

# **Designing the Contentment: Investigating the Effects of Office Environment and Physical Design on Employee Satisfaction**

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## **Abstract**

Workplace environment is important for measurement of employee satisfaction in influencing organizations to increase safety awareness, workplace comfort and employee productivity in an organization. It can make employees more comfortable to adjust work so that work is safer, efficient and can increase productivity. Based on previous studies, there are so many factors that affect employee satisfaction in the office environment. Employees will realize that the organization should provide the best conditions to improve employee health and safety. Therefore, this study aims to examine how the office environment and office physical design affects employee satisfaction in selected organizations. Next, this study measures the most contributing factors towards employees' satisfaction in order to ensure the health, comfort and well-being of workers. In addition, the earlier researchers that were involved in this study were mentioned. This study included multiple regression analysis, descriptive analysis, normality analysis, reliability analysis, Pearson's correlation analysis, and determined how the independent and dependent variables relate to one another. This research is based on a sample of 107 respondents. Data for the research was collected mainly through the administration of questionnaires and analyzed statistically using SPSS software to produce results to answer the research objective. The findings of the study showed that both office environment and office physical design have significant influence on employee satisfaction. The result also found that the office environment factor influences more on the employee satisfaction rather than physical office design.

**Keywords:** Office environmental, Physical design, Employee satisfaction, Safety awareness, Office design

## **1. Introduction**

Employee satisfaction is an important factor for organizations to consider. Most organizations work hard to ensure that their employees are happy with the working environment they're in. In recent years, designers have made significant progress in improving employee satisfaction by incorporating elements from the workplace environment into new office designs (Sander et al., 2019). The improved working conditions make work more comfortable and also make work tasks easier. The satisfaction factor in the workplace is very important because it is an indicator of one's work productivity as well as affecting career development and organizational development (Rahayu et al., 2019). Employee satisfaction will be created, when there is a feeling of happiness or fun to go to work. To obtain good work performance, organizations need employee activities and productivity in line with organizational goals. The high level of explained variance of self-assessed productivity support of various office activities by user satisfaction with the facilities, the organization and the working processes shows that both the social and physical environment including various facilities matter (Groen et al., 2019). Many factors affect employee satisfaction, such as organizational culture and leadership. However, many people think that the physical environment of an office is

just as important as the actual office design itself. Many people have different opinions about what makes an ideal office environment. Generally speaking, an ideal office environment consists of a good temperature, clean air and a quiet environment without excessive noise or dust. Apart from these factors, various design elements should also be considered when designing an ideal office space. For example, attractive décor can help create a more relaxed atmosphere and boost employee morale. Additionally, having a good lighting setup helps with productivity at work as well as with everyday tasks such as reading or completing household chores (Anyon, 2017).

Office environment concept became a standard in many large corporate environments. The concept was to maximize efficiency and reduce environmental clutter by aligning office spaces with natural daylighting or temperature (Ahearn et al., 2010). Essentially, the intention was to create work areas that were comfortable and well ventilated, yet contained minimal visual clutter. Adhering to such principles in the design of new offices improves employee working conditions and productivity. A number of factors contribute to employee's satisfaction based on the office environment. These include the number of natural light sources, window transparency, ventilation, noise level and temperature. According to Edwards & Torcellini, (2002) natural light sources such as windows or skylights allow direct illumination of work spaces without the need for artificial sources such as fluorescent fixtures. Transparency to sunlight is also extremely important for providing sufficient natural light. In addition, cool temperatures promote restful concentration and reduce eye fatigue, so regulating air conditioning is critical as well. Extensive research also demonstrates the importance of minimizing sound levels and maintaining a calm atmosphere. Employee satisfaction is an important factor for any business to consider when creating a healthy office environment. It is essential for companies to understand the different factors that contribute to employee satisfaction in order to create an environment where employees feel valued, respected, and motivated (Raziq & Maulabakhsh, 2015). This article explored the most important factors that contribute to employee satisfaction in the office environment, including job security, job flexibility, recognition of achievements, and work-life balance. Job Security One of the most important factors influencing employee satisfaction in the workplace is job security. Without job security, employees may be at risk of losing their livelihood – or even their jobs at all. For example, if a company has been consistently underperforming and is on the verge of bankruptcy, it would not likely be able to retain its current employees for long. In such a situation, it would be very difficult for an individual to find stability in his or her career through this organization and is likely to feel unsatisfied.

When people think of the workplace, they often think of busy streets or cubicles in an office building. These existing spaces make people feel comfortable and safe at work. However, some workplaces lack features that encourage employee satisfaction. This is because these spaces can make or break an organization's success. To improve the working environment, employers should consider making changes to office physical designs. One factor that contributes to employee satisfaction based on office physical design is furniture or any equipment in terms of workplace ergonomics, is harmonizing work equipment to the surroundings. The chairs available on the market today do not have all the parameters that the ergonomic or health chairs should contain (Horváthová et al., 2019). The Physical Office Design, as well as the seats, are important to individuals who spend their days in the workplace. The depth, height, form, and even color of your desk may have a big impact on how much gets done at the end of the day, as well as your employees' mood. Office equipment must be large enough to accommodate employees in office workstations. Use of chairs has a major impact on the employee's productivity, for individuals who work from 9am to 5pm. At an office, the chairs must be comfortable enough to avoid back discomfort and in the long-term working hour. Findings of the close relation between working conditions and health has made the ergonomics principles necessary to use in a widespread manner. The working postures have a great importance in creating a comfortable working place while the operator's health is maintained (Isler et al., 2018).

Other long-term health issues that might affect an employee's well-being. Office environment and Office Physical Designs critical to an employee's general health as well as their productivity. This is because when a person is doing their work and is sitting in an awkward position, the office temperature is not comfortable or too cold, and doing the same thing over and over may damage their morale and their profession, which is the cause not just physical pain but also stress. As ergonomically designed furniture can decrease complaints of pain and occurrence of injuries, increase productivity, improve morale, and decrease work-related musculoskeletal disorders (Khan et al., 2017). An ergonomic office environment considers not only the physical elements of the job, but also the psychological ones. Office furniture, lighting, and temperature are some of the physical aspects that might impact productivity directly or indirectly. Employees may relate with an adequate salary based on a quality work environment, but what needs to be done by organizations to employees is to provide a safe and healthy work environment for employees in order to boost productivity. Bad office environment affects employee productivity. Setting standards for furniture

arrangement, equipment, temperature and ventilation in an office environment helps employees stay focused and productive. Employee satisfaction promotes better worker productivity and therefore higher company profits. The effectiveness of employees in the workplace is very important because it is a direction of productivity as well as affecting career development and organizational development. Proper understanding of workplace ergonomics may not only improve employee performance but organizational competitiveness in the long run (Abdullah et al., 2016). Employers and workers must collaborate on methods to make the work environment more ergonomically friendly for everyone without sacrificing productivity. Excellent personnel help to increase the quality and quantity of excellent services. Employees that possess all of the positive characteristics required by the company will undoubtedly be able to provide high-quality job outcomes and ensure the firm's goal is realized. Employees often encounter obstacles and experience setbacks when trying to complete their duties and tasks (Peterson & Byron, 2008). Pro-active workers and have an initiative attitude are those who make an effort or something before being compelled by circumstances or directed to do it. Employees proactively try to improve the suitability of their workspace through environmental crafting, motivated by minimizing demands and maximizing resources (Roskams & Haynes, 2021). The workplace environment may be thought of as a mix of environmental pressures that lead to health problems and environmental resources that lead to engagement. Findings from Clemens (2006), state, working environment can have a major impact on our attitudes to our work and in turn on our personal efficiency and productivity. Ergonomics is one of the things that needs to be emphasized. Ergonomic solutions with a good workplace environment will often increase productivity. Low standard of environment not only decreases productivity and performance but also demotivates the employees (Riaz et al., 2017). It refers to methods of modifying the office environment and practice in order to avoid injuries and mental stress from affecting corporate production. An organization's management is regarded to have effectively provided ergonomic value to employee health and well-being if it can develop or bring any technology, equipment, processes, or work practices that can minimize pain, cut compensation costs, tiredness, and discomfort.

The concept of workplace satisfaction is gaining importance these days. The term generally signifies the emotional and behavioral responses of employees to their work environment. Employers must ensure that their workplaces are friendly to their employees and promote a positive work environment for them. This is necessary to retain good workers and to create loyal employees. Also, a poor workplace environment can lead to low employee satisfaction and productivity. Therefore, employers must take special care in designing their workplaces. According to research, there are several critical success factors that determine how satisfied an employee is at work. These include various aspects of the office environment such as lighting, noise level and temperature. All these factors contribute toward the overall work satisfaction of employees at work. Other than that, the physical environment of an office also is a big contributor to employee satisfaction in office environments.

Office environments and office physical design are vast areas that are important to public safety and health. Although it is often dealt with in organization, it can also be used in everyday life, especially in terms of safety and comfort of life. Office environment is built on the understanding that patients and members of their social networks play an increasingly important role in managing their health and healthcare across multiple settings including home, workplace, and community (Valdez et al., 2019). As a result, research should be conducted to enhance the comfort, safety, and health of officers and employees working in office environments by designing suitable and safe workstations and workspaces while taking into consideration the safety aspects advised by researchers. Using office equipment incorrectly has a detrimental influence on one's health and life. As a result, it is critical for employers to design and arrange office workplaces to offer a healthy atmosphere for employees in order to prevent and avoid any negative health impacts. Office equipment should be arranged neatly, safely and within easy reach so as not to be easily injured, dropped as well as chairs according to the height appropriate to the work surface so that employees can work in the correct body position. The workplaces that implement good work design will be uniquely positioned for competitive, reputable, and resilient operations. The design of good work contributes to health, engagement, and productivity (Karanikas et al., 2021).

Major problems that employees experience is their health condition, especially neck, shoulder, backbone and hands. Sitting arrangement or comfortable furniture for a workplace has a serious impact on the health of the user (Riaz et al., 2017). In other ways, creativity in arranging furniture and appliances is encouraged in order to be able to create a more comfortable and cheerful office atmosphere as well as non-threatening safety and Health. Factors of the internal physical environment of an office stated to be very important and affect their work performance. Choosing the right type of lighting at the workplace, be it a staff room or wide area is extremely important if you want to

maximize productivity and employee well-being. Employees work on the computer for an average of 2 to 7 hours. It is observed that most of the employee's face problems related to eyes (Kumari et al., 2010). This study aims to determine the relationship between office environment (Lighting, Noise Level, Temperature) and Office Physical Design (Equipment, Spatial Arrangement, Furniture) towards employee satisfaction. The findings of this study show that an office environment is very vital in terms of increasing employees' productivity and affecting employee satisfaction. Comfortable and ergonomic Office Physical Design motivates the employees and can increase their performance substantially.

## 2. Literature Review

Employee satisfaction is one of the important components in work motivation and is important in ensuring that employees always show good performance on the job (Amalia, 2018). The excellence of a person's organization starts from the level of job satisfaction of the employees they have by the organization. Employees who have a high level of job satisfaction will indirectly lead to his own excellence themselves, organizations and even the country. An employee's feelings towards his work will be detected by the management through the level of satisfaction the work owned by the employee. Employee satisfaction is influenced by a number of elements in each organization. It's because productivity is directly related to a goal achievement, it's understandable that employers are concerned about this issue (Bernstein & Turban, 2018). The productivity of an organization depends on quality of work performance. (Carol & Florah, 2019) as citing (Gummesson, 1998) defines employee satisfaction as the ability of a worker to produce quality outputs with limited inputs. The productivity of knowledge workers is crucial not only for organizational innovation and competitiveness but also for sustainable development (Kianto et al., 2018). Job satisfaction is an important factor that can affect work productivity. With job satisfaction an employee can feel whether the work is fun or unpleasant to do (Ekhsan et al., 2019). It is important for employees to have a high level of job satisfaction in their lives because employees actually spend a long time in their lives working to generate their respective economies. Given this situation, research on job satisfaction has been found to be one of the studies which is most often carried out in the field of psychology. It is necessary to see for yourself the level you have by an employee while working. Level of job satisfaction by an employee will affect how he is behaving and how effective the work done by them. Anything that makes the employees uncomfortable including chairs, desks, workstation, lighting, temperature and noise levels can affect productivity (Jaafar et al., 2019) supported by (Hameed & Amjad, 2009) found that a comfortable and ergonomic office design motivates employees and substantially increases their performance. Employee satisfaction is a performance measure encompassing both efficiency and effectiveness, therefore, there is a performance metric that includes efficiency as well as effectiveness (Bhatti & Qureshi, 2007).

### 2.1 Office Environment

Office environment should be conducive to work-related tasks and provide a quiet, healthy environment for all employees. Discomfort level of the operator in the workstation often was associated with workstation design, posture comfort operator at work, activity which involved work and place influence environment such as heat, noise and lighting (Gani et al., 2018). Creating a secure, noise-free environment and providing ample storage space are essential elements in ensuring employees' safety and mental well-being. Employers should consider air circulation, lighting, temperature control, ventilation and window space to provide a comfortable working environment for workers. Good planning ensures that the space is organized in such a way as to effectively promote productivity by creating different work states. For example, separate spaces should allow for concentration, socialization and relaxation without disrupting the workers' activities as well as a good room temperature. Ergonomics is concerned with the office environment and workplace equipment such as workstations, computers, chairs, lighting, noise level, room temperature could be tailored to fit and enhance employee health, safety and performance (Olabode et al., 2017).

Office environments are also related to adapting tasks to workers through a scientific approach. It is a review of how well your tasks can be completed without straining your body and without risking long-term health. An office environment without ergonomic inputs can lead to the development of musculoskeletal disorders among staff in an organization (Olabode et al., 2017). According to Berhan (2020), strategies and procedures as well as the proper implementation of the same to improve the health and safety of employees at the workplace. Office Environment is primarily concerned with adapting the work environment to the needs of the person. It's generally accomplished with the help of effective organizational structures or specialized technologies. One of the most important factors that influences employee satisfaction is aptitude, which involves matching mental work to the individual. A study

conducted by Manjunatha and Ram, (2016), found that the productivity was increased by reducing shoulder and wrist injury and fatigue for an individual workplace intervention of workplace evaluation among workers. A good office environment can help employees achieve work objectives while increasing effort, comfort and eliminating work stress. Tolerance should be practiced to reduce work pressure. Findings Jaafar et al. (2019), regarding the problem of knowledge of ergonomics, stated that ergonomics is a science concerned with the fit between people and their work. It puts people first, taking account of their capabilities and limitations. Office environment aims to make sure that equipment, information, task, workstation, and the environment fit each worker (Chandrasekar, 2011). Based on the study done by White (2008), lighting may affect the employees both physically and psychologically. Physically, inadequate lighting will increase employees' fatigue due to the excessive eye strain. Meanwhile, psychologically, inadequate lighting may decrease the employees' morale and reduce the quantity and quality of the employees' performance. Lighting provides workers with sufficient visibility at night so they can function well during nighttime hours. Lighting can actually make a workplace uncomfortable and distracting. Readiness can be influenced by many factors, including office lighting, which can impact one's visual comfort, work performance, and health (Van Duijnhoven et al., 2021). In addition, giving workers control over their lighting has been demonstrated to increase productivity and workplace satisfaction (Mendis, 2016). However, lighting condition at their working environment could cause eye tiredness to them, and that they needed to change their posture for better viewing of the objects or work area due to low illuminance levels or lighting disturbances example flickering lights, glare sources and unwanted shadows (Vahedi & Dianat, 2013). Other than that, employees will feel more satisfied and comfortable if the temperature of the office surrounding is at a good level. If the temperature is low, the employees may feel sleepy and not eager to do their work. This situation may have a negative impact on the employees' productivity as well as their performance. Lim and Loke (2016) has indicated that the office temperature should be set to a certain level where the employees feel comfortable and restful. Therefore, stable temperature in the workplace may improve production quality and help minimize the work stress and thus will ensure the employees are able to perform their jobs well.

### 2.1.1 Lighting

Many risk factors in the work environment that affect the safety and health of workers, one of which is lighting. According to Gordon (2015), regarding lighting factors there are 5 lighting systems in the office room which are direct lighting, semi direct lighting, general diffuse lighting, semi-indirect lighting and indirect lighting which affects the safety and health of workers. One of the options is to use digital business tools not only in areas such as production or planning but also in areas of assessing the working environment, namely in the assessment of lighting (Dupláková et al., 2019).

### 2.1.2 Noise Level

Noise around will interfere with one's communication. Communication effectiveness is important in the workplace to increase levels of work quality efficiency (Chuang, 2013). Disruption of communication while working can cause a high risk of accidents at work. This pattern of results was mediated by perceived noise levels at work, with employees in open-plan (vs cellular and shared-room) offices reporting less satisfactory noise perceptions and, in turn, lower well-being scores, especially regarding the cognitive (vs affective) dimension (Otterbring et al., 2020).

### 2.1.3 Temperature

Temperature, relative humidity, and inadequate ventilation are all factors that impact indoor air quality. Poor indoor air quality causes discomfort, has a negative impact on health, leads to absenteeism, and reduces productivity. People are working in a number of different climate conditions; by increasing the temperature, the performance of any task can negatively reduce. The health of an employee will also be affected negatively as there is an increase in cardiovascular stress because of temperature it also affects the performance (Riaz et al., 2017).

## 2.2 Office Physical Design

Many factors influence the effects of the office physical design, for example spatial arrangement, equipment and lighting. All of these elements must be examined in order to evaluate and enhance workplace visual ergonomics and prevent visual and musculoskeletal disorders. Spatial arrangement or comfortable furniture for a workplace has a

serious impact on the health of the user (Riaz et al., 2017). In that means, spatial arrangement which is irregular has a significant bad effect on employees. Another factor, Choosing the proper office furniture may help boost your employees' morale and productivity. Employees are more likely to like working in a nice atmosphere. According to Deb and Sinha (2010), the importance of spatial planning has become more prominent which has to be in line with the objectives of an organization. Interaction and communication that suit the environment would lead to a positive alignment. In addition, Deb and Sinha (2010) also explained that the design of spatial arrangement and its consideration can be the most substantial strategy in Human Resource in enhancing the possibility in balancing the workers with their individual job and teamwork assignments. Furniture is another important concern in designing an appropriate office that managers must pay attention to, such as adjustable office furniture for desks and chairs, which can support the employee's productivity (Van Der Voordt, 2004). When designing office equipment, there are many things to consider and several sources to reference for ergonomic principles, anthropometrics, fit and function of a product (Openshaw & Taylor, 2006). If the equipment has an ergonomic design and is user-friendly, they can considerably affect the findings of the study (Ng et al., 2014). According to new research, workplace design deals with the shape, the dimensions and the layout, for example the placement and orientation of the different material elements that surround one or more working persons. Examples of such elements are the seat, the working surfaces, the desk, the equipment, the tools, the controls and displays used during the work, but also the passages, the windows, the cooling equipment (Marmaras & Nathanael, 2021).

The physical environment in which we work shapes our emotional and physical state of mind at the same time that it helps us to achieve our objectives. It provides a peaceful or noisy atmosphere and defines our work space by arranging our workstation, office supplies and furniture. In research from (Lah et al., 2015), allocation of different types of space for different kinds of office activities, results in an organization to seek for more efficient use of space and facilities, better performance, higher user satisfaction, positive image, increased flexibility and better use of resources. The spatial arrangement of equipment, furniture and spatial arrangement creates a sense of order and comfort in which we can focus on our work (Postell, 2012). Effective use of physical office space requires good planning and a workable structure. Physical design elements include workspace arrangement, ventilation, and layout. Workspace arrangement refers to the spatial arrangement of desks in an office space. It addresses issues such as whether tables or chairs should occupy workers' space most effectively. The comfortable workplace is known as the proper ergonomic working environment (Chandra et al., 2009). Ergonomics is the information such as the behavior of the human, limitation and capacity of human that applies on the machines, designs of tools, tasks, and environment for secure, comfort and beneficial for human use (Fazi et al., 2017). Ergonomics should be considered well in the design stage and the pre-occupant and post-occupancy inspections should be used to evaluate the actual environment (Chim, 2019). From creating equipment that is tailored to each individual's body, actions, and cognitive skills. Ergonomics aims to enhance workspaces and environments to minimize risk of injury or hurt (Sirisha et al., 2019).

### 2.2.1 Equipment

Among the three independent variables, office equipment is among the main observations that involve computer workstation. The prevalence of musculoskeletal pain in neck, elbow, shoulder, wrist, hand, back, waist, leg and knee has decreased after intervention (Motamedzade et al., 2021). As shown in Figure 1, employees should be made to undergo periodic training on office ergonomics issues such as correct sitting posture, the right way to use and adjust computer monitor to avoid neck, back and eye strain, how to reduce stress and strains in repetitive work and how to avoid injury and disorders at the workplace (Asante, 2012). The equipment should be user friendly. Organizations should follow the guidelines provided by the Occupational Safety and Health Administration (OSHA) and be encouraged to purchase adjustable equipment for accommodation of the users (Michaels & Wagner, 2020).

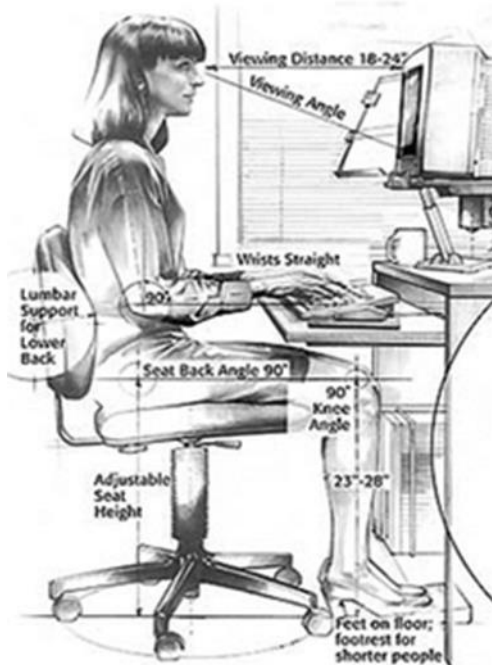


Figure 1: Computer workstation variable (Source: Asante (2012))

### 2.2.1.1 The Dimensions of Office Ergonomics

#### i) Eyes and neck

Sit right facing the monitor. Change the height of the computer monitor to that level appropriate, upper part the monitors are on the same level with your eyes, by nodding or looking up at the screen. Incorrect monitor positioning can cause neck and eye strain, and can lead to poor seat positioning, which creates pressure on the back. Costello, the ergonomics consultant, says the top of your monitor should be positioned just above your eye level when you're seated. This is the best place for your "vision cone," your most immediate field of vision, which starts at the top at your eye level and descends at a 30-degree angle (Asante, 2012).

#### ii) Arms

Shoulders in a flat position and the back is erected and fully supported. To keep wrists and arms at an optimum position, reducing the risk of repetitive-motion injuries, your keyboard and mouse should be at the same level as your elbows when you're seated (Asante, 2012).

#### iii) Wrist, Legs and Knees

Adjust the height of the keyboard so that the shoulders are at rest or neutral, the elbows are in a slightly bent position and the wrists are straight. The knee is bent at an angle of 90 degrees. Both feet are flat on the floor (Asante, 2012).

### 2.2.2 Spatial arrangement

The improper design of the working environment, stretching the physiological and psychological boundaries have a negative effect on the individual and the performance of the human system (Berenyi et al., 2015). These factors will affect employee behaviors at work. This is also issued by a study from Jaafar et al. (2019) stated, the composition and arrangement of equipment, workstations and workspaces that are not convenient can result in discomfort while performing work tasks and resulting adverse effects to employer's health. When this situation persists, it can affect the operations as well as productivity of the organization.

### 2.2.3 Furniture

The furniture in the workstation should be designed to facilitate task performance, minimize tiredness and injury by fitting equipment to the body size, strength and range of motion of the user (Khan et al., 2017). The furniture that to choose at the office space should be comfortable. That can bring the employees to be comfortable while they're working, but also want the office to look good. Office furniture is available in a wide range of safety, there are sure to find something that fits employee needs. In this study, the method of the office design and productivity model from the theoretical framework adopted from Asante (2012) can be shown with two independent variables.

#### Independent Variables

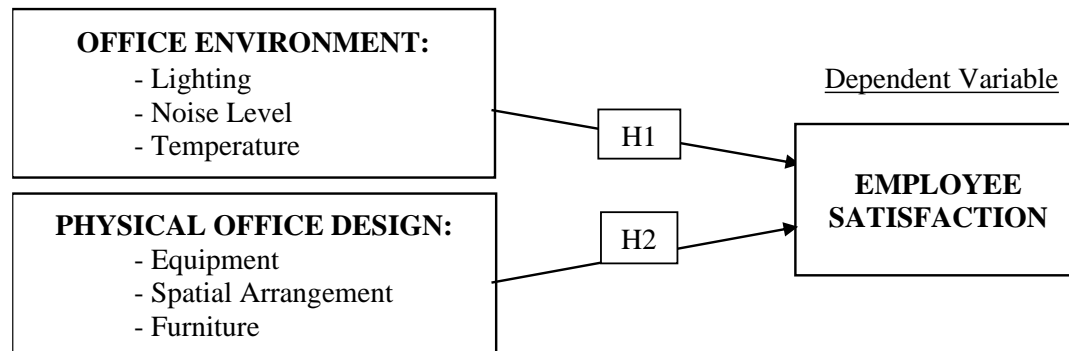


Figure 2: Office Design and Productivity (Adopt from: Asante (2012)).

### 2.3 Research Hypothesis

The following are the hypotheses concerning to this study:

- i) There is a significant relationship between Office Environment (Lighting, Noise Level, Temperature) with Employee Satisfaction;
- ii) There is a significant relationship between Office Physical Design (Equipment, Spatial Arrangement, Furniture) with Employee Satisfaction;
- iii) There is a significant relationship between Office Environment (Lighting, Noise Level, Temperature) and Office Physical Design (Equipment, Spatial Arrangement, Furniture) with Employee Satisfaction.

## 3. Methodology

The research design used for this research is correlational study with descriptive studies. In order to gather all the information and analyze the data is to determine the actual correlation factor between office environment including lighting, noise level, temperature and office physical design including equipment, spatial arrangement and furniture towards employee satisfaction. The convenience sampling method was used in this investigation because it is the best way of getting information quickly and efficiently. As shown in Figure 3, the minimum total sample size is 89 calculated using G\*Power Tool with 150 questionnaire distributed among repondents. However, only 107 were returned to the researcher.



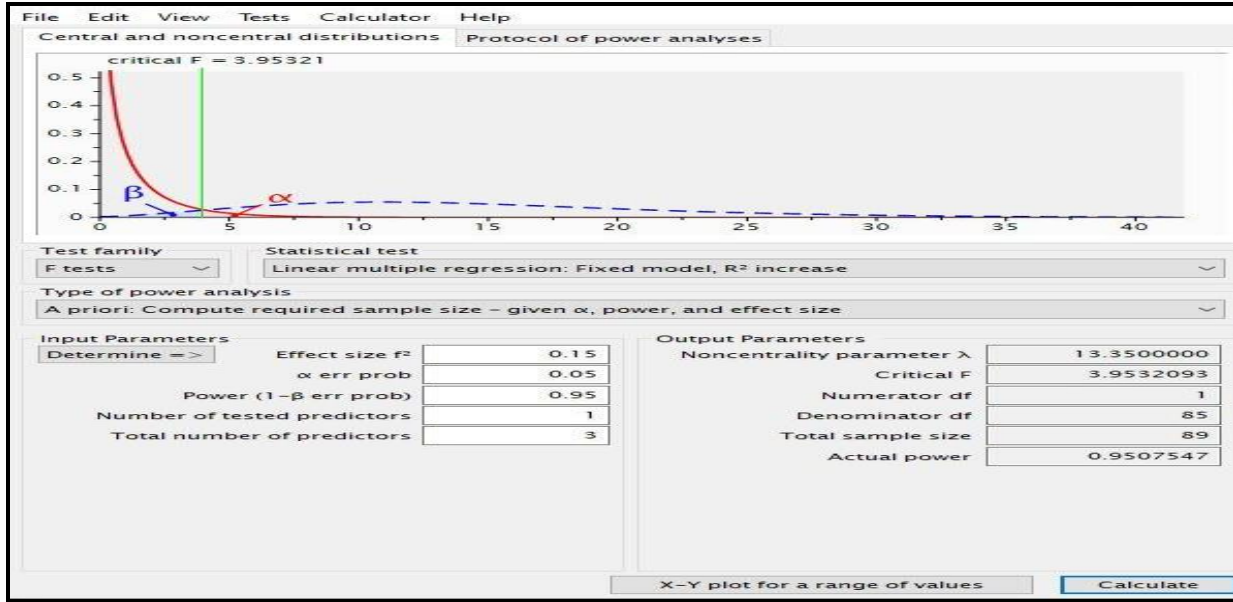


Figure 3: G-Power tool.

This research used a set of questionnaires as the instrument to collect all the data. The questionnaire was designed based on the research questions that were prepared earlier by research done by Ravindran (2019). The instrument design for this research study was constructed from the combination of two studies to measure the theoretical model of this study Office Environment and Physical Office Design. The questionnaires were divided into four sections: one section for demographic and one section for employee satisfaction and other two sections from the independent variable as office environment and office physical design factors. The two sections from the IV used a Likert scale. The questionnaire was the primary method for data gathering. A questionnaire is a series of questions that translates the researcher's information demands into a set of precise questions that respondents are willing and able to answer.

## 4. Results and Discussion

### 4.1 Demographic of the Respondent

As shown in Table 1, for gender it shows that 61 were male (57.0 %), meanwhile a total of 46 were female (43.0 %). Most of the respondents were between 20 to 30 years old which were 12 of them (11.2%). This is followed by 81 (75.7%) of them were 31 to 49 years old. Meanwhile, only 14 (13.1%) of the respondents were aging, ranging from 50 years old and above. For level of work, majority of the respondents were occupied by top management which are 37 respondents (34.6%). Meanwhile, 42 (39.3%) of the respondents were hired on middle management. Then, other remaining respondents that were entitled for support staff have been recorded as 28 (26.2%) only in this study.

Table 1: Demographic of the Respondent

Variable	Label	Count	Percentage
Gender	Male	61	57.0%
	Female	46	43.0%
Age	20 – 30 years old	12	11.2 %
	30 – 49 years old	81	75.7 %
	50 years and above	14	13.1 %
Level of work	Top management	37	34.6%
	Middle management	42	39.3%
	Support staff	28	26.2%

#### 4.2 Correlations Analysis

Table 2 shows the correlation analysis results of all independent variables; Office Environment (Lighting, Noise Level, Temperature), Office Physical Design (Equipment, Spatial Arrangement, Furniture) are significantly correlated with the dependent variable; Employee Satisfaction at  $p < 0.01$ . First correlation, Office Environment (Lighting, Noise Level, Temperature) are significantly correlated with strong correlation ( $r = -.594^{**}$ ,  $p < 0.01$ ). The second correlation, Office Physical Design (Equipment, Spatial Arrangement, Furniture) are significantly correlated with a strong correlation ( $r = -.550^{**}$ ,  $p < 0.01$ ).

Table 2: *Result of Correlations Analysis*

Independent Variables	Dependent Variable (Employee Satisfaction (ES))	
Office Environment (EOF)	Pearson Correlation	-.594**
	Sig (2-Tailed)	.000
Office Physical Design (IOP)	Pearson Correlation	-.550**
	Sig (2-Tailed)	.000

According to Table 3, Model Summary, the result show value of R Square was .765, which means 76.5% variance independent variable: Office Environment (Lighting, Noise Level, Temperature), Office Physical Design (Equipment, Spatial Arrangement, Furniture). Meanwhile, 58.5 % can be explained by other factors that are not included in this research.

Table 3: *Model Summary*

Model	R	R Square	Adjust R Square	Std. Error of the Estimate
1	.765 <sup>a</sup>	.585	.577	.34804

- a. Predictor: (Constant), Office Environment (EOF), Office Physical Design (IOP)
- b. Dependent Variable: Employee Satisfaction

Table 4 ANOVA shows F value is 73.380 at 2 degrees of freedom (df), with P value significant at 0.00 where  $p < 0.01$ . Therefore, the test of significance can proceed to each objective of this research. The objectives are tested by referring to the results of the Coefficients Analysis.

Table 4: *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.777	2	8.889	73.380	.000 <sup>b</sup>
	Residual	12.598	104	.121		
	Total	30.375	106			

- a. Dependent Variable: Employee Satisfaction
- b. Predictors: (Constant), Office Environment, Physical Office Environment.

As shown in Table 5, the finding shows that there is a significant relationship between office environment (Lighting, Noise Level, Temperature) and Employee Satisfaction ( $B = .577$ ,  $p < .000$ ). Thus, H1 was supported for this study. the study intends to investigate whether Office Physical Design (Equipment, Spatial Arrangement, Furniture) had the most influence on employee satisfaction. The H<sub>2</sub> were tested using the regression analysis as well. Based on the result shown in Table 5, it was found that Office Physical Design (Equipment, Spatial Arrangement, Furniture) has a significant relationship with Employee Satisfaction ( $\beta = -.277$ ,  $p = .000$ ). it was found that Office Environment (Lighting, Noise Level, Temperature) (EOF) factors have the most significant relationship with Employee Satisfaction (ES).

Table 5: *Coefficient Analysis*

Variable	Standardized Coefficients (Beta)	Sig.
(Constant)		.000
Level of Employee Satisfaction with Office Environment (EOF)	.577	.000
Impact of Office Physical Design (IOP)	-.277	.000

a. Dependent Variable: Employee Satisfaction

### 4.3 Summary

Table 4.11

*Summary of Research Hypotheses*

	Research Hypothesis		r value P value	Result
H1	There is a significant relationship between office environment (Lighting, Noise Level, Temperature) towards employee satisfaction;		r = .929 p = .000	Supported
H2	There is a significant relationship between Office Physical Design (Equipment, Spatial Arrangement, Furniture) towards employee satisfaction.		r = .912 p = .000	Supported

Based on the findings, there is a significant relationship between office environment and employee satisfaction. Therefore, H1 is supported. The result of this research has proved that respondents of this study have a positive impact on their job satisfaction. The more positive employee satisfaction with the Office Environment including lighting, noise level and temperature. This finding is consistent with previous studies by Akbari et al., (2013), in other words, levels of noise and light by directly and indirectly affecting physical and mental aspects, impact human productivity and performance. Also improving its condition will have a positive effect on humans and their productivity.

The current findings show that the respondents have a positive attitude towards working place factors influencing his work satisfaction. It can be concluded based on factors in the office environment which are lighting where having a good lighting system will cause a decrease in eye fatigue and reduce visual disturbances. Office lighting refers to natural light and artificial light (Phillips, 2012). Natural light is a free resource that enters the office through window or skylight, whereas artificial light is the kind of light which is produced and designed by manufacturing (Hamidi et al., 2020). Energetic and high-quality lighting provides more adjustment between the employee and his work environment while the sound level does not show any negative effects of noise that is said to be noise pollution since the office environment is good. Uncomfortable temperature levels, more likely showed that the temperature level in the work environment has a negative effect on tasks that require performance concentration in investigations and mental tasks that require high mental power and measure performance in detecting the number of repetitive task functions.

Recent research also found out that the relationship between Office Physical Design (Equipment, Spatial Arrangement, Furniture) towards employee satisfaction, office furniture comprises desks, chairs, the filing system, shelves and drawers (Hodowu, 2019). Based on the findings, there is a significant relationship between Office Physical Design with employee satisfaction. Therefore, H2 is supported. The results of this study have shown that the respondents has a positive impact on employee satisfaction. Getting better Office Physical Design is given to employees, therefore, it can be increasing employee productivity and each task can be completed by each employee. Office equipment such as computers, printers, photocopiers, plotters among others have increasingly become the basic jobs tools in enhancing performance (Tatian et al., 2012). Several studies confirm that Office Physical Designs

are a significant factor with employee satisfaction. An important source of support for the above findings emerges from the researcher. Cheong Friedenreich et al. (2020) stated the physical elements in workplace have a positive correlation with the employees' satisfaction and it can be concluded that a good environment is likely to increase the satisfaction with work with three significant physical elements in workplace design correlated to the satisfaction with work are equipment, space seating and arrangement as well as interpersonal distance. The current findings show that the respondents have a positive attitude towards physical elements influencing his work satisfaction. In this study it was found that, furniture and equipment will affect the space towards employee satisfaction. This is crucial to ensure the employees can move freely. This study reveals that flexible workstations in office design allow individual employees to modify their workstation at their own preference and following the spatial arrangement.

Based on the result from the comparison between two independent variable values in correlation analysis, it is found that Office Environment has the most influencing factor rather than Office Physical Design. Therefore, based on the research objectives of the study, the researcher concluded that lighting, noise level and temperature factor is the most significant based on the study carried out to the employees. A good design and working to a specific time scale were strong drivers of personal productivity (Chadburn et al., 2017). This is because, based on factors of Office Physical Design including equipment, spatial arrangement and furniture in terms of employee satisfaction, professional groups such as senior officers are more satisfied with their office's internal physical environment than support staff. According to Lusa et al. (2019), identified temperature, noise level, amount of space, visual privacy, adjustability of furniture, colors, and textures, and cleanliness as such basic factors were ranked according to their strengths of impact on overall satisfaction.

## **5. Conclusion and Future Research**

In today's competitive business landscape, it's no surprise that employers are turning to office design as a way to improve employee satisfaction and productivity. However, there is still much to learn about how physical design and office environment can affect employee satisfaction. This article explores the effects of office environment and physical design on employee satisfaction, with a focus on how these factors can be used to create a contentment-friendly office. Firstly, physical design plays a major role in how employees feel about their workspace. For example, an open office plan can reduce feelings of isolation and increase collaboration and creativity. Additionally, providing employees with ergonomic furniture and equipment can reduce physical discomfort, leading to increased satisfaction. In addition to physical design, office environment can also influence employee satisfaction. A relaxed office environment encourages employees to take breaks and interact with their colleagues, which can lead to increased job satisfaction. Similarly, a noisy office environment can lead to feelings of frustration and distraction, resulting in a less enjoyable work experience. Finally, employers should consider how the office environment and physical design can be combined to create a contentment-friendly office. For instance, an open office plan combined with comfortable furniture and a relaxed atmosphere can create an environment where employees feel valued and appreciated. Furthermore, employers can provide employees with amenities such as break rooms, gyms, and even game rooms to encourage socialization and promote employee satisfaction.

In conclusion, office environment and physical design can have a significant impact on employee satisfaction. Employers should strive to create a contentment-friendly office by considering both physical design and office environment. By doing so, employers can create an office that encourages collaboration, creativity, and enjoyment, resulting in increased employee satisfaction. In conclusion, the relationship between factors influencing employee satisfaction was carried out in this study. From this research, the researcher manages to conclude the implementation of data and findings of analysis from the questionnaires. All the objectives were managed to be achieved because all of the independent variables do have a relationship with the dependent variable. For future research, we may select other dimensions for example from the demographic of respondents as variables for employee satisfaction factors because different factors may contribute to different values. Moreover, today's technical work environment actually requires work to be tailored to the employees rather than vice versa.

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## 7. Conflict of Interest Statement

The author, Nur Atiqah Rochin Demong, is a technical editor for this journal. It is important to note that her paper underwent the same blind peer review process as applied to all other submissions. Her editorial position within the journal had no influence on the evaluation or decision-making process for this article. The peer review and editorial decision were conducted impartially to maintain the integrity and fairness of the review process.

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