



Dual Monitors Boost Productivity, User Satisfaction

Introduction: Too Many Windows, Not Enough Space

Many knowledge workers today are constrained by the size limits of their device screens. Laptops are getting smaller and thinner, but the amount of available screen real estate shrinks in tandem.

Think about a typical usage scenario: A worker may be viewing an Excel spreadsheet, while their e-mail client, Web browser, IM application, and Windows Explorer windows are running in the background. To get from one to another requires switching active windows and taking the focus away from critical work.

In a 2009 *New York Times* article, tech guru Farhad Manjoo describes the problem: "I'd switch over to a browser window to look something up, but as soon as I did so, all traces of my work would disappear from the screen and I'd forget about the task at hand."¹

As windows multiply, so do the sizes of the files being modified. At typical resolution and 100-percent magnification, a laptop screen can display around 15-18 columns by 25 rows of a basic Excel spreadsheet. Larger documents require extensive scrolling across and down, which means users take longer to complete tasks.

Likewise, a worker who is revising a document may need to switch among the original and new versions. Switching windows makes this a frustrating and time-consuming process.

It follows, then, that increasing the screen real estate available to workers enables them to see more at once and get their work done more efficiently. In fact, many research studies bear this out.

Dual Monitor Productivity Research

Over the last few years, several researchers have conducted studies to determine the efficacy of dual-monitor configurations in boosting productivity and increasing user satisfaction. In this report, we'll be looking primarily at results from:

- "Dell Multi-Screen Productivity Study," conducted by the Software Usability Research Laboratory of Wichita State University (2011, commissioned by Dell)
- "Lightweight Task/Application Performance using Single versus Multiple Monitors: A Comparative Study," conducted by the Georgia Institute of Technology (2008)
- "Monitor Size and Aspect Ratio Productivity Research," conducted by the University of Utah (2008, commissioned by NEC)

The tests involved subjects who were assigned both text and spreadsheet-editing tasks, cut-and-paste operations, and other typical work activities, to be completed on single and dual-monitor configurations. Time and accuracy measurements, click paths, window switches, and user impressions were analyzed for each respondent on each monitor configuration.



¹ <http://www.nytimes.com/2009/01/15/technology/personaltech/15basics.html>



Dual Monitors: Do More in Less Time

The research results prove, overwhelmingly, that dual-monitor configurations save time and increase accuracy among workers. They also indicate, based on comments from participants, that workers prefer dual-monitor setups over single screens.

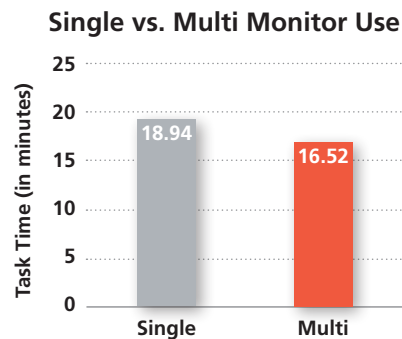
According to the Wichita study: "The 17-inch single monitor configuration was clearly the least preferred configuration. Participants were often observed to show disappointment (or groan!) when they were asked to use this configuration for the task. This was especially true if they had already used a dual-monitor configuration. Participant satisfaction was higher for the dual-monitor configurations overall. These findings are important, because it is well-documented that higher satisfaction often is related to higher productivity."

The Utah study found that workers showed a 44-percent boost in productivity for text tasks and a 29-percent rise for spreadsheet tasks when moving from a single screen to a dual-monitor setup.

In the Georgia study (Figure 1), participants were able to complete their given set of tasks nearly two-and-a-half minutes faster using a dual-monitor setup. Although

two minutes doesn't sound like a lot, it adds up quickly when multiplied by task and employee. Even a gain of five minutes per hour leads to 40 saved minutes per business day for each employee.

FIGURE 1: Dual-monitor users outperformed single-monitor users by more than 2 minutes in the Georgia study.



In the Wichita study, subjects were asked to collect text and images from several Microsoft Office documents and Internet pages and arrange them in a work document in order to recreate a read-only reference PDF. A dual-monitor setup enabled the subjects to keep the reference file in view while working. Therefore, they spent relatively less

Laptop + Monitor

Many workers use laptops as their primary computer, limiting the amount of useful screen space even more than single desktop monitors. In an October 2010 survey commissioned by Dell and conducted by Ziff Davis Enterprise, respondents discussed the disadvantages of using a single laptop display and the advantages of pairing laptops with desktop monitors and using both screens.

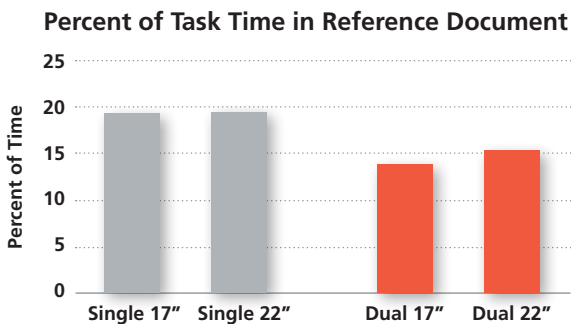
It's clear from the results that a single, often 14-inch or smaller laptop screen is not preferred for daily work tasks, and that a second monitor improves productivity, user experience, and task-completion time.

Disadvantages of laptop screens	Benefits of laptop + desktop monitor
Inferior work with graphics / video / animation	Greater employee creativity
Slower or more difficult multi-tasking	Reduces need for multiple PCs per employee
Employee fatigue / stress	Greater employee satisfaction / health / comfort
Inferior use / viewing of presentation formats	Greater employee or workgroup versatility
Employee dissatisfaction	Greater employee productivity
Inferior use / viewing of spreadsheets or databases	More customizable to individual users' needs
Difficulty using browsers / Web sites	Better / faster product development /design



time opening and closing the reference document, yielding significant time savings, as shown in Figure 2.

FIGURE 2: Dual-monitor users spent less time perusing the reference document in the Wichita State University study.



To translate these productivity gains into dollars and cents, the Utah study breaks out the potential savings by number of employees and by monitor configuration. For example, moving from a single 17-inch screen to a setup of dual 19-inch monitors brings a productivity gain that translates to 56 extra days of work per employee per year, or approximately \$1.5 million in cost savings per year for a company of 250 employees.

Moving to a widescreen 22-inch monitor, according to the Utah breakdown, yields 66 days of extra work per user and a savings of almost \$2 million.

Dual Monitors: Increased User Satisfaction

As mentioned, higher satisfaction often correlates to higher productivity, and study participants expressed their preference for dual-monitor configurations emphatically, as shown in Figures 3-5.

FIGURE 3: On a scale of 1-10, Wichita study participants ranked dual monitors as more useful than single screens.

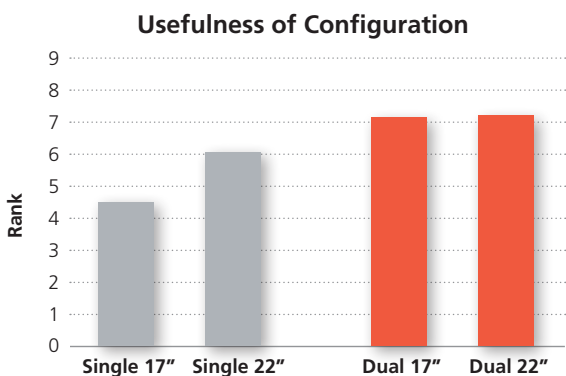


FIGURE 4: Wichita respondents said finding information is twice as easy with a dual-monitor setup.

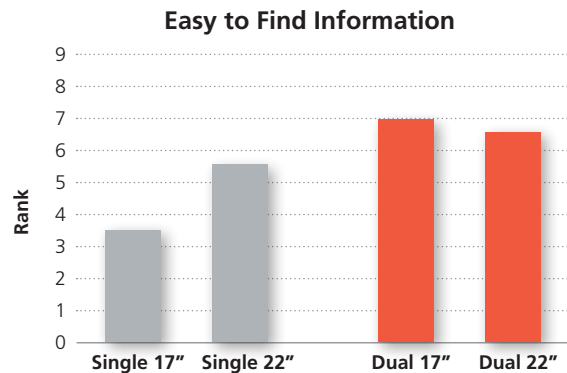
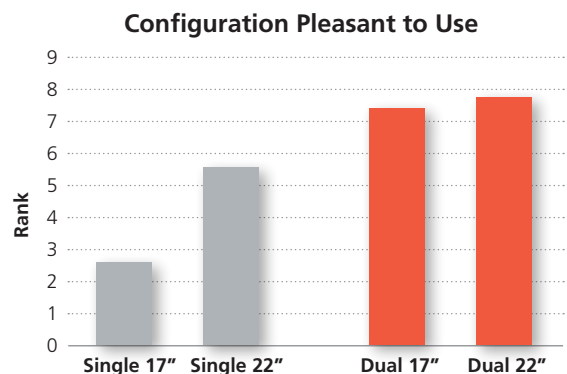


FIGURE 5: Participants in the Wichita study said dual-monitor setups were dramatically more pleasant to use than single-screen configurations.



These enthusiastic preferences were borne out in subjective comments from the Wichita participants, as well:

On using a single, 17-inch monitor:

"The screen was so small that menu bars within documents were consolidated, making editing and formatting more difficult. There was also not enough room to view the sample finished document while working with the other windows."

On using a dual-monitor setup:

"The two-screen layout made finding information easy and quick."

"I felt that I had enough space to have all the windows I needed open."



"I was having to switch back and forth between multiple windows, so this configuration gave me the most screen space, allowing me to view four windows at one time easily."

"I like being able to have multiple windows available at a time, and I also prefer the 16:9 aspect ratio over 4:3"

Dell as Your Technology Partner

It's abundantly clear that dual-monitor configurations pay for themselves through increased productivity and user satisfaction. From a measurable, time- and accuracy-based perspective, users with two monitors complete their tasks more quickly and more efficiently than users with single screens. This increase in

productivity translates to additional hours and days of work in each business year, and millions of dollars in potential gains.

To fully realize the benefits of display technology plus the added benefits of a dual-monitor configuration, companies must purchase the monitors, naturally, and then pair them with suitable computer hardware and the right software applications for their needs.

That's where Dell can help. Dell can provide complete solutions, including client computer products, software, and services. Additionally, Dell offers world-class support and services. Dell's tech support resolves any issues you may have on set-up quickly and efficiently. If problems arise, Dell can remediate them and get replacements to you quickly.



To learn more about Dell monitors and how they can help drive productivity at your company, please visit www.dell.com/monitors.