

## A CASE STUDY

# Workplace design: A powerful tool for supporting employee performance

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### ABSTRACT

Smart organizations understand that their primary goal is to enhance the performance of their people. In a knowledge work economy, people are the engine that keep companies growing, adapting, improving and innovating. Not surprisingly, thoughtful workplace design can be a powerful tool for supporting employee performance, and a collateral benefit is that what typically supports productivity also enhances employee health and wellness – it's all interrelated. Given the nature of today's work processes, how can the workplace better support human performance? How can the workplace support all of the different activities involved with knowledge work – things like collaboration, creativity, innovation, deep thinking and mentorship? One way to better understand the nature of human performance is through a definition used by organizational psychologists, who believe it is enabled through a blend of ability, motivation and opportunity *i.e.* performance is a function of the three factors acting together. Ability has to do with whether a person can do a task. Motivation is a measure of whether a person wants to do it. Opportunity is about accessibility; a person can't do a task if she is not given a chance or if she is denied access to necessary resources or amenities. This framework – looking at human performance as being influenced by multiple factors – reflects the difficult and variable nature of our work today. All of these factors must be supported by the work environment in order for people's best work to occur. So, how can the workplace help? According to Judith Heerwagen, a former scientist with the Pacific Northwest National Laboratory who is now a program expert with the General Services Administration, productivity and the workplace are related in these ways: A building can positively affect ability by providing comfortable ambient conditions, by enabling individual control and adjustment of conditions, and by reducing health and safety risks. Negative impacts on ability to do work are associated with conditions that are uncomfortable, distracting, hazardous or noxious. A building can positively affect motivation by providing conditions that promote positive affective functioning, psychological engagement and personal control. Moods create the 'affective context' for thought processes and behaviours and are directly tied to motivation. A building can affect opportunity by providing equitable access to conditions that reduce health and safety risks, equitable access to amenities and compensatory design options where inequities exist and are difficult to eliminate entirely. Which specific workplace strategies provide the right mix of ability, motivation and opportunity to enhance human performance? Best practices in workplace design can help. The paper with the help of secondary data and sources tries to find out the various work design suited to increase the performance of the employees.

**KEY WORDS :** Work design, Employee performance, Productivity

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### Defining a well-designed workplace :

A well-designed workplace means different things to different organizations. The definition is dependent on the business, its objectives and its culture. One company may have a clear need for distraction free work 90 per cent of each day, which may result in an office comprised of almost entirely private offices. In contrast, a company whose

chief business requires teamwork and extensive collaboration may desire more open work areas. The definition then, of a well-designed, workplace is subjective and relative (Becker and Fritz, 1995; Becker and Joroff, 1995 and Bell and Joroff, 2002).

The work of today is drastically different than the work processes supporting the industrial revolution. Today's products – knowledge and creativity, require a different environment in which they are to be “produced,” nurtured and shared. “Historically the white collar office reflected the mechanistic mind-set of the factory with work designed as a linear series of individual tasks.” New work processes can be better described as a network, often collaborative and non-linear, where “fewer and fewer workers create physical things. Knowledge is the product of the contemporary office and information is the primary raw material. A knowledge worker is a person whose primary function is analyzing, creating, deciding, collaborating and acting on information.” How does a workplace support this process of creating knowledge? Stan Kaczmarczk, Director of the Innovative Workplace Division of the US General Services Administration, contends that “your workplace should not be considered simply overhead, but an everyday tool to support work practices and organization's culture. The space should be capable of adapting to fit the mission, rather than the mission fitting the space.”

For our purposes, we have defined a well designed workplace as one that supports a company's strategic business initiatives, allows employees to perform their work efficiently and productively, reflects and embodies the values and culture of the company and is environmentally healthy (Benton and Fountain, 1990; Romm and Browning, 1998). Based on our experience in workplace design, along with our research and review of current literature regarding workplace design, productivity, and employee morale, we established a list of 14 physical attributes associated with a well-designed workplace. We focused on those issues that may have the most significant impact on the knowledge workers previously described.

Through our study which has been done by collecting secondary data, we have learned about the ways in which companies designated as ‘Best place to work’ use their physical environment as another catalyst to achieve great company performance. The attributes described here are those that have the biggest positive impact on the physical workplace, and individually and collectively contribute to productivity measurements and bottom-line performance. Understanding these attributes and their impact also can help to create a compelling business case to seek improvements in your own work environment.

#### **Individuals to perform distraction-free work :**

Creating a distraction-free workplace can be

accomplished by providing any of the following :

- Private offices (walls to ceiling) for all employees, or a high panel workstation with a door.
- Standing privacy height partition panels.
- The ability to control privacy at individual workstations with seated, privacy height partition, with portable screens, panels or other temporary devices.
- Ample conference rooms or other non-assigned private spaces (*i.e.* enclaves, patio, etc.) where those in need of temporary privacy can seek refuge.

#### **Spaces that support collaboration and impromptu interaction:**

In today's business environment, vast amount of information needs to be shared, analyzed, distributed and discussed. Workplaces that encourage interaction and collaboration are vital to creating an atmosphere of information sharing and knowledge creation. Interaction and collaboration also can result in learning experiences that advance product time-to-market. Depending on a company's business goals and culture, teamwork and collaboration can happen in a variety of settings.

#### **Spaces that support undistracted teamwork and meetings :**

Since 1990's, organizations have experienced and are becoming increasingly reliant on team and group-based work to meet business objectives. Successful office environments that support this group work help to achieve an organization's most prevalent performance criteria for serving the customer: high quality, speed-to-market, and added value for the customer (Johnson, 2004).

#### **Thermal comfort and temperature :**

Thermal comfort is created through the right combination of temperature, airflow and humidity. A combination of these elements is required for physical comfort in the workplace. When you hear people complaining about temperature in the workplace, chances are that airflow and humidity are part of the reason.

#### *Keys to thermal comfort include :*

- The ideal temperature in office environments is 70.88°Fahrenheit (21.6°C) with a 1-2 per cent decrease in performance for every 1.8°F (1°C) above or below (Bosti, 2001).
- Slightly lower temperatures are associated with higher accuracy on simulated tasks and reduced sick leave.
- Personal control over ambient conditions, especially temperature, increases productivity. One research study tracked workers in an insurance company as they moved to a new building with advanced thermal

controls in their workstations. The study found that productivity increased of 2.8 per cent could be attributed to the new workstations.

*Workplace strategies :*

- Consider under floor air, which provides individual control of air flow.
- Provide zoned temperature controls or, if possible, individual controls in each enclosed space (offices, conference rooms, etc.).
- Provide operable windows or operable window coverings to maximize sunlight, airflow and temperature control.

Each year, the International Facility Management Association (IFMA) surveys facility managers to determine the most common complaint of building occupants. Not surprisingly, the most common complaint relates to thermal comfort with occupants being either too hot or too cold. According to CNN.com, a Florida based HVAC contractor estimates that 72° is the optimal mid-range temperature for the open office, whereas a Cornell University study found the optimal mid-range temperature to be 77°. That difference is one example of this problem, every employee may have different expectations, but share the same thermal conditions. One temperature does not suit all. Solutions to address this issue are varied and range in cost. While Johnson Controls' Personal Environmental Modules (PEM) offers the highest range of individual controls, many companies are unwilling or unable to make the investment to retrofit existing buildings to accommodate these ideal solutions. Building envelope issues such as thermal glass, solar shade devices, and building orientation issues are another approach to working through this issue. For facility managers who live with the results of HVAC design and value engineering on a daily basis, this issue remains a major focus for time and investment.

**Access to nature, views and daylight :**

People generally prefer to be surrounded by nature, which provides endless sources of variation and sensory change (Johnson, 2004). The instinctive bond between humans and other living systems, often called biophilia, is important to replicate in interior environments. It is also beneficial for people to spend time outside, even for limited time, during the day.

- The presence of daylight and windows, as well as opportunities for active and passive contact with nature, sensory change and variability, positively impact well-being.
- Daylight helps people regulate circadian rhythms, the daily cycles of waking and sleeping hours. When these rhythms are upset, people experience stress.
- Given complete freedom, people want to be on a

height looking down. They prefer open, savanna-like terrain with scattered trees and shrubs and they want to be near a body of water, such as a river or lake. They pay hefty prices to have these views.

*Workplace strategies :*

- Organize the floor plate to maximize natural light penetration onto the floor. For example, place enclosed spaces around the core of the building and open spaces at the perimeter where windows are located.
- Use glass where visual privacy is not required.
- Give preference of nice views to shared spaces.
- Provide outdoor areas for use by employees. Encourage employees to go outside for breaks, even if just for a few minutes.

Natural light raises the neurotransmitter in the brain called serotonin, a chemical that has a large impact on mood, disposition and the ability to handle stress. The more serotonin released, the better an individual's mood, as well as their ability to deal with stress. In the last decade, workplace design has shifted away from designs that were based on status where fully enclosed, perimeter offices obstruct daylight. Offices are now often designed with offices on the interior, or with glazed perimeter offices to enhance the open office work environment with "borrowed" daylight. Considerations regarding the placement of obstructions to view and daylight are now common conversations between workspace occupants and designers. Consideration of the benefits of daylight, the reduction of eyestrain, and the potentially improved personal wellbeing, all point to the importance of daylight as an element for a great workplace.

**Control of glare factors :**

Along with abundant and desirable daylight, there is a concern that glare causes eyestrain, and is a major cause of headaches. In a Kansas city (U.S.A.) study conducted by the Institute for Health and Productivity Management aimed at the effects of managing headaches. It was shown that headaches can cause a loss of productivity. When an employee is limited in their ability to complete their work and they fall behind, stress is created. According to recent insurance industry studies, 27 per cent of workers say their jobs are the greatest cause of stress in their lives, so if additional stress is indirectly attributed to glare and glare can be fixed, it would seem an even more important issue to address.

A lack of visual stimulation during the day can dull the senses and affect a worker's ability to stay alert. Large expanses of neutral-coloured workstations, all with the same height and texture, typically do not support human productivity.

- Sensory change and variability should not include bright lights and noise, but rather, access to daylight,

window views to the outdoors, materials selected with sensory experience in mind (touch, visual change, colour, pleasant sounds and odors), spatial variability, change in lighting levels and use of highlights, and moderate levels of visual complexity (Gladwell, 2000).

- When the work environment is not stimulating, employees lose focus and creative drive. An environment devoid of sensory stimulation and variability can lead to boredom and passivity (Miller, 2001).

#### *Workplace strategies :*

- Consider introducing texture into a space by using natural materials such as wood, cork, plants, natural fibre.
- Minimize the appearance of long corridors or paths by introducing colour, art, graphics, patterns or texture changes.

#### **Colour :**

How people perceive colour varies based on their culture and life experiences. However, there are some generalizations about how colour is likely to be perceived, either overtly or subliminally, in the workplace.

- Brighter colours (reds, as well as blues and greens) are associated with higher focus and task accuracy.
- Blue is calming and cooling, promoting mental control and clear, creative thinking.
- Pink lessens feelings of irritation, aggression, loneliness, discouragement and burden.
- Red enhances feelings of strength and energy; it is associated with vitality and ambition.
- Yellow makes people feel clear-headed and alert, allowing for clear thinking for decision making.
- Orange helps ease emotions and boost self-esteem. It creates enthusiasm for life.

#### *Workplace strategies :*

- Use colour strategically to promote desired behaviours and feelings based on psychological reactions, not personal preference.
- Vary colour use through the workplace. Use it as a design technique to identify circulation or the changing character of space.
- Use lighter colours to help reflect light through the space and increase the amount of natural light.

#### **Noise control :**

Noise is an issue in most workplace environments. Interestingly, it can enable or disable productivity, depending on individual preferences and the type of work being done.

The key is enabling people to control noise by providing access to a room with a door and acoustical separation when needed.

- Perceived noise (discernible by the average human ear) is typically higher in open office environments, but this depends on a space's organization, the materials and the nature of work being done.
- When employees have a degree of control over the noise in their environment, they are less distracted by it.
- Contrary to popular belief, noise interruptions during simple, mundane tasks can provide the stimulation needed to keep going. Interruptions during complex work, however, require a longer period of time to re-orient, and continued interruptions are likely to have negative effects on mood that reduce the motivation to resume work.
- The U.S. General Services administration recently published a comprehensive guide to acoustics in the workplace. In it, they state, "office acoustics is a key contributor to work performance and well-being in the workplace. The ability to find quiet times and places are essential to support complex knowledge work, while the ability to have planned or spontaneous interactions without disturbing others are necessary for team work and relationship development. Having speech privacy is necessary for confidential interactions and work processes. 'Acoustical comfort' is achieved when the workplace provides appropriate acoustical support for interaction, confidentiality and concentrative work."

#### *Workplace strategies :*

- Designers recommend three strategies for achieving a non-intrusive level of speech privacy. They include absorption (through acoustical ceiling, fabrics and carpet), blocking (through furniture system, panels, walls, partitions and screens, and covering (sound masking). To achieve the desired result, all three strategies must be integrated.
- Try to separate energetic, centralized and noisy spaces from quiet areas. Create opportunities for people to come together without disturbing colleagues.
- In open plan environments, ensure that people are sitting near those with similar work patterns or subjects of study.
- Consider a virtual door policy in which people sitting in an open workstation aren't necessarily available to talk.
- Provide headsets to tune out noise.

- Define policies for employees to be able to reserve quiet space and collaboration space.

**Workspace allocation by function :**

Historically, office design reinforced the concept that size and privacy of an office were the symbols of status within an organization. The perimeter private offices of the 1950’s encircled open bullpen spaces for clerical and support staff. Hierarchy, department designation, geometry, status, and traditions were valid reasons to arrange work settings. Fast forward to the present day, through the experiments of office landscape and open offices, to a time where there is a better understanding of workers, teamwork, and the variety of work settings needed to create a successful office environment. Today’s well-designed workplace needs to be a highly flexible environment that can be easily altered to match an organization’s rate of change.

It would seem a logical correlation than, that workspaces should be designed to be efficient and productive (*i.e.* designed for the function performed within) and that by discarding symbolic status and hierarchy as drivers for space allocation, the workplace improves.

**Clear way finding :**

While creating spatial hierarchy in office planning, one can think of a workplace as a series of well thought-out navigation routes within the workplace, as well as good directional signage and the creation of landmarks and intersections. In his New Yorker Magazine article, *Designs for Working*, Malcolm Gladwell (2000) compared the work of Jane Jacobs in *The Death and Life of Great American Cities* with workplace design. The Jacobs concept proposes that “when a neighborhood is oriented toward the street, when sidewalks are used for socializing and play and commerce, the users of that street are transformed by the resulting stimulation: they form relationships and casual contacts they would never have otherwise.

Applying this thought to the design of workplace way finding (the paths and streets of the office neighborhood) points to the need to use way finding to create opportunities to support interaction with the network of nodes and intersections. Appropriate way finding design also can enhance security by steering people away from secure areas. Characteristics that support the creation of appropriate navigation and encourage casual contact include consideration of traffic patterns and navigation routes in terms of their impact on encouraging impromptu collaboration as part of the design.

**Accommodations for the changing demands of technology :**

A well-designed workplace will accommodate today’s technology, and anticipate how tomorrow’s may be different.

Co-ordination between IT and facility management is not only desirable, it is essential in planning for the future. Current accommodations to maintain flexibility include:

- Access to power and data, etc., above the work surface.
- Conference rooms, training rooms, team project rooms with plug and play capabilities and cable management for quick changes.
- Wireless technology.

**Ergonomic accommodations :**

Ergonomics is an important workplace issue particularly as the diversity and demographics of the workplace is rapidly changing. Ergonomically poor seating can cause back pain. Incorrect desk heights in relation to monitors and keyboards can result in eyestrain and carpal tunnel syndrome (CTS). Back pain, eye strain, and CTS over a long period can result in an increase in worker’s compensation cases, leading to additional company costs related to healthcare and lost time. They also can lead to increased levels of employee stress associated with an individual’s inability to work at their peak performance. A company that pays attention to stress-induced conditions of employees also will reap the benefits of high productivity and employee wellness. With business health care costs continuing to rise, this proactive attention to ergonomics can increase overall profitability by lowering insurance claims and other health care costs. Workplaces that are designed for and around people are more likely to be comfortable, flexible and support productivity over time. This is because they take into account the needs and limitations of the people who occupy them. “Human factors” is an area of workplace psychology that focuses on a range of topics including ergonomics, workplace safety, the reduction of human error, product design, human capability and human-computer interaction. The terms “human factors” and “ergonomics” are often used synonymously.

- According to the American Academy of Orthopedic Surgeons, musculo-skeletal diseases, which include back pain, arthritis, bodily injuries and osteoporosis, are reported by people in the U.S. more than any other health condition. In 2004, the estimated total cost of treatment and lost wages associated with musculo-skeletal diseases was \$849 billion, equal to 7.7 per cent of the gross domestic product.
- HOK recently conducted a workplace survey leveraging social media to 3,600 employees across multiple industries. An overwhelming 82 per cent of respondents report experiencing some type of physical ailment at work. The most common complaints – neck, back and shoulder pain – were typical for workers sitting for long periods during the day. About half of those responding complained

of pain in the neck, back or shoulders, while a third reported headaches and eye strain. Workers who stand for long periods of time at their job complained of hip, leg and foot pain. The survey comments indicate that most of the complaints result from poor ergonomics or from being overly sedentary.

- The American Cancer Society released a report in the American Journal of Epidemiology stating that men who sat for six hours or more a day in their leisure time had an overall death rate that was nearly 20 per cent higher than men who sat for three hours or less in the 14-year follow-up period. Women who sat for more than six hours a day had a death rate that was almost 40 per cent higher. Dedicated exercise had no neutralizing effect.

#### *Workplace strategies :*

- Provide adjustable furniture such as adjustable chairs, task lights, sit-to-stand desks and keyboard trays, so individuals can adjust their workspaces to meet their needs. To ensure employees are using furniture properly, provide training as needed.
- Provide efficient and seamless technology to enable mobility and efficient work in all work settings provided. Examples: Equip all collaboration areas with similar technology that is intuitive for users moving from space to space. Ensure technology is “user-friendly” and provide instructions clearly visible to the user.
- Equip employees with tools and technologies that encourage mobility in the workplace. Examples: Provide employees with laptops and mobile devices. Provide VoIP phones that allow workers to easily move between desks or rooms and still make a call.
- Encourage employees to use the stairs by showing them the number of calories burned or time saved. Use signage to make it easy to find the stairs.
- To encourage them to move around during the day, provide employees with wearable devices such as pedometers that count steps or vibrate at regular intervals.
- Design stairs to be more visually accessible and pedestrian-friendly.
- Provide incentives to encourage movement both in the work environment and outside of the typical workday. For instance, an employee competition (with prizes) measuring steps taken per day is a fun and healthy way to create buzz.

#### **Professionally maintained plant programme :**

It is widely believed that interior plants can increase workplace productivity, decrease employee stress levels, and

improve overall employee health. Scientific studies performed at Texas A and M, Surrey University in England and Washington State University verified that plants significantly lower workplace stress and enhance worker productivity. In the Texas A and M study, participants working in an environment with plants present were 12 per cent more productive and less stressed than those who worked in an environment without plants. Both women and men demonstrated more innovative thinking, generation of more ideas and original solutions to problems in the office environment that included flowers and plants. Several conclusive studies were performed regarding health claims in work environments at the Agricultural University in Oslo, Norway. When reviewing 12 of the common symptoms related to poor indoor quality and “sick building syndrome,” there was a 23 per cent lower complaint rate during the period when participants had plants in their offices. With all of these positive aspects, one could readily assume that a well-designed workplace will include a professionally maintained plant service to provide and maintain plants throughout the workplace.

#### **Expression of organizational culture :**

In the paper we studied that “In what ways is the organizational culture of companies perceived to be reflected in the physical environments?” More than half of respondents felt their best place to work supported and expressed their culture well. Content analysis of open-ended responses distilled common themes that describe how organizational culture is expressed in the physical environment of workplaces. The top themes describing the expression of culture in the BPTW workplaces were openness, colour, team/collaborating spaces, and “fun” touches, throughout. Companies engaged in promoting wellness offered bikes for employee use and rewarded employees with on-site car washes. Though the simple acts of offering an accessible hose bib or large dining room does not create a culture, it helps to keep the spirit of the culture visible to everyone.

#### **Employee engagement :**

There is a direct correlation between employee engagement and worker satisfaction. This affects productivity and innovation.

- Engaged employees are more productive, more profitable and safer than less engaged employees. They tend to create stronger customer relationships and stay longer with their company. Engaged employees are likely to be a company’s best source of new ideas.<sup>22</sup>
- Based on 7,939 business units in 36 companies, Gallup researchers examined the relationship at the business unit level between employee satisfaction/

engagement and the business unit outcomes of customer satisfaction, productivity, profit, employee turnover and accidents. Significant connections were found between unit-level employee satisfaction/engagement and business unit outcomes.

*Workplace strategies :*

- Provide work spaces that enable visibility, openness and greater employee mobility to foster engagement. When workers are more likely to see each other, they are more likely to connect and collaborate.
- Provide collaborative spaces that incorporate the five “Cs”: coffee, CNN (or a “buzz” in the background), circulation nearby, connectivity and comfortable seating. These five characteristics are particularly successful for “hub” or central pantry spaces on the floor.
- Organize a floor plate into team “neighborhoods,” with a variety of spaces included in each, to foster team identity and sense of place.
- Incorporate branding, awards and recognition in a visible way to reinforce employee engagement.
- Natural light – open spaces at the perimeter of the floor allow light to penetrate deeper into the floorplate, providing access to daylight for interior spaces.
- View – shared spaces are located along the window wall with access to light and views.
- Noise – phone rooms dispersed throughout the workplace support the open environment and provide opportunities for private phone conversations or heads-down work. High traffic areas by large conference spaces, breakout space, and reception, are located at the entrance to the floor, consolidating activity and noise to minimize disruption to individual workplaces. Separating open workstations with enclosed spaces helps to maintain noise. Too many open workstations create a feeling of overcrowding and can be too noisy.
- A variety of spaces can support different functional needs. Employees choose from a variety of spaces, depending on the task at hand, as well as when and how to use them.
- Community – organizing space types into “neighborhoods” has many benefits, including minimizing the feel of overcrowding, encouraging informal interaction and supporting a team environment.

**Summary :**

The physical workplace can be a critical factor in the success of an organization. It is an important factor in supporting an organization’s business initiatives and it can

be proven to be an effective tool to improve performance, rather than being seen only as a cost of doing business. The physical workplace is often the second largest asset of an organization and this asset can be used to effectively attract and retain talent, which is typically the largest and most expensive asset of any organization (Bartlein, 2005). In today’s world, the role of the workplace is about:

- Enabling new ways for people to work within an organization.
- Valuing the individual.
- Implementing new technology.
- Shifting or reinforcing culture and change.
- Leveraging facilities as assets.
- Facilitating faster and more simple change.
- Achieving financial objectives - tracking how workplace changes help achieve the organization’s goals.
- Expressing a constant brand and culture from all realms of an organization – its people, perception, delivery of products and services and its place. Companies that leverage their facility assets by giving thoughtful consideration to what a well-designed workplace means for them, are thinking strategically. They are putting a plan of action into place that is intended to improve their business, they are doing so by utilizing their assets to the fullest potential, and they are being proactive in terms of how to best support their largest, most expensive, and most important asset, their people. Being a best place to work, whether you are designated so or not, must include attention to the physical, cultural and social aspects of an environment.

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