

PERCEIVED IMPACT OF OFFICE DESIGN ON PERFORMANCE OF FACULTY: EVIDENCE FROM FACULTY MEMBERS WORKING WITH LEADING HIGHER EDUCATIONS INSTITUTES OF KARACHI

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ABSTRACT

Office design is treated as one of the most important elements which affects employee performance and well-being. Researchers from all over the globe are continuously striving to improve this issue through systematic research activities. Although in Pakistan research work associated with this issue is not only rare but also does not have completeness and most of the articles are banking and telecom industries. Thus, there is potent need to analyze the impact of office design elements with detailed perspectives of variables on larger population size. This study tries to combine variable inventory from prior studies and conduct the research on higher educational institutes which are most dominant part of higher education sector of Pakistan. SMART PLS has been incorporated for data analysis and predicted that entire ranges of office design elements are significant on the performance of faculty members of higher educational institutes. Although relationship with supervisors as a moderator is diminishing the impact of variables of office design and sometimes changes the effect from positive to negative.

Keywords: *Office Design, Higher Educational Sector, HEIs and Employee Performance*

INTRODUCTION

Most of the times work environment and office ergonomics are the two major elements which shape up employee productivity (Sehgal, 2012). Although in between these two, office design is an element which might foster productivity at employee as well organizational level (El-Zeiny, 2012). Although employee productivity is prime dependent variable in

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industrial & organizational psychology (Borman,2004) but working condition of an average office is causing exhaustion and fatigue (Chandrasekar, 2011). Similar has been also indicated by Riaz, Shoaib and Sarfraz (2017) that workplace design is a major barrier for employee productivity rather than optimal arrangement of accessories. Study of Riaz et al. (2017) also indicated poor workplace design actually hurts employee's health and well-being which ultimately resulted in decrease in productivity.

STATEMENT OF PROBLEM& DELIMITATIONS

It has been observed that firms are reluctant to invest in office design facilities as they seem to be cost centered for most of the organizations (Jaffri, 2015). Similar is valid for Pakistan where the companies are not paying desired attention towards office design (Hameed & Amjad, 2009). Although Jaffri (2015) indicated that adequate facilities of office design might able to induce level of employee productivity. Study also indicated that researchers must increase their focus towards office design through variation in data collection approaches.

Similarly, has been highlighted by Riaz et al., (2015) that there is a severe need of research on office design facilities with respect to Pakistan through taking other industries than IT. Hence studies based on other sector than IT (Riaz et al., 2017; Ullah, Mughees & Mirza, 2018), Telecom (Ullah et al., 2018) & Nadra (Jaffri, 2015), and different regions (Jaffri, 2015) are optimal to induce learning and applicability of results (Jaffri, 2015). Therefore to conduct study effectively research process has been linked with higher education sector, as the sector is treated as one of the most important sector for the development of any economy. Similar findings are associated with Pakistan, where higher education sector is also dominated by higher educational institutions (HEI's). Although there is a significant lacking of professionalism and skills in teachers hence products of the sector aren't as per required standards (Asghar, 2019).

THEORETICAL FRAMEWORK

This is supported by Parveen, Sohail, Naeem, Azhar, and Khan (2012) that maintenance of temperature is essential for work performance. On the other hand, experiment conducted by Ulrich (2002) to introduce flowers and plants at workplace induces the importance of color of workplace. Ulrich (2003) also indicated the impact of colors on innovative thinking and techniques applied by male and female employees for solving problems. Although Sarode and Shirsath (2012) posited that lightening, noise, color & air quality are the

elements of office design which are interconnected with each other.

On the contrary study of Sehgal (2012) conducted in India use furniture, noise, temperature, lighting and spatial arrangement for evaluating employee productivity. The model is similar as the model of the study used by Hameed and Amjad (2009) for evaluating the employee productivity in banking sector of Pakistan. The variable inventory of Hameed and Amjad (2009) replicated by Sehgal (2012) to indicate importance of office design in India's scenario and also replicated by Akhtar Ali Salman Ur-Rehman and Ijaz (2014) in telecom sector of Pakistan. Although Parveen et al. (2012) indicated that elements of work environment must be treated differently and must not be treated as the part of office design. Thus, it has been revealed that employee performance has been affected by variable associated with office design as well as work place, but Parveen et al. (2012) uses furniture and temperature as the major office design elements and communication and workload and relationship with boss as the major elements of work environment.

Study of Manggo (2014) conducted in Indonesia uses color, natural air quality, Lightening, noise, spatial arrangement, furniture and work-flow as the major variables of office design. Contrary to these latest study conducted in Pakistan by Jaffri (2015) uses furniture, noise, lightening & spatial arrangement are the major determinants of office design. Similarly study of Sultan et al. (2016) uses noise, air-quality, lightening, color, office-furniture, office-equipment, communication and spatial arrangements as variable inventory. Contrary to these Saha (2016) indicated ten variables including lightening, temperature, noise, air-quality, furniture and spatial arrangement in addition with work-space, privacy, individual-design & aroma. Though recent work of Riaz et al. (2017) uses furniture, equipment, lightening, noise, temperature and spatial arrangements as the indicator of employee lesser productivity & discomfort. Pickson Bannerman and Ahwiring (2017) also uses same number of variables to indicate impact of office design on employee productivity with reference to Ghana. Although their variable inventory is composed of one variable from work-environment and two of the variables are general design and workplace décor, which are not focused by most of the studies due to their generic nature. Hence variables considered potent are spatial arrangements, workplace flexibility and comfort, space available to office, state of furniture, state of equipment's, room temperature and air quality, lightening and level of noise.

Considering all the studies, it has been revealed that there are 11 potent variables which constitute office design but most of the studies uses temperature, color, noise, lightening, air-quality, office furniture, office equipment's and spatial arrangement. Therefore optimal to use eight independent variables for this study with consideration of Cummings and Schwab (1973) who highlighted that supervisor's attitude also affects the level of employee performance. Similar has been found valid through Parveen et al. (2012). Therefore, supervisor's attitude has been used as the moderating variable in the study while variables like work process (Manggo, 2014) and communication (Sultan et al., 2016) are not been used in the study.

SIGNIFICANCE

The significance of the study has many folds as Hansika and Amarathunga (2016) indicated that office ergonomics is in the list of three most impactful factors on employee performance and level of job satisfaction. Statements are supported by Riaz et al. (2017) poor office ergonomics resulted in decrease of employee productivity and also creates negative influence on employee's health. Moreover, significance of study has further been optimized by Jaffri (2015) that in Pakistan less focus towards office design elements forces employees to perform tasks with no or minimal facilities of office design. Therefore, there is a significant lacking of studies which can conceptualize the framework through using complete mix of important variables. Especially when top management needs to have a cost-benefit analysis for optimizing office design (Wah, 1998) the moderation of supervisor's support in work environment is making study more impactful. Hence, this study is deemed to be pervasive in nature and might be used by the researchers, academicians and corporate entrepreneurs not only to optimize office design, but also to conduct further research work in academia and pragmatic context.

RESEARCH HYPOTHESES

H_{1A}: There is a positive relationship between lightening and employee performance

H_{2A}: There is a positive relationship between color and employee performance

H_{3A}: There is a positive relationship between noise and employee performance

H_{4A}: There is a positive relationship between air quality and employee performance

H_{5A}: There is a positive relationship between temperature and employee performance

H_{6A}: There is a positive relationship between office furniture and employee performance

H_{7A}: There is a positive relationship between office equipment and employee performance

H_{8A}: There is a positive relationship between spatial arrangements and employee performance

H_{9A}: Negative Supervisor Attitude & Leadership Style does moderates the relationship between office equipment and employee productivity

H_{10A}: Negative Supervisor Attitude & Leadership Style does moderates the relationship between spatial arrangements and employee productivity

LITERATURE REVIEW

Khedkar and Pawar (2015) indicated that organizations willing to survive in this massive era of competition must focus on health and happiness of their workforce. This will also aid management as without proper office design facilities management might failed to utilize optimal capacities of workforce (Sehgal, 2012). Linking this statement with the statement of problem, researchers deemed to use reference of Ajala (2012) which indicated that office design varies from one company to another (Khedkar & Pawar, 2015). Although effective facilities associated with office design are always resulted in attraction, satisfaction, motivation & retention of employees. This is valid as office design is efficient in making people happy while working & also provide them pride and purpose to reach goals as per their capacities and standards (Saha, 2016). Although to device effective office design and facilities, management must understand that how workplace affects behavior of employees & how work force behavior is correlated with performance at workplace (Parveen et al., 2012). Studies addressing office design elements are conducted all over the globe and highlighted elements which are creating positive impacts and negative impacts on employees (Sarode & Shirsath, 2012). Although Riaz et al. (2017) indicated need of further studies on office design elements therefore the literature will address all the potent variables highlighted by prior studies and theoretical framework.

Lightening

Artificial light is treated as important element in office as well as in any learning environment (Knez & Hygge, 2001). One of the initial studies on office design facilities indicated that considerable increase in indoor lightening at workplace is treated as the efficient technique to enhance level of productivity (Abdou, 1997). Lightening has also numerous intangible benefits as it decreases rates of accident and also optimizes employee morale (Liaqat, Chang, Gani, Ab Hamid, Toseef, Shoaib & Alli, 2017). Similar has been evident through Ahmad Khan and Ali (2016), that light has been directly associated with the level of performance of employees.

Study also indicated that the relationship exists as lightening system does not only affect eyes but also has a correlated with headache and nervous complaints. Hence it is legitimate to believe Riaz et al. (2017) that lightening is a significantly important factor in creating conducting work environment. Similar has been revealed by Yusof et al. (2017) that poor lightening facilities create more drastic effect on productivity of male employees.

Color

Kamarulzaman Saleh Hashim Hashim and Abdul-Ghani (2011) indicated that color is defined as visual phenomenon which we observe due to prompt of light. It is treated as one of the ecological factor which affects employee performance at workplace (Vischer, 1989). Eiseman (2006) posited that there is no question regarding the significance of color in workplace in fact its structure and shades influence functions performed in offices (Guest & Van Laar, 2000). This is found to be valid as everyone has own way to experience color as reaction towards color is linked to one's education, socio-economic level, culture & genetics. Thus color has a potent impact on the level of productivity of individual working in any organization (Kamarulzaman et al., 2011). Use of color will also make workplace more attractive, efficient to work as well as attractive if management in corporate facilities in accordance with its employees (Eiseman, 2006).

Noise

Riaz et al. (2017) indicated that there are several studies which indicated impact of noise on performance of employees. Although it is termed as non-tolerate able element associated with office design (Kamarulzaman et al., 2011). This statement is valid as noise does not only include discussion and words but also noise made by machines and tools used in office (Kamarulzaman et al., 2011 & Loewen & Suedfeld, 1994). This is legitimated by the experiment conducted by Toftum Lund Kristiansen and Clausen (2012), which indicated that increase in noise leads to decrease in level of productivity. Similar has been indicated by the study of Jaffri (2015) that most disastrous element for employee productivity exits in the form of noise which is produced by speeches, telephones and traffic etc.

Although effect of noise on the level of productivity is based upon of intensity of sound, duration, exposure to sound and also on nature of task

that needs to be performed. Smith, (1989) also indicated that noise has different impact on both the genders as indicated by Amina and Amjad (2009), that female prefer chatting and discussion and hence they are able to work better as compared to their counterparts in noisy environments.

Air Ventilation

Quality of office design is of immense importance as employee spend extensive time inside their offices (Dorgan & Dorgan, 2005). Good air quality in offices does not only decrease health complaints, but also optimizes the level of productivity (Dalbokova & Krzyzanowski, 2002). Similar has been indicated by Ahmad et al. (2016) that quality of production is optimized due to good indoor air quality. Hence there is sufficient evidence to believe Dorgan and Dorgan (2005) that occupants' level of productivity is negatively related with poor indoor air quality.

Temperature

Study of Montgomery (2004) highlighted the provision made by World Health Organization (WHO) that maximum limit of temperature at any working place is 24°C. This provision has been made as raise in temperature might diminish productivity through affecting Shaken Baby Syndrome (SBS) symptoms and decreased satisfaction with air quality (Hygge & Knez, 2001). Sparks, Cable, Doran, and Maclaren (2005), also indicated that increase of temperature might harm performance of employees. Although recent work by Riaz et al. (2017) makes some insertion that length of the task & duration for which employee experiences increased level of temperature also have significance impact on performance.

Seppanen Fisk and Lei (2006) conducted an experiment to check the impact of temperature on employee productivity through excluding the impact of poor ventilation. This has been done to avoid any misunderstanding regarding the impact of poor temperature, as the combination temperature and poor ventilation produce drastic effect on performance. The experiment indicated decrease in level of productivity by 2% with increase of 1°C from 25°C to 32°C and no impact on productivity when temperature ranges between 21°C to 25°C.

Experiment conducted by Seppanen et al. (2006) also indicated that increase in temperature has strongest correlation with work performed in laboratories as there is requirement of intense focus on task.

Office Furniture

Productivity of employee has also been supplemented with office furniture and it is legitimate to believe elements like desk, chairs & drawers etc has ability to influence employee productivity (Sehgal, 2012). This impact found significant for countries like Pakistan, as employee spent significant time in close contact with office furniture (Akhtar et al., 2014), although there is minimal attention towards the impact endorsed by office furniture (Sehgal, 2012).

Therefore, legitimate to believe Ahmad et al. (2016), who declare office furniture as important element in fostering organizational productivity through optimizing the comfort level for employees. On the other hand, office furniture is also marked as third important most elements in the list of office design elements and hence must be treated carefully by management (Akhtar et al., 2014). Yusof et al. (2017) also indicated that non-ergonomics furniture might lead to increase of health issues and thus level of productivity declines. Thus management must pay concern towards ergonomics of office furniture at the time of purchase (Sehgal, 2012), as this is found to be effecting employee even when other elements of office design are absent or ineffective (Jaffri, 2015).

Office Equipment

Office equipment is defined as the sum of all devices which are required in office to perform required requirements (Sultan et al., 2016). Although the selection of office equipment is one of the most difficult tasks as the selection must be coherent with the preference of the person who is going to use these (Cullen, 2002). Similar found to be true through Mumuni and Sam (2014) that use of modern equipment in offices is directly associated with the performance although performance varies with respect to the knowledge of use and understanding from one employee to another.

Spatial Arrangement

Al-Omari and Okasheh (2017) indicated that office layout is considered as one of the most important measure to optimize level of productivity of employees. Moreover, lack of privacy in office setting might result in increase of stress in employees (Saha, 2016). Although office environment also requires proper interaction of employees in order to enhance sharing of knowledge and information (Haynes, Suckley & Nunnington, 2017). Although some of the tasks require complete absence of distraction and

thus it is optimal to believe office layout must be a hybrid of multiple types of design to deal effectively with the issue of privacy. This is valid not only to obsolete distraction but also to address the concern of privacy which varies person to person (Saha, 2016). These indications are also found valid through Al-Omari and Okasheh (2017) that in recent era there is a requirement better and effective ways to induce work through managing flexible work environment.

RESEARCH METHODOLOGY

Research Methodology is the set of parameters which are undertaken by researchers to highlight relationship among all the important aspects of their research (Brannick and Roche, 1997). Therefore, this study combines the parameters highlighted by Saunders, Lewis, Thornhill, and Wilson (2009), Saunders and Bezzina (2015) and Sekaran and Bougie (2016) with research gaps found in the area of office design from territories of Pakistan.

Research Design

The philosophy incorporated with the study is epistemology, as it is treated as philosophy of knowledge (Saunders, Lewis, & Thornhill, 2007). Other researchers like Bryman, Beker, and Sempik (2008), indicated epistemology as “As an issue concerns the question of what is (or should be) regarded as acceptable knowledge in a discipline” (p.13). The research stance for this study was post-positivism, as the study tries to combine variables, techniques, methods and data from different sources to challenge the existing knowledge (John & Gray, 2010). Research strategy incorporated is survey, method of data collection is mono-method (Saunders et al., 2007 Saunders & Bezzina, 2015) and purpose of study was correlational (Sekaran & Bougie, 2016).

Time horizon was cross-sectional (Saunders et al., 2015) and study setting was non-contrived in order to collect data through field-experiment with moderate researcher’s interference (Sekaran & Bougie, 2016). Furthermore, to comply with the reliability issues study follows Vimalanathan and Babu (2017) and works on descriptive statistics before analyzing results through inferential statistics. Proceeding further it has also been noticed that prior studies on office design uses software like SPSS and AMOS etc, but to associate properly with the theoretical framework this study incorporates SMART PLS. This has been done as seven variables of this study has never been tested by single study and

study also based on industrial analysis through incorporating data from major HEIs. Thus, legitimate to use SMART PLS to ensure the essence of theory building approach (Hwang, Malhotra, Kim & Tomiuk, 2010).

Sampling Design

In accordance with statement of problem the study has been conducted from HEI operating in Karachi, extensively focused upon impact of office design on faculty performance. Thus, the population for this study is entire list of faculty members (permanent), teaching in HEIs of Karachi. Moreover study also uses the reference of prior studies like Hameed and Amjad (2009), Riaz et al. (2017) and Sultan et al. (2016) to use simple random sampling. Although, tracing of adequate sample size was quite difficult as the study is focused towards theory building approach and faculty of higher educational institute is much difficult to trace (i.e. permanent faculty). Thus, to manage issue effectively study takes the reference of Parveen et al. (2012) to use sample of 150 faculty members of higher educational institutes offering degrees in management sciences. List of higher educational institutes from which data has been gathered are SZABIST, IoBM, KASBIT, PAF-Kiet and Dadabhoy etc. Although faculty has tough schedule, therefore, after taking consent data is collected through using Google docs which enable researchers to send questionnaire via email.

Questionnaire

The questionnaire has been developed in accordance with Hameed and Amjad (2009), as it is based on five points Likert scale to measure effect of office design on employee productivity.

The technique of data collection is supplemented with five points likert scale, followed by Riaz et al. (2017). Although unlike Riaz et al. (2017) this study focused intensively on office design on employee productivity rather than on employee productivity and employee health. The questionnaire also follows indications given by Amirazar Azarbayjani Day Thariyan Stearns and Brentrup (2017) and Parveen et al. (2012) etc.

STATISTICAL TESTING AND ANALYSIS

This section is based on gauging of results in order to show impact of variables (independent and moderating) on dependent variable. This section also includes detailed analysis of each table in order to provide proper understanding regarding concept which has been introduced throughout the paper. The section is based on analysis of descriptive models as well as inferential models. Descriptive analysis is made through

outer loadings (Table 1), Quality Criteria (Table 2), Composite Reliability (Table 3), Fornell and Larcker (1981) Citation (Table 4 & 5). Similarly, inferential statics are highlighted by (Figure 1 and Table 5)

Table 1: Outer Loading

	AV	EP	LI	MT	NO	OE	Office Equipment's* Supervisors Attitude & Leadership	OF	Spatial Arrangement* Supervisors Attitude & Leadership	SA	SAL
AV1	0.894										
AV2	0.969										
AV3	0.959										
EP1		0.896									
EP2		0.940									
EP3		0.901									
LI1			0.927								
LI2			0.802								
LI3			0.914								
MT1				0.892							
MT2				0.801							
MT3				0.816							
NO1					0.777						
NO2					0.887						
NO3					0.907						
OE1						0.892					
OE2						0.859					
OE3						0.727					
OF1								0.929			
OF2								0.894			
OF3								0.897			
OE* SAL							1.375				
SA1										0.904	
SA2										0.892	
SA3										0.771	
SAL1											0.893
SAL2											0.888
SAL3											0.749
SA* SAL									1.313		

Table 1 indicated that outer loading for each element (question) associated with different variables of study and all of these are more than 0.70. Therefore in the light of these values it is optimal to believe that each element is reliable for further statistical testing. These indications are supported by Hair Sarstedt Ringle and Mena (2012) that value of alpha (α) must be found greater than or equal to one. Moreover, Hair Jr, Hult,

Ringle and Sarstedt, (2016) that point having lesser than 0.7 values must be deleted if the delete is fruitful for overall reliability of the variable.

Table 2: Quality Criteria and Model Fit

	R Square	R Square Adjusted
Employee Performance	0.754	0.719

Table 2 indicated that value of R-Square is 0.754 and value of Adjusted R-Square is 0.719 which are sufficient enough to define model is majorly predicted by independent variables and there is minimal level of multi-collinearity in the variables. This is coherent with the analysis provided by Hair Sarstedt and Ringle (2011), that 0.75 is the value treated as substantial for R-Square as the value indicated predictive accuracy for the model (Henseler, Ringle & Sinkovics, 2009) Table 3 indicated that values of Cronbach's alpha are more than 0.70 for each variable and value of Dillion-Goldstein's rho is also more than 0.70 as well as values of Cronbach's alpha.

Table 3: Construct Reliability

	Cronbach's Alpha	rho A	Composite Reliability	Average Variance Extracted (AVE)
Air-Ventilation (AV)	0.935	0.936	0.959	0.886
Employee Performance (EP)	0.899	0.900	0.937	0.833
Lightening (LI)	0.856	0.858	0.913	0.779
Maintenance of Temperature (MT)	0.791	0.842	0.875	0.701
Noise (NO)	0.820	0.827	0.894	0.738
Office Equipment's (OE)	0.769	0.792	0.867	0.687
OE * SAL	1.000	1.000	1.000	1.000
Office Furniture (OF)	0.892	0.898	0.933	0.823
SA* SAL	1.000	1.000	1.000	1.000
Spatial Arrangements (SA)	0.818	0.831	0.893	0.736
Supervisors Attitude & Leadership (SAL)	0.801	0.833	0.882	0.716

Similarly values of AVE for all the variables shown through table 3 are more than 0.5, therefore it is legitimate to consider overall construct reliable enough for further statistical testing. In order to validate the analysis made for Table 3

it is important to link the analysis with the following illustration. Hussain Fangwei Siddiqi and Shabbir (2018) indicated that Cronbach’s alpha (α) & construct reliability are used to evaluate internal consistency while Dillon-Goldstein’s rho is more appropriate tool for the analysis of reliability than α & its value must be more than 0.70 (Ravand and Baghaei, 2016).

Similarly construct reliability is a better tool for the analysis of reliability than α (Hussain et al., 2018). Ab Hamid Sami and Sidek (2017) further indicated that value for AVE must be greater than or equal to 0.5 in order to validate construct validity.

Table 4 indicated that no value for any variables is relating with each other. This can be verified as there is no value which reaches 0.85 at the junction of two variables. (Alarcon, Sanchez, Olavide, 2015). These indication regarding parameters of HTMT are supported by Hair Jr et al. (2017) that values below 0.85 are appropriate enough to declare HTMT Ratio fit. Therefore, legitimate to declare model appropriate enough as highlighted by Hair Jr Sarstedt Ringle and Gudergan (2017) for testing as entire range of constructs are not correlating with each other.

Table 4: HTMT (Heterotrait-Monotrait Ratio)

	AV	EP	LI	MT	NO	OE	Office Equipment’s* Supervisors Attitude & Leadership	OF	SAL	SA	SAL
AV											
EP	0.513										
LI	0.322	0.449									
MT	0.550	0.758	0.534								
NO	0.561	0.606	0.679	0.633							
OE	0.526	0.637	0.654	0.614	0.629						
Office Equipment’s* Supervisors Attitude & Leadership	0.289	0.342	0.342	0.424	0.408	0.345					
OF	0.496	0.651	0.528	0.642	0.607	0.701	0.337				
Spatial Arrangement M Supervisors Attitude & Leadership	0.254	0.344	0.336	0.315	0.343	0.336	0.741	0.278			
SA	0.423	0.430	0.579	0.545	0.580	0.721	0.311	0.540	0.291		
SAL	0.512	0.670	0.577	0.678	0.659	0.720	0.467	0.659	0.350	0.526	

Table 5 indicating p-values for all the independent variables are lesser than 0.05 and values for all the variables are more than 1.97. Hence in the light of these parameters it is legitimate to indicate office design elements are creating significant impact on the performance of faculty members of HEIs of Karachi. These concluding remarks are coherent with Hair Jr et al. (2016), that in order to generate inference on the bases of t-values it is legitimate to highlight the relation between variables if t-value is more than 1.97. Although the negative sign in regression weights (Original Sample) of air ventilation and spatial arrangements indicated that these two variables are affecting employee performance negatively. Hence lack of indoor lightening and spatial arrangements (open offices) are producing negative impact on the performance level of faculty members of HEIs. Although the moderation (Supervisor's Negative Attitude and Leadership), is diminishing the impact of office equipment and spatial arrangements and making the impact of office equipment and spatial arrangement negative.

Table 5: Path-Coefficient and Total Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
AV → EP	0.074	0.437	0.056	2.604	0.037
LI → EP	-0.140	-0.130	0.071	1.984	0.048
MT → EP	0.384	0.383	0.072	5.329	0.000
NO → EP	0.189	0.177	0.089	2.113	0.035
OE → EP	0.134	0.130	0.059	2.271	0.024
OE* SAL → EP	0.094	0.090	0.048	1.940	0.053
OF → EP	0.179	0.184	0.064	2.814	0.005
SA* SL → EP	-0.067	-0.067	0.058	1.152	0.250
SA → EP	-0.128	-0.120	0.054	2.363	0.019
SAL → EP	0.167	0.170	0.078	2.144	0.033

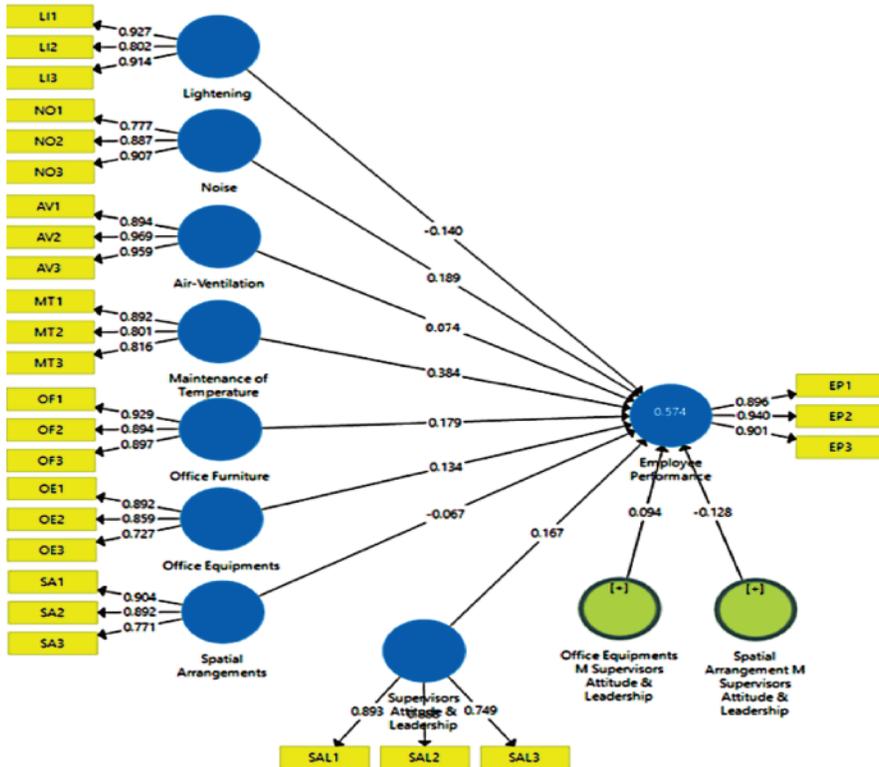


Figure 1: Outer Loadings and Regression weights for office design elements

CONCLUSION

Study indicated that there is a significant role of office design elements on the performance of faculty operating in higher educational institutes. All the potent variables from the construct of office design has been tested for the first time in territories of Pakistan and result are significant enough to declare these variables are potent in higher education sector of Pakistan. Results are completely coherent with Riaz et al. (2017) that there is positive impact of furniture, equipment, lightening, temperature and spatial arrangements on employee productivity. Results are also similar to the results of Hameed and Amjad (2009) which indicated noise; lightening; temperature; air quality and spatial arrangement all are creating significant impact on employee performance. One of the minor difference between this and Hameed and Amjad (2009) is the recent study indicated the positive impact of office furniture on employee performance of HEIs of Karachi. On the other side recent study is much unique in terms of results

from Jaffri (2015) which indicated there is no effect of any of the office design element except office furniture on the performance of employees.

Jaffri (2015) indicated that all the required elements of office design were absent from the office facilities available at NADRA and employees are performing work through using their own capacities, abilities and interests. Similarly, results are extensively changed in comparison to Sultan et al. (2016) which indicated that there is no effect of lightening, color, air-quality, spatial arrangements and noise on performance of employees. Therefore, results of paper are important mainly due to the following reasons on productivity of permanent faculty members of HEIs:

1. Entire range of variables are found to be significant on the performance of faculty
2. Moderation has been from variable inventory of work-environment and the results are found to be predominant, as moderator is able to change the impact yielded previously.
3. Last but not the least; results are important as these are highlighted through larger sample size which is reflecting the presentation of most of the HEIs operating in Karachi.

RECOMMENDATIONS& FUTURE AREAS FOR RESEARCH

After detailed analysis of data collected it has been recommended that HEIs must not only take care office ergonomics but consider politics and supervisor's attitude and leadership style.

This is legitimate to create optimal impact of facilities on performance of faculty moreover study also recommended that organizational justice might also incorporated as the moderating element in office design studies. This will aid researchers in determining role of distributive justice, procedural justice and interactional justice on the performance of faculty.

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