

# How to Cost Justify riteSCAN

This guide was prepared to provide management with a foundation to evaluate the potential return on investment of a data collection system.

Automated data collection systems can have a major impact on just about any manufacturing and distribution operation. It is not uncommon to see a return on investment of less than one year. With this workbook you should be able to determine what kind of return you might expect from a data collection system. Your actual return on investment will depend on your specific application and the cost of existing procedures.

This workbook is merely a guide on how to assemble a cost justification. However, depending upon your application, there may be several other ways that you may be able to justify this type of expenditure. Following are the topics covered as well as additional areas that you may want to investigate for further cost justifications.

Topics covered in this workbook include:

- ▶ Labor Savings
  - Minimize manual data entry
  - Minimize search for lost product
  - Correcting mis-shipped orders
- ▶ Reduced Inventory Carrying Costs
- ▶ Intangible Benefits
  - Better management decisions
  - Decreased manufacturing downtime
  - Improved Customer Service
  - Better Quality Control

Addition areas and applications that should be researched to further cost justify a data collection system include:

- ▶ Decreased Manufacturing Downtime
- ▶ Quality Control
- ▶ Accurate Lot Number Tractability
- ▶ Reduced Over-Time Hours
- ▶ Net Present Value of Money
- ▶ Company Image

### Operation Questionnaire

Obtain the answers to the following questions about your operation. They can help to create a foundation to build a strong cost justification for an automated data collection system. Use the examples in this workbook to better understand how to use this information to formulate your return on investment (ROI).

- |  |               |
|--|---------------|
| ▶ Number of Stock Keeping Units (SKU's)      | 2,000         |
| ▶ Avg. Orders throughput per day             | 50            |
| ▶ Avg. line items picked per day             | 500           |
| ▶ Avg. line items per order                  | 5             |
| ▶ Avg. line items picked per hour per picker | 21            |
| ▶ Avg. piece count per line                  | 4             |
| ▶ Number of Pickers                          | 4             |
| ▶ Number of Re-stockers                      | 2             |
| ▶ Number of Receivers                        | 2             |
| ▶ Number of Packers/Shippers                 | 2             |
| ▶ Number of Order Entry Personnel            | 1             |
| ▶ Number of overtime hours per year          | 480           |
| ▶ Avg. overtime wages                        | \$22.50/hour  |
| ▶ Avg. wage with benefits                    | \$15/hour     |
| ▶ Dollar value of inventory                  | \$1.5 million |
| ▶ Number of inventory turns per year         | 3             |
| ▶ Inventory accuracy rate                    | 80%           |
| ▶ Cost per sq. ft. of storage space          | \$ 8.00       |



## Labor Savings

Most manufacturing and distribution businesses that are not automated have very intensive processes for collecting data and keeping the operation organized. These paper and manual transactions can prove to be very inefficient and non-productive. In addition, manual systems are prone to error due to sloppy handwriting, transposing numbers and data entry typos. Bar code technology can provide major labor savings by minimizing, if not eliminating manual data entry.

Following are some operational areas that would be affected by a data collection system. There are many labor-intensive areas that could be affected including employee productivity, pick rates etc.

When calculating the labor costs be sure to use the average hourly wage "plus" the cost of benefits. Benefits can typically cost up to 1/3 of an employee's hourly rate.

It is also critical to know if any of the applications experience overtime hours that are paid at a higher wage rate. Improved productivity can help to minimize or eliminate overtime hours, providing a faster return on investment (ROI).

Labor Savings - Elimination of Manual Data Entry

Paper transactions are typically entered into the computer via manual data entry. With a data collection system, the data is entered automatically by scanning a bar code. The bar-coded data is decoded and delivered directly to the computer's database. Since the data is placed directly into the computer, most of the manual data entry can be eliminated. These man-hours can be used as a large portion of the justification.

In addition, the scanned data is much more accurate because numbers cannot be transposed and there are no typos.

Define how many man-hours are utilized to manually enter data transactions:

Manual Data Entry

Application	Man Hours	X	Avg. Hourly Rate + Benefits	X	Days per Year	=	Total Savings per Year
Receiving		X	\$	X	220	=	\$
Put Away		X	\$	X	220	=	\$
Picking		X	\$	X	220	=	\$
Shipping		X	\$	X	220	=	\$
Time & Attendance		X	\$	X	220	=	\$
Inventory		X	\$	X	220	=	\$
Work-In-Progress		X	\$	X	220	=	\$
Combine Pick List	2	X	\$15.00	X	220	=	\$6,600

*Total Estimate Savings Per Year: \$6,600 +*

Labor Savings - Searching for Lost Product

Warehousing operations typically have hundreds and sometimes thousands of locations to store products. With the vast number of material moves, products can easily be lost because a given transaction is not recorded properly. As a result, material pickers and stockers can spend a significant amount of time trying to locate products. With bar code technology, material moves can be recorded at the time of each transaction by scanning the part number and then the storage location. This information can be used to instantly update the host databases.

Number of man-hours that could be eliminated searching for lost product:

Number of Hours Searching For Lost Product

Application	Man Hours	X	Avg. Hourly Rate + Benefits	X	Days per Year	=	Total Savings per Year
Receiving		X	\$	X	220	=	\$
Put Away		X	\$	X	220	=	\$
Picking	4	X	\$15.00	X	220	=	\$13,200
Shipping		X	\$	X	220	=	\$
Time & Attendance		X	\$	X	220	=	\$
Inventory		X	\$	X	220	=	\$
Work-In-Progress		X	\$	X	220	=	\$

*Total Savings Per Year: \$13,200 +*



## Labor Savings - Mis-shipped Orders

Bar codes can be used to easily validate orders as they are picked, packed and loaded onto a truck. This validation process can literally eliminate mis-ships and save a tremendous amount of money that can be used to further cost justify the use of bar code technology. A survey of several companies has shown that it takes an average of 7 people to rectify an order that was mis-shipped.

Answer the following Questions:

- ▶ How many people must get involved in your organization to correct a mis-shipped order?
- ▶ How much time does it take each of these individuals to rectify the order?

List the People Who Must Be Involved to Fix a Mis-Shipped Order

- ▶ Receiving Personnel
- ▶ Order Pickers
- ▶ Re-stockers
- ▶ Shipping Personnel
- ▶ Accounts Payable
- ▶ Warehouse Mgmt.
- ▶ Order Entry
- ▶ Sales Management

Each person takes an average of 6 minutes or .1 hours to correct a mis-shipped order.

Annual Cost = # of Mis-Shipped Orders Per Day x # of Man Hours x 220 Days Per Year

Annual Cost = 2 Orders x .8 Man Hours @ \$15/hour x 220 Days Per Year

*Annual Cost of Mis-shipped Orders: \$5,280*

**Total Est. Labor Cost Savings: \$6,600 + \$13,200 + \$5,280 = \$25,080**

## Inventory Carrying Costs

When implemented properly, data collection can provide timely and accurate information regarding your operations inventory. This information can include the exact product and location of every product in your facility. Having tight control over your entire inventory and knowing your production schedules in advance can significantly reduce inventory levels. It is not uncommon for a company to be able to increase its inventory turns an additional 1 to 3 times per year when data collection systems have been fully implemented.

Inventory costs are primarily associated with the costs of possessing the goods, the associated interest, storage facilities and taxes. An average cost for maintaining inventory is about 25% of its value. Your accounting department can confirm this number.

Your operation may have \$1,500,000 worth of inventory with 3 turns per year. When data collection is implemented, it may increase inventory turns to 4 times per year thus allowing inventory levels to decrease to \$1,125. The \$375,000 of excess inventory would be multiplied by the cost to maintain it or 25%.

*Cost Savings Due to Inventory Turns:  $\$375,000 \times 25\% = \$93,750$*

***Based on these assumptions, this report shows that you may save \$118,830 per year by implementing a data collection system.***



### Storage Space Savings

As explained above, inventory levels can be controlled much better therefore allowing companies to decrease their inventory levels. This decrease in inventory levels can open up some much needed storage space that can help to justify the cost of data collection system.

What is the cost per square foot of storage space in your facility? \_\_\_\_\_

Space Savings: # of sq. ft made available x Cost per sq. ft. = \_\_\_\_\_

#### ABC Company example:

Cost per sq. ft. of storage space = \$6 per sq. ft.

Sq. ft. made available = 1,500

1,500 sq. ft. x \$6 per sq. ft. = \$9,000 in space savings



## Intangible Benefits and Cost Savings

There are many benefits from an automated data collection system that are intangible and difficult to measure in a dollar amount. If you cannot place a dollar value on specific items, be sure to make them part of your cost justification presentation. A detailed explanation of the benefit and how it may effect your operation can help “Sell” management on the automation proposal.

### Intangible Benefits

- ▶ Better Management Decisions
  - Since the data that is entered into the system is accurate and timely, management can make better business decisions. They can feel confident that the decisions they make are based upon accurate, real time or close to real time information.
- ▶ Decreased Manufacturing Down Time
  - The accurate and timely data generated from an automated data collection system allows management to tightly manage materials and better-forecast inventory levels. As a result, manufacturing down time due to product unavailability can be decreased.
  - Manufacturing down time can be one of the most expensive costs to a company. If you feel that your company experiences manufacturing down time, do some homework and find out why. Obtain a cost per minute for not having your production lines operating. If you can tie these costs to inventory and materials management or information availability, there may be a good opportunity to use this information in your cost justification proposal.
- ▶ Employee productivity benchmarking
  - Benchmarking productivity of individual performance and tying compensation to productivity of labor can be motivational to employees. By tracking individual productivity, you can benchmark standard performance and motivate and manage to this performance with accurate, timely data.