

# Redesigning the Workspace to propel Social Interaction: “Open” Workspace Plan for Productivity and Employee Wellness

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**Abstract:-** The physical environment influences the well-being and has a direct impact on how efficiently workers perform at the workplace. It is commonly assumed that employees who are content with their environment will work very effectively in general. The physical characteristics of the workplace environment have been repeatedly proven to have a major impact on employee conduct, perceptions, and performance. Previous studies on the impact of office design on consequences connected to the workplace have mostly been hypothetical and have produced varied and contradictory results. In addition to the social interfering theory's description of personal responses to office design modifications, we argue that employees' impressions of the larger work environment serve as a mediating factor in the link between office redesign and organizational commitment. Inside a financial services business, the effects of an office makeover that reduced workspace while increasing impressions of organizational culture and work-related attitudes are explored. The findings show that workers in the remodelled office environment reported lesser workspace and greater interruptions compared to individuals who continued to work in a cubicle layout, but that this outcome was limited by age group. With no age-moderating effects, staff members who were relocated to the newly renovated area expressed more positive evaluations of the culture and attitudes about their jobs. When findings are considered collectively, they support the hypothesis that redesigning offices is a successful method for bringing about organizational transformation. The primary goal of this manuscript is to review literature published in the last two decades on office workspace redesign and its impact on worker productivity and well-being. Also, a review and discussion of the "open" workspace plan as the future

**office plan for enhancing office collaboration and promoting social interaction among employees. Furthermore, the advantages and disadvantages of novel office space designs are duly elaborated.**

**Keywords:-** *Workspace; Redesign; Employees' commitment; “Open” workspace; Employee performance.*

## I. INTRODUCTION

Employees spend a large portion of their time inside. The physical environment has a direct impact on people's well-being and their performance at their jobs [1,2]. Inside the office, it is commonly assumed that employees who are content with their environment will work very effectively in general. Employee concentration and productivity are impacted by the workplace's temperature, humidity, illumination, and sound conditions. The physical characteristics of the workplace environment have been repeatedly proven to have a major impact on employee conduct, perceptions, and performance [2,3]. The elements of the workplace environment may significantly affect employee behavior, attitudes, and productivity, study has repeatedly shown. According to a recent study, it is frequently considered that employees who are happier with their working environments would tend to deliver higher job results [2,4,5]. User happiness is acknowledged as a crucial component of an organization's success and is viewed as a critical performance indicator [6]. This is supported by the theory that higher satisfaction levels raise morale and lower voluntary turnover. Other investigations discovered that workers' job happiness and workplace contentment are strongly correlated, but organizational commitment and desire to leave the company are indirectly associated [2,5].

A range of studies from business to psychological science and architecture have offered empirical support for the idea that physical environments have an impact on people's perceptions, attitudes, and actions [7]. Research has been conducted to address specific physical environments among various categories of people within this broad paradigm. There has been some discussion on how workplace environments affect employee attitudes and behaviors, particularly the effects of open-plan layouts. Such designs' results have produced a variety of results. "Open" workplace design advocates claim that these designs foster better employee collaboration and job satisfaction while lowering operational expenses and enabling flexible space utilization [5,7]. According to other research, "open" work environments reduce possibilities for team building, decrease supervisor input, lower happiness with the physical setting, and lower perceptions of unit effectiveness. Additionally, compared to private offices, "open" working offices have been shown in certain studies to lower motivation and job effectiveness. Nevertheless, "open" working spaces are the norm in the majority of large American and European firms, suggesting that, at least in the eyes of organizational decision-makers, the advantages outweigh the costs [3,7].

Long acknowledged as a visible expression of an institution's culture, the workplace environment [3]. The argument that workplace environments have battled to maintain progression with what has been occurring to institutions in terms of technology, business operations, clients, and marketplaces" complained just this reality, asserting that workplace layout and its concomitant physical symbols have only lately been recognized as variables that hinder or enabling organizational change." In an attempt to utilize objects to express intended alterations in organizational identity, experts advise businesses looking to transform the physical environment in order to make their cultures less bureaucratic or hierarchical [3,7]. Workplace design is one example of how the physical environment may convey perspective [8]. This practice has been referred to as object language, atmospherics, service scape, and more generally organizational artifacts. Organizational structures have been discovered to influence employee attitudes as well as convey information to both workers and outsiders about a company's strengths and traits. As a result, businesses may remodel their offices to modify the physical layout in order to influence corporate culture and reinforce desired changes in culture and strategy. Although office design has been considered to be symbolic and artifacts of an organization's culture, relatively little study has been done on the effectiveness of office design to modify corporate culture [2,8].

There haven't been many attempts to group aspects that may be used to categorize the physical environment within businesses, and the years that have followed haven't produced any frameworks that have gained general acceptance. Employee attitudes to work redesign are complicated to understand since many redesign initiatives contain opposing factors that influence employee responses. According to one viewpoint, the fact that there is no

established pattern of desired results in the physical surroundings of work settings like "open" design is a reflection of the variety of purposes that physical environments are expected to fulfill [2,3]. There are other factors that make it difficult to explain how workplace design could affect workers. First, there is less confidence in extrapolating from earlier work since the workplace environment has changed significantly during the 20th century, when many earlier research was undertaken. Additionally, modern workplace redesign initiatives differ from those made before. During that time, cubicles tended to replace single private offices in workplace renovations. Today's redesign initiatives include new procedures like reducing cubicle walls, increasing the number of alternate workspaces, and paying more attention to aesthetics and the environment. Furthermore, technical developments prevent direct comparisons; for instance, the requirement for physical file storage space is decreasing as more information is delivered electronically [1,5]. The typical age distribution of workers in today 's companies is youthful and increasingly diversified, confounding studies on workplace design and addressing the subject of how much older results still hold true for today 's youthful and more diverse generations of workers. Younger workers may have different expectations of their work experiences than their elder colleagues, who spent the most of their lives working in private, solitary offices [3].

How physical workplaces affect employee interaction in the course of work and employee happiness continues to be of interest[2,9]. Regrettably, nothing is known about these relationships. Numerous divergent empirical studies have been produced about how, for instance, the design of workplace settings influences employee attitudes and behaviour. The fact that research of these linkages has rarely been led by a theoretical approach is one rationale for these contradictory outcomes [9]. Despite the reality that several researchers have discovered considerable impact of physical environment attributes on workplace fulfillment, behavior, and performance as well as spillover impacts on work concentration and efficiency, many surveys have been unable to support a clear connection among these factors. As a result, the literature evaluations on a study of the impact of actual office settings on employees are presented in this paper. As a result, the impact of "open" workplace redesign on workers' performance and well-being is examined.

## II. MEETHOLOGY- REVISION OF PUBLISHED LITERATURE

Applying the Web of Science (WoS) showed published manuscripts in the area of "open" workspace design. 979 manuscripts on "open" workspace design have been published since 2003. Of these, 654 have been published in the last 10 years making 66.8% of the manuscripts published. Furthermore, 2,182 manuscripts have been published in all databases (WoS, Chinese Science Citation Database<sup>SM</sup> (CSCD), Derwent Innovations Index (DII), KCI-Korean Journal Database (KCI-KJD) and SciELO Citation Index) since 2003. 1,534 of which is published in the last 10 years making up 71.3 % of all

published research on the said topic. Figure 1 below indicates a sharp increase in the number of published articles on “open” workspace design.

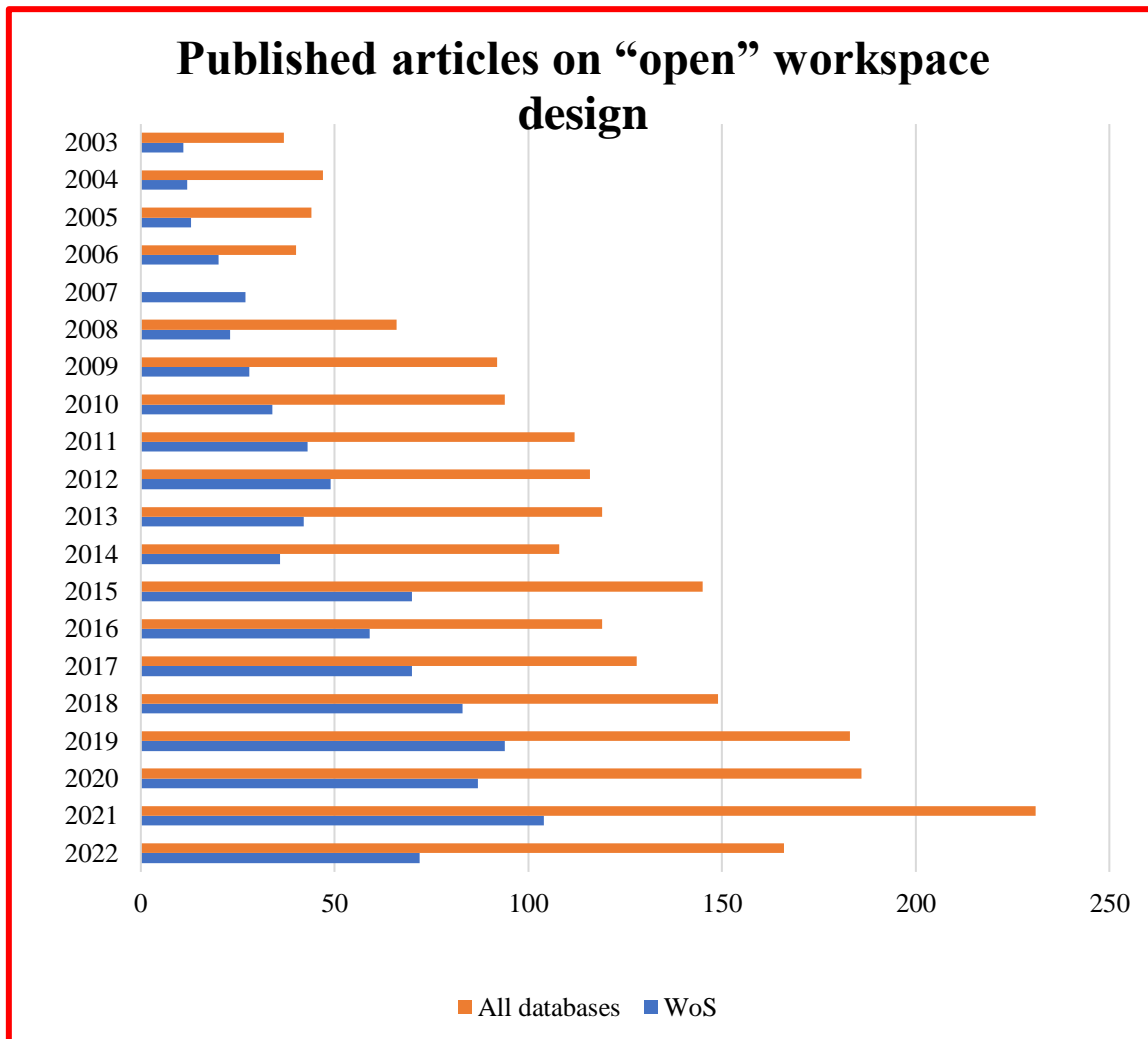


Fig. 1: A sharp increase in the number of published articles on “open” workspace design in both Web of Science (WoS) and all databases (WoS, Chinese Science Citation Database<sup>SM</sup> (CSCD), Derwent Innovations Index (DII), KCI-Korean Journal Database (KCI-KJD) and SciELO Citation Index) from 2003 to 2022 (Retrieved on December 12, 2022). Adapted from [10]

### III. WORKPLACE PLAN MODLES

#### A. Alternative workplace plan types

So how can companies create an environment that fosters cooperation and production whilst increasing worker satisfaction? There are a few solutions that have been shown to get past the drawbacks of open plan workplaces while maximizing the advantages of a more tranquil working environment.

A closed office, sometimes referred to as an enclosed office or a private office plan, employs cubicles and panels to divide personnel and provide privacy [11]. Each department has its own area in a closed office layout, and each employee has their own private workspace. These office designs offer a quiet area where employees can focus, which is a perfect alternative to the turmoil and noise of an open plan arrangement. Additionally, they aid in accommodating workers who perform better in situations that are cleaner and more organized. The following are the

main benefits of a closed workplace design: (1) The greatest option if you want to provide your staff privacy is a closed office layout. The worker feels secure and isn't distracted by outside noise thanks to the solitude of having a private, enclosed environment. In the decision-making process, privacy is crucial and can improve a worker's productivity and motivation, (2) Closed offices reduce the noise pollution that an open workplace layout produces. For enterprises like legal offices and financial institutions that need focus and distraction-free work, the decreased noise and enhanced privacy are fantastic and (3) Employees in a closed office have a better knowledge of where they fit, but those in an open plan workplace are free from hierarchy and defined rank. This is incredibly beneficial for those who do better under the direction of a mentor or leader, and it may be a fantastic motivator for employees to put in more effort if they want to advance in their team [7,12].

A cellular office layout features an open office floor plan but divides the area into more compact, private sections. Since it provides employees their own personal space while maintaining a sense of team cooperation, this style of office design is the ideal substitute for an open plan workplace[13]. Fully enclosed cells, stud partitions that go from floor to ceiling, or half-height separating walls can all be used to divide up cellular workplaces. Similar to closed office models, cellular offices provide a number of advantages, such as: (1) By removing the awkwardness of being scolded in front of other employees and giving them a calmer environment, the additional seclusion makes employees feel more confident and at peace. In addition to improving employee responsibility, the privacy aspect demonstrates to workers that they can be trusted to manage their own time and workload. This greater sense of accountability boosts employee morale and enables personnel to work more freely and intently, (2), The cellular office layout provides employees more control over their workspace and lets them customize and arrange it anyway they see appropriate. This gives employees the freedom to use their creativity to personalize and embellish their workplaces, which may boost motivation and happiness and (3) Employees that work in cellular offices are more considerate of one another's personal space and limit small talk, which can improve staff engagement and productivity. People often become more concentrated on their current duties and more silent in calmer work surroundings [3,8,9,13].

#### B. "Open" workspace design

Executives have transformed traditional office buildings into "open" architecture having less partitions, curtains, and various architectural obstacles in an attempt to promote better workplace cooperation. On how these architectural alterations impact people's interpersonal actions, there is, nevertheless, a scarcity of actual scientific evidence.[14]. Human attention has long been piqued by divisions between "us" and "them". However, in a time when the nature of work is evolving, executives and institutional intellectuals have progressively presented boundaries as obstacles to engagement that should be crossed, penetrated, or muddled to promote cooperation. This is true even though social researchers persist to research the significance of a wide variety of boundaries. To promote better cooperation and shared insight, "spatial barriers" at workplace, like cubicle partitions, are being eliminated to create open, "unbounded" workplaces. This is the most physically obvious and real instance[4,14]. Regarding the impact that eliminating spatial limits has on human behavior in the space formerly within those bounds, prior theory is split and empirical data is equivocal. In addition, psychosocial philosophy presents a convincing argument for why removing obstacles to human connection should increase cooperation and collective intelligence [11,15]. One of the most solid conclusions in

sociology is that proximity, or propinquity, predicts social contact that leads to the development of social relationships and, as a result, information sharing and collaboration. It has been noted in a variety of settings, including the US Congress. [16], 19th-century boarding houses, student residence halls, labs, co-working spaces, and business structures [1,4].

When spatial impediments like restrictions are removed, individuals experience increasingly physically close to each other. which, according to this idea, should promote increased involvement [17,18]. Such interaction is necessary for communal intelligence, a kind of generalized intelligence that develops through individual social interaction and which, more so than the intelligence of its individual members, predicts a group's overall ability to do a variety of tasks. Collective intelligence for groups of humans involves interaction, much like that found amongst intellectually simple entities[19,20]. Increased cooperation and shared intelligence may result in increased proximity fosters more engagement. Additionally, reducing geographical barriers has been linked to a reduction in cooperation and group intelligence, according to certain business experts, particularly social psychologists and environmental psychologists[19,21]. At various stages of interpretation, spatial divisions have been extremely helpful in helping people make feeling of their environment by integrating multiple them, defining who is looking and vice versa, who has information and vice versa, who is related and vice versa, who controls and vice versa, and to whom one response and vice versa [17].

According to this type of thinking, which is similar to ideas of organizational design and architecture, the physical limits of workspaces foster teamwork and communal intelligence by plummeting the negative impacts of the cognitive confines of the individuals who employ them[18,22]. Notwithstanding having more advanced intellect, humans may still need boundaries to limit their interactions and lessen the likelihood of overload, distraction, prejudice, and other constrained rationality symptoms[23,24]. As a result, studies dating back to the groundbreaking Hawthorne Studies demonstrates that being walled off might foster more contact inside the divided group[20,25]. Similarly, later workplace design study for reviews, while varied results, reveals that open offices might lessen several factors that promote cooperation and collective intelligence, such as worker contentment, attention, psychological privacy, and other affective and behavioral reactions. These unfavorable psychological impacts of open workplaces might theoretically result in less interaction, not more, amongst individuals who work there, decreasing teamwork and collective intelligence[5,20,26].

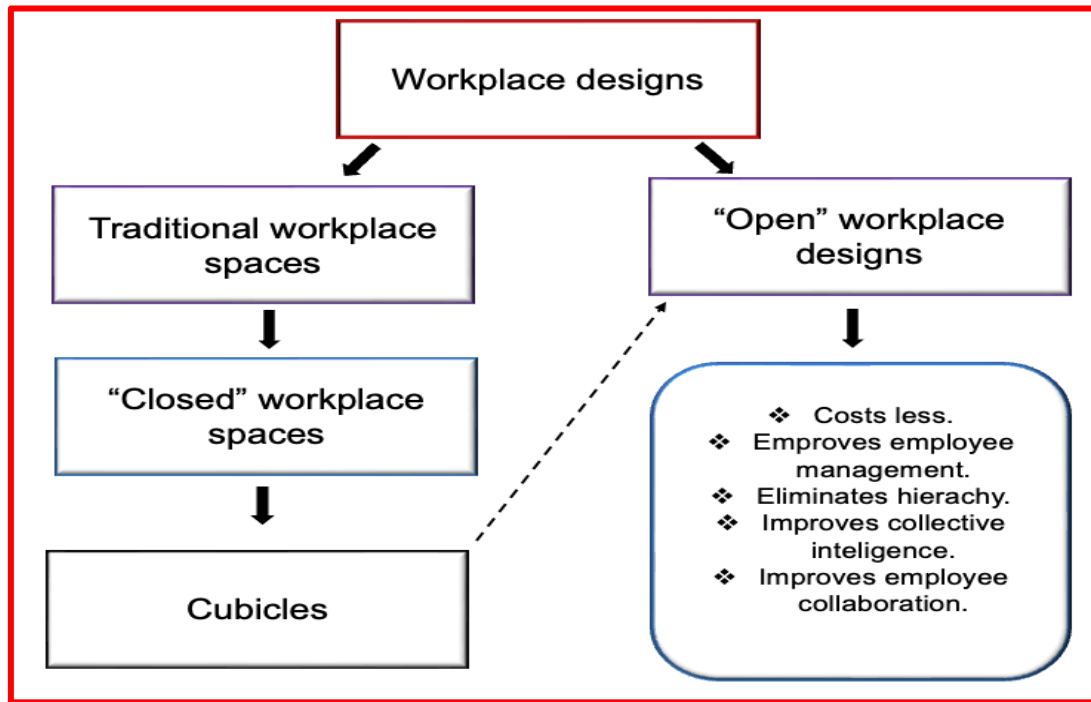


Fig. 2: Shows the conversion of traditionally closed workplaces to “open” workplaces

C. Feedbacks to “open” workplaces redesign

In order to foster greater face-to-face (FtoF) connection and a more dynamic work environment, Bernstein & Turban's group's two field locations converted their office structures into open spaces [4]. What they frequently see, as reported in a regular influx of information proclaiming the demise of the “open” workplace plan, is a large area filled with nearby colleagues who have chosen to isolate themselves as much as possible while putting up the greatest show of activity. To our knowledge, this is the first empirical study to look at the straight behavioral influence of “open”workplace plan on the quantity of FtoFand online engagement. Recent studies and prior research have looked at the self-reported discontent of workers in “open” workplace plan[4,18]. The next word of caution is how switching to an "open" workplace architecture may affect group intelligence (table 1 shows other advantages and recommendations of “open’ workplace plan). While we take from and differentiate between concurrent studies on swarm intelligence amongst social insects and certain additional creatures, there ismore tostudy about how communal intelligence operates.

Early research used the assumption that "open" environments would foster human collective intelligence, but the group's findings are consistent with more recent research that has started to cast doubt on this assumption. We discover that moderate (degrees of cues yield greater levels of collective intelligence when modeling the existence of many cues and the possibility of noticing them [4,22]. The conclusion that opens, "transparent" workplaces could be disturbance occurs and reduce work efficiency is closely related to the discovery that judgment accuracy is maximized in countable bounded, frequently small group sizes in complicated, realistic contexts. Comparable to open offices, new collective intelligence research reveals that too much information from social data may be detrimental. This is due to difficulties with attentional concentration as well as issues with more fundamental aspects of human cognition. For instance, another group showed that human cognition and collective intelligence are similar to the behavior of eusocial insects and that social learning possibilities are best restricted. Prosperity in social information was found to be detrimental to shared intelligence results [4,27].

Advantages	<ul style="list-style-type: none"> <li>• Aids employees complete their activities more conveniently, promptly, and productively.</li> <li>• Additionally, the designed architecture enables efficient use of additional space.</li> <li>• The ability to supervise and keep track of employees increases.</li> <li>• The speed and ease of communication are increasing.</li> <li>• It offers comfort and influences behavior and productivity of employees.</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• The efficiency with which police and staff operate.</li> <li>• Officer and employee productivity as well as the condition of coworkers who share similar traits in the workplace must be taken into account.</li> <li>• Equipment and paperwork need to be organized and set up in a methodical manner.</li> <li>• Reference files must be conveniently accessible.</li> <li>• There must be enough light, such as from an electrical source or artificial lighting.</li> <li>• The airflow must be sufficient.</li> </ul>

Table 1: Advantages of “open” workplace plan and recommendationsfor proper implementation [5,28].

According to this, Bernstein et al. (2018) discovered that social pressure that was intermittent rather than constant resulted in the highest performance from human participants when they were working together to solve complicated problems [4]. In their paper on collective intelligence and architectural design, A study reported that "collective intelligence is not just technical, but also overtly social, political, and by extension, professional." The aforementioned study provides factual support for the warning that there is more to the connection amid architectural design and shared intelligence than just technological factors[29]. The final word of caution is that switching to an open workplace layout may have varying consequences on various channels of communication. In several trials, openness increased email engagement while reducing FtoF interaction. Employees in the digital age have a variety of channels for communication at their disposal, and a change in workplace design may have an impact on their decision. These experiments highlight two additional effects that support earlier research on media richness that suggests productivity may be reduced when email replaces FtoF connection[29,30]. First, the physical proximity that newly planned workplaces aim to attain has a direct impact only on FtoF engagement, not on email, however promotes communication from FtoF to email since FtoF and email contact are driven by fundamentally distinct mechanisms. Consequently, implementing open workplaces seems to have the counterintuitive effect of decreasing rather than promoting productive engagement. Additionally, there are differences between email and FtoF networks. Even while one or the other has been the subject of earlier research, none have empirically connected FtoF and email network interaction to determine how well one serves as a proxy for the other. It was discovered that they are inadequate substitutes for one another. As a result, an intervention that switches a person's engagement from one network to another, like the "open" workplace plan redesigns examined here, skews both the channel and the nature of their interactions. That might have a significant impact on how and how effectively work is completed[4,31,32].

#### *D. Making "open" workplace plan work*

Each person is unique, thus not every employee fit into the same mold. Open floor plans and regular interaction may stimulate some people while exhausting and distracting others. Here are some ideas to keep in mind to make an open plan workplace work for all employees[13,17]. When it comes to open-plan offices, noise is one of the most common concerns. This is especially true if workstations are not divided by walls and employees frequently talk or shout at coworkers across desks. Numerous studies have demonstrated that excessive noise pollution in an office setting may negatively affect productivity levels, lowering attention, and elevating stress levels. According to research, 86 minutes are lost each day due to distractions, and over half of all workers claim to have trouble focusing. For employees, having an open office layout might be a nightmare, especially for those who are easily distracted [17].

Businesses may fight this by setting up "silent rooms" where employees can go and work quietly. These workplace

quiet areas are becoming prevalent now that businesses are giving workers soundproof offices or even tiny cubicles so they can work quietly. Giving workers noise-canceling headphones is another tactic to reduce noise in an open-plan office. Each employee can have a set of headphones at their desk, and offices can even offer a software or app that allows users to download relaxing music or guided meditations to listen to while working. Another excellent option is ambient noise, and many businesses now have green settings with water features to create a soothing background hum. And, it's true, sound-friendly workplace furniture is also available for purchase. These include file cabinets, office furniture, sofas, lounge chairs, and wall barriers that control the acoustics in offices to block out sound [1,2].

More often than not, introverts are quiet and reserved people who derive their energy from contemplation and isolation rather than from interacting with others. The open plan layout may be a living hell for introverts and have a significant negative impact on their productivity at work. In general, introverts appreciate their alone time and work best in a calm, private setting. The introvert prefers to maintain their attention on their task in an office setting rather than mingling or chit-chatting with other employees. Introverts dislike having their work flow or mental process disturbed by someone else's agenda and find interruptions and diversions to be exceedingly annoying [33]. Businesses may create a sense of seclusion for workstations by using partition walls or even plants as a barrier and a sort of noise insulation in order to assist introverts flourish in the workplace. Designated quiet areas and tools like noise-cancelling headphones would be quite helpful for introverts as well. Encourage employees to personalize their workstation with sentimental items or pictures of loved ones to create a cozy environment. To promote attention and relaxation, you may also designate specific areas with low illumination as silent spaces [17,33,34].

Extroverts get their energy from social engagement, whilst introverts benefit from solitude and calm environments. As a result, extroverts typically prefer open-plan workplace designs since they encourage communication and boost motivation and productivity. You may create collaborative spaces for extroverts where energizing conversations are encouraged to assist extroverts and introverts coexist harmoniously. Extroverts can also benefit greatly from creating a work recreation space where they can play games like pool or basketball with coworkers and socialize in an open dining area or patio with tables and chairs to promote interaction [35]. Sociable employees might participate in workplace tournaments to socialize and have fun with their coworkers. While most individuals treat one another with respect, some extroverts find it difficult to comprehend the introverted working personality. As a result, companies have to have talks with employees on the various personality types and how extroverts might conflict with their introverted team members. Since a lot of workers, even introverts, value good leadership, extroverts should be encouraged to guide and facilitate talks with other workers. Extroverts may be excellent meeting leaders by encouraging

participation from other team members or igniting idea exchange [7,26].

#### IV. DISCUSSION

Three components make up an organization's physical environment: a physical framework, physical stimuli, and symbolic objects [1]. The design, precise location, and physical arrangement of the office are all referred to as physical architecture. The term "physical stimuli" refers to events that take place in the workplace, such as incoming emails, phone calls, reports to read, and even scents. The aesthetics of the office space, including the colors, flooring material, furniture design, and general workplace décor, are sometimes referred to as symbolic objects. As previously mentioned, the results of workplace redesigns have been inconsistent, and the majority of research were done two to three decades ago [35]. The usefulness of ergonomic design components and a more effective use of space were the main foci of these redesign initiatives at the time. The upshot was that staff members were transferred from private, enclosed offices to cubicle workstations. It should come as no surprise that the decreased privacy and increased noise levels upset the workers who were subject to these redesign initiatives. This loss of privacy and space, which has both good and negative ramifications, is illustrative of the conflicts and trade-offs that Elsbach and colleagues claim are typical when attempting to determine the impacts of the physical environment [2,35].

In fact, there are a number of noteworthy instances when modifications in workplace design had unintended effects for the designers[3]. Since the advent of cubicles, office space layouts and designs have changed continuously, but study on the implications of these changes has lagged. In fact, in the literature on the physical environment in businesses, only a few research over the past ten years focused on responses to modifications in office layout. Because of this, not much is known about current changes in office settings. Technology advancements, office furniture, and the movement toward more ecologically friendly workplaces have all significantly changed the physical settings, often increasing usable workspace while decreasing square footage per employee [31,35]. An open plan office is one with a floor plan that encourages FtoF interaction amongst workers. Despite the fact that most open-plan offices contain a private conference room for meetings, the majority of the workspace is open, with every employee having a desk in the same area. The thought that co-working spaces enhanced the capacity to support invention and creativity while also assisting with networking gave rise to this contemporary type of office architecture [35]. Despite the fact that open plan offices may not seem to have a consistent design, they are expressly designed to improve collaboration while yet keeping some degree of privacy and designated workspaces [27,32]. With low cubicles or walls dividing certain working spaces in an open plan office, privacy is frequently reduced to a minimum. The main concept or aim is to promote interaction and prevent people from isolating themselves in their own environment, which makes it impossible for cooperation to take place [2,3,8,36].

The advantages of collaboration and creativity are two of an open plan office's main perk. The absence of a hierarchy and the inclusion of everyone in significant decisions and initiatives are both made possible by employees who can collaborate. Bringing individuals together promotes quicker learning, improved communication, and the exchange of more ideas. Since most organizations rely on brainstorming to come up with new concepts and ideas, having all employees in one location may help the ideas flow more quickly and include everyone in the process [8]. Along with fostering cooperation and increasing productivity, open plan offices are helpful for organizations since they are less expensive. The price of building, utilities, and office supplies are lower in open offices. With a shared workspace, all employees may utilize the same office supplies and tools, including printers. The open plan format also encourages this sense of belonging to a team among employees and creates a barrier-free environment, which improves staff management [1,2,8].

Whereas the principle of an "open" workplace plan appears alluring in concept, it has regularly attracted critiques. Among the primary problems with "open" workplace plan is the noise that keeps workers from working. Additional disadvantage of the "open" workplace plan work environment is that some individuals function effectively alone and their personal space. This is especially true for folks who need a well-organized workstation to be effective, such as introverts. An open-plan office's chaotic atmosphere frequently appears disorganized, which has a psychological impact on certain employees. The open-plan design may contribute to workers' feelings that they have little control over their surroundings, which might result in sloppier labor and tiredness [1,22]. There have also been studies that go against the open office concept's main goals of increased productivity and improved communication, indicating that the open office concept actually hinders face-to-face interaction while simultaneously lowering output. The same findings have been reached by other research, including a Swedish study that discovered open plan workplaces not only diminish employee happiness but also negatively impact cooperation due to an increase in emailing, texting, and instant messaging [1,3,5,26].

#### V. CONCLUSION

It is abundantly obvious from the scholarly evaluations that workplace settings have a significant impact on staff's attitudes, behaviours, satisfaction, and productivity. Employees are more inclined to claim that their office's temperature, water quality, lighting, and noise levels interfere with their ability to concentrate at work. Performance and interior surroundings condition are closely related. The biggest problem still lies in determining how to measure the impact of indoor environment quality on efficiency. The design of workplace space is a key element of the workplace that influences worker behavior. Traditional office layouts give workers enclosed private spaces. The more modern open-plan design, as evidenced by cubicles or partitioned offices, is distinguished by the absence of floor to ceiling barriers and internal limits. The idea of open-plan office utilization is continuing to spread

due to decreased costs and convenience. "Open" workplace ideas comprise old-style communal workplaces with many employees in one room as well as workplaces with separate terminals organized in an open space that is sporadically segregated by panels. When first developed, open office layouts were thought to offer a setting that would improve productivity and collaboration while costing less to build and furnish.

"Open" workplace settings proponents assert that because the space is adaptable, set-up and remodeling periods may be shortened. Additionally, it makes it possible to fit more personnel into smaller spaces. As a consequence, businesses need less overall office space and spend less on building expenses like upkeep and air conditioning. The open workplace concept's proponents also assert that the design encourages contact and interaction among staff members, which boosts happiness, morale, and productivity. In fact, there is some data to back up these beneficial effects. Compared to more traditional designs, open-plan workplaces have boosted group sociability, aesthetic judgment, and communication among coworkers. Despite physical costs being less than those of more intricate designs needing individual offices, the promised improvements in productivity and communication have not yet materialized. The savings brought about by a less expensive physical design could very well be offset by the absence of favorable results for employees and productivity. One element that might counteract the anticipated increases in productivity and efficiency is noise. Additionally, from the standpoint of the users, researchers have noted issues with open workplaces, such as noise, a lack of privacy, and other distractions. Each individual has a personal space that, when invaded, makes them feel crowded and unpleasant.

As a result, sentiments of crowding and privacy loss are apt to manifest when open-plan design's inherent intrusions on personal space surpass the comfort thresholds of the personnel. Employees working in open-plan workstations express their discontent and unpleasant responses as a result of these sensations of crowding and lack of privacy. Limited personal space and excessive unwanted interaction are the two major issues that influence privacy. Owing to information from several research, "open" workplace plan workplaces are related with poorer degrees of incentive, work fulfillment, and apparent solitude. Relevant speech has been connected to bad workplace views, decreased productivity, and stress in other research looking at subjective assessments of workers in open-plan workplaces. Offices with open floor plans have been cited as having stressful working environments by employees, and further investigations into these settings have found some evidence to support a link between open floor plans and fatigue, irritation, generalized distress, and health complaints like headaches and respiratory infections.

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#### AUTHOR CONTRIBUTIONS

**Mercedes Priscila Ada Asumu Mangue:** Conceptualization, Investigation, Formal analysis, Writing-Original Draft; **Writing-Review and Editing;** **Augustine Sarfo:** Writing-Original Draft, Formal analysis, Writing-Review and Editing; **Essah Paulina Adobe:** Resources, Methodology, Data Curation, Writing-Review and Editing; **Abdul Razak Adamu:** Investigation, Formal analysis, Writing-Review and Editing, Resources; **Nabil Issaka:** Writing-Review and Editing; **Eliasu Issaka:** Data Curation, Resources, Methodology, Validation, Writing-Review and Editing, Supervision.

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