

## A Corporate Room with a View: A Scientific Analysis of a Major HQ Renovation

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Haworth, Inc.

Science seeks to model reality in some limited domain of inquiry. This means that science must first understand, explain and predict existing knowledge pertaining to the domain of interest in addition to predicting future research outcomes; theories generally serve this purpose. The use of precise, focused methods is necessary to ensure that measures are valid, and adequate control over other potentially relevant factors can be achieved to allow straightforward interpretation of the results.

A simple pre-post comparison of design and construction projects does not qualify as a scientific analysis, because many factors in addition to the changes in the physical environment could account for any before-after differences in the data.

For example, if individual productivity measures do not improve after a renovation, one could argue that productivity would have decreased without the renovation due to negative economic conditions. Without a “control group” (a comparison building not being renovated but enduring similar circumstances), interpretation of before-after results can be tricky. In this case, because a comparison building was not available, a longitudinal design was chosen to improve interpretability. For example, any improvements after the renovation remaining consistent at six months and one year after occupation are likely due to the change in the environment rather than to broader economic factors—particularly if “before” data remained stable across “pre” and “temporary workspace” situations.

Renovating the world headquarters of an international corporation includes many goals in addition to scientific analysis. However, because of its emphasis on cause-and-effect relationships, science uncovers general, predictive insights regarding how the physical environment influences behavior. In today’s competitive, global economy, organizations need such understanding to interpret the value of investment in new designs, construction or extensive renovations. In such applied projects, multiple outcomes at various levels of analysis are of interest—including sustainable/green design (usually focused on saving energy as well as minimizing or eliminating a building’s “environmental footprint”), internal/external “branding” (impression of the new building on its occupants, clients & the media), organizational effectiveness (job performance, productivity, creativity/innovation, coordination/communication, group/team collaboration), recruitment and retention (motivating new employees to join the company and encouraging incumbents to remain), the impact on various sales initiatives (including education & training), and perhaps other criteria.

In this case, a major office workplace interiors vendor in the Upper Midwest decided to renovate its corporate headquarters. As in most such projects, findings from extensive interviews, surveys and observations contributed to a master plan/program for the renovation. To simplify a long, somewhat complicated process, a sustainable/green design for the new building proved paramount and aligned well with at least one occupant-centered concern—providing the majority of employees with daylight and an exterior view (outside the building). More prosaic criteria for the building design included aligning the work environment with the product design and development strategy of the company.

Moveable walls, raised floors, partitions of different heights, work surfaces, personal and group storage elements, and tables have all been designed to integrate with each other aesthetically and structurally, allowing efficient inventory management and flexibility for moves, adds and changes with minimal impact on landfill/waste; these capabilities have been illustrated throughout the new building and are included in a kit of parts referred to as the Integrated Palette. Although this design/product strategy has improved aesthetics quality, the need for the building to be a “working showroom” may detract somewhat from occupants’ personal control of their workspaces; however, design often grapples with the need to balance conflicting criteria and goals.

Because a scientific analysis begins with the scientific literature, we predicated our results on findings from prior work (Augustin, 2009; Brand, 2010; Brand, 2008; Brand, 2006; Brand & Smith, 2005; Hua, Loftness, Kraut & Powell, 2010; Lee & Brand, 2005; Lee & Brand, 2010; Newsham, Brand, Donnelly, Veitch, Aries & Charles, 2009; Veitch, Charles, Farley & Newsham, 2007). A recent paper provided additional perspective on the benefits of “green/sustainable” design (Rashid, Spreckelmeyer & Angrisano, 2011). From this literature, we ascertained that thermal quality/comfort, lighting/daylight and acoustics/privacy independently contribute to environmental satisfaction, mediated by a sense of personal control which in turn drives job satisfaction (albeit by influencing the quality of organizational resources); job satisfaction has been related to a number of important business outcomes, including customer satisfaction, customer loyalty and employee recruitment and retention.

This HQ renovation improved aspects of IEQ (indoor environmental quality, see Figure 1\*) such as lighting/daylight, thermal conditions and aesthetics; this in turn improved aspects of environmental satisfaction (e.g., thermal comfort; quality of lighting/daylight, see Figure 2\*). However, neither privacy nor personal control showed any improvement even one year after occupying the new HQ. As previously suggested, the need for the building to serve as a “working showroom” may account for this lack of improvement.

Nonetheless, many expected disadvantages from increased daylight and views such as glare and task visibility actually improved in the new environment, and the annoyance, distraction and interference aspects of the open environment either improved slightly or remained consistent/stable across the pre- and post-occupancy evaluation.

Although not directly included in these data, the HQ renovation seems to have influenced both internal and external “brand,” and many technical issues related to the project’s LEED CI Gold certification improved (e.g., 15% energy savings); however, because salaries and benefits (“people” expenses) comprise 70% of annual enterprise costs (Society for Industrial & Organizational Psychology), any lack of improvement for occupant-centered issues would be disappointing.

Nonetheless, there were signs that new ways of working may be emerging; this could bode well for future employee engagement and satisfaction. However, these new ways of working may have resulted as much from the exploration of new work practices as from any changes in the work environment; yet ideally, interior design should support and align with such organizational design issues.

It’s important to remember that interior architecture/design does not directly influence business outcomes such as job performance or organizational effectiveness. Interiors influence building performance, which then impacts psychosocial issues (e.g., environmental satisfaction); these then link to work attitudes, which relate to quality of work life. Finally, quality of work life can influence work-related behaviors such as collaboration, job performance and innovation (Newsham & Brand, 2007). In this regard, when the physical aspects of the environment were emphasized (e.g., noise, privacy, glare), participants rated IEQ somewhat lower. Furthermore, lack of privacy, noise and glare were mentioned in some of the unstructured comments at the end of the survey—in spite of the uniformly positive quantitative measures of the same issues.

Previous research has focused on either the first few of these links (e.g., technical design--building performance; building performance--environmental satisfaction) or the last few relationships (e.g., job satisfaction, employee engagement, organizational loyalty & absenteeism). We have just begun to test models that include measures across all these objective and subjective factors within the same research design/project. These models will improve our knowledge of the complex, indirect yet important relationships between architectural design and organizational design. Such knowledge will eventually allow executive leaders to align workplace strategy with overall business strategy--a quest long predicted and often claimed, but rarely demonstrated or delivered.

Finally, from a scientific perspective, LEED criteria may need to consider the issues of personal control over the work environment and acoustics/speech privacy, factors shown to influence indoor environment quality and environmental satisfaction (Newsham et al., 2009; Veitch et al., 2007).

\*Both objective and subjective data were obtained with Certified Building Performance Measurement (CBPM) developed by Orfield Laboratories, Inc.

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**OVERALL QUALITY OF WORK ENVIRONMENT**

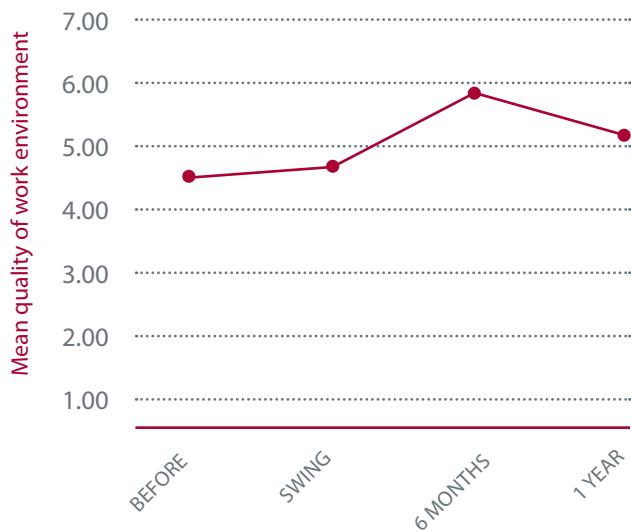


Figure 1

**MEAN DAYLIGHTING QUALITY**

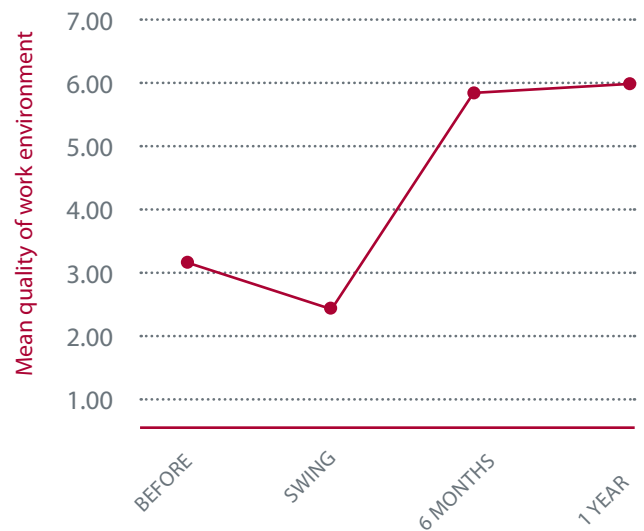


Figure 2