HB 2017

Healthy Buildings 2017 - Europe

Wednesday, 5th July, 10:30 - 12:00
Workshop Outcome

Indoor Environment Quality, Wellbeing and Productivity (PDF)

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Introduction

Targeted improvements to indoor environment quality (IEQ) have significant benefits beyond just productivity, including such efficiency measures as increasing staff retention, improving occupant satisfaction and even reducing absenteeism. For owners, demonstrable productivity improvements can lead to better building rental yields. To address the challenge of quantitative and even financial measurement of office productivity, Garnys and Wargocki conducted workshops on 'Agreeing on a Productivity Index for IEQ', at the International Healthy Buildings Conferences HB2015 Europe, Eindhoven, the Netherlands, HB2015 America, Boulder, Colorado, at the Facility Management Association of Australia conference, Ideaction 2016, Melbourne, Australia and at HB2017, Lublin, Poland. This 2017 workshop explored a universal and comparable methodology for assessing productivity from IEQ measurements, which is needed before benchmarked assessments of improvements can be made.

What is productivity?

Productivity is defined by OECD as a ratio between the fiscal volume of output and the volume of inputs. In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output.
In contrast, efficiency is the ratio of non-fiscal parameters such as task speed, sick leave rate and cognitive ability. The use of labour productivity as a measure of service-related productivity is justified. The assessments must be comparable in their methodologies and frameworks while still being universally achievable within reasonable costs. This is rarely the case or consideration for the published studies to date. Most published IEQ related studies use efficiency as a proxy for productivity. The pressing need is to assess how buildings contribute to national labour productivity.

The built environment's contribution to labour productivity

While numerous factors affect an employee's productivity, the contribution of the indoor environment to their efficiency performance is of the order of 1–10 per cent (REHVA, Indoor Climate and Productivity in Offices, 2006) in normal office environments and hence are of significant value at a local, state and national level. All energy costs of a building can generally be paid by a 1% productivity gain. How productivity uplift can improve economic development and how can we achieve this potential and drivers of productivity improvements were discussed. The delivery of indoor climate and indoor environment quality (IEQ) are directly under the control of the building owner or facility manager. Therefore, positive targeted improvements to this area are likely to drive productivity increases more widely. The Factors for Developing a Productivity Index were discussed. Taking the lead from the OECD model, a more intuitive and simple model was presented, segregating sectors of varying productivity, which can then be reduced to critical factors able to be analysed from research or organisational practice. Each tool has less than 2 degrees of freedom of variables.

Can we use rating systems to quantify IEQ?

Rating systems provide the basis for organising data and have advantages and disadvantages due to structure and acceptance, but they

are not fiscal in their intent.

Opportunities to capture this potential:
Internationally, organisations are examining the relationship between the indoor environment and productivity. The oldest (2009) National Australian Built Environment Rating Scheme (NABERS) Indoor Environment (IE) rating tool is the most established, and refined performance tool worldwide and provides a significant database for benchmark comparisons and emerging productivity estimates. Conducting benchmarking of IEQ performance through a rating tool prior to refurbishment allows targeted improvements to be made to the building where performance is poor and identification of potential labour productivity opportunities exist. Following retrofits, surveys and measurements can be conducted to confirm that improvements have been made to the areas of poor performance. Finally, an assessment of occupant satisfaction and financial modelling can be applied to determine the magnitude of labour productivity increases as a result of the retrofit. CETEC has applied this approach to a number of buildings in Australia. Capturing the potential productivity improvements is important as it maximises the output value relative to the cost of retrofits.

Benefits of investment in the improvement of the built environment: Boosting economies, improving occupant satisfaction, increasing staff retention and improving building stock and increasing rental yield were discussed.

Next steps:
Buildings can leverage occupying corporation GSP by 10 to 100 times. This is important as economies transition from manufacturing to a service industry base, while at the same time buildings and infrastructure ages. The City of Melbourne, voted as the world's most liveable city for the past five years, was used as an example. Actions possible by property associations, governments and the general property and construction community are: • Assess the potential productivity improvements of buildings. • Benchmark building IEQ and potential productivity, as shown by NABERS IE. • Educational and advocacy programmes are required on the issues of IEQ and productivity. • Accreditation of professionals able to deliver the required information is needed. Occupant surveys are required to explore the perceptions within organisations and their opinions on satisfaction, health, productivity and benchmarking efforts to inform further discussions and actions. The question of adoption rests with each stakeholder jurisdiction with respect to: • Policy; • Practice; • Research; • Communication; and • Education.