

**İŞYERİ TASARIMININ İŞ TATMİNİ VE ALGILANAN
VERİMLİLİK ÜZERİNDEKİ ETKİSİNİN ÖLÇÜMÜ:
ÜNİVERSİTE ÇALIŞANLARI ÜZERİNDE BİR ARAŞTIRMA**

*Dilek TAŞKIN**, *Çağatan TAŞKIN***

Makale Geliş Tarihi-Received: 01.12.2020
Makale Kabul Tarihi-Accepted: 11.04.2021
DOI: 10.37093/ijisi.950604

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2021

ÖZ

Çalışanların iş tatmini ve verimlilikleri uzun yıllardır işletmeler için önemli bir konu olmuştur. Her iki kavram da performans artışına, kar artışına veya düşük performans ile işgören devir oranında artışa neden olabilir. Bu nedenle, hem iş tatmini hem de verimlilik kavramlarının öncüllerinin anlaşılması ve bu öncüllerin iş tatmini ve verimlilik üzerinde etkilerinin incelenmesi uzun yıllardan beri önemli araştırma konuları arasındadır. Literatüre göre, iş yeri tasarımı çalışanların iş tatmini ve verimliliklerini etkileyen en önemli faktörler arasındadır. Bu çalışmanın amacı, iş yeri tasarımının (ofis /büro düzeni ve fiziksel çevre) iş tatmini ve algılanan çalışan verimliliği üzerindeki etkisini bir kamu üniversitesinde yapısal eşitlik modelleme ile ölçmek ve stratejiler önermektir. Araştırma, Bursa Uludağ Üniversitesi çalışanları üzerinde yürütülmüştür. Veriler yüzyüze anket yöntemi ile toplanmıştır. Araştırmada kolayda örnekleme kullanılmıştır. Analiz için 290 anket formu uygun bulunmuştur. Araştırma bulgularına

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göre, iş yeri tasarımının iki boyutunun iş tatmini üzerinde ve iş tatmininin de çalışanların algılanan verimlilięi üzerinde istatistiksel olarak anlamlı bir etkisi mevcuttur.

Anahtar Kelimeler: İş Yeri Tasarımı, İş Tatmini, Algılanan Verimlilik, Üniversite Çalışanları, PLS-SEM.

JEL Kodu: M10, M12, M19.

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**MEASURING THE INFLUENCE OF WORKPLACE DESIGN
ON JOB SATISFACTION AND PERCEIVED
PRODUCTIVITY: A RESEARCH ON UNIVERSITY
EMPLOYEES**

ABSTRACT

Employee job satisfaction and productivity of employees are so crucial for companies since many years. Both of them may either lead to higher performance, increased profit or lower performance, increased turnover rate and etc. That's why, understanding the antecedents of both job satisfaction and productivity, and exploring the influence of those antecedents on job satisfaction and productivity have been important research areas since many years. According to the literature, workplace design is one of the most important factors affecting job satisfaction and productivity of employees. The aim of this study is to measure the impact of workplace design (office layout and physical environment) on job satisfaction and perceived employee productivity by means of structural equation modeling in a public university and to suggest strategies. The research was conducted on employees of Bursa Uludağ University. Face-to-face questionnaire was used as the data collection method. Convenience sampling was chosen as the sampling method. 290 surveys were confirmed for testing the model. Research findings indicate that two dimensions of workplace design were found to have influences on job satisfaction and job satisfaction was found to have an important influence on perceived productivity of employees.

Keywords: Workplace Design, Job Satisfaction, Perceived Productivity, University Employees, PLS-SEM.

JEL Code: M10, M12, M19.

INTRODUCTION

All of the businesses such as manufacturing industry, services industry and others are competing severely in the world. There are many success factors that lead to a competitive business one of which is productivity (Groen et al., 2019: 443). There is an ongoing debate on the drivers of productivity. Concepts of workplace design and job satisfaction are at the center of this debate. If the occupants feel comfortable in office environments, this potentially leads to satisfaction and productivity. The productivity of an employee is related with the accuracy of tasks but also it is related to producing new ideas and creativity (Rasheed et al., 2019:1). In today's business environment, all of the companies should have highly productive employees to be competitive in the long term. Therefore, it is crucial to explore the drivers of productivity and to explore the influences of the antecedents of productivity on productivity (Shobe, 2018). There have been many efforts to find out the factors affecting the productivity of employees since the early years of 20th century and workplace design was found to be one of the most important factors (Sharif, Sharif, 2017). The design of the workplace may lead to improvements and developments in job satisfaction and perceived employee productivity. This has an important effect the motivation of the employees. On the contrary, poor workplace design may lead to a lower level of employee satisfaction, productivity, performance and may also lead to a higher level of stress (Gutnick, 2007). These are especially crucial in universities because universities are the places of creativity. Universities have important missions one of which is to educate students who are the future of the country. The other one is to produce science and to develop science for the benefit of the society. Lastly, universities should lead the society. Thus, productivity of employees are important to achieve these. In this study, it is aimed to measure the influence of workplace design [office layout (furniture and equipment) and physical environment (lighting, aesthetics and aroma)] on job satisfaction and perceived employee productivity by means of structural equation modeling in a public university and to suggest strategies.

1. WORKPLACE DESIGN AND ITS RELATIONSHIP WITH JOB SATISFACTION AND PERCEIVED PRODUCTIVITY

Human workforce can be evaluated as the greatest asset of a company. Thus, satisfaction and productivity of this “asset” is so important (Kim et al., 2020: 2). Workplace design is an important antecedent of satisfaction, engagement and productivity (Pitchforth et al., 2020: 1-2). In fact, researches on the influence of workplace design on productivity are old. It can be said that Taylor’s studies and Hawthorne Experiments were the first works about this topic (Harris, 2019: 57).

There are many sub-dimensions of workplace design according to Ikonne & Yacob, 2014. These sub-dimensions include many types, for instance temperature, heat and cold, lighting, gravity and etc. All of these are assumed to have influences on the satisfaction and performance of employees and thus, they can be taken into consideration as the basic drivers of comfort. There are also other sub-dimensions of workplace design such as furniture, equipment, aesthetics and aroma (Ikonne, Yacob, 2014: 3; Sharif, Sharif, 2017).

Workplace design should be done according to some criteria. A good and inspirational workplace requires an investigation of how and which workplace sub-dimensions influence job satisfaction and perceived productivity (Khan et al., 2011: 120).

Job satisfaction which can be defined as “the feelings of the employees and attitude in relation with job components and job itself” is closely related to productivity (Waqas, 2014: 144). Workplace design plays a key role in forming job satisfaction of the employees (Mendis, 2016: 148). According to researches, satisfied employees mean increased productivity (Kwon, Remøy, 2020: 2; De Been, Beijer, 2014: 142; Fahr, 2011: 29).

The concept of perceived productivity can be defined as the measure of the extent to which the workplace design supports employees when they perform their activities. Every workplace should be designed in order to increase job satisfaction and productivity (Nappi et al., 2020: 217).

In the literature, there are many studies about the relationships of workplace design, job satisfaction and perceived productivity. In spite of this, the literature that investigates this topic in universities is still rare especially in Turkey. Because of this, this study tries to fill this gap and to explore the factors that make universities more productive.

2. METHODOLOGY

2.1. Sample Size and Method of the Research

The main population of the research was the employees of Bursa Uludağ University. Face-to-face survey method was used as the data collection method. Convenience sampling was chosen as the sampling method of the research. Data collection period was between September and November 2019. 317 surveys were filled but 27 of them were not used because of some reasons such as incomplete survey, marking the same extreme option for every question and etc. The latent variables of the research model are office layout (furniture, equipment), physical environment (lighting, aesthetics, aroma), job satisfaction and perceived employee productivity. The scale of these latent variables were adopted from Sharif & Sharif, 2017. Smart PLS 3.0 and IBM SPSS 21.0 were used for analyzing data.

2.2. Profile of Respondents

As it can be seen in Table 1, 131 of the respondents were male and 153 of the respondents were female. Most of the respondents (34.5%) were between 30-40 ages, 27.2% of the respondents were between 41-50 ages and 23.8% of the respondents were between 51-60 ages. Nearly half of the respondents were faculty members (academicians) and 49.7% of the respondents were staff (non-academicians). Most of the respondents' office type were shared office and 34.5% of them were individual office. Besides, there were only 4.8% flexible offices.

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Table 1. Profile of Respondents.

Demographics	Frequency	%	Demographics	Frequency	%
Gender			Income		
Male	131	45,2	<2000 TL	12	4,1
Female	153	52,8	2000-3000 TL	34	11,7
Missing value	6	2,0	3001-4000 TL	92	31,7
			4001-5000 TL	114	39,3
			>5000 TL	38	13,1
Age			Occupation		
<=30	30	12,4	Academician	146	50,3
30-40	100	34,5	Non-academician	144	49,7
41-50	79	27,2			
51-60	69	23,8			
>60	6	2,1			
Missing value	6	2,0			
Office Type					
Individual office	100	34,5			
Shared office	174	60,0			
Flexible office	14	4,8			
Missing value	2	0,7			

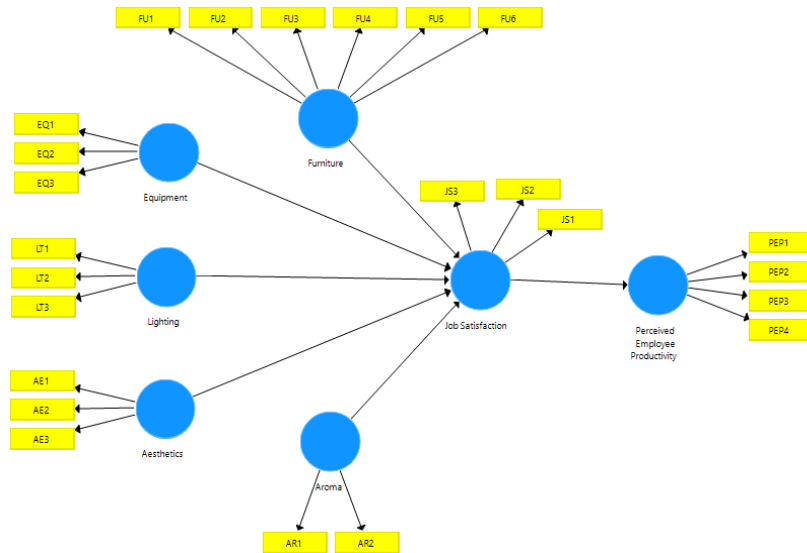
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2.3. Research Model and Hypothesis

In Figure 1, the model can be seen and it is composed of the latent variables, which are; "furniture", "equipment", "lighting", "aesthetics", "aroma", "job satisfaction" and "perceived employee productivity" and the relationships among them.

Figure 1. Research Model.



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The hypotheses of the research are:

H₁: "Furniture" positively impacts "job satisfaction".

H₂: "Equipment" positively impacts "job satisfaction".

H₃: "Lighting" positively impacts "job satisfaction".

H₄: "Aesthetics" positively impacts "job satisfaction".

H₅: "Aroma" positively impacts "job satisfaction".

H₆: "Job satisfaction" positively impacts "perceived employee productivity".

2.4. Construct Reliability and Validity Results

In Table 2, the results of construct reliability and validity can be seen. The AVE values of the dimensions must be 0,50 or more for the validity of latent variables (Fornell, Larcker, 1981). Results show that

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the AVE values for aesthetics, aroma, equipment, furniture, job satisfaction, lighting and perceived employee productivity are 0.73, 0.75, 0.79, 0.59, 0.73, 0.78 and 0.84 respectively. The composite reliability values of the latent variables are also given in Table 2. Composite Reliability value should be 0.70 or above (Cortina, 1993).

Table 2. Construct Reliability and Validity.

Construct	Cronbach's Alpha	Rho'A	CR	AVE
Aesthetics	0.82	0.83	0.89	0.73
Aroma	0.67	0.68	0.85	0.75
Equipment	0.87	0.89	0.92	0.79
Furniture	0.86	0.87	0.89	0.59
Job Satisfaction	0.82	0.83	0.89	0.73
Lighting	0.86	0.87	0.91	0.78
Perceived Employee Productivity	0.93	0.94	0.95	0.84

In Table 3 outer loadings of the latent variables can be seen. Outer loadings range from 0.65 to 0.95. These values can be accepted as high values.

Table 3. Outer Loadings.

Latent Variables	Observed Variables	Outer Loadings
Aesthetics	AE1	0.87
	AE2	0.85
	AE3	0.84
Aroma	AR1	0.84
	AR2	0.88
Equipment	EQ1	0.84
	EQ2	0.94
	EQ3	0.89
Furniture	FU1	0.78
	FU2	0.78
	FU3	0.76
	FU4	0.82
	FU5	0.77
	FU6	0.65
Job Satisfaction	JS1	0.86
	JS2	0.87
	JS3	0.83
Lighting	LT1	0.85
	LT2	0.94
	LT3	0.86
Perceived Employee Productivity	PEP1	0.83
	PEP2	0.93
	PEP3	0.93
	PEP4	0.95

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2.5. Testing the Research Model by Using PLS

Path coefficients of the research model can be seen in Figure 2. T values of the research model are given in Figure 3.

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Figure 2. Path Coefficients.

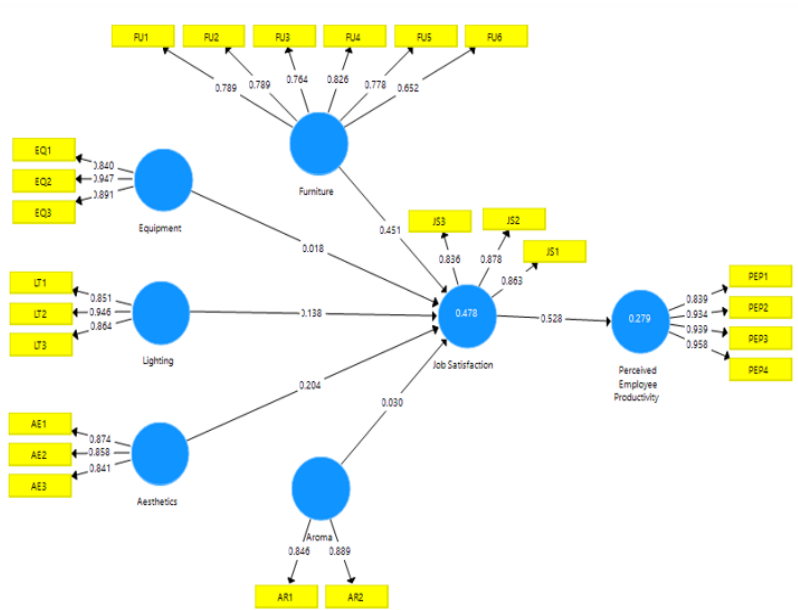


Figure 3. T Values.

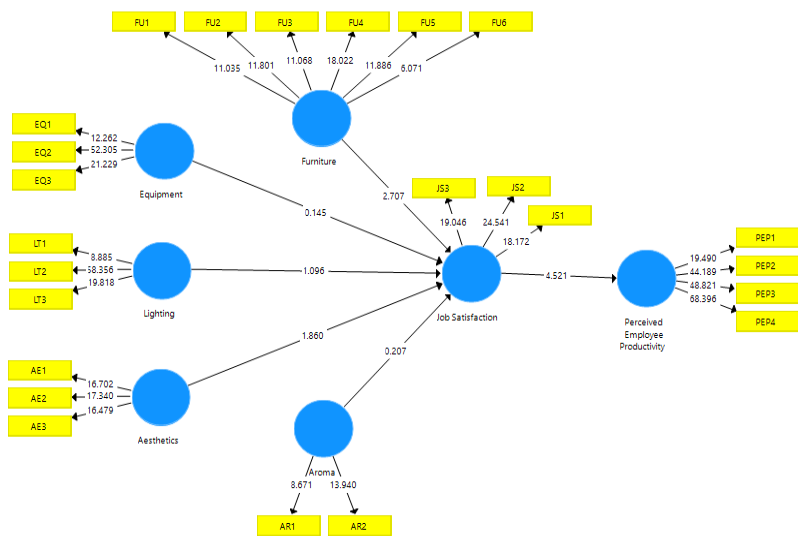


Table 4 shows the results of hypothesis tests and structural relationships. The path coefficient of “furniture” on “job satisfaction” is 0.45, the path coefficient of “equipment” on “job satisfaction” is 0.01, the path coefficient of “lighting” on “job satisfaction” is 0.13, the path coefficient of “aesthetics” on “job satisfaction” is 0.20, the path coefficient of “aroma” on “job satisfaction” is 0.03 and the path coefficient of “job satisfaction” on “perceived employee productivity” is 0.52.

Table 4. Results of Hypothesis Tests and Structural Relationships.

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Hypothesis	Path Coefficient	t-statistic ^a	P Values	Result
H ₁	0.45	2.70***	0.007	Supported
H ₂	0.01	0.14	0.885	Not Supported
H ₃	0.13	1.09	0.274	Not Supported
H ₄	0.20	1.86*	0.063	Supported
H ₅	0.03	0.20	0.836	Not Supported
H ₆	0.52	4.52***	0.000	Supported

a t-values for two-tailed test

* 1.65 (sig. level 10%)

** 1.96 (sig. level=5%)

*** T-value 2.58 (sig. level=1%) (Hair et al., 2011; Rezaei, 2015)

According to modeling findings, some of the hypotheses (1, 4 and 6) were supported. Furniture antecedent was found to have a statistically positive significant impact on job satisfaction. Aesthetics antecedent was also found to have a statistically significant positive impact on job satisfaction of employees. Job satisfaction was found to have a statistically significant impact on perceived employee productivity. In spite of this, equipment, lighting and aroma antecedents were found to have no significant positive impacts on job satisfaction. As seen from Table 4, the highest path coefficient was 0.52 that belongs to the path of job satisfaction-perceived employee productivity. The second highest path coefficient was 0.45 that

belongs to the path of furniture-job satisfaction. All of the results of the research indicate that furniture and aesthetics were crucial antecedents of job satisfaction and job satisfaction was a crucial antecedent for perceived employee productivity. The answer of “how to motivate employees” can be seen from the path coefficients.

CONCLUSION

The results of this paper provides useful implications for increasing job satisfaction and perceived productivity of university employees. It is important for university managers to know the influence of antecedents on job satisfaction and perceived productivity of employees. In this study, the antecedents were workplace design components that were office layout (furniture and equipment) and physical environment (lighting, aesthetics and aroma). According to the research results, “furniture” antecedent was found to have a statistically positive significant impact on job satisfaction. “Aesthetics” antecedent was also found to have a statistically significant positive impact on job satisfaction of employees. Job satisfaction was found to have a statistically significant impact on perceived employee productivity. The findings implicate that furniture of workplace is so crucial. In addition, aesthetics is another important factor. So, university managers should focus on these two sub-dimensions (furniture and aesthetics) in order to make their employees happier and to increase their productivity.

The findings indicate that there are two important paths concerning the research model. One of them is “furniture-job satisfaction-perceived productivity”, the other one is “aesthetics-job satisfaction-perceived productivity”. These paths show managers where to focus and to start for improving productivity. The first path mentioned is more important because of the path coefficients. In other words, if a manager invests on “furniture” dimension one unit in order to develop it, it is assumed that job satisfaction of the employees will increase 0.45 units. In addition, if a manager invests on “job satisfaction” dimension one unit in order to increase it, it is assumed that perceived productivity of the employees will increase 0.52 units. Thus, it can be said that it is a very strong path. University managers should design the office desk, chairs and etc. in a way that provide comfort and excellent communication and collaboration between employees. They should be portable, ergonomic and light. The

distance between desks should be designed according to the “new normal” of working conditions.

The second important finding is the influence of “aesthetics” on “job satisfaction”. Aesthetics is about the culture of the company and it is much related to the appearance of the workplace. According to the research findings, the “aesthetics” dimension was found to have a positive impact on “job satisfaction”. The path coefficient is 0.20 which means that if a manager invests on “aesthetics” dimension one unit in order to develop it, it is assumed that job satisfaction of the employees will increase 0.20 units. Although there was no statistically significant impact, the path coefficient of “lighting-job satisfaction” shows that there is an influence but not statistically significant. In spite of this, managers may focus on the lighting dimension also.

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Limitations

As many researches have, this research also has a few limitations. One of the limitations is about the latent variables of the research model. These latent variables can be increased or changed according to the scope of the main population. Thus, various models can be formed. The second limitation is the sample size. The sample size could be increased. The third limitation is the data collection time period. The data was collected before coronavirus pandemic. The variables and results will probably be different if it is decided to conduct the same research during coronavirus pandemic. All of these limitations generally lead to a fact that the results cannot be generalized and the researches about this topic should be updated.

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ÖZET

İşletmeler açısından çalışanların iş tatmini ve verimliliği konuları uzun yıllardır büyük önem arz etmektedir. Bunun temel sebeplerinden biri çalışanların iş tatmini arttıkça verimliliklerinin de artacağı varsayımdır. Her iki kavram da performans artışına, kar artışına veya düşük performans ile işgören devir oranında artışa neden olabilir. Bu nedenle, hem iş tatmini hem de verimlilik kavramlarının öncüllerinin anlaşılması ve bu öncüllerin iş tatmini ve verimlilik üzerinde etkilerinin incelenmesi gerek reel sektörde faaliyet gösteren işletmeler açısından gerekse de ülkelerin fikir, proje ve bilim üretme merkezleri olan üniversiteler açısından son derece önemlidir. Literatüre göre, iş yeri tasarımı çalışanların iş tatmini ve verimliliklerini etkileyen en önemli faktörler arasındadır. İş yeri tasarımı ise ofis/büro düzeni ve fiziksel çevre olmak üzere iki önemli alt unsurdan oluşmaktadır. Bu çalışmanın amacı da söz konusu unsurların bir başka ifade ile iş yeri tasarımının (ofis /büro düzeni ve fiziksel çevre) iş tatmini ve algılanan çalışan verimliliği üzerindeki etkisini bir kamu üniversitesinde yapısal eşitlik modelleme kullanarak ölçmek ve çeşitli stratejiler ve politikalar önermektir.

Araştırma, Türkiye'nin en büyük üniversitelerinden biri olan Bursa Uludağ Üniversitesi çalışanları üzerinde yürütülmüştür. Veriler yüz yüze anket yöntemi ile toplanmıştır. Araştırmada kolayda örnekleme kullanılmıştır. Verilerin toplanma zamanı 2019 yılının Eylül ve Kasım ayları arasındadır. Dolayısıyla pandemi öncesinde veri toplama işlemi tamamlanmıştır. Toplanan anket formları ön analize tabi tutulduktan sonra araştırma modelinin testi için 290 adet anket formu analize uygun bulunmuştur. Araştırma modelinin test edilmesi için yapısal eşitlik modelleme yaklaşımlarından PLS-Sem kullanılmıştır. Araştırma modelinde, büro mobilyası, araç/gereç, aydınlatma, estetik, koku, iş tatmini ve algılanan çalışan verimliliği örtük değişkenleri yer almaktadır. Büro mobilyası, araç/gereç, aydınlatma, estetik ve koku değişkenleri iş tatmini değişkeninin öncüllerini oluşturmaktadır. Algılanan çalışan verimliliğinin öncülü olarak iş tatmini değişkeni mevcuttur.

Araştırma modelinin yapısal eşitlik modelleme ile test edilmesi sonrasında elde edilen sonuçlara göre, iş yeri tasarımının iki boyutunun iş tatmini üzerinde ve iş tatmininin de çalışanların algılanan verimliliği üzerinde istatistiksel olarak anlamlı bir etkisi tespit edilmiştir. İş tatmini üzerinde en fazla etkiye sahip olan değişken büro mobilyası değişkeni olmuştur. İkinci olarak iş tatmini üzerinde etkili öncül ise estetik olarak tespit edilmiştir. Araştırma bulgularına göre iş tatmininin de algılanan çalışan verimliliği üzerinde önemli bir etkiye sahip olduğu kanıtlanmıştır. Modelleme sonuçlarına göre ilgili yöneticilere strateji ve politika önerilerinde bulunulmuştur.

