

TRANSFORM GRANT RESEARCH PROJECT

Title: Key Performance Indicators of Knowledge Workplace Design
Promoting Knowledge Worker Performance and Economic Competitiveness

Research Team:

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EXECUTIVE SUMMARY

PURPOSE OF STUDY

The purpose of this project was to:

1. fully examine the impact of the physical environment on supporting innovative performance as well as innovation strategies of the knowledge workplace;
2. provide a diagnostic platform, the Comparative Assessment and Performance Tool for Innovative Workplace (CAPTIW®), to the knowledge workplace design and management practice community; and
3. analyze the performance of the physical work environment in supporting organizational innovation performance by using this tool.

RESEARCH SUMMARY

CAPTIW® was developed by a collective effort of over 40 industry and academic partners to advance the field of workplace evaluation and management. It is a first-of-its-kind industry-wide effort to build a common ground and to offer a diagnostic tool for knowledge workplace spaces in a comprehensive manner in relation to the organizational bottom line. The tool uses seven Key Performance Indicators (KPIs) of the physical work environment that are critical to the creative and high-performing knowledge workplace when analyzing the performance of the physical environment against the measures of the innovation performance of a company.

IMPLICATION HIGHLIGHTS

- Analyze performance of the innovation of the knowledge workplace in relation to the physical work environment utilizing five measures: Product Innovation (PI), Process Innovation (PRI), Organizational Innovation (OI), Marketing Innovation (MI), and Intellectual Property Innovation (IP).
- Design and manage the knowledge workplace utilizing the seven KPIs of the physical work environment: Space Type Support (ST), Space and Furniture Layout Support (SFL), Space Size and Access to Equipment Support (SSA), Neural and Psychological Stimulation and Relaxation (NPSR), Furniture Ergonomics and Technology Support (FET), Ambient Conditions (AC), and Healthfulness (H).
- Best performance is primarily implemented through Space Type Support (ST) and Furniture Ergonomics and Technology Support (FET). ST includes Choices of Work Spaces for Focus, Collaboration, and Socialization Spaces; Interaction-Collaboration Spaces for Formal, Informal, and Impromptu Meetings; and Recharge Spaces for Play, Solitude, Fitness, Social, and Outdoor Spaces. FET includes Use of Key Ergonomic Principles and Guidelines/Standards, User Involvement in Selecting Furniture, Both Low-Tech and High-Tech Collaborative Tools, and Use of Technology for Visualization of Organizational Goals and Encouragement.

COMPARATIVE ASSESSMENT AND PERFORMANCE TOOL FOR INNOVATIVE WORKPLACE

BACKGROUND

According to the U.S. Department of Commerce, innovation is a key driver of economic competitiveness as it allows knowledge workplaces to exceed growth beyond inputs by producing new or significantly improved products or services that create new values of customers or financial returns for the company with less inputs than in the traditional economy. In order to support the knowledge workplace in the innovation economy, it is important to design and manage knowledge-intensive organizations by supporting key performance indicators (KPIs) of the physical work environment that enhance the capacity of the innovative performance of the organization.

METHODOLOGY

- A combination of an extensive review of existing literature and focus group meetings with CEOs and renowned experts from the fields of architecture, interior design, workplace consultancy, facility management, HR personnel, and academic research was used to create the instrument.
- Computer programming was implemented to establish the online tool, incorporating an automated reporting system.
- The automated reporting system generated results based on a scoring system which integrated a weighting system among the seven KPIs.
- The weighting system was developed to factor the different significance levels among the KPIs into the results of the online benchmark tool, following the Saaty's Analytic Hierarchy Process (AHP). AHP is one of the most widely used standard decision-making tools among various members

or stakeholders in a group. It is a mathematical process that utilizes pairwise comparisons and calculations of composite priorities among alternatives based on the ratings of criteria.

KEY FEATURES

CAPTIW[®] provides an instant report based on a model called the Creative and High-Performance Knowledge Workplace (CHPKW) which consists of five constituents: Organizational Environment & Culture, Process, Individuals & Groups, Physical Work Environment, and Innovation & Economic Competitiveness.

- Part 1: Organizational Environment & Culture, Process, and Individuals & Groups
 - Overview summary and result analysis against benchmark data
 - Analysis of physical work environment performance and innovation performance of a company against benchmark data
- Part 2: Physical Work Environment
 - Analysis of the critical Key Performance Indicators (KPIs) of the physical work environment in supporting specific attributes of the organizational environment & culture, process, and individuals & groups crucial to generating organizational creativity and innovation
 - Identification of key indicators to improve in order to support a specific attribute critical to enhancing creativity and innovation at the organizational level
- Part 3: Innovation & Economic Competitiveness

PRESENTATIONS

- Lee, Y.S. & Schottenfeld, M. (2015). Employee health and well-being: Lessons from the workplace. Healthcare Design 2015, Washington, D.C.

- Lee, Y.S., Schottenfeld, M., & Civan, I. (2015). Introducing CAPTIW®: A Free Comprehensive Workplace Evaluation and Benchmark Tool for Innovative Workplaces. Webinar for IFMA Banking Institutions and Credit Unions Council.
- Lee, Y.S., Schottenfeld, M., & Civan, I. (2015). Key performance indicators of knowledge workplace design. Neocon 2015, Chicago, Ill.
- Lee, Y.S., Civan, I., & Schottenfeld, M. (2015). Introducing CAPTIW®: The Comparative Assessment & Performance Tool for Innovative Workplace, IFMA Fusion 2015, Orlando, Fla.

RESEARCH TEAM BIO

Young S. Lee, Ph.D., NCIDQ, LEED AP ID+C, ASID, is the director of the Innovative Workplace Institute and faculty at Michigan State University. Trained in interior architecture and interior design for two decades, her expertise is in innovative workplace design and evaluation as well as the impact of indoor environmental quality on occupant performance, health, and well-being. She has published and presented numerous research projects on both subjects in internationally and nationally reputable journals and conferences. Her studies have been published in such renowned journals as *Indoor and Built Environment*, *Building and Environment*, and the *Journal of Green Building*.

Isilay Civan, MSc, Ph.D., LEED AP O+M, SFP, GGP, GPCP, is the firm-wide research & strategic innovation specialist at HOK Consulting, where she is responsible for research-based strategic planning, real estate strategy, facility management, and sustainability consulting. Her highly diversified educational background, coupled with over 15 years of transnational experience covering most industries and all building life-cycle phases, gives her a unique perspective on how to achieve and maintain truly wholesome built environments. She has authored numerous books and articles, and is a frequent speaker at industry conferences. She is a past member of the IFMA Board of Directors, chairs the IFMA Research Committee, and is Taskforce Chair of the Global FM - International Workshop.

Matthew Schottenfeld, NAB, is senior manager and executive producer of the Electronic Information Center at Fordham University. His expertise resides in online tool development, web programming, and website development, not to mention his insights and experiences over 30 years in the design and evaluation of educational facilities and technology infrastructure. His publications can be found in the *Journal of Learning Spaces*, *International Journal of Sustainable Development*, *International Journal of Environmental, Cultural, and Social Sustainability*, as well as in presentations at various national and international conferences including Sustainability Conference, EDUCAUSE, International Conference of Constructed Environment, and the Greater New York Conference on Behavioral Research.