

Quality standards in offices: productivity, health and well being

Mindaugas Valuckas

Member of the Board

Hanner AB

Riga, 03/20/2015

HANNER

Losses due to ill-health

- Below and further information is based on a recent research done by World Green Building Council
- Costs of ill-health vary by sectors and countries, and are rarely comparable, but the impact is clear:
 - The annual absenteeism in the US is 3% per employee in the private sector, and 4% in the public sector, costing \$2,074 and \$2,502 per employee per year respectively
 - Poor mental health specifically costs UK employers GBP 30 billion a year thought lost production, recruitment and absence
 - The aggregate cost to business of ill-health and absenteeism in Australia is estimated at \$ 7 billion per year, while the cost of 'presnteeism' (not fully functional at work of medical conditions) is estimated to be \$26 billion.

Relationship between office costs and potential effects to its users

- Staff costs, including salaries and benefits, typically accounts for 90% of business operation costs, while remaining 7-9% is allocated for office premises usage
- Therefore what may appear a modest improvement in employee health and productivity can have a huge financial implication for employers – one that is many times larger than any other financial savings associated with an efficiently designed and operated building
- A healthy, happy workforce is a vital component of a productive, successful business in the long-term

Physical office environment

•The office environment is made of up several factors, which can be measured or evaluated in numerous ways

- Indoor air quality & ventilation
- Thermal comfort
- Lighting & daylight
- Noise & acoustics
- Interior layout & active design
- Biophilia & views
- Location and access to amenities

Indoor air quality & ventilation

- A research identified 15 studies linked improved ventilation with up to 11% gains in productivity, as a result of increased outside air rates, dedicated delivery of fresh air to the workstation and reduced level of pollutants.
- A meta-analysis of 24 studies – including 6 office studies – found that poor air quality consistently lowered performance by up to 10%, on measures such as typing speed and units output.
- The analysis appeared to demonstrate that the optimum ventilation rate is between 20 and 30 liters/second (l/s), with benefits tailing off from 30 up to 50 l/s. This is significantly higher than minimum standards required by law.

Indoor air quality & ventilation

- A lab test which mimicked an office, a range of office related tasks were carried out with presence of airborne volatile organic compounds (VOCs). Increased ventilation from 5 l/s to 20 l/s improved performance by up to 8%.
- Reduced absences may also be a key indicator of the benefits of good indoor air quality for businesses. Short term sick leave was found to be 35% lower in offices ventilated by an outdoor air supply rate of 24 l/s compared to buildings with rates of 12 l/s
- CO₂ levels are one way to measure air quality, and can occur as a result of poor ventilation. High CO₂ levels have been found to impact tiredness or decision-making in a number of studies⁹. One recent lab-based study using simulated decision-making tasks showed CO₂ having a significant detrimental impact (11%-23% worse) at 1000 parts per million (ppm) compared to 600ppm, despite 1000ppm being widely considered acceptable

Thermal comfort

- An analysis of 24 studies on the relationship between temperature and performance indicated a 10% reduction in performance at both 30C and 15C compared with a baseline between 21C and 23C¹⁸, leaving little doubt as to the impact thermal comfort has on office occupants. A more recent study in a controlled setting¹⁹ indicated a reduction in performance of 4% at cooler temperatures, and a reduction of 6% at warmer ones.

- Air velocity
- Relative humidity
- Clothing and activity

Daylight and lighting

- A recent study by neuroscientists suggested that office workers with windows received 173 percent more white light exposure during work hours, and slept an average of 46 minutes more per night. Workers without windows reported poorer scores than their counterparts on quality of life measures related to physical problems and vitality, as well as poorer outcomes on measures of overall sleep quality, sleep efficiency, sleep disturbances and daytime dysfunction.

- Quality and quantity of lighting
- Glare

Noise and acoustics

- A study found that there was up to a 66% drop in performance of memory tasks when participants were exposed to different types of background noise
- A follow-up study by the same authors found that 99% of people surveyed reported that their concentration was impaired by office noise such as unanswered phones and background speech
- Vibrations

Interior layout and active design

- Workstation density
- Task based spaces and ergonomics
- Break out spaces and social features
 - A study showed the remarkable impact on productivity that occurs in organizations that have strong informal social networks.
- Active design

Biophilia and views

- Connections to nature

- People who spend time close to greenery found to be more happy and productive

- Views outside

- A study of workers in a Californian call center found that having a better view out of a window was constantly associated with better overall performance: workers were found to process to process calls 7% to 12% faster.

Location and access to amenities

- Access to amenities

- One study of a major employer found that 68% of parents would have missed work if they had not used the onsite childcare center.

- Transport

- A Dutch study found that employees who cycle to work are less frequently ill, which on average more than one day per annum less absenteeism than colleagues who do not cycle

Thank you for your attention!

HANNER