

## Descriptive statistics from the RFID survey 2007

### Letter to ISM members request to participate in RFID survey

May 2007

Dear Sir or Madam:

I am the director of the *RFID Lab* here at Baylor University, affiliated with *The National RFID Center*, and a member of the *RFID Technology Council*.

RFID (radio frequency identification) technology is currently a hot topic of discussion for many firms. Even though RFID business applications have evolved over the past couple of decades, there is no doubt that it is an emerging technology for identifying and tracking objects and hold many promises for closing the time-lag gaps in information transfer for improving supply chain operation productivity. This RFID-awareness has lead to much discussion regarding benefits, challenges, and security-type issues.

We are investigating the key issues that companies should consider in assessing this rapidly growing technology with this follow up survey of ISM professionals. In this research we aim to determine:

- how companies can assess if RFID will be a worthwhile investment
- the key motivators for RFID adoption
- how RFID can improve supply chain performance

By completing this research questionnaire you will be helping us benchmark these issues. Your responses will be confidential and will be combined with those of other respondents. The aggregated results will be reported to you and your colleagues at ISM. If you participate in this study, you may request a summary of results by sending an email request.

The survey can be found at <http://www1.baylor.edu/surveys/RFID/rfid.htm> (case sensitive) and will take approximately 5-10 minutes to complete.

Research title “RFID Attractiveness Survey” is supported by the office of the Vice Provost for Research at Baylor University (#113-07-URC).

The Principle Investigators are:

Dr. Pedro M. Reyes, Baylor University

Dr. Greg Frazier, The University of Texas at Arlington:

Dr. Edmund Prater, The University of Texas at Arlington:

We appreciate your help in making this research project a success. For any questions feel free to contact Dr. Pedro Reyes at 254-710-7804 or email at [Pedro\\_Reyes@baylor.edu](mailto:Pedro_Reyes@baylor.edu).

## Survey Results

Total responses= 149

### RFID implementation plans

**Table 1: Current status of companies' adoption plans for RFID tags**

What is your RFID implementation plan?		
(A) No, not considering it within next two years	97	65.10%
(B) Yes, considering it within next two years	19	12.75%
(C) Yes, we are conducting a pilot study	14	9.39%
(D) Yes, we are in the implementation process	9	6.04%
(E) Yes, implementation is complete	10	6.71%
Total responses	149	

### (A) No, not considering it within next two years

**Table 2: (Q14) Reasons for not adopting RFID**

<i>Variable</i>	<i>Means</i>
Lack of foreseeable benefits	4.42
Technical issues with hardware	4.35
Technical issues with software	4.36
Cost of tags	4.95
Security/regulation issues	3.74
Initial cost of implementation	5.60
Your firm's lack of knowledge/understanding about RFID	4.31
Developing/integrating new process	4.54
Usage difficulties for customers	4.04
Usage difficulties for suppliers	4.75
Uncertainty of technology standards	4.93
Training problems	4.00
Difficulty with determining potential costs	4.68
Database difficulty	4.92
Difficulty in determining potential ROI	4.06
Large number of stakeholders in the decision	3.81
Privacy issues	3.52
Difficulty in understanding potential benefits	4.52

Least applicable=1, Most applicable=7

The following are based on those respondents that are different levels of RFID adoption.

**(B) Yes, considering it within next two years**

**(C) Yes, we are conducting a pilot study**

**(D) Yes, we are in the implementation process**

**(E) Yes, implementation is complete**

**Table 3: (Q15) Who would benefit the most from your use of RFID tags**

<i>Variable</i>	<i>Means</i>			
	<i>(B)</i>	<i>(C)</i>	<i>(D)</i>	<i>(E)</i>
Your supplier	3.05	3.21	3.22	2.80
Your company	5.40	5.21	5.11	5.00
Your customer	4.15	4.42	3.67	5.60

Weak benefit=1, Strong benefit=7

**Table 4: (Q16) RFID implementation level**

<i>Variable</i>	<i>Means</i>			
	<i>(B)</i>	<i>(C)</i>	<i>(D)</i>	<i>(E)</i>
RFID implementation level	2.10	2.00	2.11	2.10

**R**eactive implementation simply to comply with a trading partner's request=1

**T**actical approach seeking to improve efficiencies to specific processes within the company=2

**S**trategic implementation that involves using RFID across the entire supply chain=3

**Table 5: (Q17) Reasons for implementing RFID**

<i>Variable</i>	<i>Means</i>			
	<i>(B)</i>	<i>(C)</i>	<i>(D)</i>	<i>(E)</i>
Pressure from customer(s)	2.31	2.42	2.11	3.60
Pressure from supplier(s)	2.36	1.50	1.55	1.80
Pressure from parent company	1.89	1.57	4.77	1.80
Reduce lead times	3.50	1.92	4.44	4.90
Reduce labor cost	4.26	4.64	5.11	5.10
Reduce inventories	5.00	4.14	4.88	4.10
Enhance operations capabilities	5.52	4.64	6.00	4.80
Enhance accuracy of information	5.57	5.42	6.11	4.20
Enhance availability of information	5.47	5.14	6.11	5.20
Improve process automation	4.89	4.28	6.11	5.20
Reduce overall operating costs	5.78	3.92	6.00	4.60
Improve customer service	5.52	4.50	6.00	5.60
Keep up with competitor(s)	4.42	3.00	3.55	3.10
Better supply chain visibility	5.15	4.64	5.44	4.00
Better inventory visibility	5.52	4.78	6.11	4.20
Reduction of out of stock inventory	5.42	4.07	5.88	3.90
Reduction of claims	3.52	2.21	5.00	3.00
Reduction of theft	3.63	2.35	5.11	2.00

Not Important=1, Very Important=7

**Table 6: (Q14) Expected hurdles or difficulties in implementing RFID tags**

<i>Variable</i>	<i>Means</i>			
	<i>(B)</i>	<i>(C)</i>	<i>(D)</i>	<i>(E)</i>
Technical issues with hardware	4.00	2.92	4.33	2.90
Technical issues with software	4.84	3.64	5.00	3.90
Cost of tags	3.57	4.07	4.00	3.20
Security/regulation issues	3.10	3.42	4.55	3.00
Initial cost of implementation	4.68	5.87	5.55	4.00
Your firm's lack of knowledge/understanding about RFID	4.21	2.42	2.88	3.90
Developing/integrating new process	4.89	3.35	3.33	3.20
Usage difficulties for customers	3.97	3.85	4.11	2.80
Usage difficulties for suppliers	3.94	4.50	4.22	2.80
Uncertainty of technology standards	3.63	3.21	4.77	2.50
Training problems	3.26	3.42	4.44	3.33
Difficulty with determining potential costs	4.05	4.07	3.11	3.70
Database difficulty	4.31	4.62	3.55	3.40
Difficulty in determining potential ROI	4.05	3.28	4.77	3.60
Large number of stakeholders in the decision	3.15	2.35	5.11	3.10
Privacy issues	3.15	3.21	3.11	2.20
Difficulty in understanding potential benefits	4.00	4.07	3.88	4.20

Minor Hurdle=1, Major Hurdle =7

**Table 7: (Q18) Planned to use RFID tags**

<i>Variable</i>	<i>Means</i>			
	<i>(B)</i>	<i>(C)</i>	<i>(D)</i>	<i>(E)</i>
Track parts at individual unit level	4.68	3.28	5.33	3.70
Track parts at case/pallet/container level	4.36	5.92	6.33	4.20
Locate parts or equipment within facility	4.68	4.78	5.67	3.50
Help automate inventory replenishment	5.10	2.50	5.88	4.00
Track equipment (pallets, carts, trailers, etc.)	3.84	3.21	5.00	3.33
Conduct inventory counts of items in storage	5.31	3.50	5.67	3.90
Help monitor inventory usage	5.00	3.64	6.11	3.70

Not Important=1, Very Important=7

**Table 8: (Q19) Plans to evaluate RFID investment**

<i>Variable</i>	<i>Means</i>			
	<i>(B)</i>	<i>(C)</i>	<i>(D)</i>	<i>(E)</i>
Return on investment (ROI)	5.05	6.21	3.77	4.90
Discounted cash flow and IRR	4.47	3.07	2.77	4.10
Net present value (NPV)	4.21	2.21	4.44	2.80
Profitability index	3.68	2.07	3.55	3.10
Payback period	5.15	3.35	4.77	4.30
Present worth	3.73	2.21	5.67	3.00

Least Applicable=1, Most Applicable=7

**Table 9: (Q20) Assessment of realized improvements**

<i>Variable</i>	<i>Means</i>		
	(C)	(D)	(E)
Lead times	4.07	5.44	4.90
Labor cost	4.07	5.77	4.90
Inventory levels	4.35	5.67	5.30
Operations capabilities	3.85	5.88	5.80
Accuracy of information	4.35	5.44	5.60
Availability of information	4.42	6.33	6.00
Level of automation	4.42	5.88	5.80
Overall operating costs	4.50	5.77	5.30
Level of customer service	4.64	6.00	5.60

Worse=1, Same=4, Better=7

**Table 10: (Q21) RFID & e-procurement**

<i>Variable</i>	<i>Means</i>			
	(B)	(C)	(D)	(E)
I can accomplish my e-procurement tasks more quickly using RFID.	3.42	2.64	2.67	3.30
I can accomplish my e-procurement tasks more easily using RFID.	3.84	2.64	2.67	3.20
RFID enhances my effectiveness in utilizing e-procurement tasks.	3.84	2.57	2.67	3.60
RFID enhances my efficiency in utilizing e-procurement tasks.	3.78	2.57	2.67	3.50
RFID enables me to make better decisions in utilizing e-procurement tasks.	4.05	2.57	2.67	3.50
Overall, I find RFID for e-procurement tasks useful.	3.94	2.57	3.00	3.50
Using RFID for e-procurement tasks is easy for me.	3.36	2.21	3.00	3.10
It is easy to for me to use RFID to accomplish my e-procurement tasks.	3.42	2.21	3.00	3.10
Overall, I believe RFID for e-procurement tasks is easy to use.	3.47	2.21	3.00	3.30
In my opinion, it is desirable to use RFID for e-procurement tasks.	3.47	2.50	2.88	3.30
I think it is good for me to use RFID for e-procurement tasks.	3.57	2.50	2.88	3.30
Overall, my attitude towards RFID for e-procurement tasks is favorable.	4.10	2.50	2.88	3.70
I will use RFID for e-procurement tasks on a regular basis in the future.	3.36	2.50	2.88	3.50
I will frequently use RFID for e-procurement tasks in the future.	3.42	2.50	2.88	3.50
I will strongly recommend others to use RFID for e-procurement tasks.	3.31	2.37	2.88	2.90

Disagree=1, Agree=7