

# Study Finds High Economic Gains from RFID Deployments

According to University of Texas researchers, RFID technologies have already added \$40 billion in benefits to the retail and health-care sectors, despite relatively low adoption of item-level RFID tagging.

By Beth Bacheldor

Dec. 13, 2006—RFID technology has the potential to create billions of dollars in benefits to the retail and health-care sectors, according to a new study conducted by researchers at the [University of Texas at Austin](#). The findings of the study, commissioned by [NXP Semiconductors](#), were released earlier this month.

That economic boon in the retail sector will come from reducing labor costs, shrinkage due to theft or misplaced goods, and inventory and inventory write-offs, the study claims, as well as from increased product availability and time-to-market. For providers of health-care and pharmaceutical products, the researchers expect the benefits to come from reducing drug counterfeit and shrinkage, hastening time-to-market, and improving the product recall and sample-management processes, inventory turnover and clinical trials. Hospitals, the study predicts, will gain value from RFID by improving equipment tracking and asset utilization, increasing access to health care and providing better patient safety and care.

"We've all been looking at the RFID industry at large, but one thing that has been very difficult to create clarity on is the benefit," says Jan-Willem Reynaerts, general manager for the RFID Market Sector Team at NXP, an independent spin-off semiconductor company founded by [Philips](#). "We expect the technology will create a better user experience, reduce inventory and decrease shrinkage. But one of the main arguments we hear is that there's a lack of clarity about what the technology can specifically mean to a company."

The estimated economic gains, the researchers say, are perhaps the most surprising finding of the study. While studies in the past have predicted high value from RFID deployments (see [MIT and IESE Study Shows RFID's Value and Item Tagging Offers Quick Payback](#)), few—if any—have estimated such a sizable impact. Using current adoption levels of RFID at the pallet and item levels (9 percent and 2 percent of retail sales, respectively), the study estimates that the retail industry currently derives \$12.05 billion in benefits from existing RFID applications. Furthermore, it says, economic benefits to sellers in that sector will jump to \$68.55 billion within five years if, as predicted, adoption rates of RFID in the retail reach 45 percent of sales at the pallet level and 20 percent of sales at the item level.

Using current adoption levels of RFID within the health-care sector, which includes manufacturers, distributors and hospitals, the study values the benefits at \$27.95 billion. Even without accounting for the monetary value of human life, it estimates improved patient care from RFID deployment to be \$34.67 billion at current adoption levels. That includes savings resulting from such implementations as using RFID-tagged syringes to dispense the correct dosages of medicine, and extending the usable life of RFID-tagged surgical tools by ensuring that they're properly sanitized. As RFID adoption rates grow in the health-care sector, so too will the financial returns.

"When you start talking about billions and billions of dollars," says Reynaerts, "it's the size of those numbers that is most impressive."

To calculate the economic gains, researchers at the university's Center for Research in Electronic Commerce, part of the McCombs School of Business, developed a forecasting model of RFID's potential impact by quantifying broad classes of benefits (such as better tracking of assets), then translating them into financial benefits. The researchers culled data from a number of sources, including case studies of RFID trials and deployment. For example, the study leveraged U.K. retailer Tesco's RFID item-level tagging trial, which indicated a 50 percent increase in product availability and a 40 percent reduction in shrinkage. Other sources of data included government agencies such as the Bureau of Labor Statistics (BLS), and industry associations such as the Healthcare Distribution Management Association (HDMA). Additionally, researchers leveraged results from prior RFID studies.

"We didn't have too many benchmarks, so we took a more holistic look," says Anitesh Barua, a professor of IT at McCombs School of Business. Barua, along with fellow professor Andrew Whinston and IT doctoral student Deepa Mani, authored the study. "The impacts are quite sweeping, even though the RFID adoption level is still low."

The study indicates that RFID technologies have already added \$40 billion in benefits to the retail and health-care sectors, despite relatively low adoption of item-level RFID tagging. Those benefits, the study further notes, are derived from \$4.4 billion in infrastructure investments in those sectors, implying a collective return on investment of more than 900 percent.

Barua acknowledges that the study assumes all RFID implementations to be successful. "But of course, we will see failures. Even if 50 percent of implementations fail, you could still see a return of at least 400 percent," he says.

**RELATED ARTICLES** According to Reynaerts, the study should serve as a discussion piece for companies to start thinking about RFID. "There's an increasing scientific base that supports the necessity for industries that want to become or remain competitive, to look at what RFID could mean for them," he says. "And companies need to think about RFID from outside the existing box, which is typically bar-code based."

The complete study, entitled "Assessing the Financial Impacts of RFID Technologies on the Retail and Healthcare Sectors," is available online for downloading.

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