



# Investigating the Impact of Visual Characteristics of Workplace Architecture on Creative Atmosphere (Case Study: Private Banks in Rafsanjan City)

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## *Article Information*

Doi: [10.71674/jaa.2024.1122633](https://doi.org/10.71674/jaa.2024.1122633)

Received Date: 13/06/2024

Accepted Date: 25/07/2024

Available Online: 10/09/2024

**Abstract:** In addition to its functional aspects, architecture holds a deeper significance that communicates with the observer or user of the architectural work. Perception plays a crucial role in various fields, as an individual's perceptions, emotions, and mental states, alongside visual characteristics, can lead to diverse or multiple interpretations, allowing the landscape to be understood in myriad ways. Every architectural design maintains a connection with its surroundings through its distinct visual attributes. Aligning with this notion, the present study aims to elucidate the visual aspects of workplace architecture and its impact on the performance of private bank employees in Rafsanjan city. This research adopts an applied developmental goal and employs a descriptive-analytical methodology. Data collection utilized both field methods (public questionnaires) and a combined approach (quantitative-qualitative) for data analysis. Descriptive and inferential statistical techniques were applied using SPSS software. The findings revealed a direct correlation between the visual characteristics of workplace architecture and job performance in private bank branches in Rafsanjan. Thus, emphasizing visual elements in bank architecture holds significant importance, as these factors can influence employee performance, alertness levels, and concentration at work. The visual features of workplace architecture directly impact visual and psychological needs. Therefore, to enhance the performance quality of banks, these characteristics must be regarded as pivotal factors in workplace environments.

**Keywords:** *visual features, Workplace architecture, performance, employees, Private Banks.*

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## ***Introduction***

In the realm of visual identity within architecture and urban planning, defining and interpreting the surrounding environment, encompassing both internal and external spaces, holds significant sway over human behavioral science and society at large. Perceiving the environment entails a cognitive process of knowing and understanding, wherein sensory input is transformed into experiences of objects, events, sounds, tastes, and more. While perception can be studied across all senses, the majority of theories and studies focus predominantly on visual and auditory perception. Vision, in particular, accounts for over eighty percent of sensory input and is widely regarded as the primary means through which we understand the world. It serves as humanity's foremost mode of communication with the external world and is the most extensively developed sense, boasting the broadest range (Sadr, 2010: 9). Given these definitions, it becomes evident that vision stands out as the most fundamental sense, gathering a wealth of information from the surrounding environment and conveying it to the brain. Consequently, the significance of vision extends beyond architectural structure to its profound impact on behavioral sciences within environmental psychology. Throughout history, the assessment of harmony and order in architectural endeavors has traditionally revolved around four key systems: functional, structural, physical, and human. Organizing architectural elements according to the visual system for environmental perception—both internal and external—directly correlates with human cognition and the influence of behavioral sciences on the environment. The physical-visual aspect of architectural landscapes occupies a crucial position within the realm of visual perception due to its role in shaping mental images of the environment and imbuing spaces with evocative qualities. Despite the recognition of visual elements as pivotal factors in shaping the visual quality of the environment, there remains a dearth of information concerning their relationship with the elicitation of emotions (Taharian et al., 2016: 25).

Visual elements and features encompass a diverse array of organized visual components that delineate the identity and attributes of a specific landscape area. They facilitate readability and enhancement of the landscape while also playing a crucial role in aiding orientation and wayfinding within the environment. These elements shape concepts of understanding, foster a sense of place, time, and objects, and define the relationships between them in architecture and urban planning (Bahmanesh, 2018: 31).

## ***Literature Review***

Safi et al. (2019), in their research titled "Evaluating the Characteristics of Sleep Quality of Employees and its Relationship with the Parameters Related to the Light Sources Used in the Work Room," concluded that the performance, level of alertness, and concentration of employees at work can be affected by various physical factors, including lighting parameters in the work environment. Physical factors in the work environment have a direct effect on the visual, mental, and health needs of individuals. Therefore, to improve the quality of indoor spaces, lighting as a physical factor in work environments should be considered. The results showed that low performance levels can be significantly improved by modifying lighting conditions and light sources, including lighting intensity and color temperature.

Rezaei and Sarrouri (2019), in their research titled "Evaluation of the Quality of Office Environments on the Level of Vitality and Job Satisfaction," found that office environments are where employees spend half of their day. Their studies resulted in a model comprising five factors: space form, space dimensions, environment usage, space components, and color and light, which influence employee satisfaction in the work environment. In general, the examination

of various factors shows that proper lighting, adequate ventilation, ease of communication between employees and clients, and respect for privacy, especially for women, can play a key role in employee performance and job productivity.

Azimi (2021), in their research titled "Characteristics and Design Solutions of Creative Work Environments," concluded that innovation and creativity are important factors for the success of any workgroup in today's world. A creative group can be more successful in the competitive market and provide more effective solutions for various crises. Proper design can create a suitable platform for cultivating creative ideas and innovation in work environments. Studies show that both non-physical and physical environmental factors are effective in increasing creativity. Encouraging creativity, teamwork, social interactions, and job challenges are non-physical factors, while flexibility, visibility, natural light, color, space, and furniture are physical factors considered in creative workspaces.

Papatisma and Linartz (2020), in their article titled "Personal Office Lighting for Daytime Health and Improved Sleep," concluded that optimal lighting has many positive features that increase comfort and safety in indoor environments. Furthermore, the beneficial effects of good lighting extend far beyond initial expectations. Over the past two decades, medical science has consistently shown that natural daylight positively affects human health and performance. Daylight regulates human physiology, behavior, and the sleep-wake cycle by directly stimulating the brain's internal timing mechanisms. Harrison et al. (2020), in their research paper titled "Studying the Effectiveness of the Combined Implementation of a Multi-Component Lighting Intervention for Hospital Shift Workers," found that since humans spend most of their time indoors, indoor lighting should be designed to incorporate as much daylight as possible, supplemented by artificial light that adapts to human needs in the absence of daylight. This approach ensures the best visibility and suitability. A characteristic of the modern lifestyle is the mismatch between circadian and social clocks, a condition known as social jet lag, which can have severe effects on human health and well-being. Kralioka et al. (2021), in their research titled "Analysis, Evaluation, and Improvement of Workplace Lighting Design," found that the visual demands of work, satisfaction with light, and shift work are associated with an increase in health problems and discomfort. Proper lighting design can mitigate these issues.

Belia et al. (2021), in their research titled "The Role of Architecture in Determining the Non-Visual Effects of Light," found that night shift workers are more prone to vision discomfort, headaches, and related symptoms. Exposure to artificial light at night disrupts the circadian rhythm. Fukumura et al. (2021), in their research titled "Workers' Views on the Use of Artificial Light in Office Work Spaces," found that dynamic light affects people's health and performance.

### ***Methodology***

The purpose of this research entails examining relationships through a questionnaire, thereby conducting survey research. Within this study, the variables related to the visual characteristics of workplace architecture were treated as independent or predictor variables, while performance served as the criterion or dependent variable. This research falls within the applied and evaluation research group regarding purpose, the quantitative research group concerning data, and the field research group regarding method. The nature of this study is correlational research

### ***Statistical Population***

The statistical population comprises all employees of private bank branches in Rafsanjan city,

totaling 388 individuals. A sample is taken from this population to represent it. To determine the required sample size, Cochran's formula is applied. Based on this formula, 290 individuals were selected, and random stratified sampling was employed according to the stratum sizes.

According to Cochran's formula, a sample size of 290 individuals was determined. During the questionnaire distribution stage, 310 questionnaires were distributed. Subsequently, 290 completed questionnaires were collected from employees.

Row	name	Number of Employees	The number of statistical samples
1	Mellat	240	148
2	EN Bank	24	22
3	Sina	14	14
4	Parsian	23	23
5	Pasargad	20	19
6	Karafarin	24	22
7	Shahr	20	19
8	Sarmayeh	23	23
total		388	290

Table 1: Names of banks

$$1 + \frac{\frac{z_{1-\alpha/2}^2 \times p \times q}{d^2}}{1 + \frac{\frac{z_{1-\alpha/2}^2 \times p \times q}{N \times d^2}} - 1} = 290$$

$\frac{4.70 \times 0.5 \times 0.5}{0.0036}$   
 $\frac{4.70 \times 0.5 \times 0.5}{1163 \times 0.0036} - 1$

### Data Collection Tool

Various tools are available for collecting information, each suitable for recording specific data. To acquire the necessary data for this research, the researcher must employ appropriate tools and subsequently analyze and process the collected information to test the formulated questions or hypotheses. In this study, a questionnaire is utilized as the primary data collection tool.

### Data Analysis Method

In the data description section, demographic indicators and research variables were characterized using frequency distribution and descriptive statistics. For hypothesis testing, Spearman's correlation and Kendall's Tau-b correlation (for quantitatively non-normal variables) were employed. Additionally, the one-sample Kolmogorov–Smirnov test was utilized to assess the normality of the variables. Data analysis was conducted using SPSS version 19 software, with a significance level set at 0.05.

### Quantitative description of the variable

The descriptive indices for the research variables are presented in the table below.



	Component	Mean	Standard deviation	Median	Skewness	Kurtosis	Min	Max
Visual characteristics of the architecture		3.70	0.53	3.72	-0.73	0.90	1.73	4.73
	Light	3.74	0.71	4.00	-0.71	0.37	1.33	5.00
	Color	3.66	0.68	3.66	-0.25	-0.08	1.67	5.00
	Space	3.71	0.72	3.66	-0.25	-0.33	1.67	5.00
	Shape	3.68	0.72	4.00	-0.38	-0.18	1.50	5.00

Variable descriptive index values of the visual characteristics of the work environment architecture and its components

Based on the table provided, the mean score for questions related to each variable has been computed as the value of these variables. Consequently, based on the calculated averages, the visual characteristics of the work environment architecture and its components exhibit high mean scores, indicating a predominance of high ratings. This observation is further underscored when considering other descriptive indicators.

### ***Examining research hypotheses***

#### ***Main Hypothesis 1***

H0: There is no correlation between the visual characteristics of the work environment architecture and job performance in private banks in Rafsanjan city.

H1: There is a correlation between the visual characteristics of the work environment architecture and job performance in private banks in Rafsanjan city.

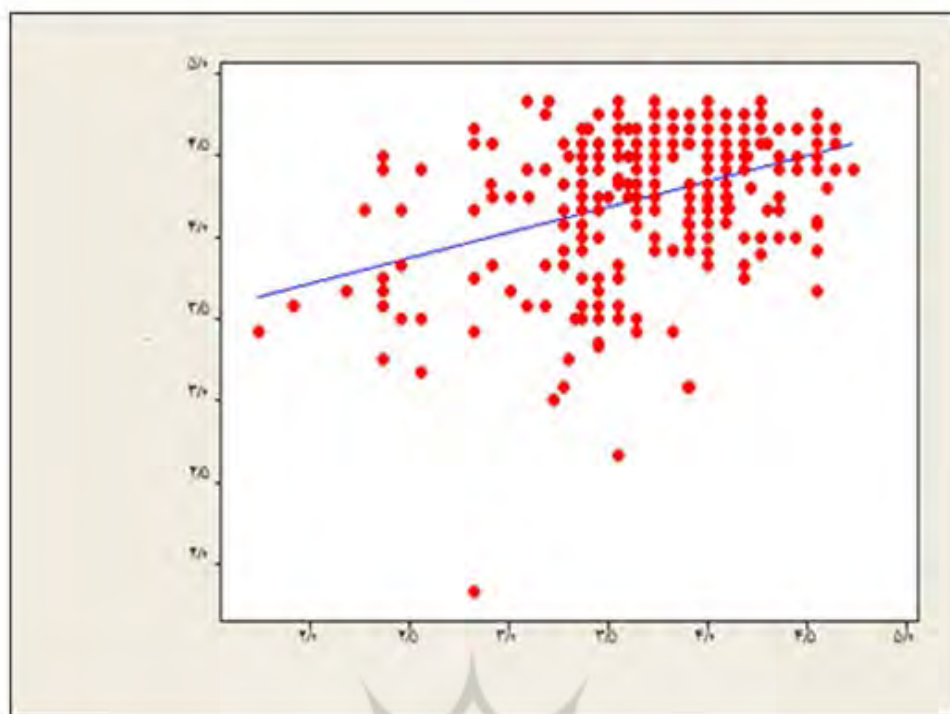
Spearman and Kendall's Tau-b correlation coefficients were used to examine the relationship between the visual features of workplace architecture and job performance. The results of this analysis are presented in the table below.

The correlation coefficients between the visual characteristics of the workplace architecture and job performance

Correlation Coefficient	Correlation Coefficient Value	Number	Significance	Relationship Existence	Relationship Type
Spearman	0.312	290	<0.001	Exists	Direct
Kendall's Tau-b	0.216	290	<0.001	Exists	Direct

These results indicate that there are significant correlations between the visual characteristics of the workplace architecture and job performance, and these correlations are direct.

Based on the results of the correlation test, the Spearman correlation coefficient is 0.312, and the Kendall's Tau-b correlation coefficient is 0.216. These values indicate a significant relationship between the visual characteristics of the work environment architecture and job performance. The positive correlation coefficients suggest a direct relationship, implying that as the visual attributes of the work environment architecture increase, job performance also increases. This observation can be further supported by examining the scatter plot.



Dispersion of visual characteristics of workplace architecture \* job performance

#### Sub-Hypothesis 1:

There is a correlation between the visual characteristics of the workplace architecture and work standards in private banks in Rafsanjan city.

H0: There is no correlation between the visual characteristics of the workplace architecture and work standards in private banks in Rafsanjan city.

H1: There is a correlation between the visual characteristics of the workplace architecture and work standards in private banks in Rafsanjan city.

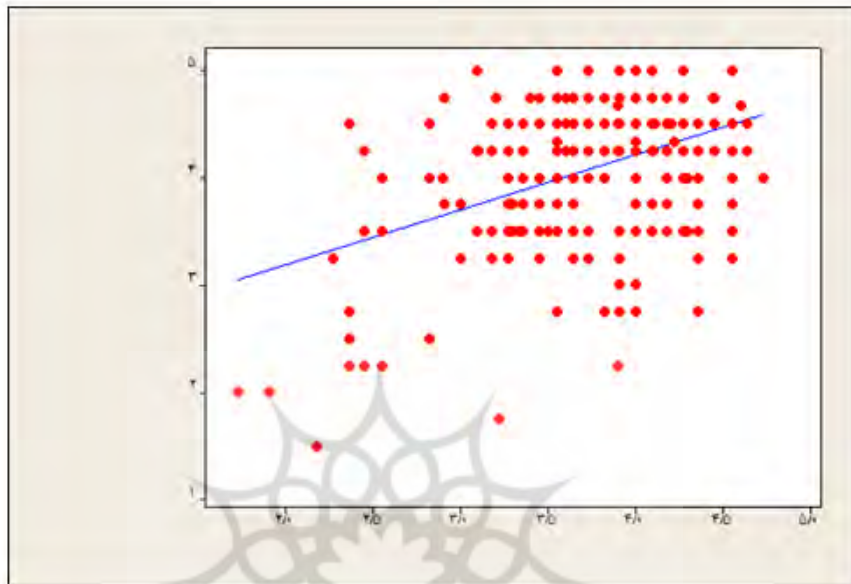
Spearman and Kendall's Tau-b correlation coefficients were utilized to investigate the relationship between the visual characteristics of the workplace architecture and work standards. The outcomes of this analysis are presented in the table below.

The Spearman correlation coefficient and Kendall's Tau-b correlation coefficient were used to examine the correlation between the visual characteristics of workplace architecture and job performance criteria.

The Spearman correlation coefficient and Kendall's Tau-b correlation coefficient were used to examine the correlation between the visual characteristics of workplace architecture and job performance criteria

Correlation Statistic	Correlation Coefficient Value	Cases	Significance	Type of Relationship
Spearman	0.317	290	<0.001	Direct
Kendall's Tau-b	0.233	290	<0.001	Direct

Based on the results of the correlation test, the Spearman correlation coefficient is 0.317, and the Kendall's Tau-b correlation coefficient is 0.233. These values indicate a significant relationship between the visual characteristics of the work environment architecture and work criteria. Since the calculated correlation coefficients are positive, it indicates a direct relationship between these two variables. In other words, as the visual characteristics of the work environment architecture increase, so do the work standards. This relationship can be visually confirmed by examining scatter diagram 4.



The dispersion of visual characteristics of workplace architecture with work criteria.

#### Sub-Hypothesis 2:

There is a correlation between the visual characteristics of the work environment architecture and ethical standards in private banks in Rafsanjan city.

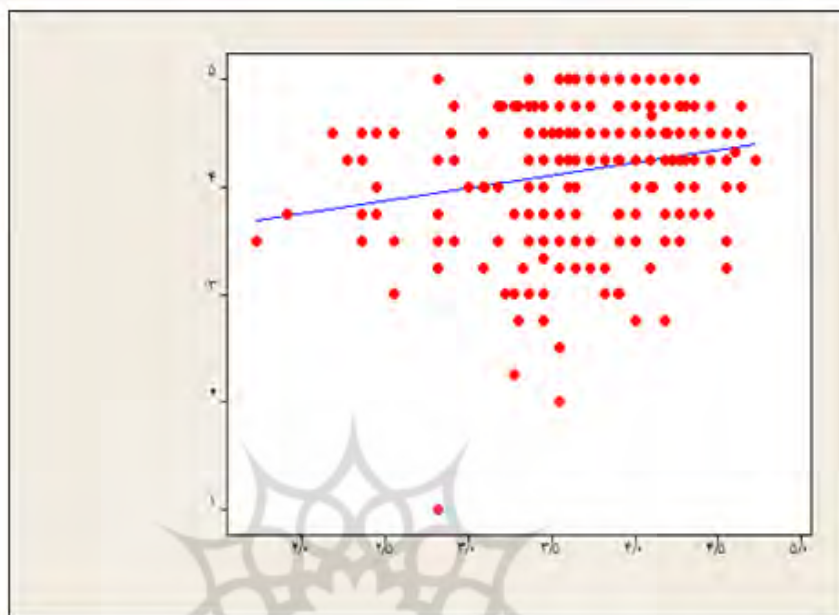
H0: There is no correlation between the visual characteristics of the work environment architecture and ethical standards in private banks in Rafsanjan city.

H1: There is a correlation between the visual characteristics of the work environment architecture and ethical standards in private banks in Rafsanjan city.

Spearman and Kendall's Tau-b correlation coefficients were employed to investigate the relationship between the visual characteristics of workplace architecture and ethical criteria. The results of this analysis are presented in the table below.

Correlation Statistic	Correlation Coefficient Value	Cases	Significance	Type of Relationship
Spearman	0.190	290	<0.001	Direct
Kendall's Tau-b	0.133	290	<0.002	Direct

Based on the results of the correlation test, the Spearman correlation coefficient is 0.190, and the Kendall's Tau-b correlation coefficient is 0.133. These values indicate a significant relationship between the visual characteristics of the work environment architecture and ethical standards. The positive correlation coefficients suggest a direct relationship, implying that as the visual attributes of the work environment architecture increase, ethical standards also increase. This observation can be further confirmed by examining the scatter plot.



The dispersion of visual characteristics of workplace architecture with ethical criteria

### ***Sub-hypothesis 3***

There is a correlation between the visual characteristics of workplace architecture and value criteria in private banks in Rafsanjan city.

H0: There is no correlation between the visual characteristics of workplace architecture and value criteria in private banks in Rafsanjan city.

H1: There is a correlation between the visual characteristics of workplace architecture and value criteria in private banks in Rafsanjan city.

Spearman and Kendall's Tau-b correlation coefficients were employed to examine this relationship. The results of this test are presented in the table below.

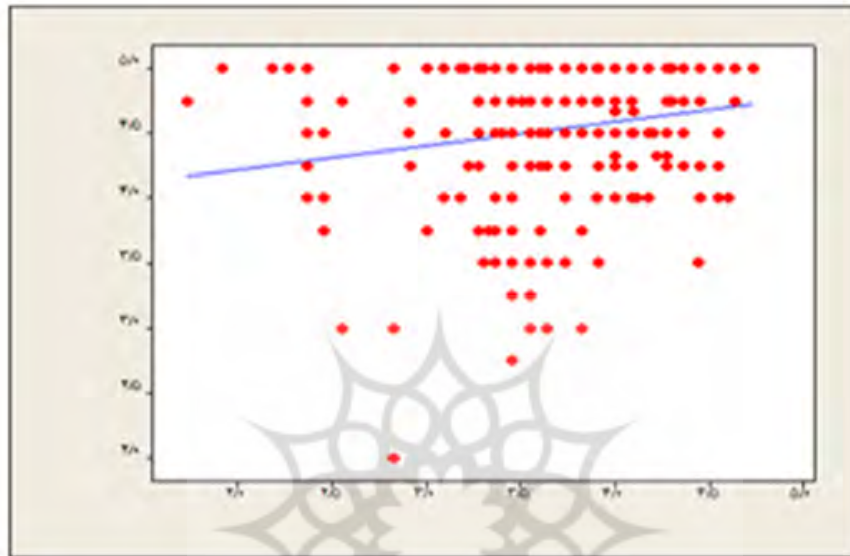
The Spearman correlation coefficient and Kendall's Tau-b correlation coefficient between the visual characteristics of workplace architecture and value criteria.

Based on the results of the correlation test, the Spearman correlation coefficient is 0.191, and the Kendall's Tau-b correlation coefficient is 0.140. These values indicate a significant relationship between the visual characteristics of the work environment architecture and the value criteria. The positive correlation coefficients suggest a direct relationship, implying that as the visual attributes of the work environment architecture increase, the value criteria also increase. This observation can be further confirmed by examining the scatter plot.



The Spearman correlation coefficient and Kendall's Tau-b correlation coefficient between the visual characteristics of workplace architecture and value criteria.

Correlation Statistic	Correlation Coefficient Value	Cases	Significance	Type of Relationship
Spearman	0.191	290	<0.001	Direct
Kendall's Tau-b	0.140	290	<0.001	Direct



Scattering of visual characteristics of workplace architecture \* value criteria

## Discussion and Review

The findings of this research indicate a direct correlation between the visual characteristics of workplace architecture and the conducive creative atmosphere with job performance. These findings align with those of Nahaqiq Rezaei and Sarrouri (2019), who emphasized that office environments serve as employees' primary living spaces for a significant portion of their active waking hours. Consequently, the long-term quality of office spaces significantly impacts employees' lives and performance.

Adopting a free plan layout, provided it aligns with employee needs and respects technical construction principles, presents a promising approach to office space design. The culmination of these studies has led to the identification of a model comprising five critical factors (space form, dimensions, usage, components, color, and light) effective in enhancing employee satisfaction in the work environment.

In essence, the examination of various factors underscores the pivotal role of proper lighting, ventilation, effective communication channels between employees and clients, and privacy considerations—especially for women—in bolstering employee performance and productivity across the board.

Additionally, Golabchi et al.'s research (2013) supports these findings, highlighting the significant impact of various internal factors on personnel performance. These factors include traffic, air and noise pollution, as well as internal elements such as health, safety, proper lighting, win-

dow type, equipment age, space layout, presence of music, space size, and color. As employees spend the majority of their working hours in the workplace, the influence of internal factors on their performance outweighs that of external parameters. Consequently, the specifics of internal workspace design will vary based on the organization's activities and strategies, employee preferences, and organizational culture.

The research findings of Bagheri and Lal Bar (2017) also emphasized the profound impact of colors on human psychology. Humans have always been influenced by the colors of their environment, a phenomenon that has sparked human interest and curiosity. Our world comprises two essential elements: shape and color. The influence of color on human life is immense; it is unimaginable to conceive of life without it. Color is a remarkable and vital aspect of existence, imbuing human life with emotion and passion. It enhances the perfection of form and brings it to life. Where there is light, there is color. Color manifests in the presence of light. Hence, it can be asserted that color and light are inseparable; thus, the visual characteristics of color in the work environment profoundly impact employee performance. Also, The findings of Moidi and Kamel Nia's research (2016) underscore the significance of work environments in people's lives. An office building serves as an individual's primary work environment, akin to their residence. With individuals spending over half of their waking hours in office spaces, these environments have become pivotal and significantly impact job performance. Their investigation concluded that several ergonomic factors within the work environment, such as adaptability and adjustability of furniture and equipment to match individuals' body dimensions, office design facilitating interaction with colleagues and managerial changes, and the quality of the indoor environment including thermal and visual comfort and indoor air quality, directly correlate with employee job performance. Among these factors, furniture compatibility based on individuals' body standards, comfort in hearing, and ease of interaction with colleagues exerted the most significant influence on job performance. Also, The findings of a comprehensive study (1400) highlight the importance of innovation and creativity in the success of any work group in today's world. A creative team can outperform competitors in the market and offer more effective solutions during crises. Research suggests that the physical environment significantly impacts employee satisfaction and productivity, ultimately enhancing overall efficiency. Therefore, proper design can establish an environment conducive to cultivating creative ideas and fostering innovation in the workplace. Studies indicate that both non-physical and physical environmental factors play vital roles in enhancing creativity. Non-physical factors include encouraging creativity, fostering teamwork, promoting social interactions, and presenting challenging tasks. On the other hand, physical factors such as flexibility, visibility, natural light, color, space, and furniture are essential considerations in designing creative workspaces. Also, the research findings from Harrison et al. (2020) emphasize the significance of indoor lighting design. Given that humans spend the majority of their time indoors, it's crucial that indoor lighting maximizes daylight exposure while also incorporating artificial light that can adjust to human needs in the absence of daylight. This approach ensures optimal visibility and suitability in indoor environments. On the contrary, the findings of Papatisma and Linartz (2020) highlight the numerous benefits of optimal lighting for enhancing comfort and safety in indoor environments. Moreover, they suggest that the positive effects of good lighting extend beyond initial expectations. Over the past two decades, medical research has consistently demonstrated the positive impact of natural daylight on human health and performance. Natural daylight directly influences the internal timing mechanisms of the brain, thereby regulating human physiology, behavior, and the sleep-wake cycle. Similarly, the research conducted by Balesh Zar and Tabebadi (2017) underscores the relevance of environmental architecture in relation to job performance. They propose that aspects

such as adaptability, understanding, support, and feedback within the environmental framework significantly impact job performance. Furthermore, Ahmadi's research (2015) aligns with these findings by indicating that workspace and environment can significantly influence work efficiency and job performance.

**Conflict of Interest:** The authors declare that they agreed to participate in the present paper and there is no competing interests.



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