



CISCO THOUGHT LEADERSHIP SERIES

WIRELESS LAN BENEFITS STUDY

**CONDUCTED BY NOP WORLD - TECHNOLOGY
ON BEHALF OF CISCO SYSTEMS**

Fall, 2001

EXECUTIVE SUMMARY

Significant development in the market for wireless LAN infrastructure has led to in excess of 10% of US organizations (100+ employee) having either piloted or implemented the technology. Although the positive benefit of wireless LANs may appear to be logical, definitive, quantitative research has not to date explored the main perceived benefits of the technology **post-implementation**. This quantitative study, designed by Cisco Systems and NOP World – Technology, was designed to do just this. Highlights of the main results include the following:

- On average, end-users say that the wireless LAN allows them to be connected 1¾ more hours per day. This increased connectivity translates into an estimated 70 minutes increase in productivity by end-users, which in turn enables the average user to be as much as 22% more productive. **Given a reported average salary of \$64K, this indicates that the annual productivity improvement per user is worth, on average, \$7K – for the average large corporate organization, this is producing productivity improvement worth as much as \$6.3m per annum.**
- Based on the planned roll-out of wireless LANs (32% of employees on average are anticipated to have access within the next 12 months, and 44% within 24 months), this productivity improvement could amount to average figures worth as much as the equivalent of \$11m and \$16m, respectively, (assuming productivity does not further increase!)
- Companies underestimated the financial benefit in their ROI calculations. The average ROI estimates account for less than \$450 savings per user vs. **an actual ROI calculation of over \$550 per user. Respondents, on average, expect that implementation will save the organization \$164K annually compared to an original estimate of \$47,000 – and this still doesn't include any productivity gain analysis.**
- **63% of end-users report that wireless LAN technology improves the accuracy of everyday tasks** – with 51% of healthcare organizations finding significant improvements in accuracy (50% increased accuracy on average) – crucial, given the life and death implications of improved accuracy at the point of care.
- 87% of respondents believe that the wireless LAN improves their quality of life, taking into account attributes such as increased flexibility, productivity and time savings – with 43% overall believing that this improvement is significant.
- “Hot Spot” usage is gaining momentum. 60% of respondents are familiar with the concept, with 16% currently using. Among those aware of hotspots (but not currently using it) a further 54% are interested in taking advantage of the capability.
- On average 16% of employees within organizations with wireless LANs in place have access to the technology. 56% of these respondents using the technology use it either constantly or (at a minimum) daily.

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The almost ubiquitous strategic implementation of networking products in most vertical markets in the US, as well as the continued development of the Internet as a business tool, represent robust declarations of the benefits of shared information resources. It almost goes without saying that, in larger organizations, technology is being used to drive forward both core business lines, as well as new ways of doing business.

However, with choices more widespread than ever before, organizations are having an increasingly difficult time identifying the benefits of implementing many technology products and services. In addition, given uncertainty in global markets, there is a sense of trepidation with regard to the uptake of many new technologies, however innovative and potentially useful they may appear to be. While, over the past several years, new technology implementation has been viewed as “a must” in order to maintain competitive advantage, there is now a real sense that investment must be justified – and that benefits must be more clear-cut than they have been in the past.

Wireless LANs represent a major area for potential growth in this “new, new economy,” given the benefits offered by their implementation (including increased flexibility, productivity, and cost-effectiveness). With over 10% of US organizations having already either piloted or deployed wireless LAN infrastructure (with more than 25% having done so in some sectors), wireless LAN technologies are poised for dramatic growth over the next few years. Indeed, the market for wireless LANs is projected to grow from \$1.2 billion in 2000 to more than \$5.6 billion in 2005 (Cahners-Instat, April 2001).

The research has been designed to address the above requirements, within the parameters of the detailed objectives outlined below.

1.2 OBJECTIVES

As briefly outlined above, the Wireless LAN Benefits Research program has been designed to address several specific business objectives, including the following:

- to obtain a more thorough understanding of how wireless LANs are being implemented in the US marketplace, corroborating and enhancing previous qualitative research conducted by Cisco Systems
- to provide in-depth insight into the perceived benefits of wireless LAN implementation, as well as offering input into the challenges experienced by organizations who have deployed wireless LANs
- to provide detailed evidence of cost savings and/or benefit associated with the deployment of wireless LAN technologies

Taking the above detailed objectives into account, Cisco Systems and NOP World - Technology defined an appropriate quantitative methodology to provide for the most consummate insight into the market possible. This is outlined in Section 1.3.

1.3 METHODOLOGY

The methodology implemented as a part of the Wireless LAN Benefits Research program was applied because of its ability to obtain extremely in-depth data from those organizations implementing wireless LANs. With primary survey objectives consisting of obtaining detailed ROI (**R**eturn-**O**n-**I**vestment) figures, as well as **considered** productivity gain statistics, a **single-stage** CATI (**C**omputer-**A**ssisted **T**elephone **I**nterviewing) approach was anticipated to be potentially somewhat cursory in nature. The procurement of accurate ROI data would require the respondent to (potentially) reference documentation from the time of any cost/benefit analysis (or, indeed, speak to colleagues who were also involved in the process), while productivity gain estimates would necessarily require consideration off-line, rather than a rough estimate of an appropriate figure.

As such, a more comprehensive modular approach was adopted, consisting of three primary stages (in sum):

- **Stage 1** – telephone recruitment and demographic/firmographic interview
- **Stage 2** – e-mail outline of areas for further consideration – and interview
- **Stage 3** – telephone completion of interview based on areas outlined in e-mail

The interviewing distribution consisted of 300+ organizations (404 Stage 1, 303 Stage 3), sampled on a representative basis from the US population of 100+ employee organizations. The decision was made to focus on the larger end of the market in order to ensure sufficient buying power for wireless LAN infrastructure. Final sample size distributions were as follows:

Number of Employees	<250	250-999	1,000-4,999	5,000 – 9,999	10,000+	DK	Total
First Stage							
End Users	35	61	35	11	16	2	160
IT/MIS	33	83	58	20	48	2	244
Total	68	144	93	31	64	4	404
Second Stage							
End Users	26	43	26	10	13	2	120
IT/MIS	26	61	45	15	35	2	184
Total	52	104	71	25	48	4	304

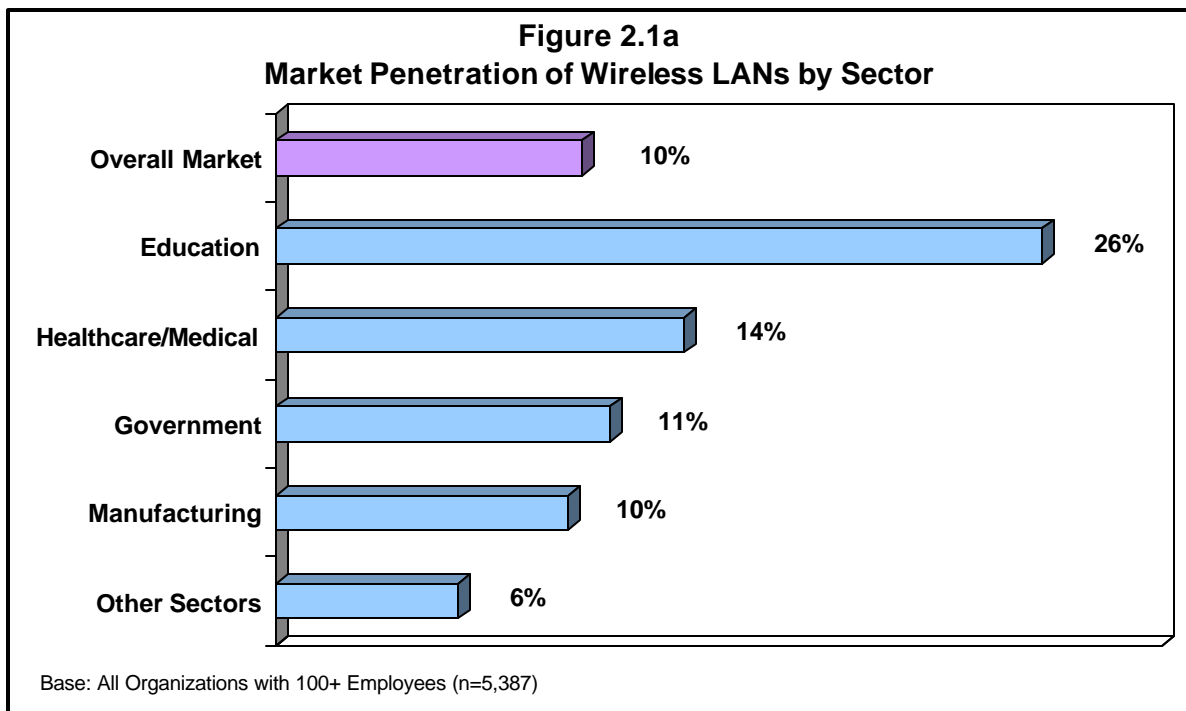
All sample was sourced from Cisco's proprietary version of the Harte-Hanks database.

2.0 WIRELESS LAN USERS

In advance of any appraisal of wireless LANs within US businesses, it is important to ensure that a detailed understanding is obtained with regard to exactly what groups are using the technology. As outlined in qualitative research conducted by Cisco Systems in May of 2001 (**Wireless LANs: Improving Productivity and Quality of Life**), this is comprised of two primary components; the types of organizations implementing wireless LANs and employee functions most likely to use the technology.

2.1 FIRMOGRAPHIC TYPOLOGY OF ORGANIZATIONS UPTAKING WLANs

As touched on as a part of the qualitative research, there are specific sectors that tend to be at the forefront of adoption of wireless LAN technology. **While the overall market penetration of wireless LANs in the US is approximately 10%**, a couple of vertical markets are adopting the technology much more quickly. In particular, the education sector is a rapidly adopting sector – with implementation to date very rapid indeed. As displayed in Figure 1.41 below, almost 26% of organizations operating in education spheres have already implemented wireless LANs:



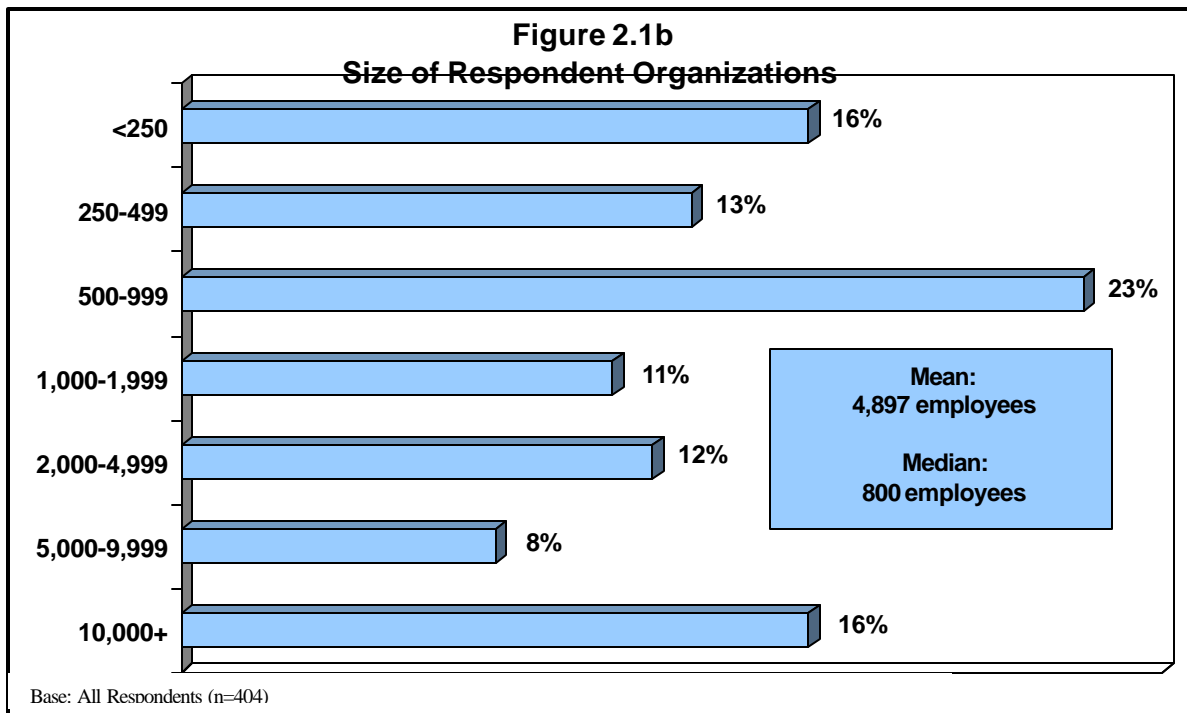
Adoption among large education entities (1,000+ employee) is even faster, with almost 35% of these organizations having already either piloted or implemented the technology.

The healthcare/medical sector is, as also touched on in the qualitative research is the other rapidly up taking sector; overall, almost 14% of these organizations have either piloted or implemented the technology, with this figure rising to 25% among large healthcare sector players, specifically those with 1,000 or more employees.

On a vertical market basis, other rapidly adopting areas include government and manufacturing sectors, each with around 10% penetration. Beyond these, most other sectors tend to be either implementing at a relatively laggard pace (with an average 6% penetration), or exist in a limited universe such that it is difficult to obtain a precise read into their implementation rates (large utility conglomerates, for instance). **The distribution of completed interviews by sector reflects the distribution outlined above.**

On an overall level, there isn't a great deal of difference between organizations with less than 1,000 employees compared to those with more than 1,000 in terms of implementation rates (9.86% vs. 11.19) – it is only in the rapidly adopting sectors where the discrepancy becomes more marked, with the latter adopting much more quickly.

Given there are not particularly well-defined differences by company size in terms of penetration, a fairly even spread of 100+ employee organizations was achieved:

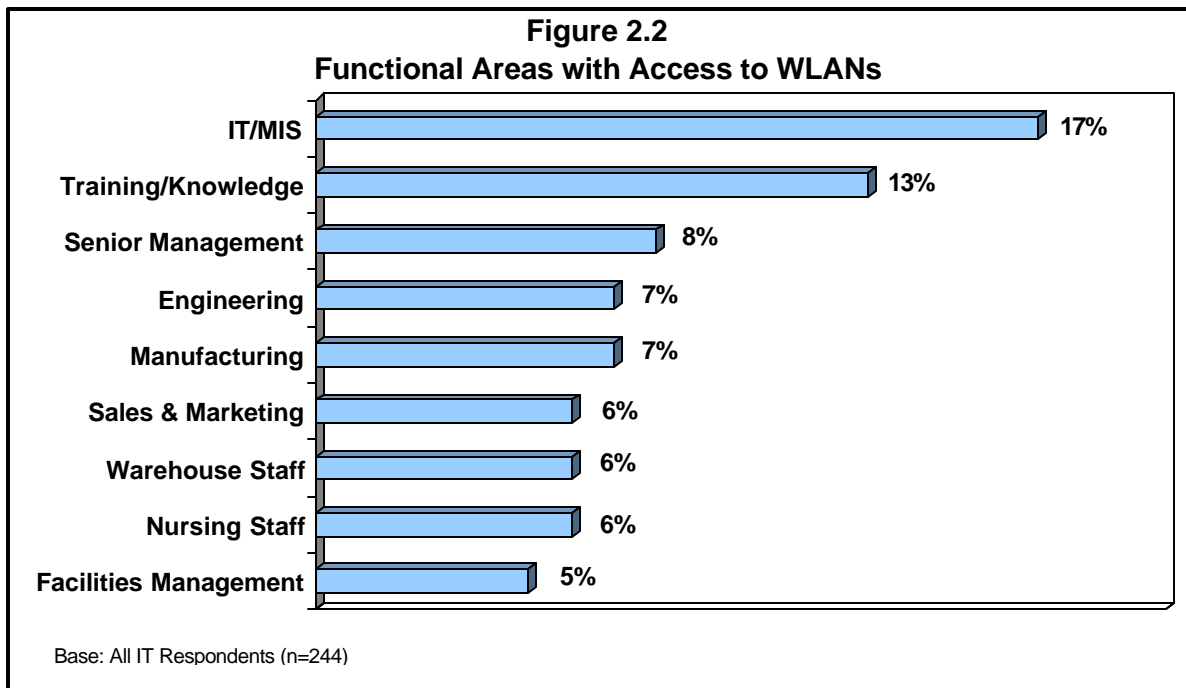


While a good range of employee sizes qualified for interview based on wireless LAN penetration, a full 16% of organizations had more than 10,000 employees. Indeed, the interviewing distribution is skewed towards large organizations in general – this is to be expected with emerging technologies such as wireless LANs. Even given this over sampling of large organizations, however, a very few, very large organizations are tending to artificially inflate the average number of employees figure (mean = 4,897). As such, the median of 800 employees is probably a better reflection of an “average” respondent company size.

2.2 FUNCTIONAL AREAS USING WIRELESS LANs

Within organizations that have implemented wireless LAN technology, **16% of employees on average have access to the technology.** This corroborates the findings from the initial qualitative research conducted by Cisco Systems. This figure rises to as high as 21% of employees in healthcare sector organizations with wireless LANs, and to around 20% in education and government spheres.

As a part of the WLAN Benefits Research, IT/MIS respondents were also asked to indicate what departments or functional areas had access to the wireless LAN infrastructure. As briefly noted in the qualitative pre-stage, the areas with most widespread access to wireless LANs include IT, senior management, and sales:



In addition, in 14% of organizations, ALL employees and departments had access to the wireless LAN. This ubiquitous type of access is most commonly seen in smaller organizations (less than 250 employees) and those operating in education or healthcare vertical market sectors.

Other areas with access are very diverse, ranging from shipping and receiving, to finance, to PR, to emergency room staff. All other areas (not outlined above) have access in less than 5% of organizations, however. **In sum, a wide variety of departments have access, depending on the specific needs of individual organizations.**

3.0 USE OF WIRELESS LANS

Wireless LAN usage among functional areas with access is very regular – **a full 56% of respondents interviewed are using the WLAN either constantly or on a daily basis**. On average, IT/MIS respondents interviewed are using the WLAN around 2 times a week, while end users are using the technology 4 times a week on average (being required to use the technology a minimum of once a week).

There are no particular patterns in usage frequency by vertical market or company size; however, the more staff that have access to the WLAN, and the longer access structures have been in place, the more reliant respondents tend to be on the technology.

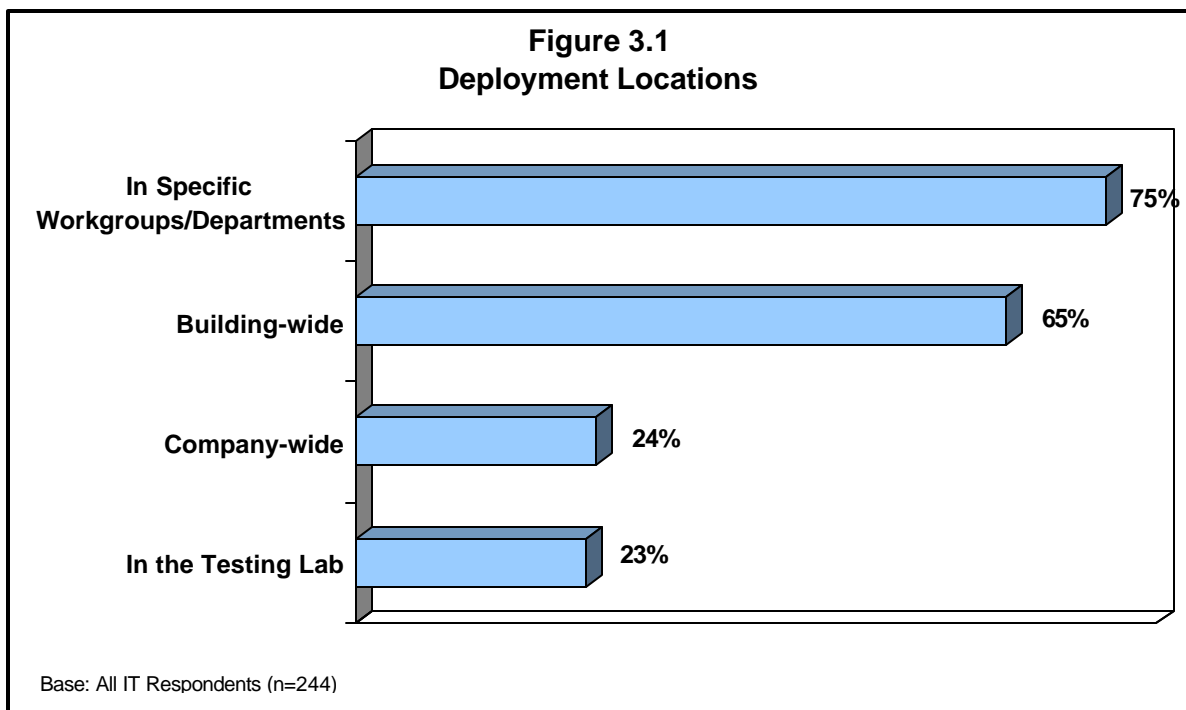
3.1 STAGES OF DEVELOPMENT

Overall, **60% of organizations interviewed** had progressed with wireless LAN implementation to the stage that the technology was **in a production setting or being rolled out** on a wider basis. A further 25% of companies interviewed were currently piloting wireless LANs within the organization, while 15% were still at the “beta test” stage, prior to a more comprehensive pilot.

Given 40% of organizations are still beta testing or piloting, this explains (to some extent) why IT/MIS departments still have the most access at the current point in time. As wireless LAN technology moves further down the road towards production settings, the more departments tend to exploit the benefits of the technology. Assuming access is in place, companies in all sizes and sectors are equally likely to have progressed on to production stages in the developmental cycle. As previously mentioned, an average of 16% of employees have access to the wireless LAN, with healthcare, education and government boasting the highest numbers of users.

According to IT/MIS respondents, wireless LANs tend to have been in operation, on average, 1 year. End users tend to estimate the length of time that they have been using wireless LANs at slightly longer, at almost 15 months (this is as a result of end-user organizations, inevitably, being less likely to include beta test or pilot stage environments. There are no particular differences on either of these scores by size or sector.

Wireless LANs tend to be deployed on a widespread basis within specific workgroups/departments or buildings (or both), with a further quarter having rolled the technology out on a company-wide basis:



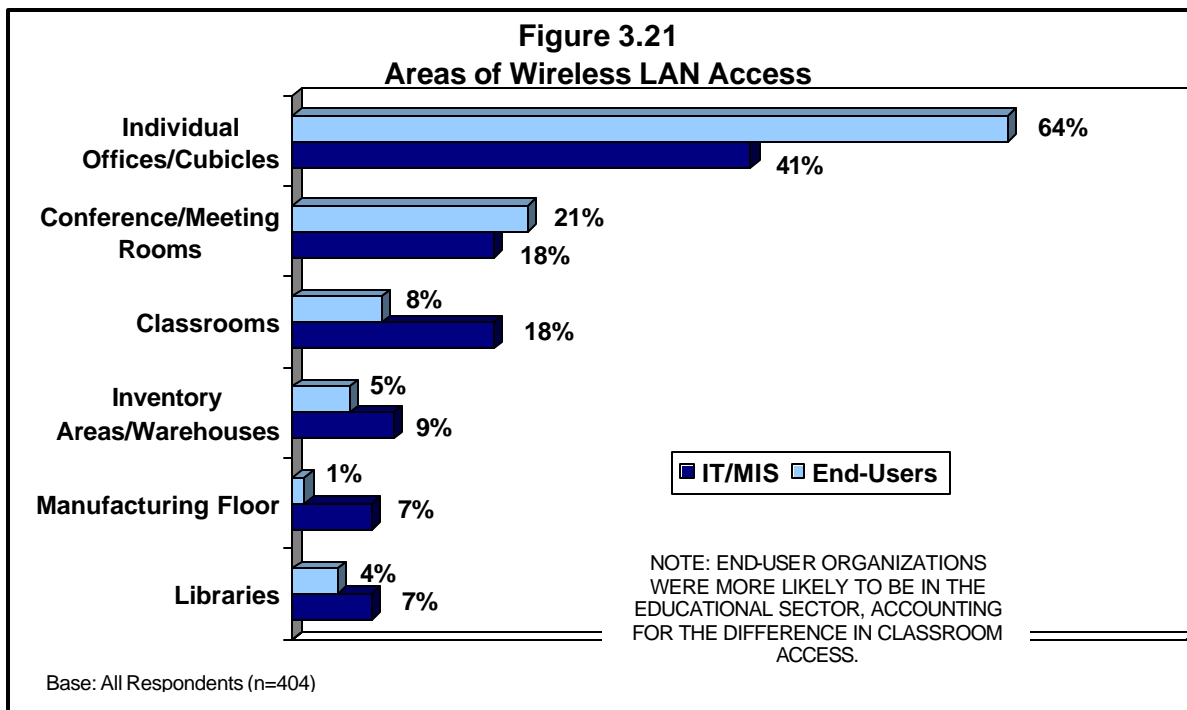
3.2 APPLICATIONS

Wireless LANs are being utilized for a wide variety of applications, in an increasingly diverse set of locations and across several key platform types.

3.2.1 DEVICES AND AREAS USED TO ACCESS WIRELESS LANs

According to IT/MIS respondents, 80% of organizations with wireless LAN infrastructure in place are using notebook or laptop computers as the primary network access platform. Notebooks are followed by desktops (at 47%) and PDAs or hand-held computers (at 31%). While the education sector in particular is focusing on notebooks or laptops as wireless LAN access platforms (86% using them with wireless LANs), the manufacturing marketplace has identified the PDA as an ideal means of accessing inventory details while in warehouse or manufacturing floor environments (35% using PDAs to access the wireless LAN). The healthcare sector is adopting a two-pronged approach; both notebooks and PDAs are being utilized with the wireless LAN at higher than average rates.

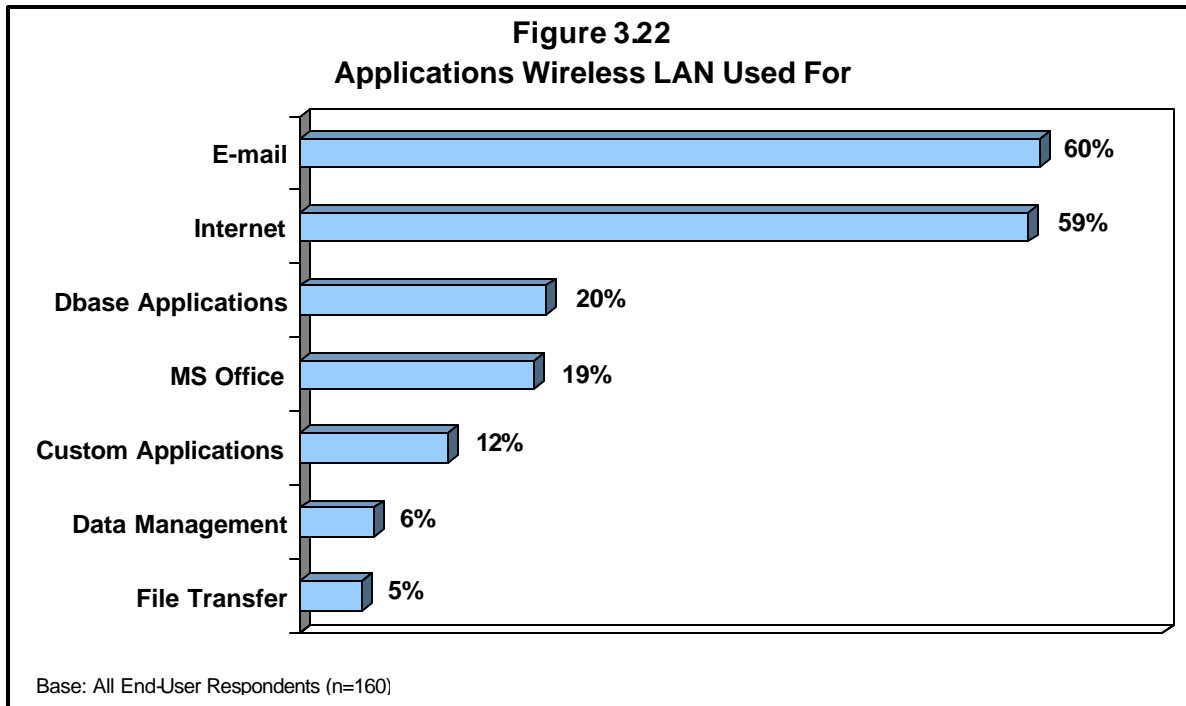
IT/MIS respondents tend to underestimate the extent to which the wireless LAN is actually accessed from individual offices and cubicles by end-users, believing that usage is slightly more disparate than it actually is. Two-thirds of end-users indicate that they access the wireless LAN from individual offices or cubicles, compared to the IT estimate of 41%:



Differences by sector tend to only be marked for obvious differentiators; classrooms are obviously of particular relevance for the education sector, and inventory areas/manufacturing floor environments tend to be of more specific focus for manufacturing organizations.

3.22 KEY WIRELESS LAN APPLICATIONS

End-users were asked which key applications they used the wireless LAN for:



As might be expected, the “anytime, anywhere” communications capability provided by the wireless LAN is perceived as one of the most significant advantages of the technology, with e-mail and Internet-based applications the most widely utilized applications over the wireless LAN. These applications are followed at some distance by database applications and Microsoft Office packages.

There are few variations in this pattern by any key firmographics; where wireless LANs have been implemented, communications applications are widely used over the infrastructure, regardless of type of company or level of respondent.

IT/MIS respondents were asked what applications they thought end-users might be making the most use of over the wireless LAN; although they tend to slightly underestimate usage of all applications over the wireless LAN, their perceptions of usage mirror actual application practice.

3.23 INTEREST IN “HOT SPOTS”

60% of respondents are familiar with the concept of “hot spots,” defined as areas outside of the office (or home) that allow users access to the company network or the Internet. Examples of hot spots might include airport lounge or coffee shop environments. As might be expected, this figure is slightly higher for IT/MIS respondents – although 51% of wireless LAN-using end-users are aware of hotspots. This awareness tends to be consistent regardless of any other demographic or firmographic attributes.

According to IT/MIS respondents, 13% of organizations have staff utilizing these “hot spots.” This usage figure is fairly consistent across all sizes of company – until the 10,000+ employee level is reached. Over a quarter (27%) of organizations at this level have employees taking advantage of hot spot technology.

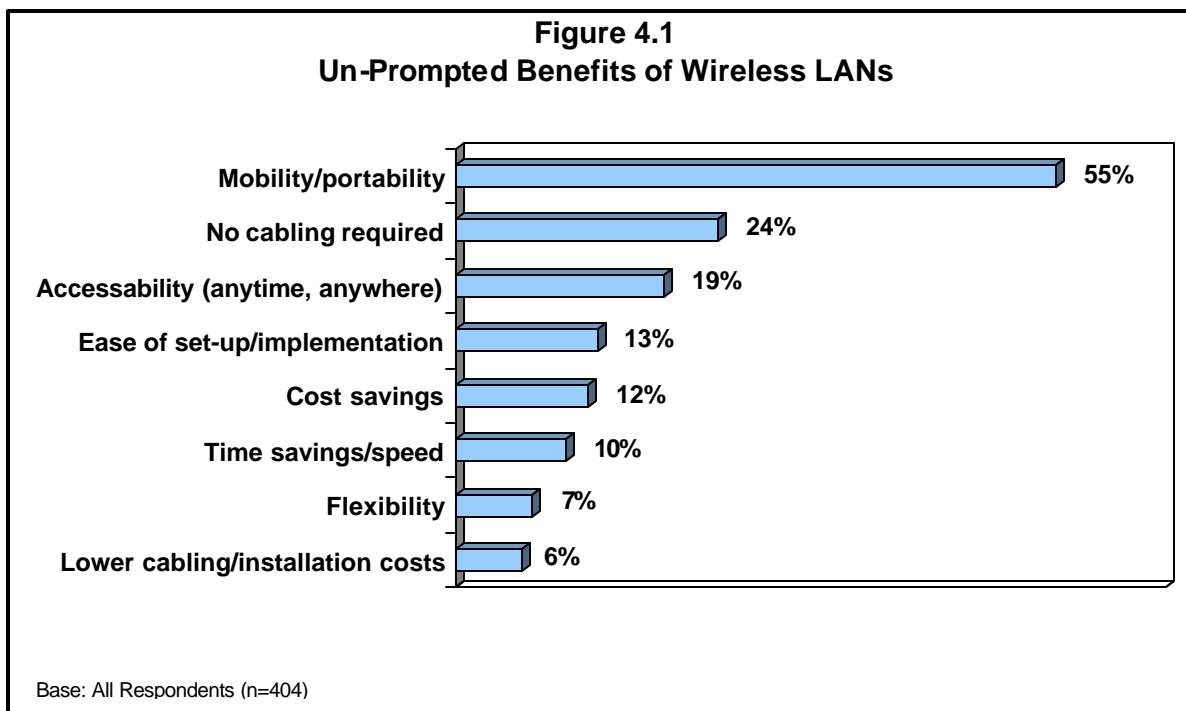
Among end-users aware of hot spot technology, but not yet using it, a further 54% are interested in taking advantage of the capability. This figure approaches two-thirds in the education (63%) and healthcare (67%) sectors – although interest is more limited in other sectors. In particular, staffs in sectors that do not regularly experience an “off-campus environment” (such as manufacturing) tend to be less keen on hot spot technology.

4.0 BENEFITS OF WIRELESS LANS

A significant element of the Stage 1 Wireless LAN Benefits research revolved around the **perceived** benefit of wireless LAN use from the respondent point of view. Initially, respondents were asked for their “top-of-mind,” un-prompted insight into what they view as the primary benefits of wireless LAN implementation.

4.1 UN-PROMPTED BENEFITS OF WIRELESS LANS

While the qualitative pre-stage identified time savings, flexibility, and quality of work as key benefits (which they certainly are), an initial appraisal of respondent perception points to the fact that aspects of **mobility and portability** come to the forefront as the **most important features of wireless LANs**:



This is the case across all company sizes and sectors. When combined with accessibility (anytime, anywhere access) – which is a similar feature – this increased mobility is by far the most strongly perceived benefit of wireless LANs. These aspects of implementation are noted as paramount by IT/MIS respondents and end-users alike:

“Portability is the most important benefit, no wired infrastructure, you just pick it up and move it. It is also easy to set up, and it's quick to get installed.” Network Manager, Education, 400 Employees.

“This is a hospital, so portability is a great boon - being able to chart at the point of care for the patients is a major benefit.” Network Manager, Healthcare, 700 Employees.

“Mobility is essential. Checking inventory of our product (large store fixtures) would be impossible with any type of wired equipment, it requires the person to move around a great deal – and this gives you actual figures in real time.” Network Engineer, Manufacturing, 450 employees.

“Being able to keep up with e-mail from wherever I am is great, the technology gives me more immediate access to communication.” Supervisor, Government, 950 employees.

“I can take my office with me and work anywhere on site I like, whether in a colleague’s office, outside, or the coffee shop!” Business Line Director, Communications, 150 employees.

Other “top of mind” key benefits of wireless LANs are perceived to include the fact that no cabling is required, and that set-up/implementation is relatively painless. These benefits are primarily perceived by IT/MIS respondents:

“Ease of implementation and moving offices are key benefits – we don’t have to drop cords and wires of any kind. Eases MAC’s (moves and changes) of any kind.” Network Engineer, Communications, 10,000.

“You can use it in areas where you don’t have the capability to run wire.” Technician, Government, 10,000 employees.

Cost savings (primarily as a result of lower cabling/installation costs) are also key benefits as perceived by IT/MIS respondents:

“Not having to run cables saves us masses of time and money.” Technician, Utility and Energy Services, 400 employees.

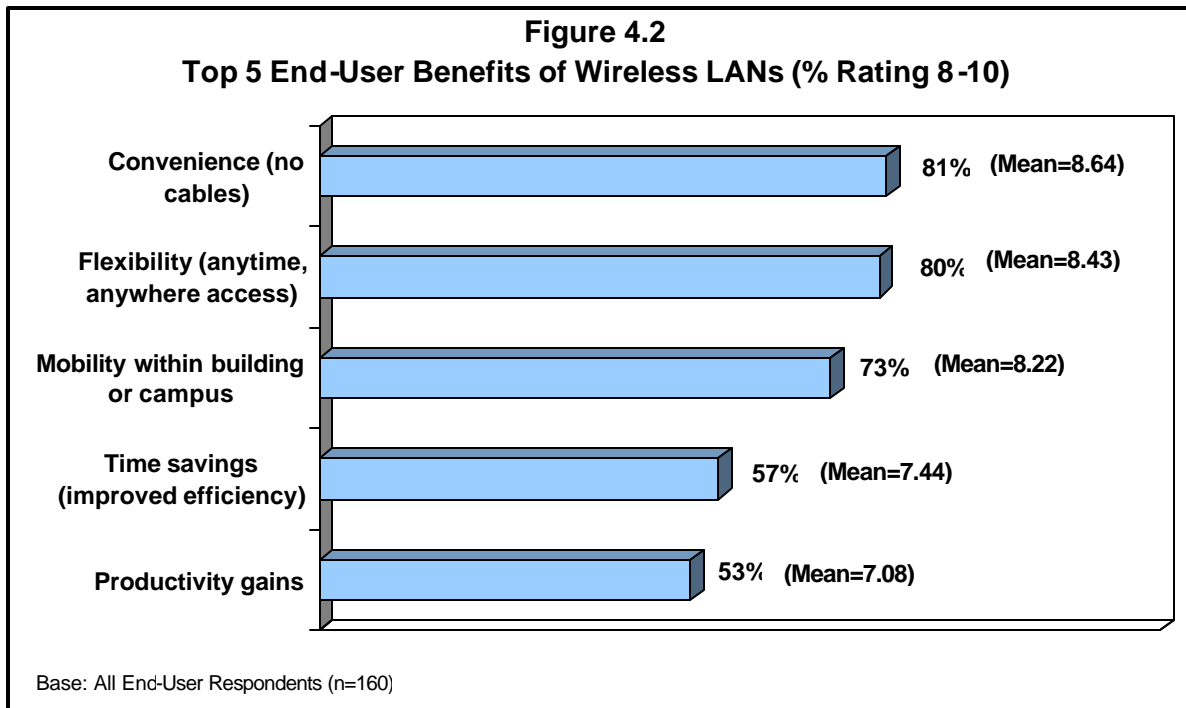
“Cost savings is the primary benefit: Running signals from building to building is a lot cheaper than running wire from building to building.” IT Manager, Social Services, 10,000 employees.

All of these topline, general benefits are viewed as important across all sectors, with few significant differences across vertical markets– or, indeed, company sizes. The only issue of note is that the mobility aspects of wireless LANs are of somewhat less importance to government agencies (37% vs. average of 55%) – here, the cost savings provided by eliminating the need for cabling is more of an issue than it is in other sectors (20% stating this as a primary benefit, compared to an average of 12%).

Sections 4.2 and 4.3 look at specific benefits as perceived by both end-users and IT/MIS respondents in more detail.

4.2 END-USER BENEFITS OF WIRELESS LANs

Following on from an initial, unprompted appraisal of the perceived benefits of wireless LANs, respondents were asked to rate a series of key potential benefits as outlined by the qualitative research and added to by Cisco Systems and NOP World - Technology. Issues surrounding **convenience, flexibility and mobility again came to the forefront** as the essential benefits of wireless LAN implementation, with three-quarters or more of end-user respondents rating these as “important” (8-10 on a 10-point rating scale):



End-users also perceive time savings (due to improved efficiency) and productivity gains as integral benefits. The quantification of the dollar benefit derived from these areas will be looked at in more detail in Section 5.2.

These core benefits are followed by several other “lesser” boons, including:

- easier to collaborate with others (46%)
- increased competitive advantage for company (34%)
- reducing errors (by replacing paper with wireless output) (33%)
- improved company image (33%)

While all end-user respondent functions and organizational typologies tend to agree on the core benefits as important, interesting sectoral differences do exist. For instance, flexibility and mobility are of much less importance (in terms of proportion rated important - 8-10/10) to the government sector than they are to areas such as education and healthcare:

	Education (n=41)	Manufacturing (n=32)	Government (n=25)	Healthcare (n=19)	Other Sectors (n=43)
Convenience (no cables)	90%	84%	72%	74%	79%
Flexibility (anytime, anywhere access)	88%	81%	60%	95%	77%
Mobility within building or campus	78%	72%	64%	74%	72%
Time savings (improved efficiency)	51%	66%	44%	68%	58%
Productivity gains	46%	47%	48%	58%	63%
Easier to collaborate	49%	41%	40%	53%	58%
Increased competitive advantage	34%	34%	16%	58%	35%
Reducing errors	27%	31%	24%	68%	30%
Improved company image	46%	28%	20%	42%	26%

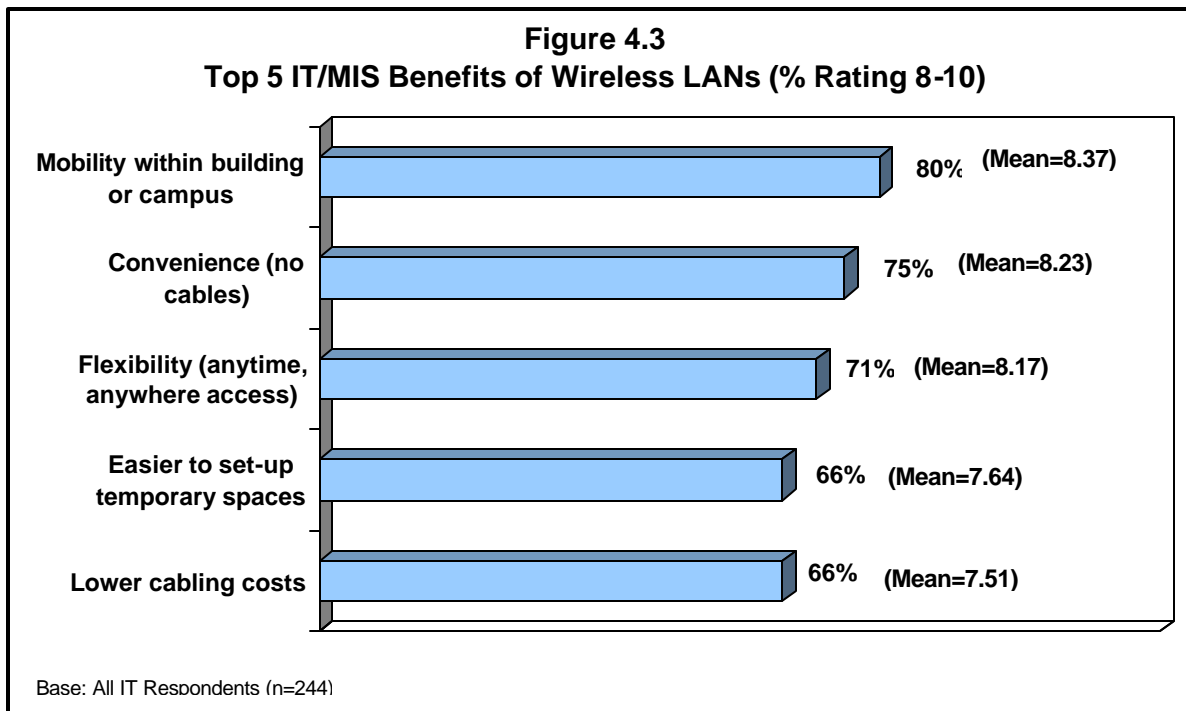
Another interesting difference between the sectors is the vast benefit experienced in reducing errors by the healthcare sector (68% rating this as important, compared to the average of 33%). This has been derived from the ability to enter details in care locations – rather than writing details down and entering them at another time. This is of obvious significance, in potential life and death situations.

End-users within education and healthcare sectors are much more likely than average to appreciate the benefit of wireless LAN implementation – a likely result of the fact that they have been quickest to uptake the technology.

4.3 IT/MIS BENEFITS OF WIRELESS LANs

When prompted as to the potential benefits of wireless LAN implementation, IT/MIS users were as likely as the end-users to view issues surrounding mobility, convenience and flexibility as being of paramount importance. Again, as many as four-fifths of respondents view these sorts of features to be the primary benefits of wireless LANs.

Differences start to arise, however, once the more “obvious” benefits have been established. Rather than viewing time savings and productivity as key benefits (as end-users do), **IT/MIS respondents are more likely to view key benefits** as including **easier set-up and lower cabling costs** (as one might expect – both respondent types MOST READILY NOTICING benefits as they impact their working lives):



This set of “core” benefits is followed by several others of somewhat lesser importance:

- easier adds, moves, changes (55%)
- time savings (improved efficiency) (43%)
- productivity gains (39%)
- easier to collaborate with others (33%)
- improved company image (30%)
- more efficient use of office space (28%)
- increased competitive advantage for company (27%)
- reducing errors (by replacing paper with wireless output) (24%)
- lower support and maintenance costs (19%)

It is worthy of note that, in particular, lower support is not a strongly perceived benefit for IT/MIS respondents. Given this is a potentially significant area for savings, it may well be worth Cisco focusing more marketing on this area – this is surely an educational issue rather than an area that will not be of significant benefit.

Looked at on a sector level, we again see that there is approaching ubiquitous agreement that mobility, convenience, and flexibility are the key benefits provided by the implementation of wireless LAN implementation. That being said, IT/MIS users in the healthcare sector are particularly likely to view these features as of priceless benefit:

	Education (n=78)	Manufacturing (n=57)	Government (n=34)	Healthcare (n=28)	Other Sectors (n=47)
Mobility within building or campus	78%	81%	79%	96%	70%
Convenience (no cables)	74%	77%	79%	75%	72%
Flexibility (anytime, anywhere access)	65%	79%	71%	86%	64%
Easier to set-up temporary spaces	68%	56%	71%	68%	70%
Lower cabling costs	63%	70%	71%	68%	60%
Easier adds, moves, changes	55%	54%	62%	61%	49%
Time savings (improved efficiency)	27%	49%	65%	54%	40%
Productivity gains	32%	44%	35%	43%	43%
Easier to collaborate	27%	30%	44%	36%	36%
Improved company image	37%	16%	32%	43%	23%
More efficient use of office space	29%	23%	35%	36%	23%
Increased competitive advantage	26%	25%	18%	54%	26%
Reducing errors	9%	37%	29%	43%	17%
Lower support and maintenance costs	9%	23%	24%	29%	21%

As with end-users, IT/MIS respondents in the healthcare sector tend to identify a higher number of the benefits covered than respondents in other sectors; a likely result of the fact that this sector is at the leading edge of the technology. Interesting distinctions arise with regard to the healthcare sector's realisation of competitive advantage and reduced errors in particular (the latter again due to the ability to enter details at the point of care).

4.4 BENEFIT PERCEPTION OF END-USERS COMPARED TO IT/MIS STAFF

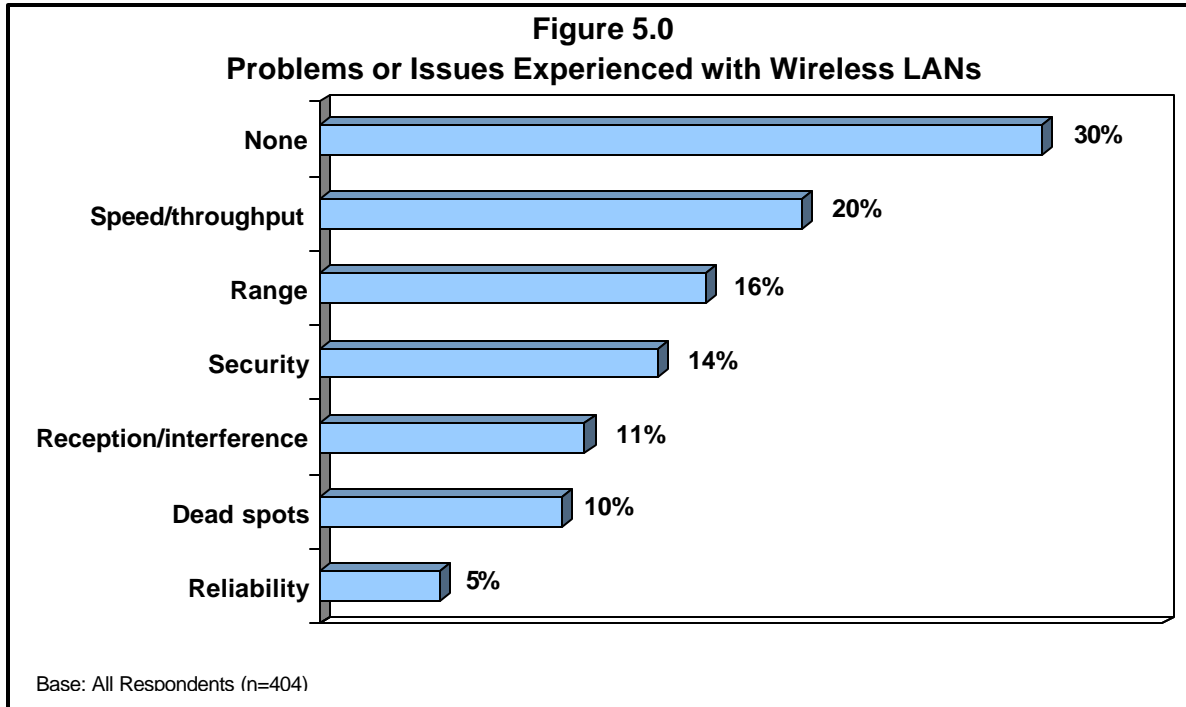
Although both end-users and IT/MIS staff agree that convenience, flexibility and mobility are the primary benefits associated with wireless LAN implementation, key differences do exist in their perception of other benefits. As briefly touched on before, end-users tend to focus on the time savings and productivity gains brought about by the freedom offered by a wireless LAN, while IT/MIS users focus on logistical aspects of installation, as well as cost savings achieved.

Key differences exist as follows:

End-Users (n=160)	IT/MIS (n=244)
Time savings	Easier to set up temporary spaces
Productivity gains	Lower cabling costs
Easier to collaborate with others	Easier adds, moves, changes
Convenience of no cabling in education	Mobility in healthcare
Increased competitive advantage in education, manufacturing	Lower support & maintenance costs in all but education

5.0 CHALLENGES OF WIRELESS LAN DEPLOYMENT

When asked about any particular challenges, problems or issues presented by the implementation of wireless LANs, it is worthy of note that **almost a third of respondents had experienced no issues whatsoever**, with this figure rising to **40% for end-users**:



Where problems have been experienced, they have tended to revolve around speed and range/reception issues. **It is worthy of note, however, that issues are experienced more regularly by IT/MIS respondents – indicating that, in many cases, IT/MIS respondents are considering their experience based on dealing with a relatively small proportion of their end-using population.**

As an example of the above, a full quarter of IT/MIS respondents perceive speed to be an issue – while only 14% of end-users have experienced any problems on this attribute.

6.0 RETURN ON INVESTMENT AND COST SAVINGS

As outlined in Section 1.3, Stages 2 and 3 of the Wireless LAN Benefits Study focused on key issues revolving around cost savings and return on investment analyses. The primary areas covered off as a part of these stages included the following:

- ROI (Return On Investment) calculations made with regard to the wireless LAN
- Productivity gains experienced through the implementation of wireless LANs

6.1 RETURN ON INVESTMENT CALCULATIONS

6.11 PROPORTION CONDUCTING ROI ANALYSES

According to IT/MIS staff, 26% of respondent organizations conducted an ROI analysis prior to the implementation of wireless LAN infrastructure. At just over a quarter of the overall base, this is not an overwhelming proportion of respondents. Reasons for not conducting an ROI analysis were varied, and tended to include the fact that, for reasons of cost or logistical issues, the choice was a “no brainer” (a quarter saying that there was simply no need to, and a further 16% indicating that cost was simply not an issue):

“The entry level cost was so low, and we knew what the benefits would be, so we decided to go ahead with it. We didn’t even think about it, given we’re not talking about a hugely expensive piece of technology, and we’re not centered around profit.” Senior Systems Administrator, Non-Profit Organization, 275 employees.

“We just didn’t think it was necessary. I needed the product whether it was financially beneficial or not. There are simply places I could not cable into one of my resorts, and even if I could, it would have been hugely more expensive to do so.” IT/MIS Manager, Hospitality, 200 employees.

“We are a school so we don’t really make decisions based on the financials. I only calculated the cost of implementing a wire network versus a wireless network – the latter would be cheaper to do in the first place, so what is there to think about?” IT Technician, Education, 120 employees.

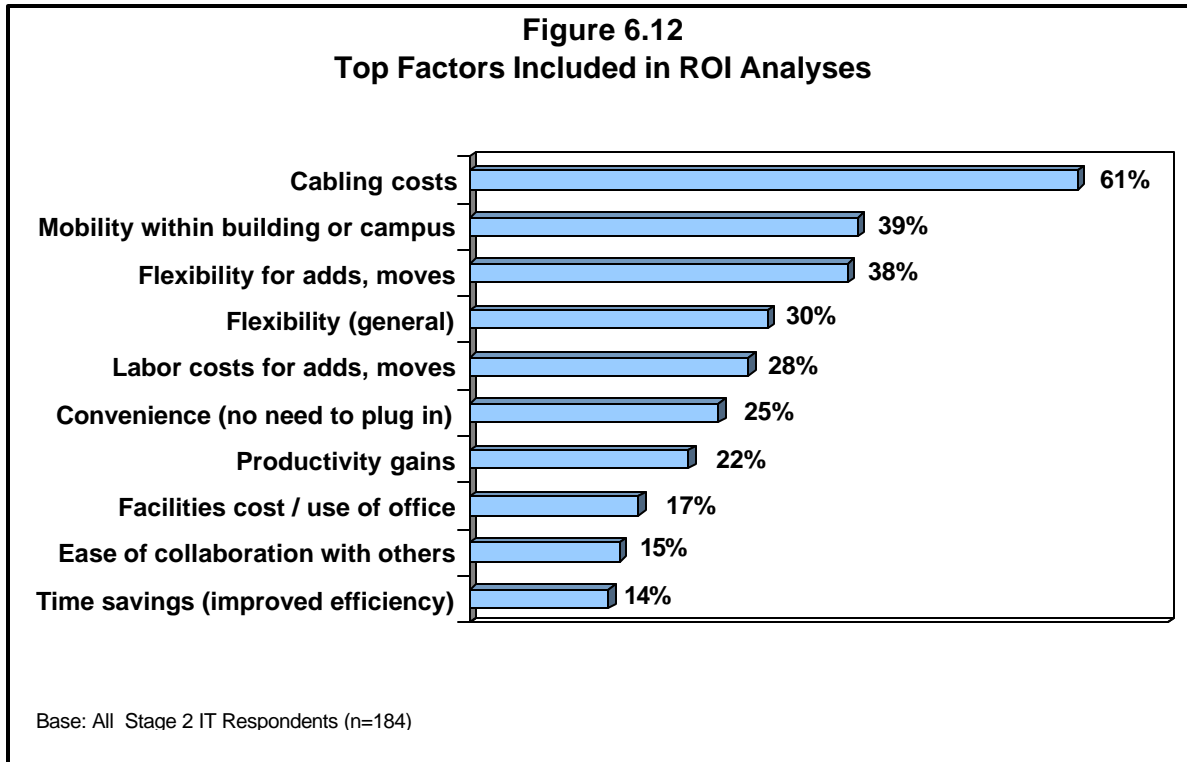
Other reasons for not conducting an analysis included the fact that the project was still in beta test or pilot stage (19%), or simply that there was a lack of time or manpower (10%).

The government sector is most likely to have conducted an ROI analysis (31%), in order to justify spending, with other areas more likely to assume benefit.

As a result of the limited nature of ROI calculations, those who had not conducted an analysis were asked by the Stage 2 e-mail to do so off-line, in order to ensure that the best understanding of how the process works was obtained.

6.12 FACTORS INCLUDED IN ROI ANALYSES

Respondents conducting an ROI analysis were asked to provide feedback as to what factors were included in their organizations detailed appraisal of cost/benefit with regard to wireless LAN implementation. As we have seen with regard to perceived benefits of the technology, the fact that no cabling is required comes out quite strongly – not only as a matter of convenience, but also as a cost-saving mechanism:



Other factors that were included in cost-benefit analyses to a lesser extent include the additional mobility and flexibility that will be enabled, allowing for less “down time.” Flexibility and labor costs associated with adding or moving workstations also came out in a significant minority of cost-benefit analyses.

6.13 ROI ESTIMATES

Overall, 30% of respondent organizations conducted their ROI analysis on a per employee basis, while 75% conducted investment calculations on a total company level (a few conducting the ROI analysis in both ways). Those who did not actually conduct any sort of ROI analysis would anticipate doing so in similar proportions – around a quarter at an employee level, with the remainder on an organizational level.

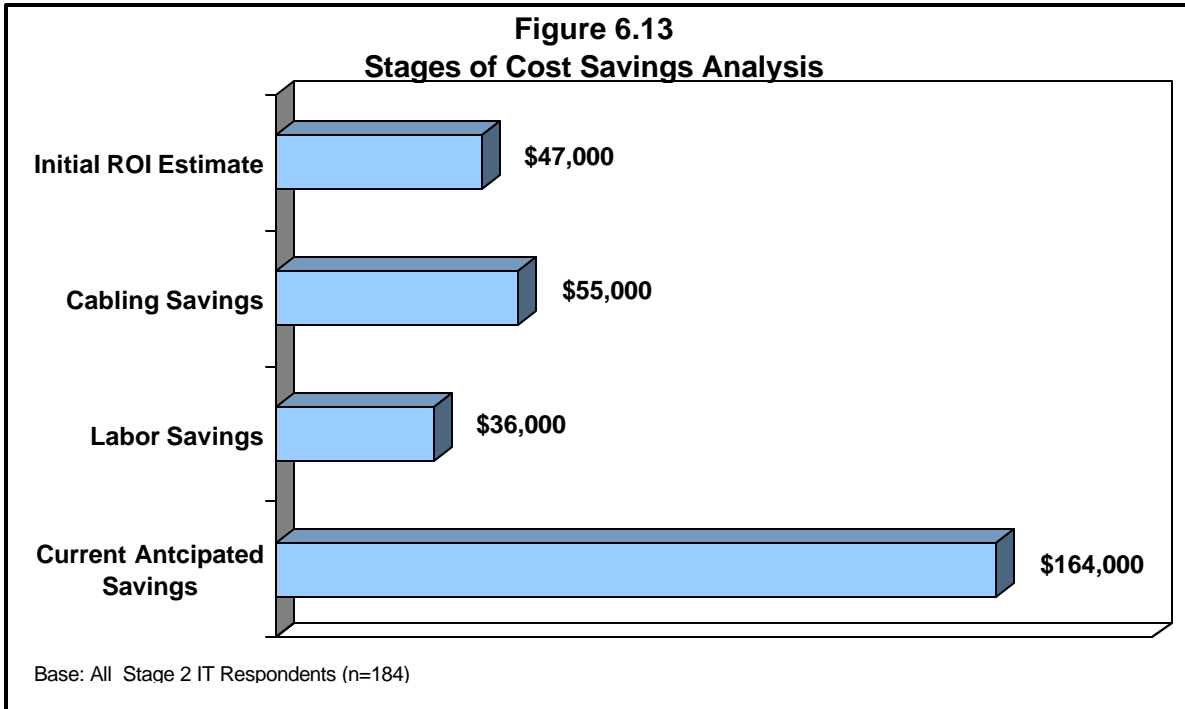
As previously mentioned, just over a quarter of respondents conducted return on investment analyses prior to implementation of wireless LAN infrastructure. As such, those who had not done so were asked to perform one prior to the Stage 3 telephone interview. **Among respondents who calculated (or would calculate) ROI figures at an employee level, the average savings per employee on an annual basis was found to be in excess of \$450.** However, this figure is even larger – over \$550 – for those that actually conducted an analysis, indicating that those who had not conducted an ROI analysis tend to slightly underestimate the financial benefit of implementation.

Those respondents who conducted (or would conduct) any ROI analyses on a total company level find the overall company savings to exceed \$47K. However, those who had not conducted an ROI analysis prior to interview tend to have again underestimated the benefit. **Organizations who had previously conducted an ROI analysis found that the total company benefit was more in the region of \$82K.**

Average total company ROI estimates were highest in leading edge sectors - **\$57K for education, and almost \$130K for healthcare.** All other sectors estimated return at between \$30K and \$40K.

However, these ROI figures would appear to underestimate actual savings. Excluding productivity gains, amounts saved would appear to far exceed initial ROI estimates. Just looking at what has been saved on cabling costs and labor costs associated with adds, moves and changes, it becomes obvious that initial ROI estimates may have been cautious. **With an average total company savings of \$55K on cabling (\$235 per drop) and \$36K on labor related to adds, moves or changes (\$79 per employee), an annual savings of \$91K per company is already being achieved.**

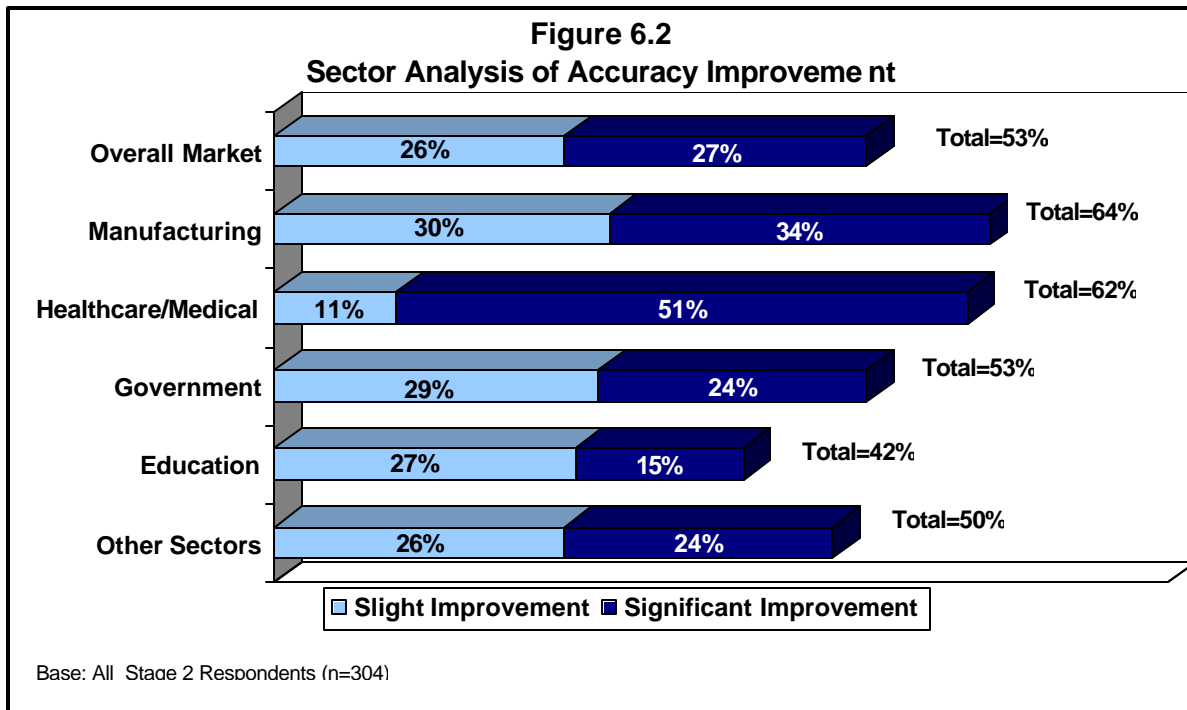
Further evidence of this initial underestimation is available when respondents are asked for their CURRENT view of the total annual savings that will be associated with implementation of wireless LAN infrastructure, **taking on board cabling costs and labor savings, in addition to other benefits experienced since implementation:**



Respondents, on average, expect that implementation will save the organization \$164K annually – and this still doesn't include any sort of productivity gain analysis.

6.2 INCREASED ACCURACY

Over 50% of respondents believe that the wireless LAN improves accuracy of everyday tasks – **with 63% of end-users believing that the technology minimizes mistakes that they make** (27% feel that their accuracy is significantly better). As many as 51% of healthcare staff feel that their accuracy is significantly better (again, a crucial benefit given the ability to be wired at the point of care) – but with manufacturing seeing the greatest overall benefit:



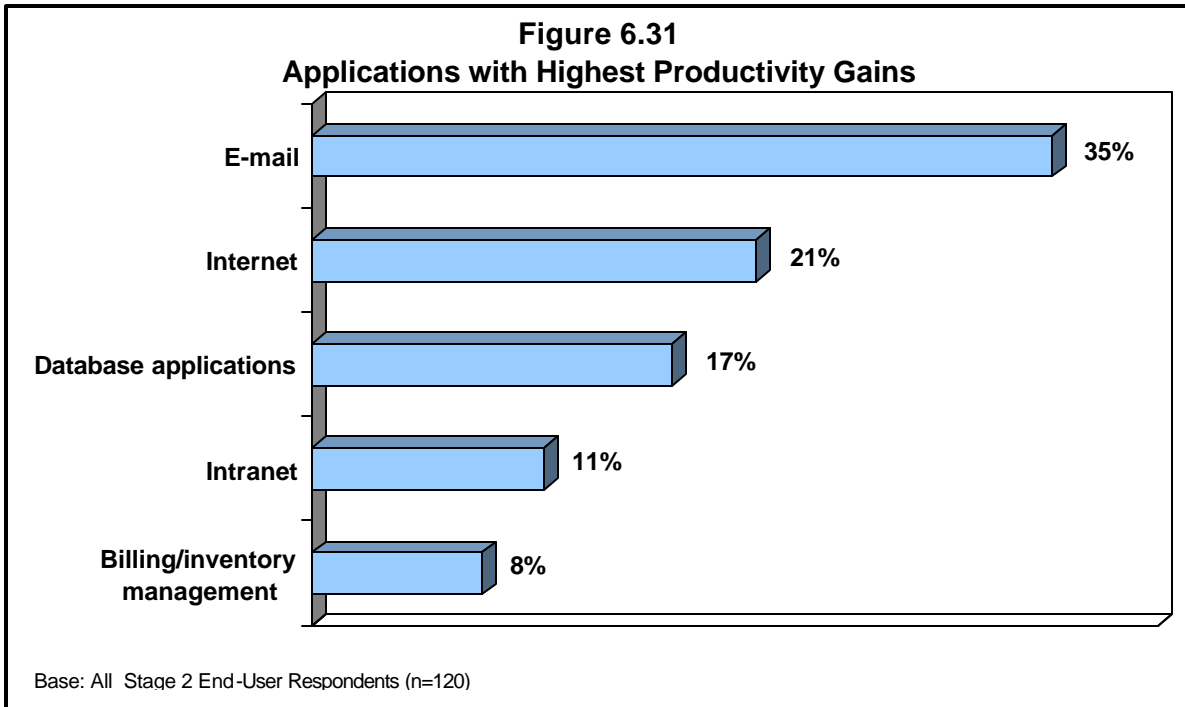
Only around a third of end-user respondents feel that the wireless LAN does not necessarily make them more accurate – and a significant proportion of these are concentrated in the education sector (58% feeling that accuracy is not improved).

Among those that feel that the implementation of wireless LAN infrastructure makes everyday tasks more accurate, **it is estimated that individuals are as much as 38% more accurate on average** (39% end-users, 37% IT/MIS). Although this figure is a respondent estimate of increased accuracy, it is significant in its size; 40% increased accuracy among individual users has the potential to save a lot of time and effort across a company. **Staff in the healthcare sector again leads the field here – respondents here expect that they are almost 50% more accurate in their everyday tasks.**

6.3 PRODUCTIVITY

6.31 APPLICATIONS WITH HIGHEST PRODUCTIVITY GAINS

Following on from an appraisal of return on investment estimates, end-users were asked about applications for which the highest productivity gains have been experienced since the wireless LAN was introduced. As we saw in Section 3.32, it is communications applications for which the wireless LAN is most suited, with e-mail and Internet-based apps seeing the highest productivity increases:



Only 5% of end-users indicate that no productivity gains have been experienced. IT/MIS respondents were also asked to theorize about productivity gains by application – similar estimates were provided, with the emphasis remaining on communications applications.

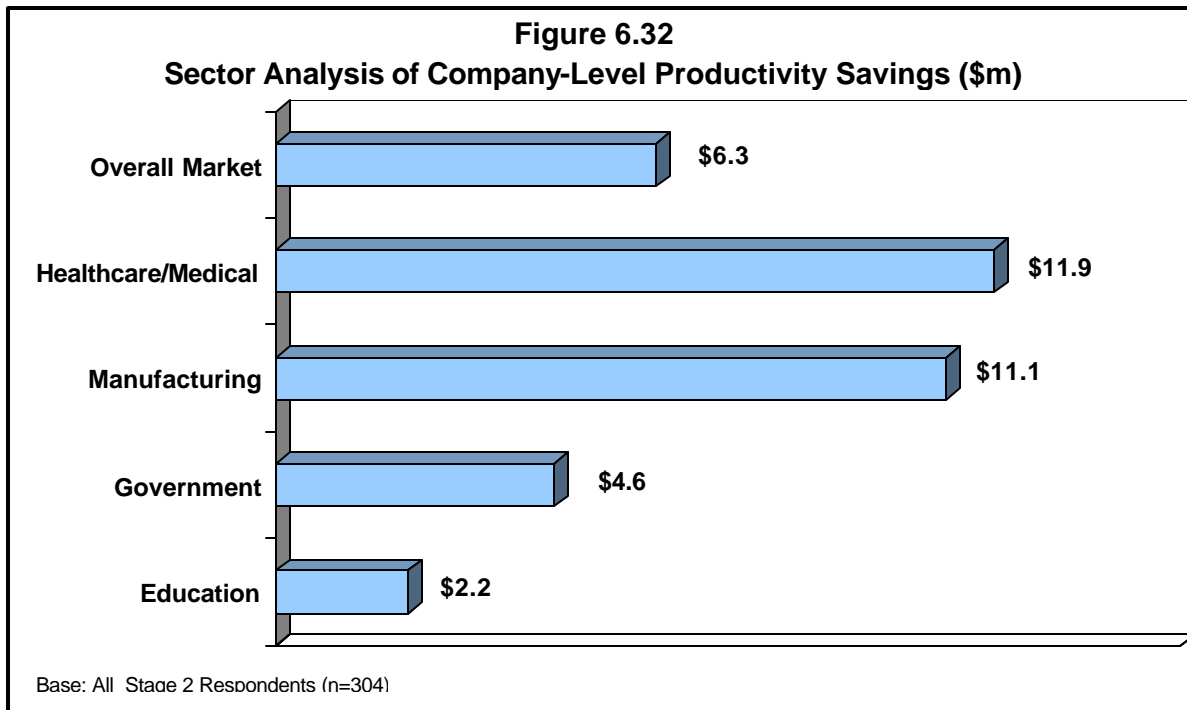
6.32 INCREASED PRODUCTIVITY

On average, respondents estimate that **having access to the wireless LAN means that they can be connected**, on average, **one and three-quarters hours more per day**. This view is consistent across IT/MIS respondents and end-users, with little variation by company size or sector (although government organizations post more modest gains, at an average of an hour and a quarter).

This increased connectivity translates into a significant amount of time saved for employees – estimated at around an hour a day by IT/MIS users, and as much as an hour and a quarter by end-users. Time savings are greatest in the healthcare industry, where the average time savings is also around an hour and a quarter.

This significant time savings is estimated to, on average, represent 17% of user working days. This relates almost directly to productivity – on average, users on the wireless LAN are anticipated to be as much as 22% more productive than they would otherwise be. The healthcare industry experienced the highest growth in productivity, with an average 25% increase in employee productivity as a result of wireless LAN implementation.

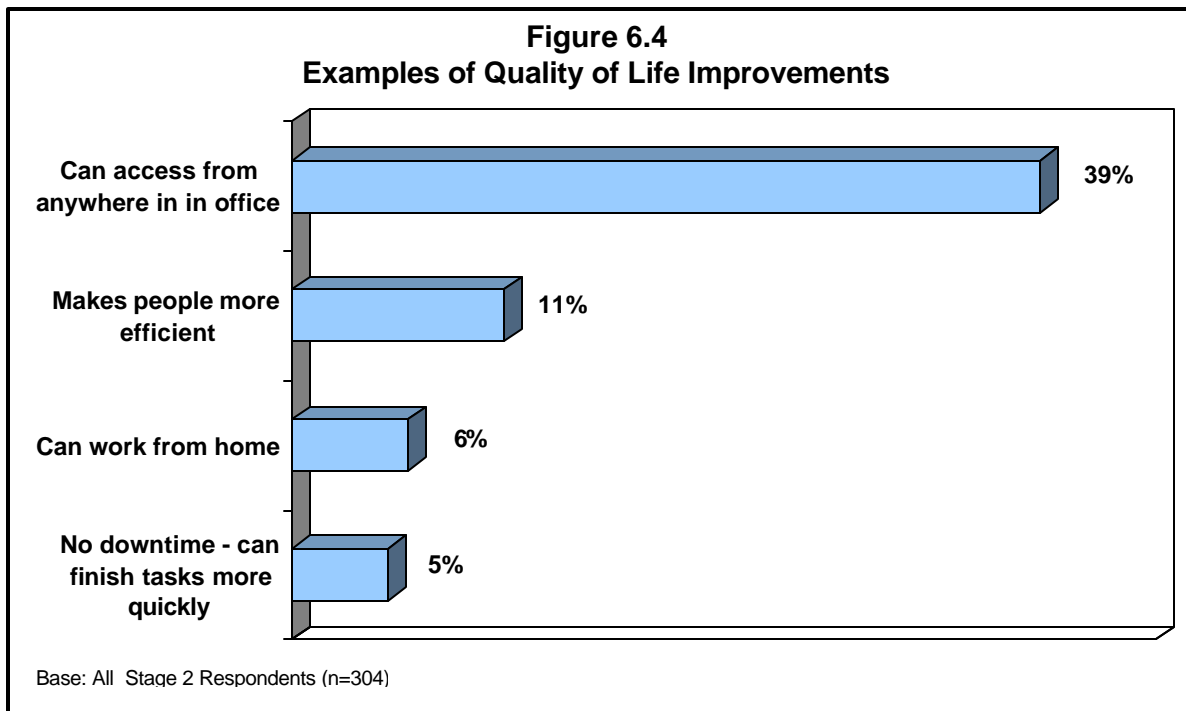
Given a reported average salary of \$64,000, and taking into account this increased productivity, the annual cost savings PER EMPLOYEE can be estimated at over \$7K per user, with gains as much as \$9K per user in manufacturing and healthcare industries. **Given a current average number of users of over 850, the average productivity savings in a large corporate entity is approaching \$6.5m per annum:**



6.4 QUALITY OF LIFE IMPROVEMENTS

When asked to what extent the wireless LAN **improves the quality of life** of those using the technology, **both IT/MIS staff and end-users are in agreement that there is a discernible beneficial impact, taking into account things like increased flexibility, productivity, and time savings.** 87% of respondents overall agree that the wireless LAN improves quality of life (taking the above considerations into account), with 43% believing that this improvement is significant. **Only 13% believe that there is no improvement – with this figure a mere 5% for end-user respondents.**

When asked for examples of how the wireless LAN improves the quality of life, it is flexibility, efficiency, and freedom of movement in the home that come to the forefront.



Although not mentioned on a broad basis by respondents as a part of the WLAN Benefits research, this increased flexibility, efficiency and freedom of movement have the potential to impact other quality of life issues, as highlighted in the following:

“It is great at home. I can take anything home and do a VPN session while munching on a bowl of chips – wherever.” Network Analyst, Manufacturing, 35,000 employees.

“By just allowing me to be more efficient at work, getting me home at a more reasonable hour, it’s less overtime. I am able to multitask with the Wireless LAN, without it, I wouldn’t have been able to do as much. It gives me more time with my family.” General Manager, Manufacturing, 10,000 employees.

"It takes much less time to do things when I have to do them from home, so I have more time to spend with my family." Network Analyst, Education, 500 employees.

"It's reduces stress in the workplace because people can take work with them with and have accurate information, wherever they are. There isn't consternation and stress related to problems, errors or mistakes." IT/MIS Director, Retail, 14,000 employees.

"I use it at home and I find it seriously amusing to manage the network while wandering around my backyard." Network Manager, Education, 1,000 employees.