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Çalışma Koşullarının Hava Trafik Kontrolörlerinin Bağlamsal Performansı Üzerine Etkisi The Impact of Working Conditions on Contextual Performance of Air Traffic Controllers

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ÖZET

Hava trafik performansı havayolu taşımacılık operasyonları performansı üzerinde oldukça etkilidir. Hava trafik performansı da kontrolörlerin performansından oluşmaktadır. Bu nedenle görev performansının yanı sıra bağlamsal performans ta takım olarak 24 saat çalışılan işler için oldukça önemlidir. Bu çalışmada çalışma koşullarının kontrolörlerin bağlamsal performansları üzerinde etkili olup olmadığının ortaya çıkarılması amaçlanmaktadır. Kontrolörlerin çalışma koşulları ve bağlamsal performans algısı subjektif değerlendirilmeli olarak yapılmıştır. Hava trafiği bakımından en yüksek trafiğe sahip beş meydana çalışan kontrolörler çalışmanın evrenini oluşturmaktadır. SPSS 21.0 programı kullanılarak değişkenler analiz edilmiştir. Araştırma sonucunda yapılan istatistiksel analizler neticesinde hava trafik kontrolörlerinin çalışma koşullarının bağlamsal performans üzerinde etkili olduğu ortaya çıkarılmıştır.

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ABSTRACT

Air traffic performance has a huge impact on air transport operations performance. Air traffic performance is comprised of by the controllers performance. For this reason in addition to task performance, contextual performance is also important for team jobs which is always active for 24 hours in shift works. In this study it is expected to show the impact of working conditions on contextual performance. The contextual performance and perceived working conditions of controllers will be evaluated by the self-report method. The five biggest airport on the traffic basic is choosen for the research. SPSS 21.0 program is used to analyse variables. In the results of the study it is seen that there is a relation between working conditions and contextual performance of air traffic controllers.

INTRODUCTION

The importance of working condition's impact on individual performance has triggered new studies about these topics. Stream of thoughts about individual performance generation, contextual performance concept is evaluated as a very precious. By ensuring high contextual performance it is expected to have more valuable task and individual performance. Satisficer, continent, cultured and expansive structured organizations present more contextual atmosphere to employees. In this regard contextual performance is came up from social, environmental and psychosocial related operations performance. In addition to organizational model, the relations between employees may have impact on contextual performance formation. And also relations between colleagues, superior-subordinate communication, stress in the organization, work engagement will be determinative for contextual performance entity.

In this study it is aimed to analyse air traffic controllers working conditions impact on contextual performance. Working conditions and contextual performance terms will be determined and literature review will be shown. Finally statistical analysis will be described at the base of research model.

1. Working Conditions

Work life is a significant part of human existence. It is believed that more than %50 of human life passes in the work environment(Sundstrom and et al,1994). Gerber, Nel and Von Dyk(1998) stated that working conditions in the work life are composed of relations between employees and their organizations(Gerber and et al.,1998:48) However working conditions have a large framework, some of it's elements can be listed as below(Uyargil and et al;2010:522):

- Physical Conditions
- Work Equipments
- Workload
- Incomes
- Working Shifts
- Relationship between Colleagues
- Supervisor Support
- Organizational Culture
- Supervisor-Subordinate Relations
- Social Support ...etc (Aisha and et al, 2013:605).

Management and psychology literature approached working conditions in to two perspectives. Physical and psychosocial working conditions are parts of this approachment. Taylor(1911) analysed physical features of job(working conditions) and mechanic production integration in the Principles of Scientific Management Book(Taylor,1911). Roethlisberger and his colleagues(1939) introduced that workers social and emotional requirements are also important for their work life. Also Maslow determined that human's physical-social and phychosocial needs should be met for a successful working environment atmosphere(Bolin,2009:18).

In last two decades, it is approved that the development of service related industries increased the value of working environment's social and psychosocial features(Cappelli and et al, 1997),(Robone, Jones, Rice,2008:2) Therefore it is accepted that physical and phychosocial working conditions can be decisive on employee's behaviors, well-being, motivation, satisfaction, performance and social relations(Sundstrom and et al,1994:195-222), (Gerber,Nel,Dyk,1998:48).

2. Air Traffic Controller Job and Working Conditions

Air traffic controllers are workers who monitor and control air traffic operations 7 days and 24 hours. They have the ability of expedite decision making for aircraft operations(Caner,2008:2-4). It is well known that air traffic controller job is stressful. Time pressure and life safety of passengers make this job more excited and difficult. Air traffic controllers work with their colleagues in their work environment. In a wide office at tower they rely on radar and visual observation to direct the movements of commercial and private aircrafts. They work to keep planes operate safely as they minimize delays. Much more than traffic directors, air traffic controllers keep pilots informed on weather conditions and runway status during arrivals and departures. Air traffic controllers organize flight plans and traffic management plans to prepare for planes about to enter assigned airspace. Air traffic controllers also provide flight path changes or directions to emergency landing fields for pilots travelling in bad weather conditions or emergency situations. (Akca and Karagülle,2011:3-5),(Histon and Hansman, 2002:33) (Costa,1996:1-4)

Air traffic controller's incomes are higher than average monthly incomes of other state employees. Shift work system, stress, quick decision making, specific skills are some reasons for higher revenues in the job. They work in the towers and other buildings at airports. They generally work with advanced technological equipments. They have resting rooms in the offices. Their physical working conditions are similar between the same level countries. But social and psychosocial factors may vary from airport to another airport. For this reason it is expected that social and psychosocial related factors are more important for air traffic controllers who work in teams with shift system. It is considered to approach some of the social and psychosocial working conditions features for air traffic controllers in this title.

Shift Work System: Shift work system may impact controller working abilities. Sleepness, physical and mental problems can be occurred due to the unsocial hours. And also fatigue is another issue which is related about shift work system. Not only health problems but also human behaviors can show an alteration by shift work system(Mélan, Galy, Carioum,2007:392) To minimize performance losses and distractibility in different working times, authorities have to provide relaxation opportunities for controllers in the work environment. A study about Italian air traffic controllers showed that however traffic density slow down, communication related errors increase at night hours(Corradini and Cacciari,2001).

One of the another undesirable result of shift work system is called as burnout(Culloch and et al,2008: 41-47). The negative conditions of working environment, shift work and work load may trigger burnout generation. For this reason qualified working conditions are required to pick up controllers readiness and efficiency of air traffic controllers.

Team Work: Air traffic controllers work in towers with working groups. Team cohesion is essential for successful traffic operations(Isaac and Ruitenberg,1999). Relations between colleagues and supervisor have a significant impact of employee performance and motivation(Chang and Yeh,2010:123-129)Due to this, team work is also an important indicator for psychosocial working conditions.

Stress: It is well known that air traffic controller job is stressful. Quick decision making, time pressure, safety of passengers, responsibility over the job are some of the generation reasons of perceived stress. Not only operational factors but also individual and organizational factors are related with perceived stress in the work environment. Organizational climate, management support, colleague relations can be evaluated as working conditions which may influence over stress levels(Costa,1996:1-4). However stress in air traffic control job is a popular research area, last reports did not indicate that stress is so significant in the aircraft collisions due to the controllers error(Edwards and et al, 2012:159-166).

3. Contextual Performance

Motowildo and Borman(1997) approached individual performance in two perspective. Task and Contextual performance concepts have become populer with these movement of ideas. Task performance can be described as a performance model which is focused on main task related operations.

A surgeon's medical operation, a lecturer's teaching education, a controller's radar monitoring can be utilized as a task performance activities. And also putting in action social and psychosocial behaviours to contribute organizational performance in secondary ways is called as contextual performance (Binnewies, Sonntag, Mojza, 2009:67). Contextual performance is related with environmental and social activities which are not focus on main job tasks. Prosocial organizational behaviours, organizational citizenship behaviours are closed to contextual performance behaviours. Conscience, personal support, organizational support, sacrifice, volunteering, persistency are some of the role activities under contextual performance notion (Bing and et al., 2011:563-577). The philosophy of contextual performance concept is related with being positive and helpful human behaviours. (Brief and Motowido, 1986:710-725) Helping other's duties, listening colleagues problems, taking care for friends in the work environment are some activities which can be classified under contextual performance. Contextual behaviours can be evaluated as motivational factors for employees (Ünlü and Yürür, 2011:186). These activities also contribute to achieving employee's aims in organizations. It is stated that contextual performance is impressed by working conditions of organizations. (Neal and Griffin, 2000:347-358). However this concept is not related with main tasks, it aims to provide organizational success and performance by environmental and social perspectives and it has indirect impacts over the main tasks formation (Borman and Motowido 1997:100), (Katz and Kahn, 1966), (Bateman and Organ, 1983:588), (George and Brief, 1992:310)

Table 1: Literature Summarize about Research Variables

Kahya(2007)	It is found that weak working conditions and bad marked working environment decreases employee performance and influence creativity and problem solving negatively.
Naharuddin ve Sadegi(2013)	It is discovered that working conditions and work environment can influence employee performance.
Leblebici(2012)	It is stated that work environments physical and psychosocial features are effective on workers productivity.
Severinsson ve Kamaker(1999)	It is found that work environment is related with job satisfaction of health industry workers.
Herrero et al(2012)	It is found that ergonomic conditions have affects on individual performance and quality of work-life.
Jayaweera(2015)	It is analysed the relationship between performance and working conditions. By searching related articles it is found that enhancing working conditions will have positively impact on employee performance.
Greenberg ve Baron(2000)	It is determined that there is a strong relationship between working conditions and employee performance.
Önal et al(2008)	It is found that working conditions of air traffic controllers are related with stress level, job satisfaction, burnout and performance.
Kristensen et al (2005)	It is examined that doctors perceived working conditions are related with their job satisfaction.
Chang and Yeh(2010)	It is determined that working conditions can be evaluated as a performance factor for air traffic controllers .

Shikdar ve Sawaged(2003)	It is found that there is a relationship between workplace conditions and employee performance.
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4. A Research To Determine The Impact of Working Conditions on Contextual Performance of Air Traffic Controllers

4.1.Purpose of the Research and Sample-Data Collection Methodology

In this study it is aimed to determine the impact of perceived working conditions on contextual performance of air traffic controllers. In this context, SPSS 21.0 program is used to analyse the datas. First of all factor analyses had used and than regression analyses was applied. In factor analyses results, it is seen that scale's features are complied with the original ones. And then, assumptions of regression analyses is examined. Finally regression analysis is used to test the research's hypothesis. Measures, hypothesis and research model which are used for this study is shown below.

Working Conditions:It is used Severinsson and Kamaker's(1999) work environment scale's short form which has 38 items. The scale has five dimensions. Supervisor and colleague relations, stress, work engagement, perceived anxiety, physical and mental problems are dimensions of original scale.

Contextual Performance: It is used Williams and Anderson's(1991)scale. Contextual performance scale is composed of 8 items.



H₁: There is a positive and significant relationship between perceived working conditions and contextual performance.

Questionnaire form is composed of 54 items. There are 8 demographic questions in the 3rd part of the questionnaire form. Working conditions and contextual performance scales are designed with Likert Scale Format.

The population of this study is generated from the five biggest airports(traffic base) air traffic controllers in Turkey. It is stated to the researcher that there are approximately 800 air traffic controllers in the five biggest airports in Turkey. Istanbul Ataturk Airport, Istanbul Sabiha Gökçen Airport, Ankara Esenboğa Airport, Antalya Airport, Izmir Adnan Menderes Airport have the huge number of air traffic in Turkey. For this reason the main population of this study is 800 controllers. In this view, it was sent 500 questionnaire forms to these airports. The systematic for sample is shown in the table below. 362 useful questionnaire form is analysed for this study.

Table 2: Sample Method for Research

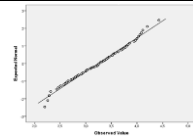
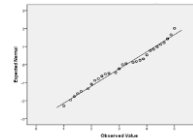
Airport Name	Employee Rate in Total	Number of Sending Questionnaire Forms	Number of Returning Questionnaire Forms *	Return Rate
Istanbul Ataturk	0,25445293	127	108	0,85
Istanbul Sabiha Gökçen	0,05852417	29	28	0,96
Antalya	0,22900763	115	45	0,39
Ankara Esenboğa	0,3307888	165	143	0,86
Izmir Adnan Menderes	0,12722646	64	38	0,59
Total	1	500	362	0,72

*(Cleared from missing data)

4.2. Research Results

In this study to provide regression analysis assumptions, the normality and correlation analysis tests have done. In the normality tests, diagrams and Skewness-Kurtosis values; it is accepted that the data demonstrates normal distribution.

Table 3: Descriptive Statistics for Research Variables

Variable	Mean	Max	Min	Skewness	Kurtosis	Std. Deviation	Normality Q-Q Plot Diagram
Working Conditions	3,24	4,43	2,20	-0,71 0,128	-0,722 0,256	0,519	
Contextual Performance	3,25	5,00	1,00	-0,173 0,128	-0,972 0,226	1,05	

And also in the correlation tests it is seen that there is a positive and middle level correlation between perceived working conditions and contextual performance variables. Correlation between variables are 0,589 and significant at the level of 0.01.

Table 4: Regression Analyses Model Table

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,589 ^a	0,347	0,345	0,85145	0,347	191,079	1	360	0	1,376

Regression analyses model table values can show some critical features of the research hypothesis. In accordance with this table's results, it can be explained that variance in the depended variable can be determined by the independence variable. R Square value should be approached to equate the model. In

this perspective, the variance in the contextual performance can be explained by the %35 of the working conditions.

Table 5:Regression Analyses Anova Table

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	147,411	1	147,411	210,501	,000 ^b
	Residual	252,103	360	0,7		
	Total	399,515	361			

When it is examined the ANOVA table it can be assumed that research model is meaningfulness for the regression equity. F and significance values show that with this model, research hypothesis can be determined by the regression analyses.

Table 6:Regression Analyses Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-0,611	0,283		-2,159	0,031					
	Working Conditions_	1,192	0,086	0,589	13,823	0	0,589	0,589	0,589	1	1
	Mean										

Regression Analyses Coefficients Table is generally used to formulate the model equation. In this based, the equity model of this research is;

$$\text{Contextual Performance} = 0,611 + 1,192 * \text{Working Conditions} + e(\text{error})$$

The regression results of the study support the hypothesis of the model. By evaluating the results, it is admitted that there is a positive and significant relationship between perceived working conditions and contextual performance.

Table 7: Demographic and Occupational Characteristics

Variables	Features	Numbers	%
Age Group	20-30	51	14
	31-40	105	29
	41-50	126	35
	51-60	43	12
	61+	37	10
Gender	Female	147	40
	Male	215	60
Marital Status	Single	51	14
	Married	263	73
	Divorced	48	15
Educational Status	Associate Degree	23	6
	Bachelor's Degree	279	77
	Master Degree	56	16
	Doctoral Degree	4	1
Working Position	Radar	263	72
	Tower	99	28

Airport	Istanbul-Atatürk	108	30
	Istanbul-Sabiha Gökçen	28	8
	Ankara-Esenboga	143	40
	Izmir-Adnan Menderes	38	10
	Antalya	45	12

When it is analysed the demographic variables it is seen that %40 of the controllers are female and %60 of them are male. This indicator shows that women employment rate in tower is a pleasing situation for Turkey.

While %72 of the controllers work in the radar position, %28 of them work in the tower control. This means that most of the answerers have the radar control certificates. When it is approached that tower capacities and tower control necessity is lower than radar, results will be evaluated as significant. It is well known that there are huge number of radar controllers in air traffic control centres.

One of the another important result of the demographic feature is age. However it is tried to employ younger candidates for being an air traffic controller, from the results it is seen that there is an accumulation between 31 and 50 age range. In addition to these results it can be understood that Turkey has considerably experienced controllers in it's airports. Due to the disadvantages of early retirement on old age pension elderly controllers work until the retiring age of 65.

Finally, it should be signed that an air traffic controller candidate should graduate from a university. For this reason in this sample study %77 of the controllers have bachelors degree while %16 of them have master degree. %1 of the answerer controllers have PHD degree. And also some of the elderly controllers have associate degree(%6). Although in some countries it is not necessary to have a bachelors degree for applying as an air traffic controller, in Turkey it is an obligation. There are two alternatives for becoming a controller. First way is graduating from air traffic control department of Anatolian University. The alumni candidates from related faculty can be assigned as an assistant air traffic controller if they actualize the job conditions. Second way is that all alumni candidates from other bachelor degree programs can be educated as a trainee air traffic controller if they actualize the job conditions. Success in public personnel selection examination, foreign language proficiency examination corporate exams and interviews are some of the employment process necessity.

CONCLUSION

One of the most important aim of the organizations is to increase employees performance. It is generally believed that to enhance organizational performance the significance of the employee's contribution is necessary. For this reason, the development of working conditions will influence employee performance. In this study it it tried to explain the impact of working conditions on contextual performance. The population is chosen from air traffic controllers. In addition to studying literature review it is analysed the relationship between variables with self report method. In the results of the statistical analyses it is seen that there is a relation between variables. The hypothesis of the study is supported with the statistical analyses. It is expected to increase contextual performance by developing working conditions. Next researchs will focus on relationship between working conditions and other behavioural variables to show the importance of the work environment physical-social and psychosocial features.

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