

ANALYSIS OF FACTORS CONTRIBUTING TO WORK STRESS AMONG EXPATRIATE AIRLINES CREW IN SAUDI ARABIA

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Abstract— *Work stress can significantly impact the performance of cabin crew in the airline industry, potentially leading to job errors with critical implications for safety, a paramount concern in the industry. The research focuses on factors influencing work stress among cabin crew, providing a valuable reference for improving both service quality and safety in the industry. The potential key factors that affect work stress, including workload, cross-cultural adjustment, rotating work schedules, interpersonal relationships, organizational relationships, and physical demands, are established through extensive literature reviews. The relevant data were collected from a sample of cabin crews in Saudi Arabia representing various nationalities. The most pertinent factors for the problem setting are determined by applying a multivariate regression analysis, where the theoretical understanding is statistically verified. The analysis suggests that the theory is supported by the sample data with a fitness level of 0.85 in terms of the determination coefficient, implying strong materialization of the theory. Furthermore, the agreement between theory and reality is supported by the ANOVA and t-tests. The study concludes that workload is the most dominant factor affecting work stress, followed by organizational relationships and rotating work schedules. Statistically less significant factors include cross-cultural adjustment, interpersonal relationships, and physical demands.*

Keywords— *work stress, aviation, multivariate regression*

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I. INTRODUCTION

Saudi Arabian's air transportation sector is experiencing rapid growth due to high competition and the development of services. The results of Air Transport Statistics Publication showed that the number of passengers in 2022 was almost 88 million, a rise of 82% over 2021. The large number of flights also requires many cabins crew, especially international flights. International flights require cabin crew to speak the language of the country of origin. In addition, before 2020 Saudi Arabia did not allow female citizens to work as flight crew, so the number of expatriate cabin crew in Saudi Arabia is very high to support the development of the aviation business in Saudi Arabia.

The cabin crew is the first line of defense inside the aircraft being the ones whose work ensures the safety of all passengers. Safety is an absolute thing in the aviation business that must be maintained and developed by all parties related to the aviation business. It is not only for business purposes but also a responsibility to provide the comfort, security, and safety of all passengers and cabin crew in an airline. To realize aviation safety, it is necessary to pay attention to the problem of human factors, which is caused by work stress. Human factor failures can have disastrous consequences, loss of life or property damage. Work stress is an important variable that affects job behavior, which may lead to job errors of employees [1].

Cabin crews are exposed to special health-related challenges. The health status of cabin crews and found significantly more sleep problems, depression, anxiety, and fatigue than in the average population [2]. Work stress arises because of environmental demands and different responses for each individual in dealing with these demands [3]. Work stress is also related to performance, stress has a negative impact on work productivity. One of the psychological impacts of stress can reduce employee job satisfaction, where job satisfaction is an emotional attitude that is pleasant and loves work [4].

Samia Sanjabin divined that workload, role characteristics, rotating work shifts, time pressure, deadlines, and non-work pressure are factors considered most responsible for causing stress [5]. Cross-cultural adjustment also impacts on expatriates' stress on work [6].

The research begins by identifying the factors influencing work stress, especially in the aviation industry, after obtaining problem identification, identification of the problem formulation is carried out which forms the basis for determining research topics. In this study, the authors attempt to present the results of the analysis to determine the most influential factors contributing to work stress to improve the performance of airline crew.

Stress is a situation where we are no longer able to withstand the burden we face or accept. Stress can result in emotional changes that arise as a reaction to a dangerous condition or situation [7]. Stress is caused by an existing stress-causing factor or “stressor”. Work stress is an unhealthy emotional state that a person experiences when the demands of his job are out of line with his ability to deal with the situation [8]. Stress is the reaction of people, and it is not wanted because it creates severe pressure upon them. Many key factors are working behind this, such as the work environment, workload, management support, etc. [5].

Work stress was a unique reaction to the interaction between the attitudes toward supervisors and the frequent and strong workplace-related conflicts [9]. Bijwaard and Wang reported that work stress has a bad physiological and psychological influence on a worker in an organization (or an institution) when individual capability cannot live up to the corresponding expectation [10].

Based on the conducted literature review, some factors are considered as most responsible for causing stress among expatriate airline crew, these are workload, cross-cultural adjustments, rotating work schedules, interpersonal relationships, organizational relationships, and physical relationships.

Workloads hurt the working performance of employees as well as airline crew. According to Meshkati (in Tarwaka, 2015), workload can be defined as a difference between the capacity or ability of workers with the work demands that must be faced [11]. The workload of the flight attendants falls into the categories of physical and psychosocial workload, cabin crew workload is handling carry-on baggage, handling carts (beverage, meal, and duty-free), service to passengers, and safety checks. It should be underlined, however, that flight attendants also have to perform mentally demanding work such as safety and security checks [12]. This work is carried out by cabin crew within a limited time, especially on short and medium flights. So, the workload is assumed to be a trigger for work stress in cabin crew work.

Cross-cultural adjustment is culture shock generated in the process of an individual adjusting to a different culture in a foreign country [13]. From one particular culture to another, one has to adapt to cultural differences and change the usual lifestyle and principles of thinking; In cross-cultural experiences, an individual will experience different changes in perception and physical and mental changes [14]. Living abroad offers a different lifestyle and experience for expatriates, facing challenges and making necessary adjustments is necessary to survive working and living in a foreign country [15]. Expatriates will have different personality characteristics needed to relate to other people and expatriates who are not open to interactions

with host country nationals will have less cross-cultural adjustment compared to people who have greater openness. The early stages of most expatriate assignments are usually associated with stress and families can provide the emotional support that helps overcome the negative feelings that are a natural part of transitioning across cultures [16].

Cabin crew working time is a very strange concept because there are various terms and definitions, such as “duty time” and “rotation”. There are forms of work that include work-related time but are not necessarily defined as time worked on another job [17]. Apart from that, the cabin crew's working hours are not always the same every day. They can work during the day, afternoon, or even midnight according to the flight schedule they receive. Medium, long-haul, and ultra-long-haul flights require sleeping patterns. Cabin crews' sleep and wake cycles change frequently and are often irregular and conflict with the rhythm of their internal physiological clock. Former studies have found that long working hours are associated with depression and occupational stress.

Interpersonal relationship stressors include the character of the local community, the character of the work of the local community, poor relationships between work teams, and work-family conflict [6]. Interpersonal connection at flights creates contact between co-workers, supervisors, cockpit crew and passengers. Interpersonal relationships are a natural part of the work atmosphere and are often fun and imaginative, but sometimes, stress and obstacles can also occur [18].

Organizational relationship is a set of properties of the work environment, perceived directly or indirectly by the employees, that is assumed to be a major force in influencing employee behavior [19]. Organizational stressors are related to the organizational pattern, organizational support, and management model. Increasing organizational pressure on cabin crew and the emergence of signs of stress, i.e., physiological symptoms and psychotic symptoms, especially their appearance in cabin crew behavior, will reduce cabin crew performance.

Physical and mental relationship stressors among airline crew include daily life, inconvenient aircraft, and unfair treatment. A work atmosphere that causes physical discomfort is thought to be a trigger for stress.

II. METHOD

This research is a descriptive study with an exploratory study, in which this research is aimed at certain populations that are intended to explore the form of an idea/phenomenon by describing several variables related to the problem under study, then further information is extracted about the research variables using various sources deemed relevant/important.

The object of research is an expatriate's airline crew who works under Airline Company in Saudia Arabia. The first stage of this research is literature review, which is carried out by reviewing several journal references regarding the factors and impacts of work stress, to obtain variables that will be used as the basis for the survey. After that is identification of research variables was carried out through a literature review process in previous research as a basis to be used in the preliminary survey to obtain relevant variables to be modeled and analyzed. Data collection was carried out by distributing questionnaires. Questionnaires were distributed to respondents with specifications, which are expatriate cabin crew members from Airlines Company based in Saudi Arabia.

The next stage is data analysis, data obtained from the results of distributing questionnaires to the main survey. The data obtained will be tested by validity test, reliability test, and classical assumption test is carried out to provide certainty that the regression equation obtained has accuracy in estimation, is not biased, and is consistent. Based on the literature study, several main factors influence work stress among expatriate cabin crew. They are workload, cross-cultural adjustment, rotating work schedules, interpersonal relationships, organizational relationships, and physical relationships.

To statistically assess the relationship depicted in Figure 1, data from those seven constructs was collected using a questionnaire. The instrument was distributed to 100 active expatriate cabin crew from different countries who works at Airlines Company in Saudi Arabia.

The questionnaire consists of 2 parts. The first part contains basic information from respondents such as age, gender, nationality, company name and work experience. The remaining part contains questions that discuss jobs stress and things that are suspected to be the cause of job stress among expatriate cabin crew. For each of these questions, participants are given five choices, from which one answer must be selected. The options are Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.

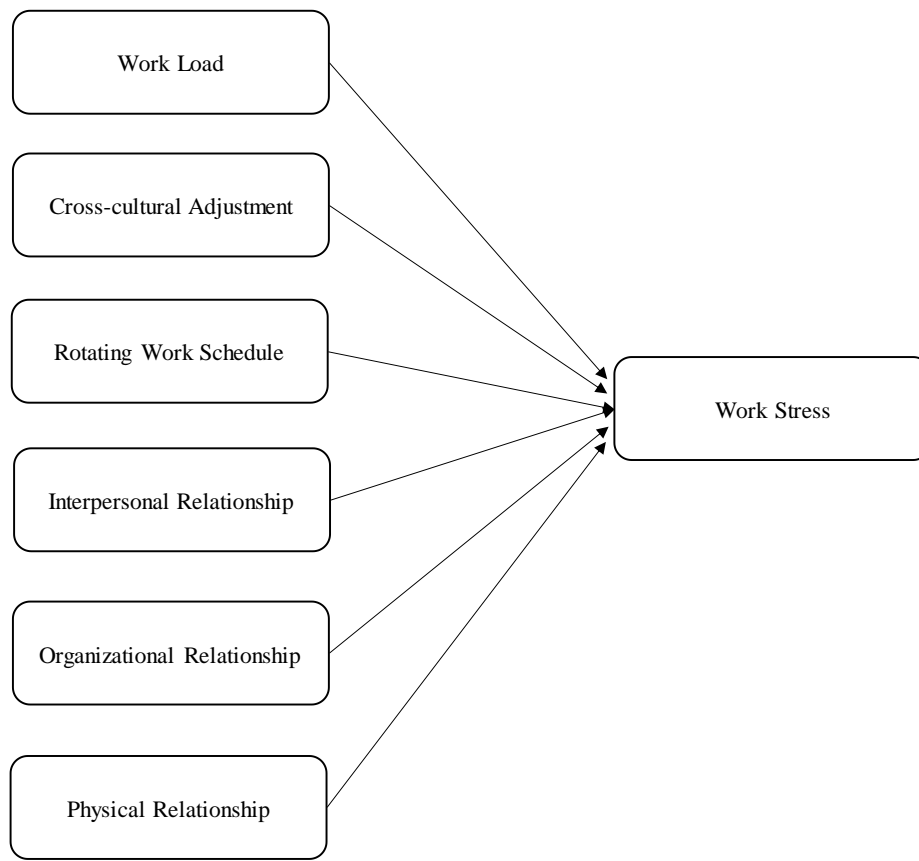


Figure 1. The factors influencing job stress model adopted in this study.

The conformity of the six hypotheses to the collected empirical data is evaluated statistically by multivariate regression analysis. For the purpose, we establish a linear model of:

$$\text{Work Stress} = \beta_0 + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + \beta_3 \cdot X_3 + \beta_4 \cdot X_4 + \beta_5 \cdot X_5 + \beta_6 \cdot X_6 + \text{errors}$$

The six hypotheses are accepted on the condition that the *t* statistics associated with $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are sufficiently large, exceeding the critical limit of $t_{\left(\frac{\alpha}{2}, n-d-1\right)}$, where α denotes the significance level and is usually taken as 0.05. Prior to the computation of the *t* statistics, we perform the ANOVA test to determine the importance of the model globally. In this case, we compute and evaluate the *F* statistic. In addition, we also evaluate the model fitness to the data by using the coefficient of determination or R^2 . Before conducting multivariate analysis, we will first test the data with classical assumption, validity, and reliability tests to ensure that the data are appropriate.

III. RESULT AND DISCUSSION

In this work, we study the stress among expatriate cabin crew in Saudi Arabia. Data collection will be carried out by collecting the primary data in the form of a preliminary survey, which is survey data and interviews aimed at respondents who are expatriate's active cabin crew who work in Airline Company based in Saudi Arabia. This survey aims to determine the relevance of the variables influencing work stress based on personal experiences. The list of variables previously proposed has been collected through a literature study.

To assume a large population with an unknown exact population size, the sample size can be referred to the Lemeshow formula. The questionnaire data collection was carried out fully online by distributing online form to 100 male and female cabin crew from various Nationality shows in Table 1. The collected data will be analyzed using SPSS software.

Table 1. Respondent's Nationalities

Respondent's Country of Origin	Total
Indonesia	60
Philippines	21
Malaysia	5
Tunisia	4
India	4
Pakistan	2
Egypt	1
Albania	1
Greece	1
Morocco	1
Total	100

In data processing there are 18 questions with six independent variables. The variable is aimed at the expatriate's cabin crew working in Saudi Arabia. Degrees of freedom (df) = $n - 2$ and the chosen confidence level is 0.05, which means that 95% of the entire sample has the true population value. Questionnaire items are valid if the calculated r value is greater than the r table value.

$$r = \frac{t}{\sqrt{df + t^2}}$$

The calculated r value can be calculated using SPSS and the result is that the 18 questions items are declared valid because the calculated r value $>$ r table.

The reliability test was carried out to show that the measuring instrument used in this research has reliability as a measuring instrument. Where in this test the results show that the Cronbach's alpha value is greater than 0.6, so it can be declared a reliable measuring instrument to use.

The first classical assumption, normality test is obtained from the distribution of data to determine whether the data has a normal distribution or is close to normal. As it is known, the significance value >0.05 assumes that the residual value is normally distributed and vice versa if the significance value <0.05 then the residual value is not normally distributed.

The next test is heteroscedasticity test, this test aims to test whether it is in the regression model occurs variance inequality from residual one observation to another observation. To determine heteroscedasticity, the basis for decision making in this test is if the significance value is ≥ 0.05 , it can be concluded that there is no heteroscedasticity problem, but if the significance value is <0.05 , it can be concluded that there is a heteroscedasticity problem. By looking at figure 3, normality and of the residual data between the model predictions on the stress level and the participants' responses is satisfied.

Multivariate regression analysis begins by assessing how much the independent variables affect the dependent variable by knowing the value of R^2 . R^2 is a number that ranges from 0 to 1 which indicates the magnitude of the combination of independent variables that jointly affect the value of the dependent variable. The R^2 value of 0.75 is included in the strong category, the R^2 value of 0.50 is in the moderate category and the R^2 value of 0.25 is in the weak category[20]. It is computed by the following formulas:

$$R^2 = 1 - \frac{SS_{\text{res}}}{SS_{\text{tot}}}$$
$$SS_{\text{res}} = \sum_i (y_i - \hat{y}_i)^2$$
$$SS_{\text{tot}} = \sum_i (y_i - \bar{y})^2$$

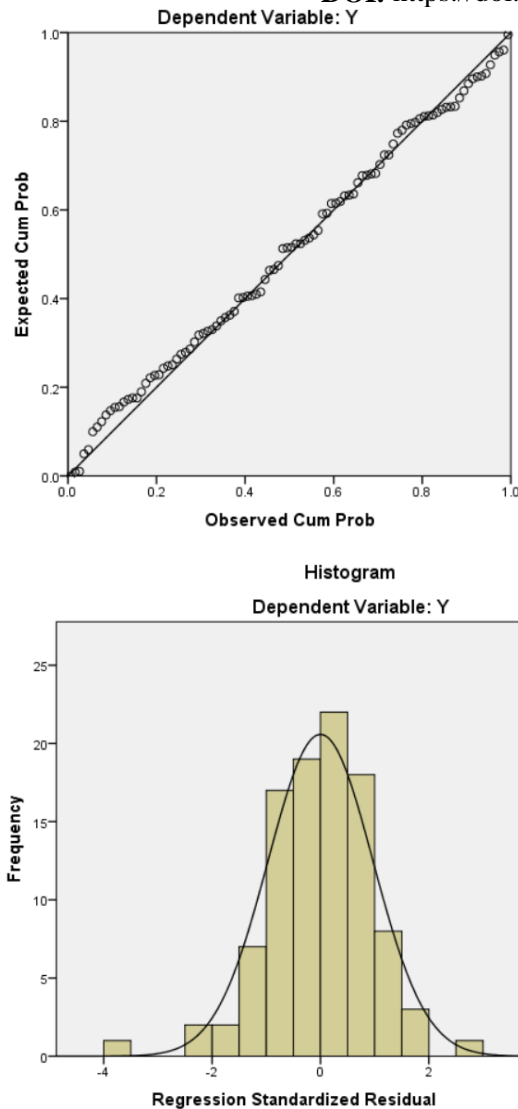


Figure 3. The distribution of the residual data in the form of a P-P plot and Histogram

In the case, y_i is the value of the variable Rework of the i -th respondent, \bar{y} is the sample average, and \hat{y}_i is the model prediction. The result is $R^2 = 0.848$, suggesting that the model reasonably fits the data. The second statistical analysis is the F -test to evaluate the significance of the coefficients $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$. As for this test, the results are presented in Table 2. The computed F -stat is 86.678 with the p-value of 0.000, suggesting a rejection of the null hypothesis.

Table 2. ANOVA Table

Model	df	SS	MS	F-stat	p-value
Regression	6	197.443	32.908	86.678	0.000
Residual	93	35.307	0.380		
Total	99	232.750			

The third step in the multivariate analysis is the t test for the six variables. The results are depicted in Table 3. From the results in Table 3, we obtain the regression model relating to the variables of the following:

$$\text{Work Stress} = 0.317 \cdot \text{workload} + 0.131 \cdot \text{Cross-cultural adjustment} + 0.147 \cdot \text{Rotating work schedule} + 0.12 \cdot \text{Interpersonal relationship} + 0.207 \cdot \text{Organizational relationship} + 0.111 \cdot \text{Physical related relationship}$$

Table 3. The result of the t tests where the dependent variable is Work Stress

Model	Unstandardized Coefficient					Collinearity statistics	
	B	Std. Error	Std. Coeff Beta	t-stat	p-value	Tolerance	VIF
Intercept	-1.399	0.433		-3.234	0.002		
Workload	0.236	0.060	0.317	3.902	0.000	0.247	4.049
Cross-cultural Adjustment	0.091	0.049	0.131	1.859	0.066	0.330	3.032
Rotating Work schedule	0.109	0.054	0.147	2.021	0.046	0.308	3.245
Interpersonal relation	0.113	0.065	0.129	1.737	0.086	0.297	3.372
Organizational Relation	0.170	0.065	0.207	2.628	0.010	0.264	3.792
Physical Relation	0.079	0.046	0.111	1.721	0.089	0.395	2.532

The result shows that most of the participants agree that workload is the most influential factor with standardized beta coefficient 0.317, followed by factor related organizational relationship with 0.207, then rotating work schedule with 0.147, and cross-cultural adjustment with 0.313 beta coefficient, and interpersonal relationship whit 0.129 and physical relationship is the least influential factor with standardized beta coefficient 0.111. The relation between workload and work stress is supported by research conducted by Luga, he conducted research on the Health Office sector and it shows that workload is the main factor causing work stress[21].

IV. CONCLUSION

The objective of this study was to identify the factors that cause work stress among expatriate cabin crew. Based on the results of the research, the factors influencing work stress according to the data tend to follow the normal distribution. Work stress is mainly affected by the factors related to the workload faced by cabin crew, followed by organizational relationship, rotating work schedule, then the cross-cultural adjustment, followed by interpersonal relationship, then physical relationship.

The findings may help aviation industry and cabin crew to understand work stress causes, which affect the work performance. This will help in the derivation of appropriate strategies to reduce work stress and hence, enable service and safety performance improvements to be made. The recommendation of this study may also apply to other industries.

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