

IBM BUSINESS CONSULTING SERVICES

EPC™ Forum Survey

Kathryn Gramling, Anthony Bigornia, Tig Gilliam

AUTO-ID CENTER MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 77 MASSACHUSETTS AVENUE, BLDG 3-449, CAMBRIDGE, MA 02139-4307, USA

ABSTRACT

IBM Business Consulting Services (BCS) would like to thank all of the participants of the EPC™ Forum. The survey and workshop discussion were invaluable to all members of the Auto-ID community. We would like to give special thanks to Procter & Gamble, Wal-Mart, Target and Johnson & Johnson for sponsoring this event. In addition, we would like to thank Diane Werling of P&G and Tracy Skeete of the Auto-ID Center who made the EPC™ Forum a clear success.

EPC™ Forum Overview

The purpose of this white paper is to report on the proceedings from the EPC™ Forum and on the results of a survey that was conducted both pre- and post-EPC™ Forum. The intent of the survey and this report is to give an early indication of the direction and priorities to the Auto-ID Center sponsor and non-sponsor community on high priority applications and anticipated EPC™ adoption hurdles. As part of this survey and during the course of the EPC™ Forum, IBM Business Consulting Services (BCS) captured both qualitative and quantitative information. This report will include the details from the survey as well as feedback from the breakout session where end users prioritized applications and discussed challenges ahead for EPC™ adoption.

It is important to note that this report is not statistically significant for the purpose of any market sizing analysis. Rather, this report should be used to contrast and analyze individual company priorities against the views expressed by this subset of the larger CPG and Retail community. The survey results were summarized from over 200 responses, representing over 60 companies – making the results directionally correct not absolute.

The Process

The survey was administered through the web and data points were collected and analyzed by IBM BCS. These results were reported out to the EPC™ Forum participants and then the survey was re-administered at the end of the workshop to compare results adjusting for learning curve and normalization of education among the participants.

The survey focused on the following topics:

1. Current company investment and experience in EPC™ solutions
2. Direction and relative priority of EPC™ applications
3. Expected overall investment and timing for EPC™ solution adoption

This report presents the priorities of the end user community; the key challenges for adoption, and the expected benefit areas end users are driving towards. The paper concludes with some recommendations on critical next steps for the community.

IBM Business Consulting Services (www.ibm.com/services) is one of the world's leading providers of management consulting and technology services to many of the largest and most successful organizations, across a wide range of industries. With offices in 160 countries, IBM Business Consulting Services helps clients solve their business issues, exploiting world-class technology for improved business performance.

IBM BUSINESS CONSULTING SERVICES

EPC™ Forum Survey

Biography



Kathryn Gramling
Consultant

Kathryn Gramling, Consultant, IBM Business Consulting Services has over 14 years of experience and specializes in retail and consumer packaged goods marketing strategies, including B2B strategies, B2C marketing mix, consumer trends research, global retail trends analysis, and eRetailing. Most recently Kathryn has played a leadership in the Collaborative Value Chain practice helping clients with their B2B strategy and eMarkets participation go-to-market approach. She earned a Bachelor of Arts degree in Government from the College of William and Mary and a Master of Business Administration degree, with a concentration in International Marketing, from The American Graduate School of International Management, Thunderbird.



Tig Gilliam
Consultant

Tig Gilliam, Consultant, IBM Business Consulting Services has more than 15 years in delivering intra- and inter-enterprise transformation solutions for global CPG companies. His client experiences encompass a broad range of large-scale strategic, operational improvement, technology and change management programs for CPG companies and their trading partners. Tig earned a B.S. in Systems Engineering and Finance from the University of Virginia, and an MBA in Finance and Operations from Columbia University.



Anthony Bigornia
Consultant

Anthony Bigornia, Consultant, IBM Business Consulting Services has over 7 years of international consulting experience serving clients in the consumer packaged goods and retail industries. His work includes a broad range of corporate and new venture strategy formulation engagements to help clients drive shareholder value. Anthony earned a B. Sc. degree in Economics and Business Administration from Saint Mary's College of California and a JD from the Northwestern University School of Law.

IBM BUSINESS CONSULTING SERVICES

EPC™ Forum Survey

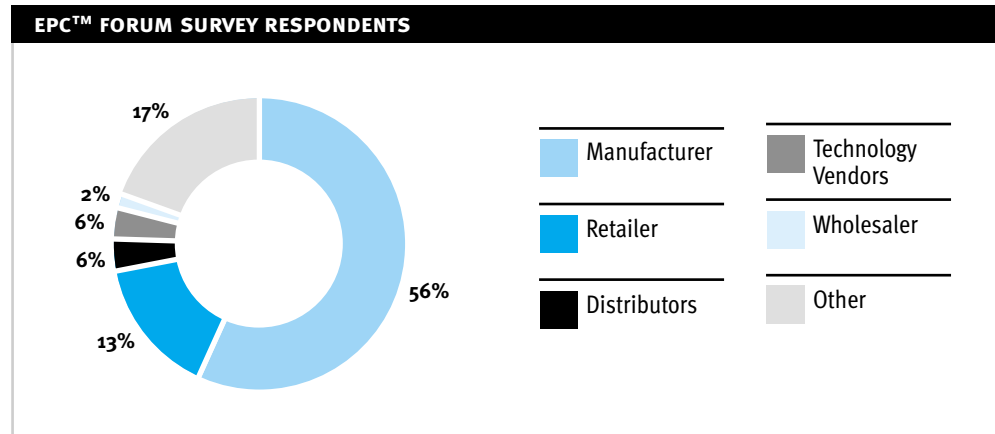
Contents

1. EPC™ Forum Overview	3
2. EPC™ Forum Survey Participants	3
2.1. Current Investment and Understanding	3
2.2. Timing.....	4
2.3. What are ROI expectations?	6
2.4. Some Categories will Go First	6
2.5. Pallet and Case Most Likely Scenario	7
3. Current Company Investment and Understanding.....	8
3.1. Application Priorities.....	8
3.2. Adoption Challenges	9
4. Conclusion.....	11

1. OVERVIEW OF THE EPC™ FORUM SURVEY PARTICIPANTS

The EPC™ Forum Survey included responses from over 60 sponsor and non-sponsor companies. The survey was completed by a wide range of functional area experts including: Finance, Supply Chain, Marketing and Technology. Further, the survey included responses from Europe, South America and the US. The survey was executed by a large number of manufacturers, with less participation from retailers and other supply chain participants. Significantly, based on the detail and content of responses provided, the overwhelming majority of participants were willing to give comments and feedback openly.

Figure 1



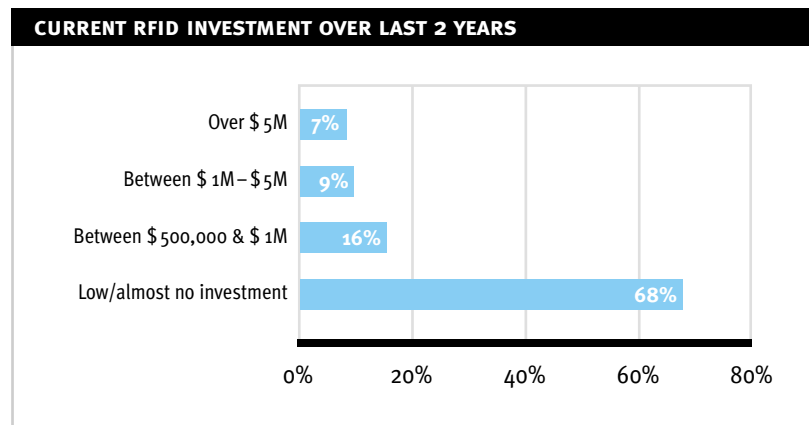
2. CURRENT COMPANY INVESTMENT AND EPC™ UNDERSTANDING

2.1. Current Investment and Understanding

Most notably, the survey results indicated that there is a wide range of understanding among end users around the elements of the Auto-ID solution and how the EPC™ standard will work.

This is perhaps most significantly manifested in the range of current RFID/Auto-ID investments that companies have made in the past. The chart below summarizes survey participants' current RFID/Auto-ID investment made to date.

Figure 2



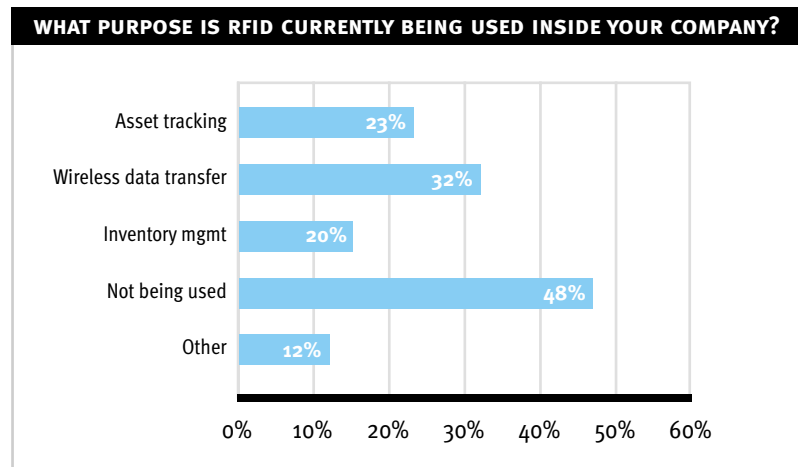
It is not surprising to learn that the end users who have already made significant investments in RFID/Auto-ID (i.e., over \$5M) over the last two years have a deeper understanding of this solution and the benefit categories. However, this group represents only 7% of the participants. Likewise, the disparity in current investment is further supported by the number of end users that have completed or are in the process of completing business cases for Auto-ID investment. This implication, that the amount of current investment is directly related to degree of understanding was qualitatively confirmed by the varying degree of knowledge exhibited by participants in the breakout sessions.

To date, just over 20% of retailers and a mere 8% of manufacturers present at the event report they have completed a business case. However, for the companies that have completed business cases, many commented that the potential for strong positive net returns of using the technology were found in both the near and long term.

In general, companies felt there was a lack of knowledge about Auto-ID within their companies, with over 60% of all end users stating there is only “personal awareness” or “no awareness at all” around Auto-ID inside their companies today. This finding indicates a significant need for greater education around the Auto-ID solution in the near term.

During the course of the workshop, the companies currently using RFID reported they were generally pleased with their results and the benefits of the technology. Many of these early RFID adopters report the following usages for the technology:

Figure 3

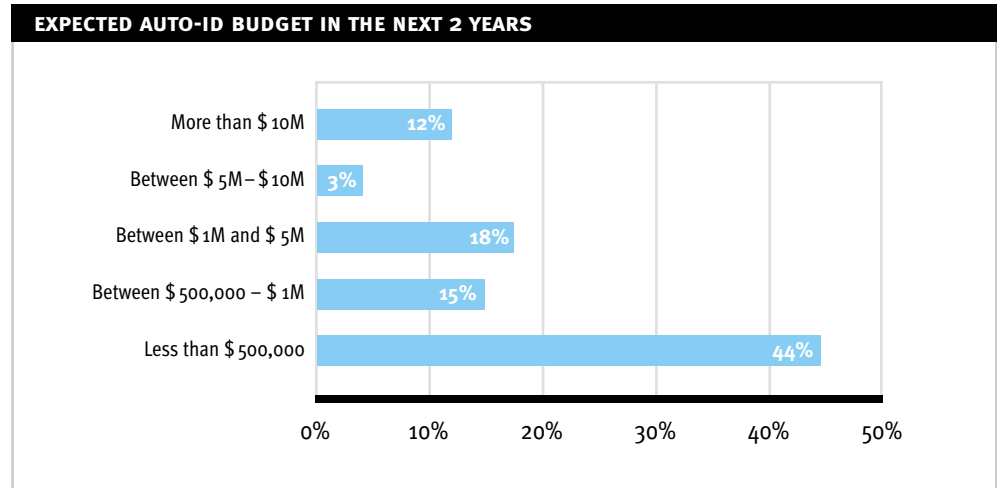


2.2. Timing

Another important finding relates to the expected timing of future investment in RFID/Auto-ID solutions. The chart below summarizes the expected level of investment in Auto-ID technology over the next two years. The headline is most respondents remain cautious regarding near-term Auto-ID investments, with 44% of the participants indicating that they would be budgeting less than \$500,000 in the next two years.

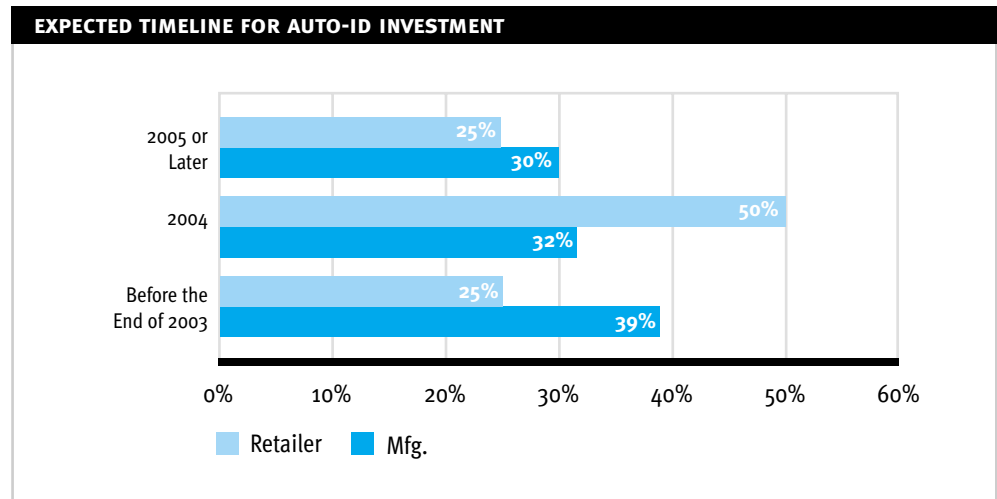
These survey results are not congruent with the expected investment timeline the majority of end users (especially the retailers) expected for 2004. In addition, over 40% of the survey participants report that Auto-ID falls on the bottom 50% of priorities for their firms, calling into question the likelihood of these companies making a significant investment in Auto-ID by 2004.

Figure 4



The end users that have already invested in Auto-ID understand what is required to truly drive benefits from Auto-ID solutions. For example, early adopters report that investments in Auto-ID outside of any small-scale pilot certainly have required more than \$500,000. The inconsistency in the aforementioned responses clearly indicate that there is a need for more education around Auto-ID adoption requirements and investment in the development of Auto-ID specific business cases.

Figure 5

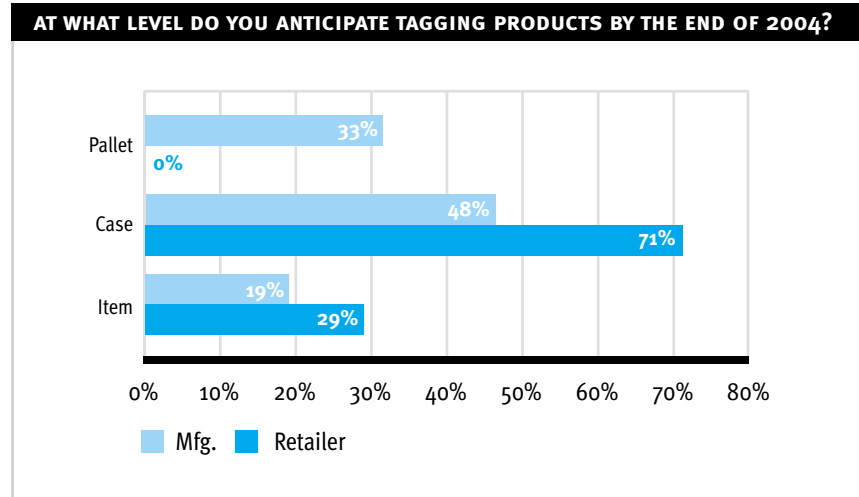


The general lack of Auto-ID education may be one of the prime drivers of the inconsistency in responses related to the amount budgeted vs. the timeline of investments over the next two years. This finding highlights in the workshop session discussions related to the primary cost drivers of an Auto-ID implementation. A majority of end users report that the focus of their investment decision is around the cost of tags and readers. However, the workshop session discussions concluded that the larger challenge was likely to be the data integration and the ability to store, move and analyze the new, real-time data streams generated by an Auto-ID solution. The cost and benefit of this new data was unclear to the majority of end user participants. To this end, IBM BCS has seen an increase in end users who are actively engaging in business case projects, and we expect this trend to continue throughout FY 03.

2.3. What are ROI Expectations?

During the EPC™ Forum, most end users agreed that they expect to be able to drive attractive ROI results from case and pallet level implementation within the four walls of individual companies. The chart below indicates the level of tagging expected in the near term from end users.

Figure 6



The expectation from retailers is clear – a majority report, they expect to leverage case level tagging by the end of 2004. The division between manufacturer expectations and retailer expectations also is clear – over 70% of retailers expect to be rolling out full implementation of Auto-ID by the end of 2005; while 75% of manufacturers expect to reach rollout at the end of 2006. This implementation timing issue will need to be addressed on a trading partner basis and most likely will be decided on a category by category basis.

2.4. Some Categories will Go First

Not all product categories will rollout at the same time. Both retailers and manufacturers agree that some categories are more likely to rollout faster due to product attributes and category economics. The chart below is a summary of both manufacturer and retailer expectations around pallet, case and item level rollout by product category.

Table 1

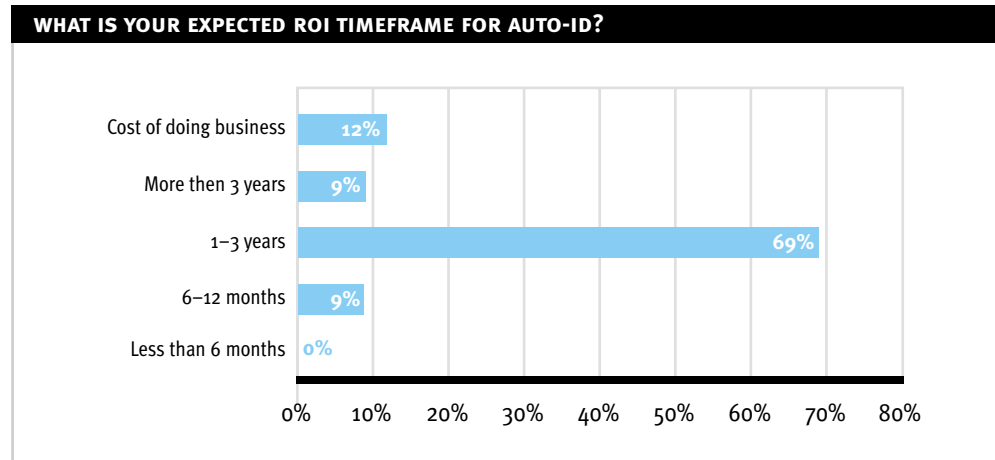
	TODAY	2003	2004	2005	2006	2007	NEVER
APPAREL			Pallet	Item, Case			
GROCERY			Pallet	Case		Item	
CONSUMER ELECTRONICS		Pallet	Case, Item	Item			
HPC		Pallet	Case	Item			
MEDIA			Pallet				
PHARMA		Pallet	Item, Case				
TOYS		Pallet	Item, Case				

IBM BCS has conducted significant research in these product categories. Working with our proprietary business-modelling tool for Auto-ID solutions, our business case work with clients has confirmed that the product category rollout timeframes in the table 1 are directionally correct. However, it is important for individual companies to conduct their own internal business case studies to understand the specific Auto-ID economics associated with their key product categories.

2.5. Pallet and Case Most Likely Scenario

Both manufacturers and retailers agree the business case for initial adoption and rollout will be made at the **pallet and case level**. In addition, most companies expect positive ROI from a pallet and case implementation within their own four walls. This is a very positive finding for adoption. As more companies are able to justify the investment in Auto-ID, the greater the likelihood a value chain wide solution will be successfully rolled out. The chart below indicates the ROI timing expectations by EPC™ Forum survey participants.

Figure 7



During the course of the workshops, it was clear the manufacturing community placed a great deal of significance on trading partner expectations. That is, the manufacturers clearly noted that the requirements for EPC™ trading are directly correlated to retailer EPC™ adoption. In addition, the majority of participants believe the Auto-ID solution will significantly accelerate supply chain productivity, performance and effectiveness throughout and across trading partners.

Indeed, many participants cited the Auto-ID solution as potentially representing the most viable collaborative solution to date. End users reported that other industry wide initiatives focused on collaboration have not shown as much promise as Auto-ID. In fact, much of the excitement generated in the workshop discussions revolved around the many potential transformational collaborative opportunities, such as CPFR, that may be enabled by Auto-ID. There is little doubt that both the manufacturer and retailer communities look forward to strengthening strategic and operational relationships throughout the supply chain to improve efficiencies and drive benefits for both communities, and that Auto-ID may play a prime role in driving to this state of deeper collaboration.

The skepticism that remained focused on the capability of the total solution to stand-up to the variety of physical environments in the industry and the ability for Auto-ID solution to "work" with all forms and materials across typical CPG product lines.

3. PRIORITY APPLICATIONS AND ADOPTION CHALLENGES

3.1. Application Priorities

Perhaps the most significantly correct results from the EPC™ Forum Survey are around the near-term priority application areas. Both manufacturers and retailers agree that early EPC™ applications will focus on inventory management and out of stocks. The charts below show the relative scores for application areas for both manufacturers and retailers.

Figure 8

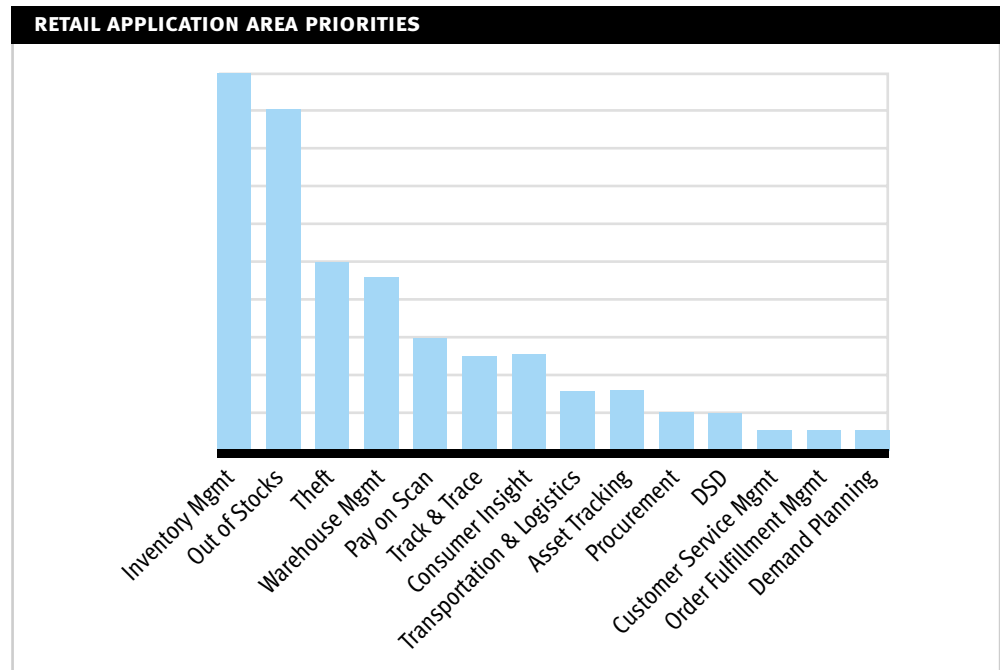
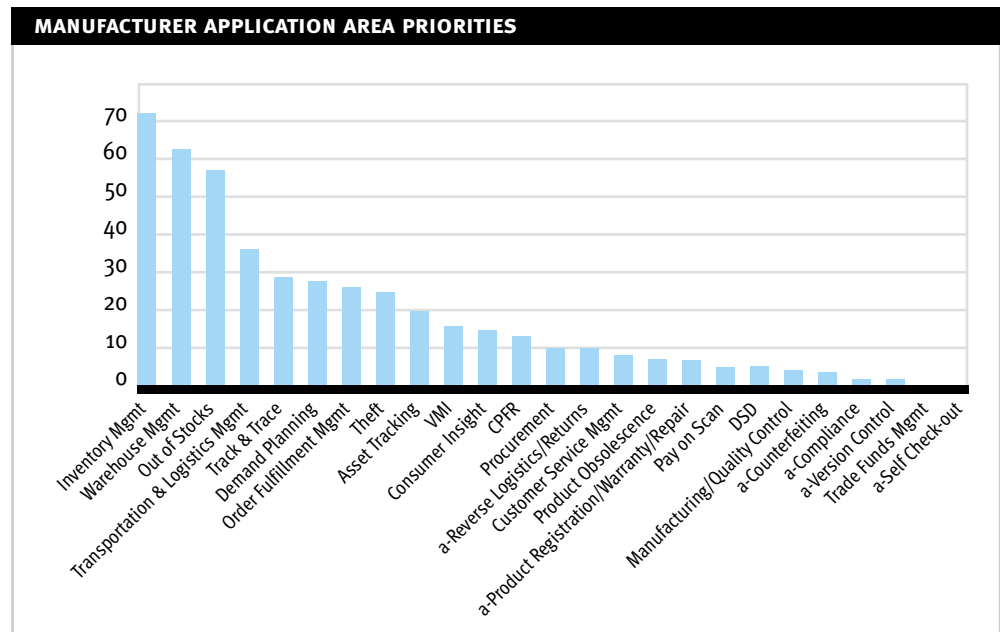


Figure 9



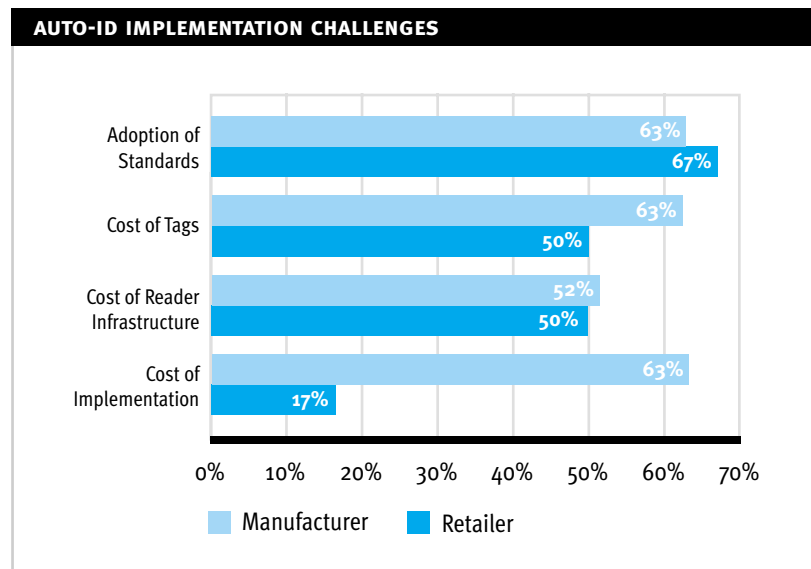
However, the results also illustrate areas of divergent priorities for manufacturers and retailers. For example, manufacturers included warehouse management and transportation and logistics applications among their choices for near term adoption areas while retailers, on the other hand, showed a much higher degree of interest in theft and pay on scan applications.

There were some innovative areas of applications development that end users proposed for second and possibly third wave rollout that included: eSelf-checkout, eCompliance, trade funds management, returns management and unsaleables. In addition, there was significant discussion around product safety issues and potential pressure to provide a secure supply chain, given the possibility that this may be mandated by governmental agencies in the near term for at least a subset of product categories.

3.2. Adoption Challenges

While the priority applications were clear for end users, the adoption challenges were not. In general, survey participants reported the following as key adoption challenges:

Figure 10



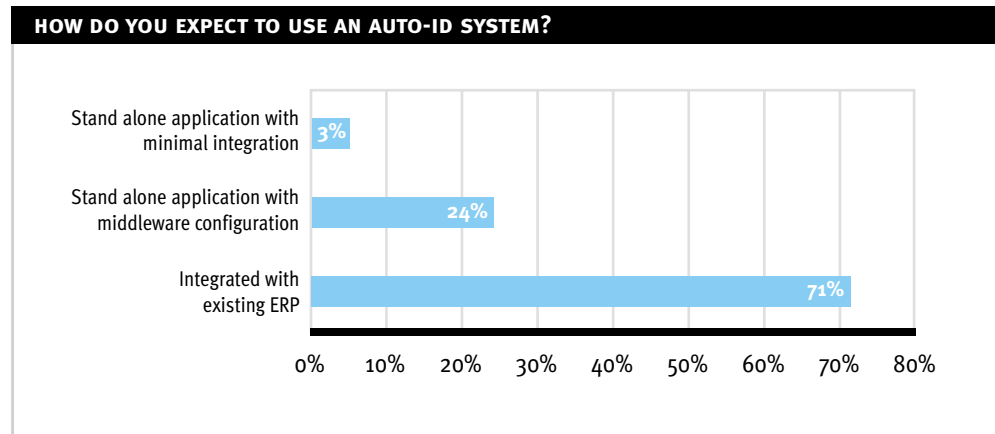
The primary challenge cited by all end users was the adoption of the EPC™ standard. Confusion exists around the objectives and synergies of the EPC™ and GTIN and the work the standards will play in driving toward a common, global EPC™ standard. More education is needed to help bridge the gap of understanding on this critical issue.

The second and third areas of adoption challenge focused on the cost of tags and readers. Most participants focused on the need for cheap tags and readers with 100% read accuracy. While all participants expect the total system (which includes technology and business processes) to reach the required reliability levels, there were varying expectations on when the cost of tags and readers would reach mass-market acceptable levels. The vendor community participants echoed this conclusion reporting mixed expectations on timing for low cost tags and readers, at least in the near term.

The final broadly cited adoption challenge was the area with the least visibility and understanding – that is the cost and effort related to the implementation of an Auto-ID solution. Most workshop participants misunderstood the Auto-ID architecture, citing confusion on the role of Savant™ and application middleware. It is clear that adoption requirements for Auto-ID are only understood at a first order level.

Most end users (over 70%) expect the Auto-ID solution to be integrated into existing ERP systems. However, many workshop participants stated they expected the initial installations to be stand-alone solutions that leverage middleware configurations – with longer, more costly integration investments with ERP applications delayed until Auto-ID-related applications are proven and the overall business impact is better understood.

Figure 11



Participants also reported other adoption challenges both from internal and external points of view. For most companies, the external challenges of highest importance were the cost of tags and readers and the implementation of standards. The internal challenges were not as easily identified. The chart below describes a general view of internal and external adoption challenges. However, individual companies have varying requirements.

Table 2

INTERNAL CHALLENGES	EXTERNAL CHALLENGES
<ul style="list-style-type: none"> - New process design and implementation - Integration with existing systems - Competing priorities for business assets - Replacement of existing systems - High investment in current solutions - Lack of executive sponsorship 	<ul style="list-style-type: none"> - Privacy concerns and consumer perceptions - Intellectual property rights - Legislation/Government/Policy - Data synchronization - External data management - Engineering challenges - Selling the benefits to Vendors & Consumers

In addition to above challenges, one of the most interesting questions raised was “what else changes when we implement the solution?” Some of the early implications discussed by participants highlighted the downstream impacts of Auto-ID solutions on the areas such as human resource management, operations management, and consumer insight.

4. CONCLUSION

These early results indicate that there is still work to be done this year on the road to Auto-ID adoption. Overall, the conference attendees strongly agreed that end user benefits and ROI related to Auto-ID technology were likely to be substantial, provided that appropriate Auto-ID standards are developed and accepted promptly and that technology issues related to tag/reader reliability are overcome for a wide array of CPG products.

Further, the EPC™ Forum validated that there is a growing global community that is quickly focusing on the real timelines, resource requirements and expectations for Auto-ID solutions. While there remain challenges ahead for the industry this year, our overall conclusions from the EPC™ survey and workshop discussions are:

- Both manufacturers and retailers are planning to invest in Auto-ID, but cautiously
- Initial investments will be strategic and point solution based
- Companies are looking to implement integrated solutions
- Standards remain the key challenge
- There are early indications of consistent priority application areas for both retailers and manufacturers
- Inconsistencies remain among manufacturers and retailers regarding expectations related to adoption timing and rollout priorities
- However, Auto-ID/RFID is expected to be a cost effective way of doing business in the future.

