

Where RFID Meets ROI: Beyond Supply Chains

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~ Underwritten, in Part, by ~



Executive Summary

This benchmark study offers information and recommendations to help business and IT decision-makers identify and pursue the strongest Radio Frequency Identification (RFID) deployment opportunities for specific business situations.

Best-in-Class Performance

Aberdeen used four business-critical measures of IT performance and business value to distinguish the Best-in-Class from Industry Average and Laggard organizations:

- Year-over-year changes in user satisfaction
- Year-over-year changes in employee productivity
- Year-over-year changes in overall infrastructure costs
- Year-over-year changes in time to information for operational / line-of-business applications

Competitive Maturity Assessment

The performance levels of the above measures are strong indicators of the maturity of RFID deployments and pursuits at surveyed companies. In addition, Best-in-Class companies identified for this study:

- Are more than 1.3-times as likely as Industry Average and more than 3.4-times as likely as Laggard respondents to have the ability to craft effective RFID Service Level Agreements (SLAs)
- Are more than 1.5-times as likely as Industry Average and more than 2.9-times as likely as Laggard respondents to have consolidated, integrated RFID performance monitoring in place
- Are more than 1.4-times as likely as Industry Average and more than 1.9-times as likely as Laggard respondents to have in place middleware or other solutions for integration of RFID-generated data

Required Actions

In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Ensure that incumbent IT and business infrastructures are "RFID-ready," including abilities to compare RFID solutions with alternatives fairly and accurately and to integrate management of RFID deployments and IT infrastructures
- Frame all RFID initiatives in ways that focus on business goals, needs and benefits, and that can be evaluated in terms of their effects on business performance and alignment of IT efforts with business requirements
- Identify, then pursue opportunities to integrate RFID-generated data with key line-of-business, operational, management and support applications, and to measure the effectiveness and ROI of such efforts

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

"If you look at it from an efficiency perspective, RFID makes perfect sense [for tracking IT assets]. As we started looking at RFID, we saw more and more clearly that there were ways this technology could benefit the entire [financial services] industry. If we can simplify workflows for our data center staff..., and we use common models with our hardware suppliers, it translates to an advantage for all of us and enables us to provide even greater customer services."

~ Mike Russo,
SVP, Wells Fargo,
and founding member of an
RFID Special Interest Group
(SIG) within the Financial
Services Technology
Consortium (FSTC)

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Chapter One: Benchmarking the Best-in-Class

Business Context

For its June 2008 Benchmark Study, *RFID and IT Infrastructures: Maximizing Business Value*, Aberdeen surveyed more than 135 businesses. IT and Radio Frequency Identification (RFID) decision-makers were asked about the top business pressures driving RFID and IT infrastructure management efforts at their organizations. The top drivers cited were easing integration of RFID data with key applications (38% of respondents), maximizing the business value of that data (31%), and maximizing the availability of business-critical information (29%).

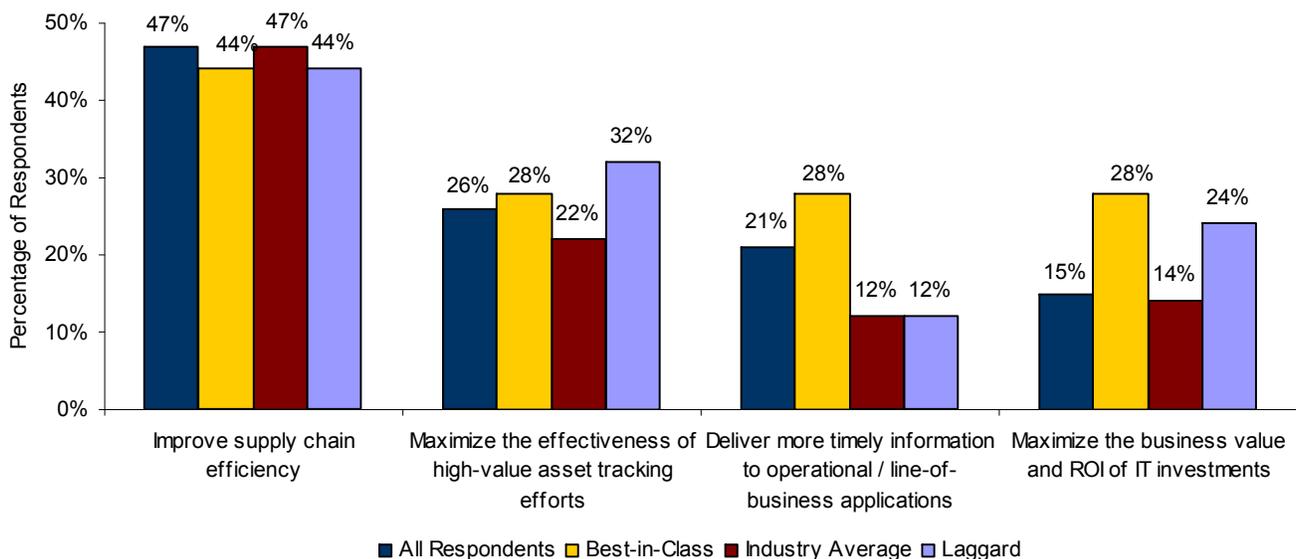
In addition, while new technologies and integrations are making traditional "track-and-trace" and "slap-and-ship" applications more powerful and capable, RFID deployments are moving far beyond these arenas. When asked what items they were tagging or planning to tag with RFID, 43% of respondents to the June 2008 Aberdeen study cited IT assets, ahead of manufacturing work in process, or WIP (35%) and inventory (30%). In addition, fleet vehicles were cited by as many respondents as pallets before shipment (25% each).

RFID is already delivering significant business benefits to the supply chains of multiple types and sizes of businesses. However, the business value of RFID and related technologies can extend more deeply into, and eventually far beyond those supply chains. This is demonstrated by the top pressures driving RFID initiatives cited by more than 190 respondents surveyed for this study (Figure 1).

Fast Facts

- ✓ **100%** of Best-in-Class respondents have at least one RFID solution in place
- ✓ **61%** of Best-in-Class respondents have had at least one RFID solution in place for two years or more

Figure 1: Top Business Pressures Driving RFID Initiatives



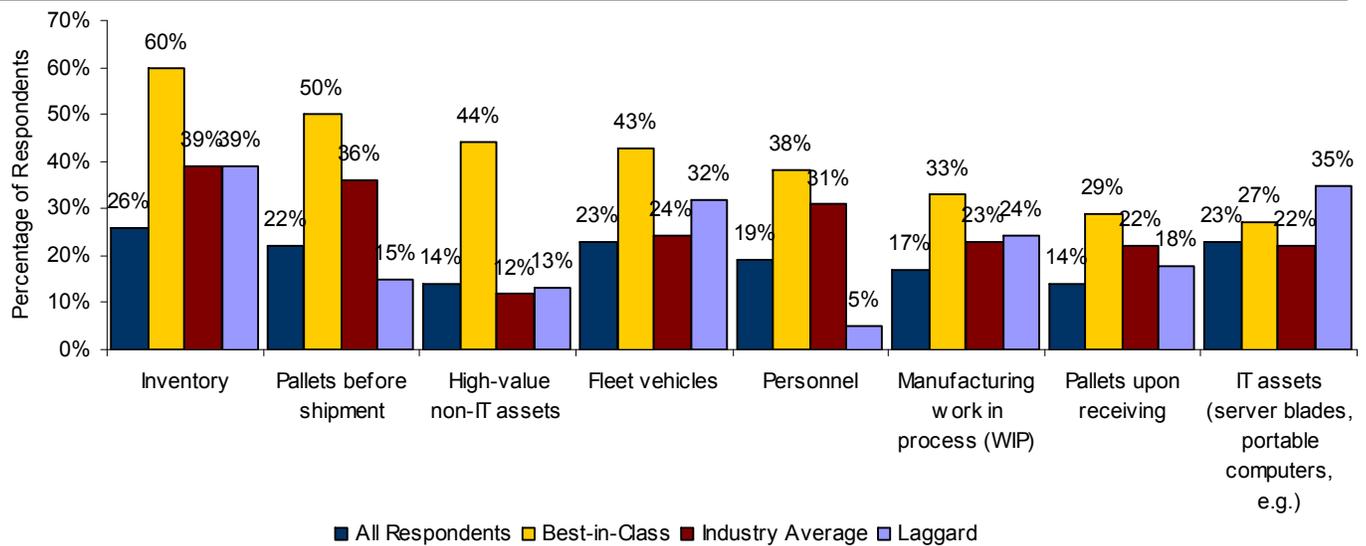
Source: Aberdeen Group, November 2008

Among all respondents, the primary driver of RFID initiatives is the pressure to improve supply chain efficiency. However, among all respondent classes, the next most frequently cited driver is the pressure to maximize the effectiveness of high-value asset tracking efforts.

Among Best-in-Class respondents, this pressure tied with the needs to deliver more timely information to operational and line-of-business applications, and maximize the business value and ROI of IT investments (28% each). These latter pressures were also ranked third and fourth by all respondents (21% and 15%, respectively). However, Industry Average (14%) and Laggard (24%) respondents ranked the business value / ROI pressure ahead of the pressure to deliver timely information to operational / line-of-business applications (12% each).

Companies seeking to increase competitive agility and to achieve or increase ROI for RFID investments are looking to leverage those investments beyond traditional supply chain applications. This is demonstrated by the aforementioned pressures concerning high-value assets and timely information, and by what companies are tagging with RFID today, as shown in Figure 2.

Figure 2: What Companies are Tagging with RFID



Source: Aberdeen Group, November 2008

There are several noteworthy variations among survey respondent classes in terms of what they are tagging with RFID. For example, inventory is the most frequently cited response across all respondent classes, with pallets before shipment ranking second among Best-in-Class (50%) and Industry Average (36%) respondents. However, among Laggard companies, pallets before shipment ranked behind IT assets (35%), fleet vehicles (32%), manufacturing work in process (24%), pallets upon receiving (18%) and high-value non-IT assets (13%).

In comparison, after inventory and pallets before shipment, Best-in-Class respondents cited, in order, high-value non-IT assets (44%), fleet vehicles (43%), personnel (38%), manufacturing work in process (33%), pallets upon receiving (29%) and IT assets (27%). Further, much higher percentages of Best-in-Class respondents also cited pallets before shipment (50%) and high-value non-IT assets (44%) than did other respondent classes. Such variations reflect variances in maturity, both among the survey respondent classes and various types of RFID technologies.

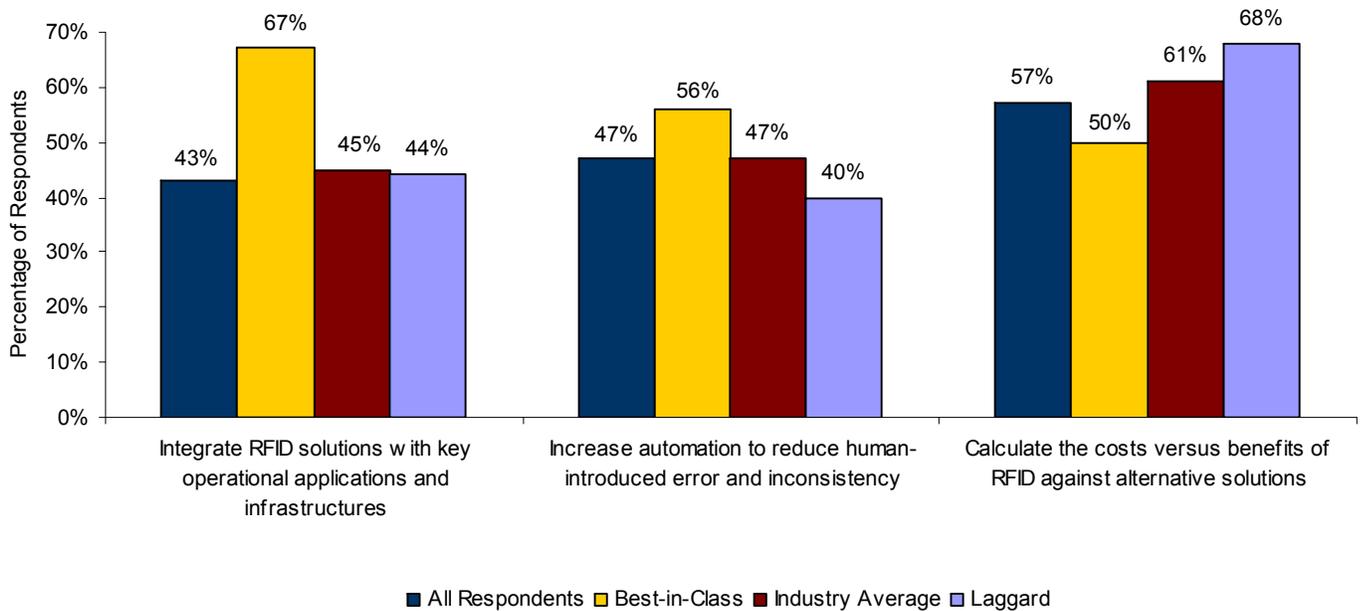
Despite these variations, these tagging plans make clear that today, many early RFID adopters are looking to extend its benefits and increase its ROI beyond compliance with regulations or mandates by broadening its deployment. Those companies that have not yet adopted RFID are looking to choose from among multiple paths toward greater competitive agility and meaningful ROI. In all cases, companies are and should be looking beyond traditional supply chain applications of RFID to achieve their business goals.

From the end user's perspective, the key benefits are the opportunity to increase competitive agility and the ROI of RFID investments, thus achieving the following advantages:

- Improved "real-time" and "near-real-time" competitive flexibility and responsiveness, enabled by RFID-generated data
- Improved business analytics, intelligence, and processes
- Extension of RFID-enabled business benefits to embrace more business functions and / or technologies
- Improved compliance with regulations and industry mandates
- Greater alignment of RFID and IT infrastructure investments with business goals

Survey respondents are taking largely similar actions in response to the pressures and opportunities described (Figure 3). As with the top business pressures driving RFID initiatives, there is some variance in order of priority across respondent classes. However, all agree that the top actions taken to support RFID and its business value are focused on integration, automation and cost justification and comparisons. And the relatively high percentages of respondents currently taking these actions indicates that they no longer question RFID's ability to deliver business value – they are just trying to achieve that value.

Figure 3: Top Actions Taken to Support RFID Initiatives

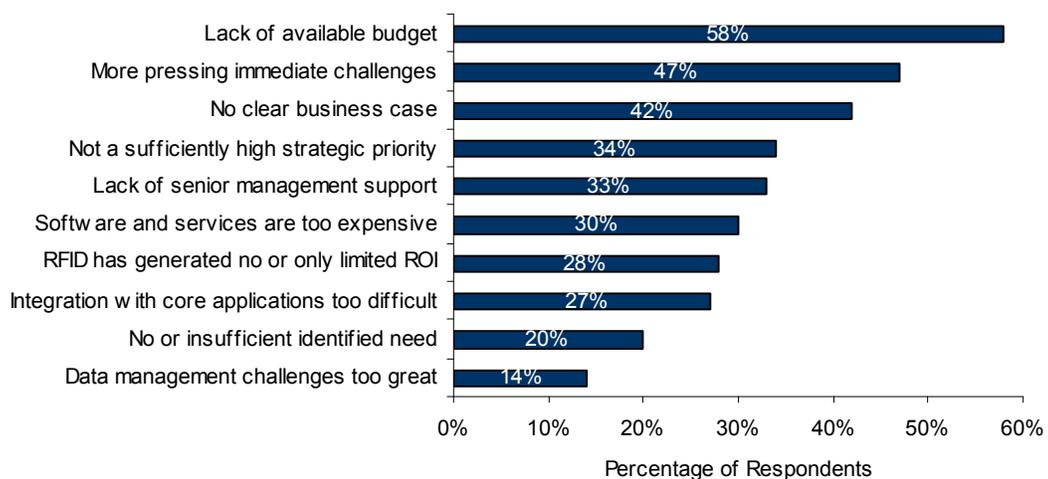


Source: Aberdeen Group, November 2008

So Why Not Pursue RFID?

Despite its abilities to deliver business benefits, 21% of all survey respondents indicate they have no plans to pursue any RFID initiatives. Another 26% indicate they plan to pursue RFID, but only sometime beyond the next 12 months. Figure 4 highlights the top reasons cited by those respondents with no RFID plans.

Figure 4: Reasons for Not Pursuing RFID



Source: Aberdeen Group, November 2008

Arguably, the five most frequently cited reasons are based on perceptions not necessarily supported by facts or formal metrics. In many cases, identification of opportunities to derive business value from technologies

such as RFID lead decision-makers to “find” budget or to reorder tactical priorities. This implies that many such companies would benefit from such metrics and a focus on more rigorous criteria, such as those employed by Best-in-Class respondents and detailed later in this study.

The Maturity Class Framework

Aberdeen used four business-critical measures of IT performance and business value to distinguish the Best-in-Class from Industry Average and Laggard organizations.

- Year-over-year changes in user satisfaction
- Year-over-year changes in employee productivity
- Year-over-year changes in overall infrastructure costs
- Year-over-year changes in time to information for operational / line-of-business applications

Based on these indicators, the respondents were divided into three groups: Best-in-Class (top 20%), Industry Average (middle 50%), and Laggard (bottom 20%). Table I describes the criteria and user responses in greater detail. Taken together, these criteria provide a credible profile of respondents' experiences with RFID and related efforts, and some revealing characteristics.

Table I: Top Performers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ 19.8% year-over-year increase in user satisfaction ▪ 9.1% year-over-year increase in employee productivity ▪ 1.0% year-over-year decrease in overall infrastructure costs ▪ 7.9% year-over-year decrease in time to information for operational / line-of-business applications
Industry Average: Middle 50% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ 8.7% year-over-year increase in user satisfaction ▪ 1.9% year-over-year increase in employee productivity ▪ 1.5% year-over-year increase in overall infrastructure costs ▪ 2.2% year-over-year increase in time to information for operational / line-of-business applications
Laggard: Bottom 30% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ 3.2% year-over-year increase in user satisfaction ▪ 0.6% year-over-year increase in employee productivity ▪ 3.3% year-over-year increase in overall infrastructure costs ▪ 10.4% year-over-year increase in time to information for operational / line-of-business applications

Source: Aberdeen Group, November 2008

The Best-in-Class PACE Model

Success with RFID requires a combination of strategic actions, organizational capabilities, and enabling technologies. These are summarized in Table 2.

Table 2: The Best-in-Class PACE Framework

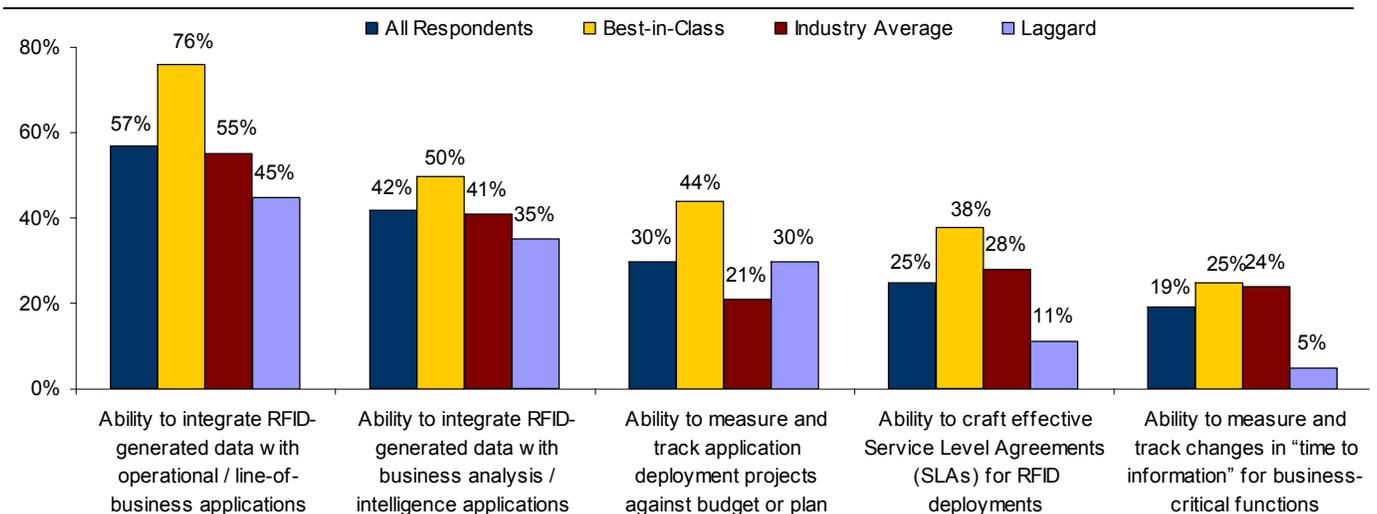
Pressures	Actions	Capabilities	Enablers
<ul style="list-style-type: none"> To maximize competitive agility and responsiveness to changing business requirements 	<ul style="list-style-type: none"> Integrate RFID solutions with key operational applications and infrastructures Increase automation to reduce human-introduced error and inconsistency 	<ul style="list-style-type: none"> Ability to integrate RFID-generated data with operational / line-of-business applications Ability to integrate RFID-generated data with business analysis / intelligence applications Ability to measure and track application deployment projects against budget or plan Ability to craft effective Service Level Agreements (SLAs) for RFID deployments Ability to measure and track changes in “time to information” for business-critical functions 	<ul style="list-style-type: none"> RFID tags and readers Middleware and / or other solutions for integration of RFID-generated data A high-capacity, scalable network infrastructure RFID-enabled application and infrastructure performance monitoring, management and testing tools Consolidated, integrated RFID management Consolidated, integrated RFID testing Consolidated, integrated RFID performance monitoring On-demand, role-based reporting of RFID management information

Source: Aberdeen Group, November 2008

Best-in-Class Strategies

As summarized in Table 2, companies have identified several key capabilities as necessary for success with RFID. Comparisons of the priorities of these capabilities among Best-in-Class, Industry Average and Laggard respondents are presented in Figure 5.

Figure 5: Top Capabilities for RFID Initiative Support



Source: Aberdeen Group, November 2008

Aberdeen Insights — Strategy

Current and recent survey findings indicate that supply chains are still critically important to businesses, and that RFID is still widely used to support supply chain efficiency and visibility. However, the latest Aberdeen survey and interview results indicate that asset tracking is rapidly joining if not displacing supply chain efficiency and visibility as a primary driver of RFID initiatives.

Any company that does business has assets it considers to be of high value. The more accurate and complete a company's knowledge is of its valuable assets, from laptops to people, the more responsive and competitively agile that company can be. Also, losing track of high-value assets can be more disruptive and expensive than outright asset loss, because of the need to devote resources to tracking down the misplaced assets. This is also particularly true in environments where "lean manufacturing" or "just-in-time" techniques can amplify the negative effects of misplaced assets.

RFID can help to reduce or eliminate many of the challenges associated with asset tracking, particularly in environments where current processes are highly manual and labor-intensive. Where assets have been tracked manually, RFID can reduce time and labor requirements considerably. Where assets have not been tracked well previously, RFID can help reduce loss, misplacement, and resulting delays and costs. Users surveyed and interviewed for this study indicate that the highest-value RFID deployments introduce the highest levels of automation and consistency into tasks that were previously highly manual and inconsistent.

In the next chapter, we will see what the top performers are doing to achieve these gains.

Chapter Two: Benchmarking Requirements for Success

Successful RFID initiatives can play pivotal roles in delivering IT-enabled business benefits, from more timely information for business decision-makers to greater constituent care, revenues and profits.

Case Study Snapshots

The following are brief summaries of actual production use cases of RFID that are generating meaningful business benefit, within and beyond supply chains. These examples demonstrate that there are many potential starting points for enterprises seeking business value from RFID.

IT asset tracking. Wells Fargo and Bank of America are both using RFID to tag and track IT assets in data centers. Wells Fargo began tracking laptops with RFID, and found that it saved significant time previously spent by employees and security guards on manual procedures. Wells is now using RFID to track assets at its five nationwide data centers as well. Bank of America, meanwhile, is using RFID-based asset tracking at 14 of its 38 data centers to date. Both banks are also active in the Financial Services Technology's Consortium's RFID Special Interest Group (SIG), which is working on RFID standards for the financial services industry.

Supply chain / production / inventory management. Dairy Farmers of America (DFA) is a \$9-billion cooperative with more than 20,000 members, 4,000 employees, and 33 processing plants around the US. The company delivers approximately one-third of the nation's milk supply, as well as cheeses and other products.

A supplier to Wal-Mart, DFA began deploying RFID for compliance with Wal-Mart mandates in 2006. The resulting system began grew from a single plant in December 2005 to seven production lines at two plants tagging 12 different cheese products. What began as an exercise in mandate compliance is now delivering data DFA is beginning to use to improve product roll-out, promotion and stock-out management, and overall operations and profits.

Inventory / personnel management / loss reduction. Jeddah, Saudi Arabia's Jade Jewellery has replaced manual processes with RFID to tag and track more than 2,000 pieces of jewelry on display at one of its stores. The RFID tags use metal components of the jewelry items as antennas to transmit signals, and trigger automated alerts when damaged or removed without authorization. Each tag carries an Electronic Product Code (EPC) number, which is stored in a database with detailed information about each product. Employees also wear badges equipped with RFID tags.

continued

Fast Facts

- √ **30%** of Best-in-Class respondents have begun to integrate RFID-generated data with their Customer Relationship Management (CRM) deployments
- √ **18%** of Best-in-Class respondents expect at least 60% of their CRM deployments to be "RFID-enabled" within the next 12 months

Case Study Snapshots

The system tracks employees and jewelry as they move between display cases, display trays shown to customers, and the jewelry storage vaults. Alarms are triggered if jewelry remains on display for too long, or if it is handled by non-authorized personnel. The system has reduced the time required to take inventory from two to three days to 10 minutes. It has also reduced internal theft from approximately \$267,000 to zero in its first year. By providing information about the movement of jewelry within the store, the RFID solution also reveals what sells well, and which salespeople are more effective in converting browsers to buyers.

Manufacturing work-in-process. Freescale Semiconductor has design, research, development, marketing, and sales operations in more than 30 countries, including an 80,000-square-foot wafer manufacturing facility. Thousands of individual lots, or containers holding Work-in-Process (WIP), go through as many as hundreds of manufacturing steps, traveling through multiple locations across the fabrication facility. The company's manual processes often required as much as a half-hour to locate an individual lot, assuming it wasn't lost or misplaced. The inability to locate the right lots at the right time caused order delays and disgruntled customers – and employees.

Freescale implemented an RFID-enabled WIP management solution that employs active RFID tags able to communicate via incumbent Wi-Fi network facilities. The solution avoids radio interference with manufacturing equipment, and eliminates the need for costly and disruptive RFID-specific wiring or re-wiring. It has also resulted in an 82% improvement in lot retrieval times, and improved on-time delivery by 13%, according to Chris Magnella, operations manager for the fabrication facility.

"Given the high production volumes in semiconductor manufacturing and speed-to-market requirements, it's essential that our facilities move work-in-progress products throughout the manufacturing process as quickly as possible. [Our chosen RFID solution] is especially attractive in that it can use our Wi-Fi network without impacting existing operations, and has been embraced by our [fabrication facility's] operators due to its ease of use."

~ Chris Magnella,
Fabrication Facility
Operations Manager,
Freescale Semiconductor

Competitive Assessment

Aberdeen Group analyzed the aggregated metrics of surveyed companies to determine whether their performance ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in five key categories: (1) **process** (the approaches they take to execute their daily operations); (2) **organization** (corporate focus and collaboration among stakeholders); (3) **knowledge management** (contextualizing data and exposing it to key stakeholders); (4) **technology** (the selection of appropriate tools and effective deployment of those tools); and (5) **performance management** (the ability of the organization to measure their results to improve their business). These characteristics (identified in Table 3) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

Table 3: The Competitive Framework

	Best-in-Class	Average	Laggards
Process	Ability to integrate RFID-generated data with operational / line-of-business applications		
	76%	55%	45%
	Ability to integrate RFID-generated data with business analysis / intelligence applications		
	50%	41%	35%
	Ability to craft effective Service Level Agreements (SLAs) for RFID deployments		
	38%	28%	11%
Organization	Senior management that leads and encourages innovation		
	78%	59%	45%
Knowledge	Key personnel are trained in RFID concepts and the business use of RFID-generated data		
	76%	50%	43%
Technology	RFID tags and readers		
	89%	76%	52%
	Middleware and / or other solutions for integration of RFID-generated data		
	69%	48%	35%
	A high-capacity, scalable network infrastructure		
	61%	33%	32%
	RFID-enabled application and infrastructure performance monitoring, management and testing tools		
	56%	45%	38%
	Consolidated, integrated RFID management		
	53%	23%	23%
	Consolidated, integrated RFID testing		
	41%	29%	15%
	Consolidated, integrated RFID performance monitoring		
41%	26%	14%	
On-demand, role-based reporting of RFID management information			
	35%	24%	14%
Performance	Ability to measure and track changes in information availability for business-critical functions		
	25%	24%	5%
	Year-over-year change in time to information for operational / line-of-business applications		
	-7.9%	2.2%	10.4%
Year-over-year change in time to information for business analytics / intelligence applications			
-4.4%	1.6%	8.9%	

Source: Aberdeen Group, November 2008

Capabilities and Enablers

Based on the findings of the Competitive Framework and interviews with end users, Best-in-Class RFID efforts rely on effective combinations of policies, procedures, processes, and well-selected tools. Meaningful metrics and a focus on business benefits are also important elements of success with these efforts.

Process

Success with RFID, within and beyond supply chain applications, requires processes that enable effective integration of RFID-generated data with business-critical applications, and effective oversight of RFID deployments. Thus, more than three-quarters (76%) of Best-in-Class respondents have in place processes for integrating such data with operational and line-of-business applications, compared with 55% of Industry Average and 45% of Laggard respondents. Further, half (50%) of Best-in- have processes in place for integrating RFID-generated data with business analysis and intelligence applications, compared with 41% of Industry Average and 35% of Laggard respondents.

Organization

Effectively innovative initiatives must be “led from above” to maximize their business benefits and minimize disruptive resistance. Thus, 78% of the Best-in-Class, 59% of Industry Average and 45% of Laggard respondents all currently have senior management that leads and encourages innovation. Further, an additional 11% of Best-in-Class, 26% of Industry Average and 14% plan to have such senior management in place within 12 months.

Knowledge Management

Beyond senior management that embraces innovation, RFID success also requires key professionals across multiple roles that understand and support relevant concepts. This is demonstrated by the fact that 76% of Best-in-Class, 50% of Industry Average and 43% of Laggard respondents already train key personnel in RFID concepts and the business use of RFID-generated data. The value of such training is underscored by the finding that an additional 6% of the Best-in-Class, 32% of Industry Average and 26% of Laggard companies plan to implement such training within 12 months.

Technology

Beyond RFID tags and readers, a critical success factor regarding RFID is a portfolio of technologies that support integration with incumbent resources, and sufficient capacity, scalability and manageability to meet evolving business needs. The criticality of these factors is demonstrated by the emphasis placed on these areas by Best-in-Class respondents. For example, 69% of Best-in-Class respondents already use middleware or other solutions for integration of RFID-generated data, compared with 48% of Industry Average and 35% of Laggard respondents. Similarly, 56% of Best-in-Class respondents have in place RFID-enabled application and infrastructure performance monitoring, management, and testing tools, compared with 45% of Industry Average and 38% of Laggard respondents.

Performance Management

At least as important to success with RFID as any of the above factors is the ability to measure and deliver meaningful, business-centric results. Thus, 25% of the Best-in-Class and 24% of Industry Average respondents have in place the ability to measure and track changes in information availability for business-critical functions, compared with only 5% of Laggard respondents. Those same Best-in-Class respondents enjoyed a 7.9% year-over-year decrease in time to information for operational / line-of-business applications, compared with year-over-year increases in this metric of 2.2% for Industry Average and 10.4% for Laggard respondents. Similarly, Best-in-Class respondents saw a 4.4% year-over-year decrease in time to information for business analytics / intelligence applications, compared with year-over-year increases of 1.6% for Industry Average and 8.9% for Laggard respondents.

Aberdeen Insights — Technology

When RFID is discussed in the business or technology media, much is often made of the differences among the various predominant RFID technologies. Comparisons and contrasts among active, passive, High-Frequency (HF), Ultra-High-Frequency (UHF), reusable, single-use, hybrid and other RFID tag variants abound. However, these discussions often miss the primary point of RFID, according to those surveyed and interviewed by Aberdeen. RFID's primary role is to deliver business benefit. From that perspective, multiple business challenges can often require consideration and deployment of multiple RFID technologies.

For example, high-volume, low-value assets may be best served by inexpensive passive tags – but only if and as those assets pass through locations well served by accurate, low-cost readers of such tags. If employees have to physically navigate assets to read their RFID tags, as they do with bar codes or manual processes, the business value of the RFID technology may be negated entirely. Similarly, the value of assets to be tracked must be compared carefully and accurately to the cost of the tag on each of those assets – which can be greatly reduced if those tags are easily recyclable.

In addition, discussions focused on comparing and contrasting specific RFID technologies also ignore a critical success factor for RFID deployments, within and beyond supply chains. At most RFID-using companies, the value of RFID can be increased significantly if and as RFID-generated data can be filtered and formatted in ways that make it usable by business-critical applications.

This is borne out by the fact that integration with key applications and infrastructures was the most-cited action taken by Best-in-Class survey respondents (67%) in support of their RFID initiatives. Those same Best-in-Class respondents also cited integration of RFID-generated data with operational / line of business and business analysis / intelligence applications as the top two capabilities supporting their success with RFID (76% and 50%, respectively).

Chapter Three: Required Actions

Whether a company is trying to move its performance from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

Laggard Steps to Success

- Ensure that there is sufficient support from senior management to overcome objections and to counter inadequate or inaccurate information about RFID solutions and how they might help the enterprise. For each candidate new or expanded deployment or integration, make a strong business case that focuses on meaningful business benefits. More than three-quarters (78%) of Best-in-Class respondents currently benefit from senior management that leads and encourages innovation at their organizations.
- Identify, then pursue initial projects that promise significant and / or rapid, measurable, and meaningful business benefits. At many enterprises, these may build upon RFID, EAS, bar code or other initiatives already in place. Where such initiatives exist, ensure that they are scrutinized by effective metrics and meet minimum business requirements before expanding upon them. Forty-four percent (44%) of Best-in-Class respondents have the ability to measure and track application deployment projects against budget or plan, compared with 21% of Industry Average and 30% of Laggard respondents.
- Ensure that incumbent IT infrastructure and management resources are "RFID-enabled" or at least "RFID-ready." Call upon vendors, integrators, and / or resellers to help to meet this goal, and to validate relevant claims of readiness. More than half (56%) of Best-in-Class respondents use RFID-enabled application and infrastructure performance monitoring, management, and testing tools, compared with 45% of Industry Average and 38% of Laggard respondents.

Industry Average Steps to Success

- Invest in solutions that ease and speed the integration, rationalization, and management of all RFID deployments, with one another and with relevant business-critical applications and IT resources. More than two-thirds (69%) of Best-in-Class respondents use middleware and / or other solutions for integration of RFID-generated data, compared with 48% of Industry Average and 35% of Laggard respondents. In some cases, vendors or integrators may be able to provide or help to create interfaces to custom or legacy applications.

Fast Facts

- √ **45%** of Best-in-Class companies saw year-over-year increases in the ROI of their IT infrastructure investments
- √ **83%** of Best-in-Class companies saw year-over-year increases in the ROI of their RFID investments

"It's a good fit – it's got a great business value. The beauty of it is that because it is built on [a widely used software] infrastructure, it is fully scalable. We don't have to keep reinventing the system."

~ Director of Product Development for an RFID solution provider

- Maximize the effectiveness and "RFID-readiness" of all application and IT infrastructure management and monitoring efforts. Solutions and processes that increase integration and enable flexible, role-based reporting of management and monitoring data can help to achieve this important goal. More than one-third (35%) of Best-in-Class respondents currently use such reporting solutions, compared with 24% of Industry Average and 14% of Laggard respondents.
- Focus on solutions and providers with strong and credible records of success in similar businesses and situations, and sufficient industry support. Best-in-Class respondents cited as their top vendor selection criteria demonstrated success in similar projects (67%), domain expertise (56%) and a strong partner network (44%). Ensure that candidate vendors, their solutions, and their partner ecosystems have sufficient breadth, depth, and coherence to achieve and sustain such integration, even as RFID and related IT-enabled business solutions proliferate and evolve.

Best-in-Class Steps to Success

- Ensure that the evaluation of RFID and other candidate and incumbent solutions are accurate, consistent, and framed in terms of business goals and requirements. Focus on the ability to measure and track what business users care about, such as compliance with SLAs or information availability. More than one-third of Best-in-Class respondents (38%) cited the ability to craft effective RFID SLAs as critical to their success with RFID. Meanwhile, 25% cited the ability to measure and track changes in information availability for business-critical functions.
- Make sure that management solutions are in place and sufficiently integrated to support and enforce the SLAs and other metrics used to assess the performance of key RFID deployments and other applications and resources. More than half of Best-in-Class respondents already use RFID-enabled application and infrastructure performance monitoring, management and testing tools (56%) and consolidated, integrated RFID management (53%).
- Extend the automation and information integration benefits of successful RFID implementations to other applications, resources and infrastructure elements. Strive to achieve and maintain complete, user-centric and business-driven views and management of all information architecture components, including RFID deployments, and of every business action and transaction. Two-thirds of Best-in-Class respondents (67%) are integrating RFID with key operational applications and infrastructures, while more than half (56%) are using RFID to increase automation and reduce human-introduced errors and inconsistencies.

Aberdeen Insights — Summary

At the end of the day, discussions of “RFID” that focus on “radio frequency identification” are far off the mark. The goal of every RFID deployment should be to generate and leverage “real-time, fully integrated data” that improves business processes, competitive agility, asset tracking, constituent care, revenues and / or profits. As demonstrated by the survey responses of Best-in-Class companies identified for this study, such a business-centric focus requires far more than knowledge of or sophistication with any particular RFID technology or technologies. What is also required is a set of people, processes, and technologies that enable and support innovation in ways that are well integrated with incumbent resources and focused on business benefits. Metrics, integration capabilities, SLAs and other elements all have roles to play, but the value of those roles is only maximized when they are focused on benefits that do not require slides or manuals for non-technical decision-makers to understand, appreciate, and support.

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Appendix A: Research Methodology

In November 2008, Aberdeen examined the use, the experiences, and the intentions of more than 190 enterprises using or considering RFID. Aberdeen supplemented this online survey effort with interviews with select survey respondents, gathering additional information on RFID strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: CEO / CFO / CIO / CTO / EVP / VP / Chairman (23%); manager / general manager (22%); director (12%); IT / Engineering (15%); analyst (4%).
- *Geography:* The majority of respondents (52%) were from North America. Remaining respondents were from Europe (27%), the Asia-Pacific region (15%), South / Central America and the Caribbean (3%) and the Middle East and Africa (3%).
- *Company size:* Twenty-three percent (23%) of respondents were from large enterprises (annual revenues above US \$1 billion). Twenty-eight percent (28%) were from midsize enterprises (annual revenues between \$50 million and \$1 billion); 49% of respondents were from small businesses (annual revenues of \$50 million or less).
- *Headcount:* Forty-seven percent (47%) of respondents were from smaller enterprises (headcount between 1 and 100 employees). Twenty percent (20%) were from midsize enterprises (headcount between 101 and 1,000 employees); 33% of respondents were from large businesses (headcount greater than 1,001 employees).

Solution providers recognized as sponsors were solicited after the fact and had no substantive influence on the direction of this report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

Responding IT and business decision-makers completed an online survey that included questions designed to determine the following:

- √ The length of time RFID has been deployed in their organizations
- √ The effectiveness of their RFID implementations
- √ Current and planned use of RFID solutions, generally and for integration with and support of specific business and IT functions
- √ The business benefits, if any, that have been derived from RFID initiatives

The study aimed to identify emerging best practices for RFID usage, especially beyond traditional supply chain applications, and to provide a framework by which readers could assess their own RFID capabilities.

Table 4: The PACE Framework Key

Overview
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p>Pressures — external forces that impact an organization’s market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p>Actions — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p>Capabilities — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)</p> <p>Enablers — the key functionality of technology solutions required to support the organization’s enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: Aberdeen Group, November 2008

Table 5: The Competitive Framework Key

Overview	
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance:</p> <p>Best-in-Class (20%) — Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.</p> <p>Industry Average (50%) — Practices that represent the average or norm, and result in average industry performance.</p> <p>Laggards (30%) — Practices that are significantly behind the average of the industry, and result in below average performance.</p>	<p>In the following categories:</p> <p>Process — What is the scope of process standardization? What is the efficiency and effectiveness of this process?</p> <p>Organization — How is your company currently organized to manage and optimize this particular process?</p> <p>Knowledge — What visibility do you have into key data and intelligence required to manage this process?</p> <p>Technology — What level of automation have you used to support this process? How is this automation integrated and aligned?</p> <p>Performance — What do you measure? How frequently? What’s your actual performance?</p>

Source: Aberdeen Group, November 2008

Table 6: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
<p>Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.</p>

Source: Aberdeen Group, November 2008

Appendix B: Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report includes:

- [*Demand Generation: Kick-Start Your Business*](#); September 2007
- [*Winning RFID Strategies for 2008*](#); December 2007
- [*CRM Everywhere: The 2008 Software-as-a-Service Update*](#); January 2008
- [*RFID in Retail: The Truth Behind the Hype*](#); March 2008
- [*Business Intelligence Deployment Strategies*](#); April 2008
- [*Application and Infrastructure Monitoring and Management: Business Growth Starts Here*](#); June 2008
- [*RFID and IT Infrastructures: Maximizing Business Value*](#); June, 2008
- [*Information Architecture Agility: Maximizing Business Benefit*](#); August 2008

Information on these and any other Aberdeen publications can be found at www.aberdeen.com.

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