and CFI shows acceptable fit. Since more than one fit criteria are considered in SEM, the model is accepted as long as most of the fit criteria are compatible (Bayram, 2010). Therefore, our model is accepted.

**Table 4** Fit index of the model applied within the scope of the research

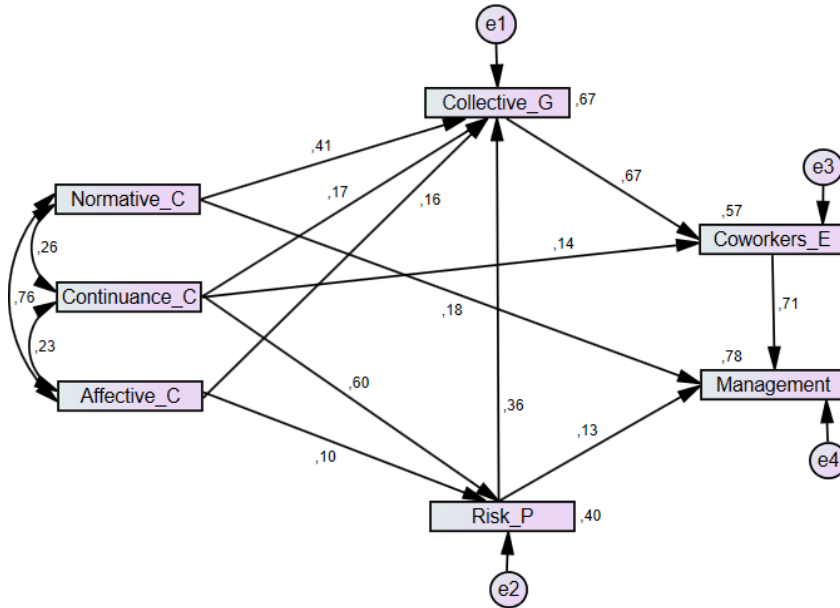
<i>Model</i>	<i>P</i>	<i>CMIN/DF</i>	<i>SRMR</i>	<i>GFI</i>	<i>NFI</i>	<i>CFI</i>
Default model	0.00	10.38	.03	.95	.96	.96

Note: CMIN:  $\chi^2$

Looking at Figure 1, it was found that there was a correlation between the sub-dimensions of organisational commitment (normative, continuance and affective commitment). For standardised path coefficients, around 0.10 can be interpreted as small, around 0.30 as medium-sized and above 0.50 as large effects (Korkmaz et al., 2015). There is no sharp boundary between these values. Considering the standardised regression coefficients ( $\beta$ ), which have medium and large effects in the research model in Figure 1, the standardised regression coefficient ( $\beta$ ) of normative commitment on collective gratitude is 0.41, the  $\beta$ -value between continuous commitment and risk perception is 0.60, the  $\beta$ -value between risk perception and collective gratitude is 0.36. It has determined that the  $\beta$ -value between collective gratitude and co-workers and safety training was 0.67, and the  $\beta$ -value between management's perspective and rules was 0.71. In addition, looking at the research model in Figure 1, 67%, 40%, 57% and 78% of the total changes in the variables of collective gratitude, risk perception, co-workers and safety training, and management's perspective and rules are explained by the research model, respectively. All three sub-dimensions of organisational commitment affect collective gratitude and indirectly affect the sub-dimensions of safety climate through

collective gratitude. In addition, it directly affects the safety climate in continuance and normative commitment. Organisational commitment affects the perception of risk, thus indirectly affecting the safety climate.

**Figure 1** Path analysis of the research model (sub-dimension)



Note: Risk\_P: Risk perception, Management: Management’s perspective and rules, Coworkers\_E: co-workers and safety training, Affective\_C: affective commitment, Continuance\_C: continuance commitment, Normative\_C: normative commitment and Collective\_G: collective gratitude).

3.3.2 Evaluation over dimensions

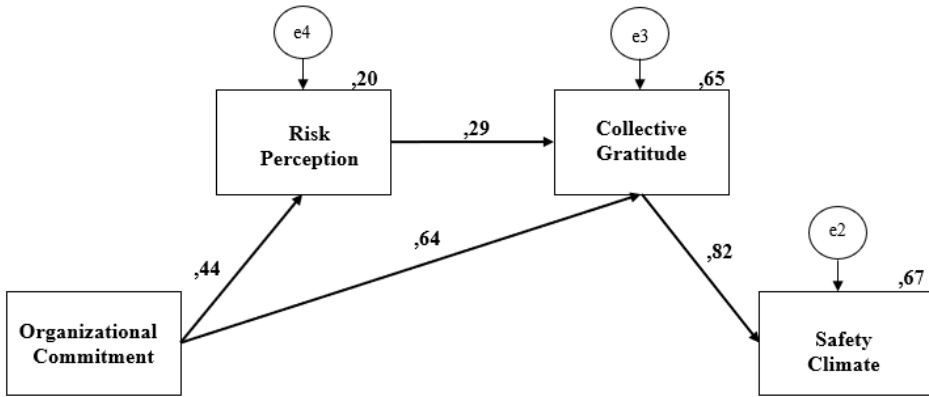
Looking at Table 5, all of the fit indices and chi-square degrees of freedom (CMIN/DF) show that the model is a good fit.

**Table 5** Fit Index of the model applied within the scope of the research

Model	P	CMIN/DF	SRMR	GFI	NFI	CFI
Default model	0.00	1.25	.01	.99	.99	.99

Although some of the sub-dimensions of organisational commitment (continuous, normative) directly affect the safety climate, when the whole organisational commitment is considered, it is seen that it indirectly affects the safety climate (see Figure 2). While organisational commitment affects both risk perception ( $\beta = 0.44$ ) and collective gratitude ( $\beta = 0.64$ ), it has a particularly serious effect on collective gratitude. Organisational commitment affects both risk perception and collective gratitude. It has a particularly serious effect on collective gratitude.

**Figure 2** Path analysis of the research model (dimensions)



The primary aim of the study was to explore the potential intervention mechanisms that mediate the impact of organisational bond on the safety climate, as well as the effect of organisational bond on the safety climate.

For the secondary, it is aim to explore that the serial mediation effect and full mediation effect of risk perception and collective gratitude were determined even though organisational commitment indirectly affects the safety climate.

Another study showed that affective commitment significantly predicted secure behaviour and normative commitment significantly predicted safety compliance behaviour (Moon et al., 2011). Although Smith (2020) followed a different path from the regression model in this study, he also stated that the safety climate significantly predicted affective organisational commitment and emotional organisational commitment was positively related to both safety compliance and safety engagement.

Similar to this study, Rundmo (2000) stated that there are direct and indirect effects on risk perception and risk behaviour. Similarly, there are also studies stating that there is a strong relationship between the safety climate and risk perception (Nielsen et al., 2013).

H2, H3, H5 and H7 were accepted. H4 was rejected. However, organisational commitment has been found to indirectly affect the safety climate. H6 was rejected. It has been determined that risk perception indirectly affects the safety climate. These are very important finding.

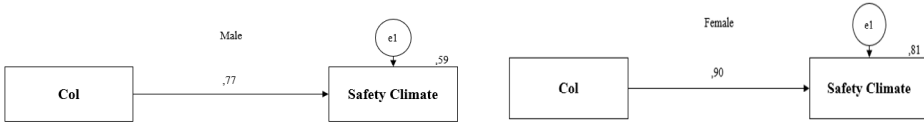
### 3.3 Moderator regression analysis

#### 3.3.1 Evaluation of collective gratitude through the effect of gender on safety climate

In the categorical variable and moderator (regulator) regression analysis, the *P* significance level value was observed as  $p < 0.05$  and it was found to be significant. Considering the critical ratios for the parameters, the effect from female to male was found to be 3.76 in absolute value. It was found to be significant because the absolute value was greater than 1.96 (Weston and Gore, 2006). In other words, the effect of collective gratitude on the safety climate was found to be more in women. When the chi-square ( $R^2$ ) values were examined, it was determined that it was .59 in men and .81 in women. The  $R^2$ -value takes a value between 0 and 1. If the score value is close to zero, it

indicates that the existing data is not suitable for the model used, and if it is close to one, it can be deduced that the fit of the model is appropriate (Bayram, 2010). This also shows the accuracy of the model (see Figure 3). H8 was accepted.

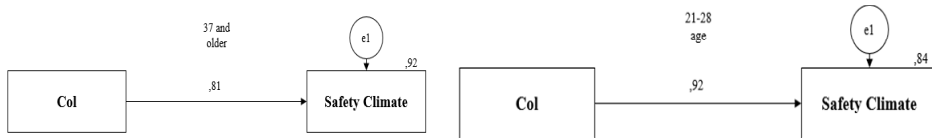
**Figure 3** The moderator effect of gender (col: collective gratitude)



### 3.3.2 Evaluation of collective gratitude through the effect of age group on safety climate

In the categorical variable and moderator (regulator) regression analysis, the  $P$  significance level value was observed as  $p < 0.05$  and it was found to be significant. Considering the critical ratios for the parameters, the effect on the age group of 21–28 years and over the age of 37 was found to be 4.45 in absolute value. The effect of collective gratitude on the safety climate was found to be greater in the 21–28 age group than in the 37 and older (see Figure 4). H9 was accepted.

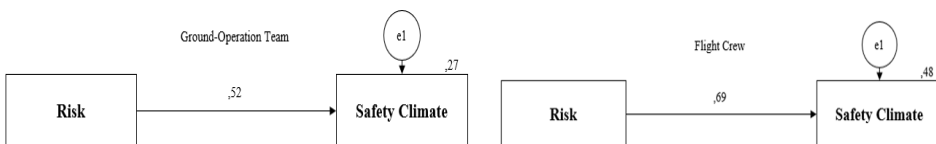
**Figure 4** Moderation effect of age group (col: collective gratitude)



### 3.3.3 Evaluation of risk perception through the effect of the occupational group on the safety climate

In the categorical variable and moderator (regulator) regression analysis, the  $P$  significance level value was observed as  $p < 0.05$  and it was found to be significant. Considering the critical ratios for the parameters, the effect of flight crew to ground-operation was found to be 2.52 in absolute value. Accordingly, the effect of risk perception on the safety climate was found to be greater in the flight crew than in the ground and operations crew (see Figure 5).

**Figure 5** The moderator effect of the occupational group (risk: risk perception)



It is analysed that the parameters which are educational level, experience and working responsibility are not significantly at the results of the analysis.

## 4 Conclusions

In a rapidly globalising world, the competitive environment has developed at the same pace. Organisational commitment is also very important for the aviation industry, which continues its rapid development and has a great competitive environment around the world. The aviation industry, which wants to have qualified manpower, is trying to increase the organisational commitment of its employees in order to survive in an intense competitive environment and to continue its activities safely. By doing this, it enables its employees to be more efficient and effective in the organisation. With the high level of job satisfaction of the employees in the aviation sector, results such as meeting the expectations of the customers correctly, having the highest level of service quality and ultimately increasing customer satisfaction are achieved.

Apart from organisational commitment, the safety climate is also very important for employees. Safety climate is the perception of safety that employees feel against the vision, strategy and policy of the organisation they work for.

Another important factor for organisations is the sense of collective gratitude. It has been seen that useful, constructive and appropriate gratitude is beneficial for organisations. It has been observed that the employees in the organisation have a positive attitude with gratitude, which is done correctly and usefully.

In this study, in which 334 people working in the aviation industry participated, it was seen that 105 people were in the technical team, 68 people were in the operations department and 161 people were in the flight crew. As a result of the correlation analysis, it was observed that there was a correlation between the sub-dimensions of the safety climate and the sub-dimensions of organisational commitment. As a result of the path analysis, the model was accepted. As a result of the analysis, it was seen that 3 sub-dimensions of organisational commitment affect collective gratitude and indirectly affect the sub-dimensions of safety climate through collective gratitude. In addition, it is seen that organisational commitment affects the perception of risk and thus indirectly affects the safety climate again (see Figure 1).

When we look at the relationship between the dimensions, organisational commitment indirectly affects the safety climate. In addition, organisational commitment affects the safety climate through serial mediation and full mediation effect through risk perception and gratitude (see Figure 2).

When collective gratitude was evaluated in terms of the effect of gender on the safety climate, it was seen that there was a significant relationship. Considering the critical ratios, the effect from woman to man was found to be 3.76 in absolute value. It is also said to be significant because it is greater than 1.96 in terms of absolute value. As a result, the effect of collective gratitude on the safety climate was found to be greater in women.

When the collective gratitude was evaluated in terms of the effect of the age group on the safety climate, it was seen that there was a significant relationship. Considering the critical ratios, the effect from the 21–28 age group to 37 years and older was found to be 4.45 in absolute value. As a result, the effect of collective gratitude on the safety climate was found to be greater in the 21–28 age group over 37 years of age.

A significant relationship was found when the risk perception was evaluated over the effect of the occupational group on the safety climate. Considering the critical values for the relevant parameters, the value from flight crew to ground operation crews was

found to be 2.52 in absolute value. In the face of this result, it can be said that the effect of risk perception on the safety climate is greater for the flight crew than for the ground and operations crew.

It is known that the safety climate has an important and key role in the prevention of work accidents and occupational diseases. This study is one of the first to examine the relationships among organisational commitment, collective gratitude, risk perception and safety climate. In particular, collective gratitude is a newly researched subject, and its relationship has been revealed by examining it over the safety climate.

In future studies, it is recommended to make a new evaluation with a larger sample group or sample groups to be selected from different occupational groups.

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