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### Open Office Floorplans: More Damaging Evidence

As we have previously written, for maximizing worker productivity, open office plans are penny-wise and pound-foolish. A recent Harvard Business School study by Ethan Bernstein and Stephen Turban provides more evidence that open office plans, which are intended to increase team collaboration, actually contribute to a decline in cognitive focus and worker productivity. The study examined the number of face-to-face interactions between employees and a team's productivity in an open plan office environment versus traditional office space.

A critical challenge facing the increased efficiency of office space utilization — primarily attributable to open plans and shared workspace — is that while such layouts enhance worker interaction, reduce real estate costs, and are “cool,” studies of cognitive processing invariably show that even minor distractions greatly reduce worker productivity. Notable examples of reduced cognitive productivity in the presence of distractions include texting or talking on the phone while walking or driving.

Some may be surprised to learn that open plan designs originated in post-WWII Germany, as people wanted to abolish the “old regime,” repressive and socially divided office, in favor of a horizontal social hierarchy. Over the next decade, this trend began to flourish globally, taking hold in the U.S. in the early 60s, coincidentally occurring around the same time as the construction of the Berlin Wall. The mentality of “tear down the wall” pervaded sociological thought, making its way into office design as it became “hip” and “forward-thinking” to eliminate boundaries between people, both socially and physically. Not only did this model appeal — at face value — to both the companies and its employees from a corporate culture perspective, it also generated real estate cost savings.

Most recently, open floorplans have once again become popular and cool. Primarily championed by the tech industry and other “new economy” sectors, open plans are slowly finding their way into traditional in-

dustries. Proponents argue that these office layouts promote collaboration among employees and are cost-effective. However, the purpose of office space is to enhance worker productivity. Unfortunately, human cognitive processes do not allow high productivity in open floorplan environments. This has been proven by years of research on human behavior and on workplace environments.

When workers are deprived private workspace, they are guaranteed that more unwanted and uncontrolled interruptions will oc-

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cur. Since the 1970s, workers in open plan offices have reported increased talking, noise, and distractions. This undoubtedly hurts productivity, as most humans are simply not wired to fully concentrate on more than one task.

In a study published by the National Institute of Health, scientists conducted an experiment in which they gave college students various activities to perform (texting, listening to music, making phone calls) while they crossed a street with traffic in a simulated environment. They found that college students listening to music or texting while attempting to cross the street were more likely to be hit by a vehicle. The simple act of reading and typing distracted the students enough that they were unable to refocus on activities critical to their physical safety. The cognitive skills necessary to cross the street safely, including information processing and decision-making, were reduced by simple distractions. If people could not handle crossing the street (which we are taught how to do as children) without endangering their lives, we can only imagine how workers in an office fare as they try to complete complex tasks which require detailed information processing and decision-making. Research documents that as tasks become more difficult, interruptions increase decision-making time and decrease decision accuracy. Furthermore, “hot-desking,” in which workers claim desks depending on who is in the office further detracts from a worker’s ability to find a reliable place to do higher-level thinking.

Open office environments create more visual and auditory interaction with other employees — the distractions that private cubicles and offices are designed to prevent. A 1990 study showed that simply maintaining eye contact with another person was disruptive to completing a task that involved visual processing. Participants in an experiment were asked to complete a task with auditory instructions while either closing their eyes, maintaining eye contact with someone or maintaining contact with someone wearing dark glasses. Performance was most impaired when the participants had to make direct eye contact.

In 2014, studies found that both visual and auditory distractions proved disruptive, especially when workers were presented with difficult tasks involving

long-term memory. While a private workspace does not guarantee freedom from distractions, open floorplans guarantee that distractions will occur, resulting in productivity declines.

Research on workplace interruptions has proven that distractions in the workplace have significant negative consequences for employees. A 2003 article published in the Academy of Management Review categorized workplace interruptions into four groups, including intrusions and distractions. The study showed that unscheduled interactions adversely affect productivity and the ability to meet deadlines. Research also reveals that when workers are attempting to complete an urgent task, an intrusion increases their time consciousness and adds to heightened feelings of pressure. In addition, a 2008 study found that just 20 minutes of interrupted performance led to workers having higher stress, frustration, workload, effort, and pressure. Interruptions also operate as distractions, which are defined by the Academy of Management study as disruptions in concentration generated by external stimuli. Unsurprisingly, although some people were less affected by distractions, distractions were found to make most people less focused. Distractions and intrusions lead to lost work time and even the complete stoppage of work.

Distractions and interruptions in the workplace not only limit productivity, but also negatively impact workers’ mental states. Researchers have found that people exposed to distractions had their perspective of work negatively impacted even if the interruptions had no effect on their performance. Unhappy and unproductive workers are hardly good for any company. A 1991 study from the Academy of Management Journal found that both job performance and job satisfaction decreased when workers were in “unshielded” environments, meaning the workplace was high density, had few enclosures, or had low distances between workers, all attributes of today’s popular open floorplans.

A 1980 study also published in the Academy of Management Journal noted that having architectural privacy, like the walls of a cubicle or office, is associated with psychological privacy. It noted that employees need to have job satisfaction. Psychological privacy was even linked to a greater sense

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of self-identity, and employees found that accessibility and social interaction was not hindered by architectural privacy.

The recent HBS study is the only quantitative examination which measures different elements of the open office before and after a company converts its office space. The first element is whether or not open offices actually increase face-to-face interaction between workers, while the second is whether or not they increase worker productivity. The study examined two separate multinational companies and consisted of two 15-week sessions: a period before each company switched to an open floor design and a period after the two offices had been converted to open floorplans. The study used digital data captured from electronic “sociometric” badges worn by workers to record face-to-face interactions between employees, and from electronic communication servers, such as email and instant messaging. A face-to-face interaction was only recorded if three conditions were met: when two or more badges were facing each other, when they detected alternating speaking, and when they were within less than 33 feet (10 meters) apart.

The study concludes that productivity per worker declined after the companies switched from a traditional office plan to an open plan. Surprisingly, the study also found that the volume of face-to-face interactions decreased by about 70% in open space plans, with an associated increase in electronic interactions (i.e. email and instant messaging) of 22-56%. The authors surmise “that employees value their privacy and find new ways to preserve it in an open-plan office. They shut themselves off by wearing large headphones to keep out the distractions caused by nearby colleagues.” Additionally, people are less inclined to have old-fashioned “doorway conversations” when the audience is the whole office.

Aside from general distractions, the researchers attribute the reduced ratio of face-to-face interactions versus electronic interactions as a primary factor in decreased productivity. Namely, it takes longer to resolve most issues through electronic means as op-

posed to face-to-face interaction. If the majority of a person’s communication occurs through email, productivity suffers.

Even in instances where face-to-face contact occurs in open offices, they do not generate productivity improvements. In 2016, Fortune magazine provided an example of open office inspired collaboration between a company’s employees. Two individuals were discussing an upcoming project, a new cookbook, when several “eavesdropping colleagues” joined the conversation and generated a list of people to reach out to for recipes. Through their combined efforts, the book ended up containing 50 recipes from famous chefs and ce-

lebrities, an outcome that might seemingly prove the benefits of open offices on productivity. However, one has to wonder how much value each person who abandoned their projects added to the new project and how much was lost on their assigned projects. Research shows that distractions severely decrease a person’s ability to fully focus on a task, so the “eavesdropping” that occurred decreased worker productivity in real time.

Interruptions to a person’s work is also shown to decrease not only their performance on their work but also job satisfaction, decreasing long-term productivity. Furthermore, it seems unlikely that the two people originally assigned to the project could not have come up with a comprehensive list on their own through a simple Google search. The evidence supports the argument that higher productivity tends to prefer planned collaboration over spontaneous collaboration.

People tend to adjust their behavior to meet their needs. If they need assistance with a project, they will generally seek out assistance. Conversely, if they need private time to meet a deadline, they will take that time. People will balance their face-to-face interactions on their own, without guidance from above. Similar to our

discussion on the study of Keynesian macroeconomics, it is high time that we recognize that the open office concept was a valiant experiment but that the evidence does not support its value.

It is clear that if companies value productivity, they will have to face up

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to human cognitive limitations and abandon the open floorplan fad. Any possible improvements in collaboration are negated by the loss in productivity and lower levels of worker performance. The bottom line is that research clearly shows that distractions significantly reduce efficiency and increase the likelihood of seri-

ous mistakes and lapses in judgment. While open layouts are trendy and reduce occupancy costs, they also notably reduce worker productivity. Stated bluntly, saving \$600-1,000 per employee a year in rent pales in the face of \$10,000-100,000 of lost productivity per worker annually.

## About Dr. Peter Linneman

Dr. Linneman, who holds both Masters and Doctorate degrees in economics from the University of Chicago, is the Principal of Linneman Associates. For nearly four decades, he has provided strategic and financial advice to leading corporations. Through Linneman Associates, he provides strategic and M&A analysis, market studies, and feasibility analysis to a number of leading U.S. and international companies. In addition, he serves as an advisor to and a board member of several public and private firms.

Dr. Linneman is the author of the leading real estate finance textbook, *Real Estate Finance and Investments: Risks and Opportunities*, now in its fourth edition. His teaching and research focuses on real estate and investment strategies, mergers and acquisitions, and international markets. He has published over 100 articles during his career. He is widely recognized as one of the leading strategic thinkers in the real estate industry, and was named among the top 30 “Most Influential People in Real Estate” by Commercial Property Executive in 2013.

He also served as the Albert Sussman Professor of Real Estate, Finance, and Business and Public Policy at the Wharton School of Business at the University of Pennsylvania until his retirement in 2011. A member of Wharton’s faculty since 1979, he served as the founding chairman of Wharton’s Real Estate Department and the Director of Wharton’s Zell-Lurie Real Estate Center for 13 years. He is the founding co-editor of *The Wharton Real Estate Review*.

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