KPIs for maximizing goods-to-person investment

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Seminar Overview

Abstract

The recession caused many companies to reduce labor in their operations. Now that business is improving, it is important to maximize operational performance with existing labor to enable on-time, accurate shipments and exceptional service to stores and/or consumers. This session will discuss the available goods-to-person technologies, best practices and the leading performance indicators to help companies ensure they are getting the most out of their investment.

Key topics

- Learn the top key performance indicators (KPIs) for justifying the return on investment (ROI) of your goods-to-person operation

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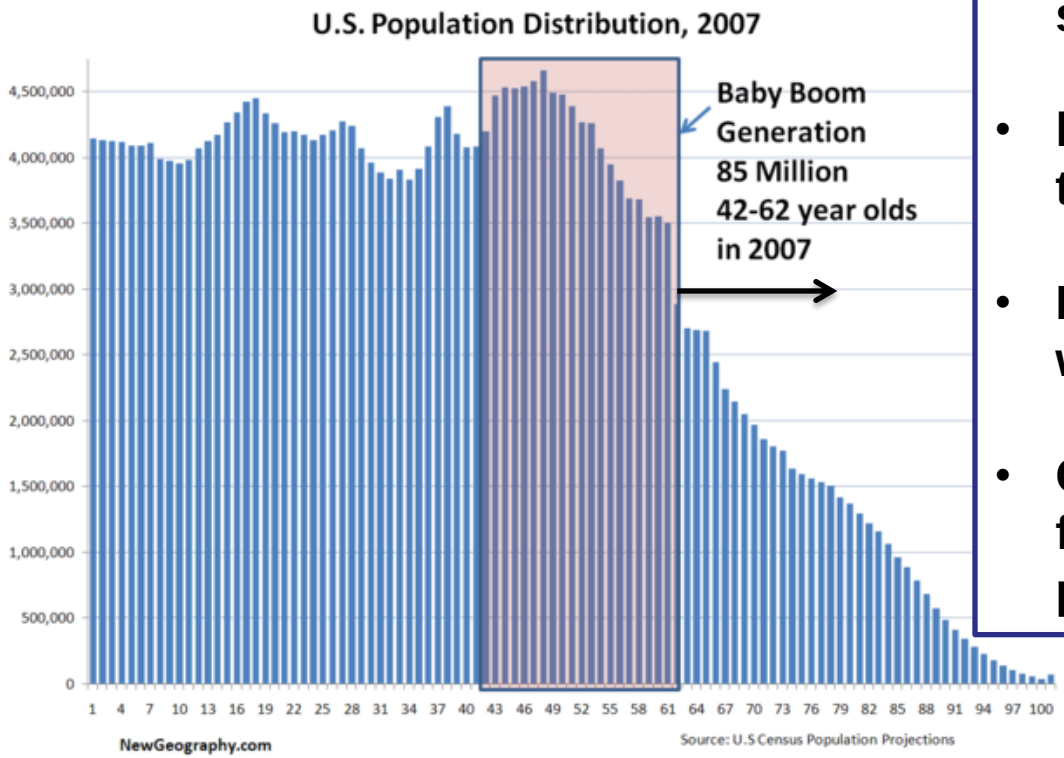
Agenda

Goods to Person Solutions

- Trends Driving Adoption
- Solution Types
- Elements of Return on Investment
- Top KPIs to Monitor

Labor Demographics



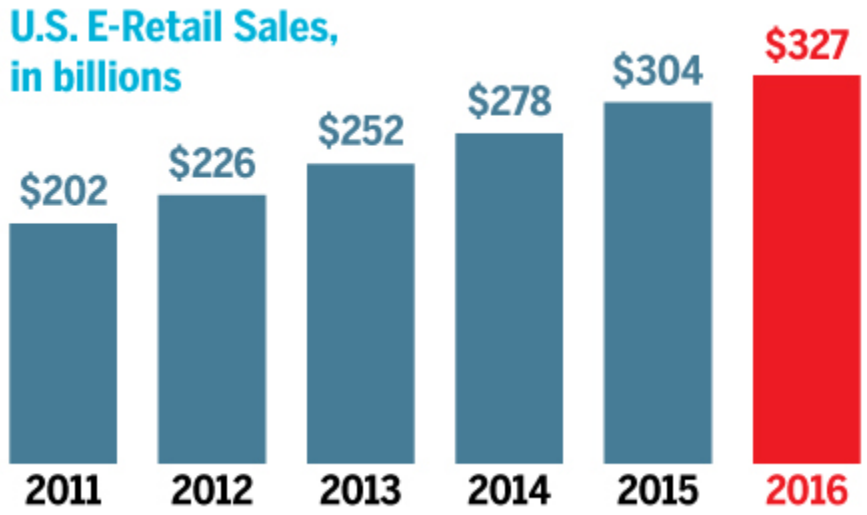
- **6,000 Americans turn 65 everyday, that is 1 every 14 seconds or 2.2 million per year.**
- **By 2020 65+'ers will be 36% of the population.**
- **By 2016, 40% of the aging workforce will disappear.**
- **Only half of those jobs can be filled with the available labor pool.**

From "we don't have enough jobs" to
"we don't have enough people for the work we want to do."

Labor Trends

- The Great Recession (December 2007 - June 2009) caused the largest increase in unemployment in the United States since World War II, losing 6.1% of all payroll employment.
- Sentiment regarding economic and labor uncertainty is driving a desire to add automation – “to do more with what we have.”

Consumer Trends



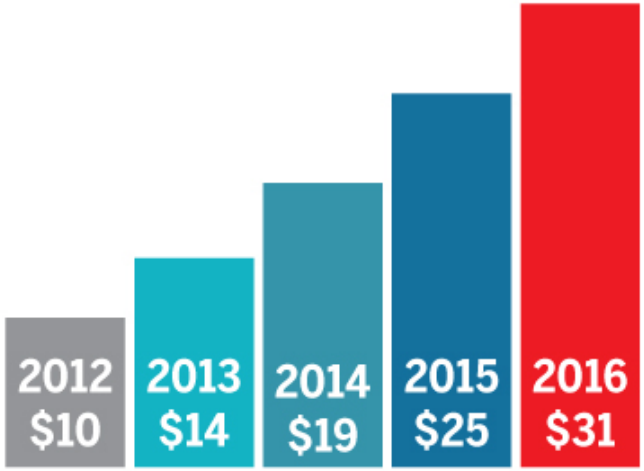
U.S. E-commerce Sales: 2011-2016

Online consumers will increase their spending 62% by 2016, according to Forrester Inc.

Source: Forrester Inc.

E-commerce sales are expected to grow **10%** per year to **$327 billion** by 2016, accounting for **9%** of all retail sales*

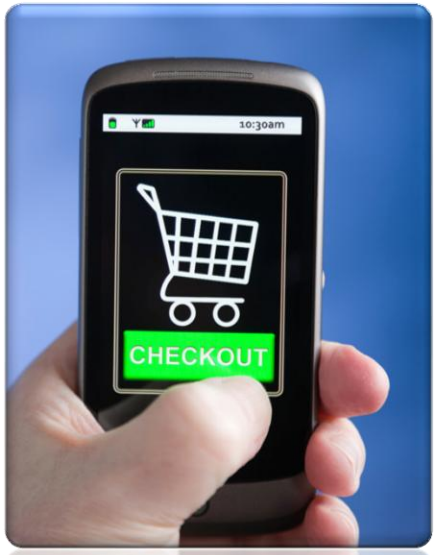
Consumer Trends



U.S. smartphone commerce forecast

Consumer purchases via smartphones will grow from $10 billion in 2012 to $31 billion in 2016, Forrester Research predicts. Smartphones will account for 3% of e-commerce in 2012 and 7% in 2016.

Source: Forrester Research, sales in billions



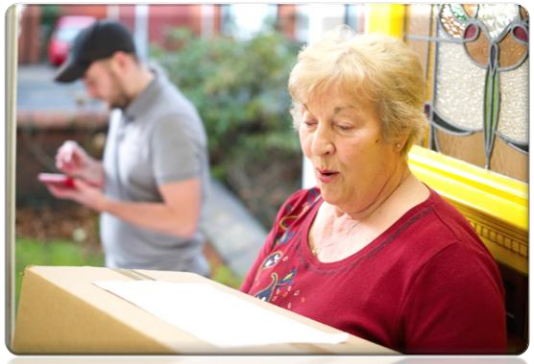
Nearly 50% of all mobile phones in use are smartphones.

Mobile Shopping Activities of Smartphone Owners

46% of smartphone owners have conducted some type of mobile shopping activity, comScore says. The most popular are taking product pictures, locating nearby stores and searching for coupons.

Source: comScore

Consumer Trends



So what's it all mean…

- Customers want it all – right product, right price, and at the right place
- More smaller orders – more case and 'each' picking demands
- Continual focus on improvement in fulfillment speed and accuracy

Goods to Person Solutions

Characteristics

- Order picker stays in one place
- System brings the goods or SKUs to the order picker or person

Components of a solution

- Storage medium for inventory
- Conveyance method
- Pick/put workstation
- Software to control product flow and order fulfillment process

Goods to Person Solutions

Types – Mechanized Put Wall

- Case, Tote or Batch Pick
- Conveyance
- Put-and-Pack Wall
  - Put-to-light Items by order
  - Pack-to-light completed orders

Goods to Person Solutions

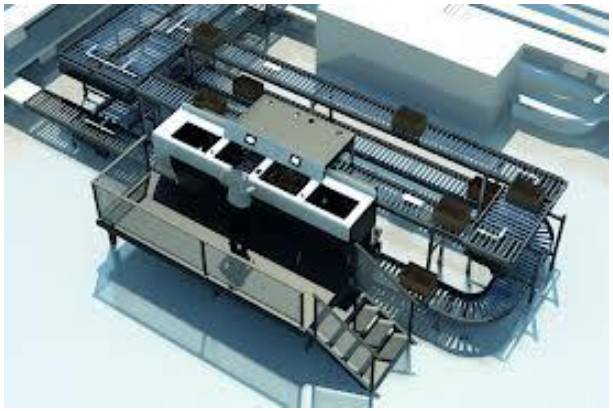
Types – Semi-Automated Storage

- Horizontal Carousels
- Vertical Carousels
- Vertical Lift Modules
- Conveyance

Goods to Person Solutions

Types – Automated Storage and Workstations

- AS/RS or Shuttle Storage
- Conveyance
- Pick/Put Workstation

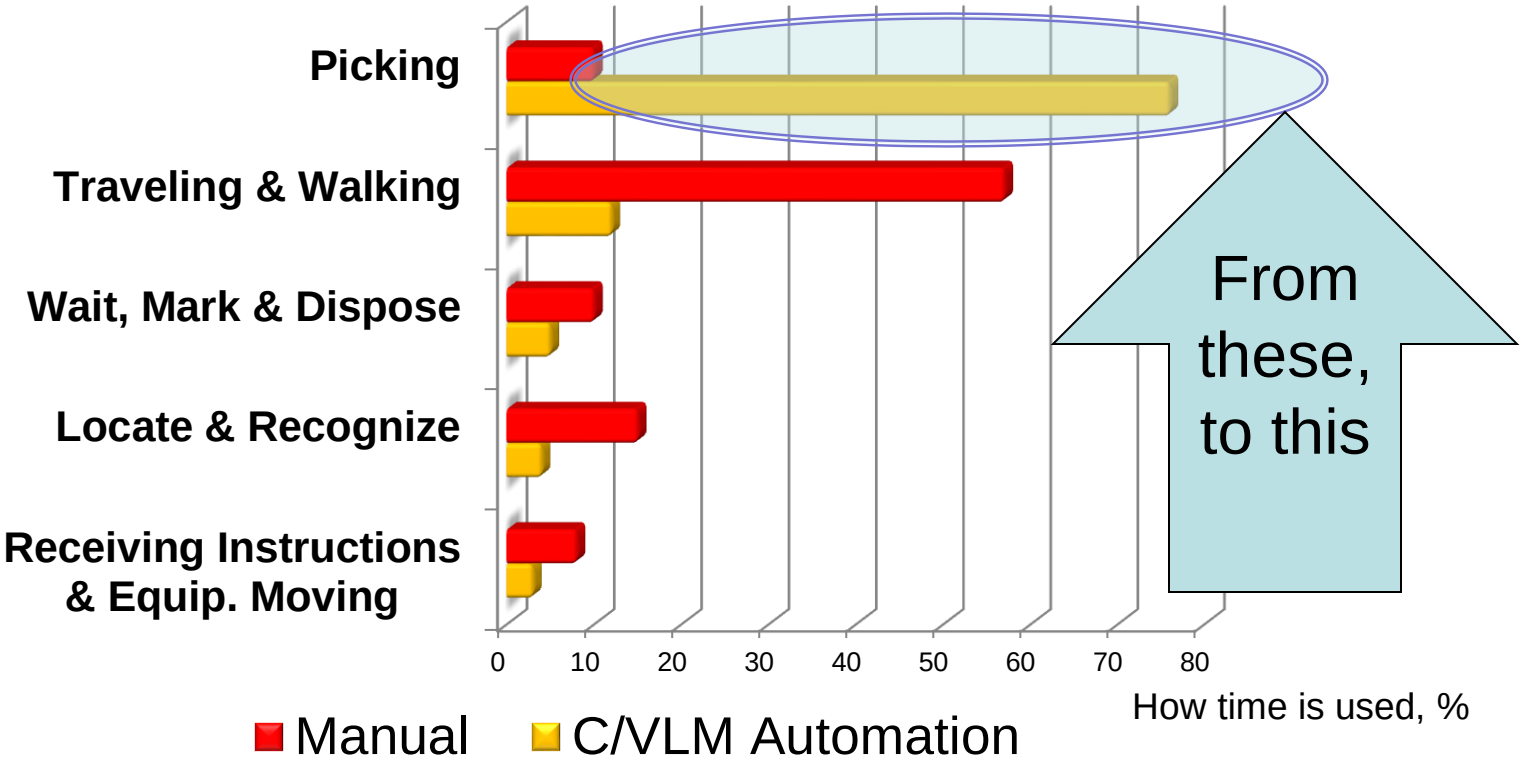


Elements of ROI: Timetable

- 24 months **Not so much!**
- 18 months more frequent
- 12 months …
- Reflects ….
  - Cost-neutral within 2 budget cycles?
  - Uncertainties in business investment cycle?
  - Rapidly changing consumer trends?

Elements of ROI: Performance

- Productivity – Translates to Cost of Labor

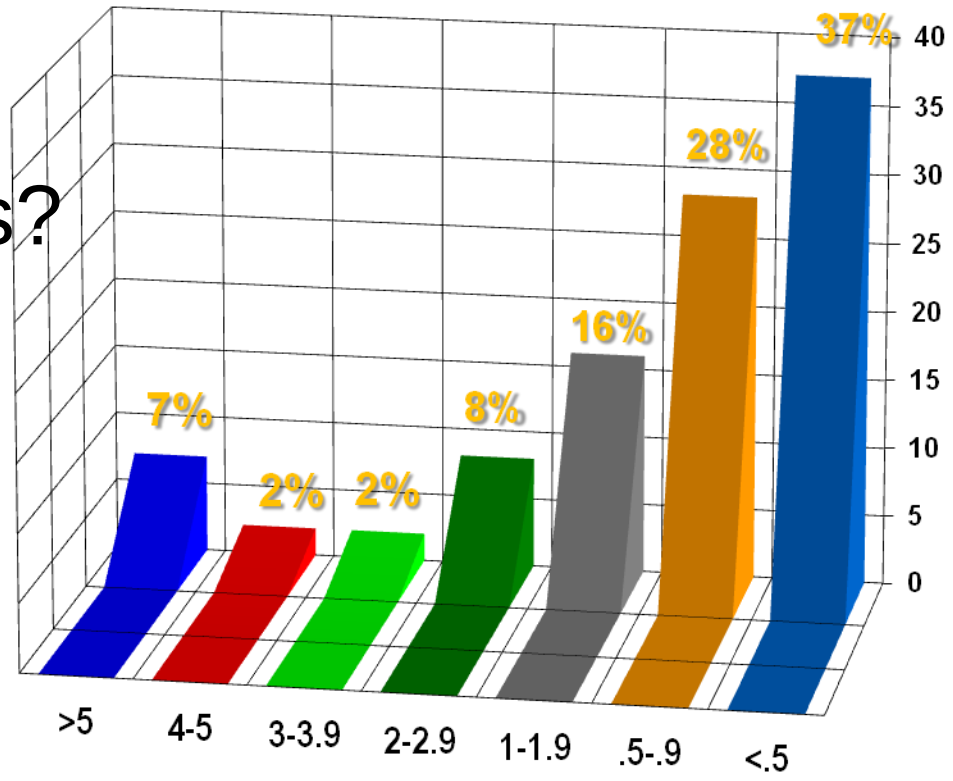


Elements of ROI:
Performance

- Increase the speed of filling orders
  - More orders in less time
- Minimize the time an order is in the system
  - Customer responsiveness
  - Non-facility staging (UPS, FedEx trucks)
- Respond readily to changing order trends

Elements of ROI:
Accuracy

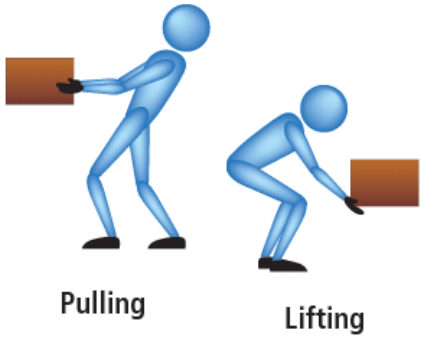
- What is the cost of incorrect shipments?
- Corrective
- Customer relations



How Many Orders is 1%?

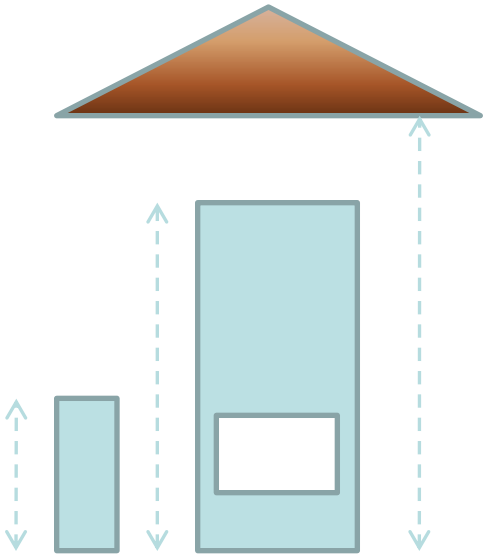
Elements of ROI:
Health & Safety

- Increase productivity
- Battling trends
  - Aging workforce
  - Activity levels
- Costs of workers comp, lawsuits & OSHA 300 record



Elements of ROI:
Using Space Effectively

- Increase building utilization
  - Maximize cube
- Floor-to-truss optimization
- Utilize hard-to-reach areas where workers can't / shouldn't go



Raise the Roof

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Key Performance Indicator (KPI) Measurements

- **Inventory**
  - Inventory accuracy % = (actual SKU units / system SKU units)
  - Damaged inventory % = (total damaged inventory $ / total inventory value at cost)
  - Storage utilization % = (total cubic feet occupied / total available capacity cubic feet)
- **Order Fulfillment**
  - Order fill rate = (orders filled complete / total order shipped)
  - Order accuracy = (orders error free / total orders shipped)
  - Order cycle time (hrs) = (actual ship date – customer order date)
  - On-time delivery = (orders on-time / total orders shipped)

Key Performance Indicator (KPI) Measurements

- **Productivity**
  - Units per labor hour = (orders or units or items or lines picked or packed / total DC labor hours)
  - Cost labor hour = (total variable costs / total labor hours)
  - Rate = (volume / hours worked)
  - Cost per unit or case = (total costs / total units or cases shipped)

- **These are typical operational key performance indicators.**
- **Goods to person operations have a direct impact on these metrics**

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Goods to Person (KPI) Measurements

- **Productivity**
  - units in/hour (average / peak)
  - units out/hour (average / peak)
  - Total labor hours
- **System Uptime**
  - Time in error condition
  - Quantity of errors by cause
- **System Availability**
  - FEM (European standards agency) provides a very specific definition, based on component downtimes
  - OEE Availability = Available Time / Scheduled Time

Most operators focus on
measuring productivity numbers…
measure more to know more…

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Goods to Person (KPI) Measurements

- **Storage**
  - Overall and By Aisle Utilization = locations used/locations available (average per day / peak hour in a day)
- **Movement Assignment**
  - Available assignments from storage (number of released units waiting to come out of storage)
  - Waiting assignments into storage (number of units from receiving and order residuals)
  - Internal assignments (number of units that need to be shuffled)

- **Storage and assignment metrics are important. Automated systems work best with steady flow and steady work.**
- **The storage and assignment metrics allow an operator to recognize less than optimal conditions.**

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Goods to Person (KPI) Measurements

- **Profile Metrics**
  - Average number of stations per inbound donor tote/carton
  - Average number of units picked during per inbound donors visit per station
  - Average outbound lines hit from an inbound donor per station

- **Operating Metrics**
  - Standby (dwell) times per station:
    - No operator
    - No inbound donor
    - No outbound container
  - Average turnover time of inbound donor once arriving at a station
  - Average processing time of an outbound container within a station

- **Order profile metrics can help identify improvements**
- **Operating metrics can help identify opportunities**

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