



The  
**Science**  
of  
**EDGE**

THE KNOWLEDGE TO MASTER THE NEW SUPPLY CHAIN

**Maybe You *Can* Be Everywhere at Once**

Track 3 Session 8

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# Abstract

**There is a profound convergence of two fast-growing practices: Connected Devices that continually capture subtle operating data and Enterprise Mobility that allows mankind to process and apply that information anytime, anywhere. Our presiding know-it-all will share deep insights into the Supply Chain implications of mobile hardware, software, and services - particularly powerful in view of multi-node distribution models ala Omnichannel. Learn how further connecting your workforce and tapping key flex points can create better service.**

# The Connected Workforce

20+ Billion Networked Endpoints



3+ Billion Mobile Devices



**1 BILLION MOBILE WORKERS**

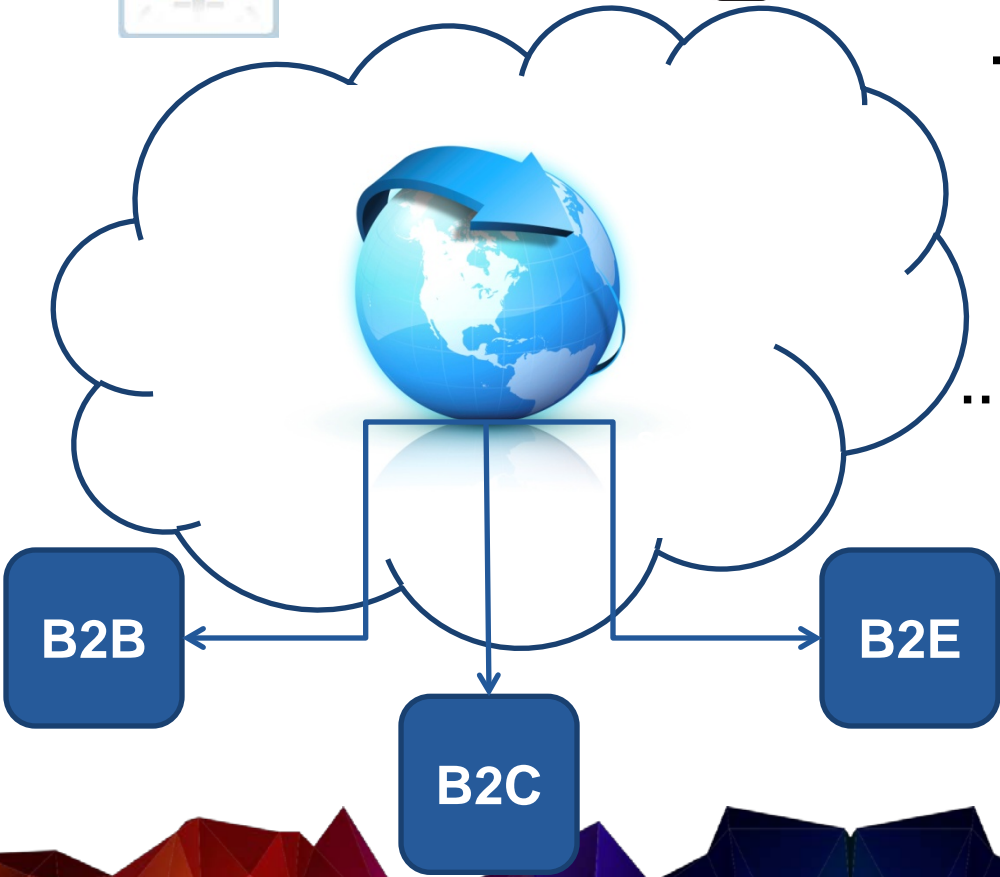
ONE THIRD OF WORKFORCE IS MOBILE

**84%**

OF ORGANIZATIONS CITE MOBILITY AS CRITICAL INITIATIVE

**50%**

OF ORGANIZATIONS HAVE MOBILE STRATEGY IN PLACE

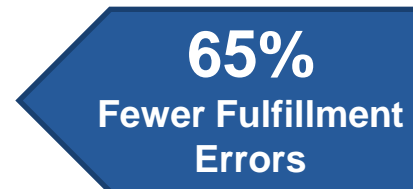


# Enterprise Mobility IS Mission Critical



**44%**  
Productivity  
Improvement

**AUTOMATION AND EFFICIENCY**



**65%**  
Fewer Fulfillment  
Errors

**ACCURATE SUPPLY CHAIN**



**32%**  
Operating Cost  
Reduction

**FINANCIAL OPTIMIZATION**

**IMPROVED  
SERVICE  
EFFICIENCY  
LOYALTY**



**50%**  
Faster Checkout

**INVENTORY & PRICING OPTIMIZATION**



**28%**  
Sales  
Improvement

**CUSTOMER ENGAGEMENT**



**21%**  
Improved Customer  
Loyalty

**CONSISTENT CUSTOMER SERVICE**

# Omni-Channel Driving Warehouse and DC Modernization Efforts

- **Omni-channel redefining warehouse and DC design with multiple channels supported by common facility**
- **Single largest driver of warehouse and DC investment and modernization efforts**
- **Role of retailers, wholesalers and others across supply chain changing to support fulfillment**
- **Greater demand for collaboration, cross functional integration, data sharing AND data quality**
- **Greater pressures on optimizing warehouse performance and achieving perfect order**



# What is Omni Channel Fulfillment?

**Omni-Channel** Retailing and Fulfillment is the evolution of multi-**channel** retailing, but is concentrated more on a seamless approach to the consumer experience through all available shopping **channels**, i.e. mobile internet devices, computers, brick-and-mortar, television, radio, direct mail, catalog, etc.

# Shift Towards More Agile Customer Engagement Model

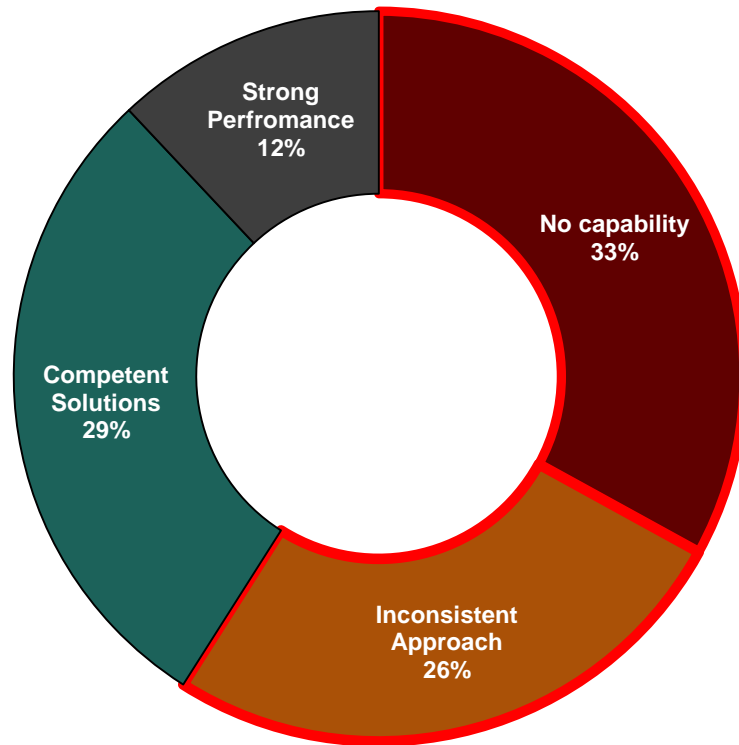
Traditional Model	Emerging/Modern Model
Total response time from order to retailer measured in days or weeks	Total supply chain response time narrowing to hours or days
Quality defects per million at the plant	Quality defects per million at the retail outlet
Forecast accuracy in replenishing the retail DC	Zero stock outs on the shelf
New product design manufacture and delivery	Speed to deliver innovation at the shelf

Source: Capgemini Group. & VDC Research



# Omni-Channel Adoption Still in Early Phases

Level of Preparedness to Support Omni Channel Retailing

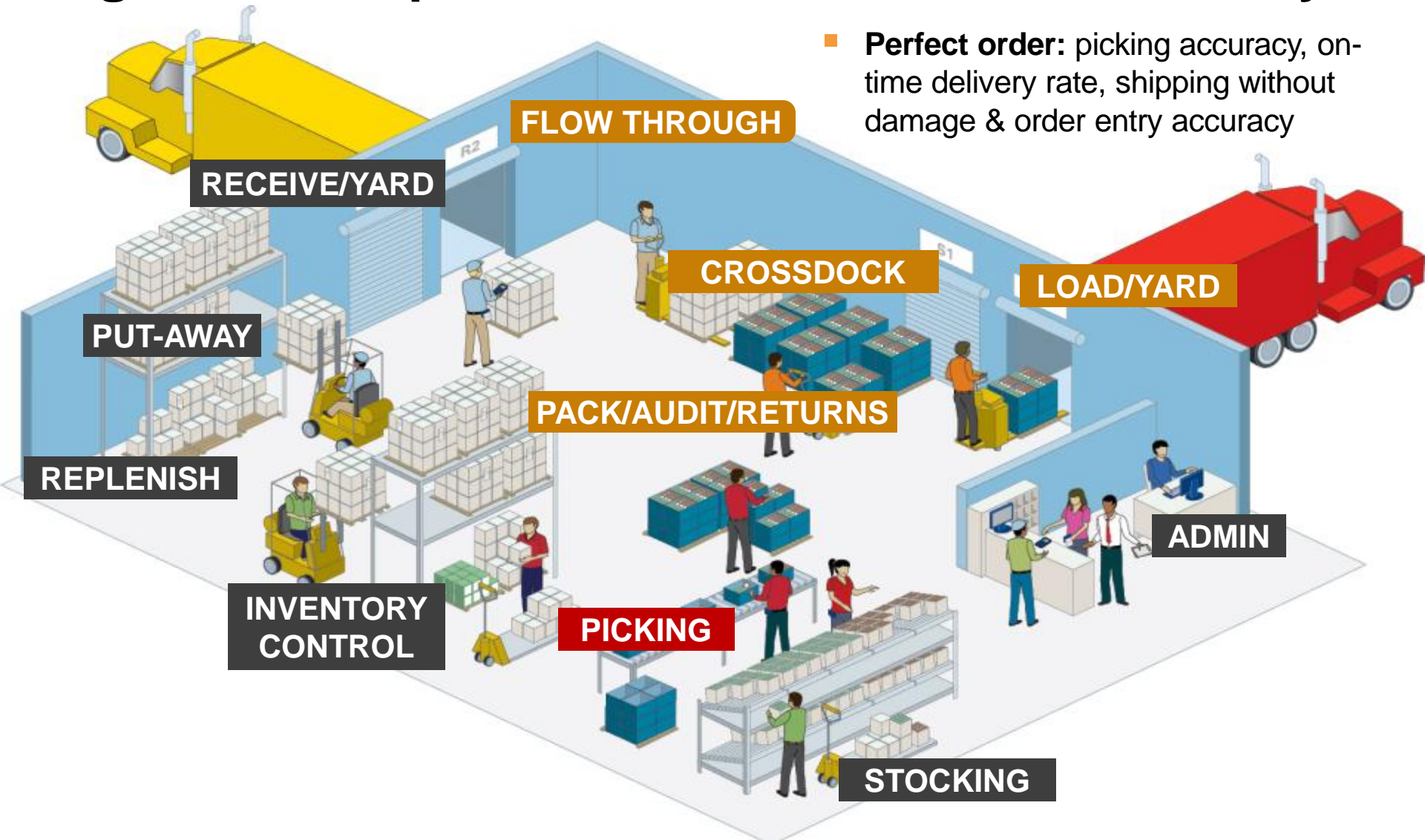


- **Customer service the greatest driver behind omni-channel efforts**
- **Most significant factors impacting fulfillment across channels:**
  - Order flexibility
  - Inventory accuracy and visibility
  - System integration

Source: Capgemini Group, Penn State, Korn/Ferry

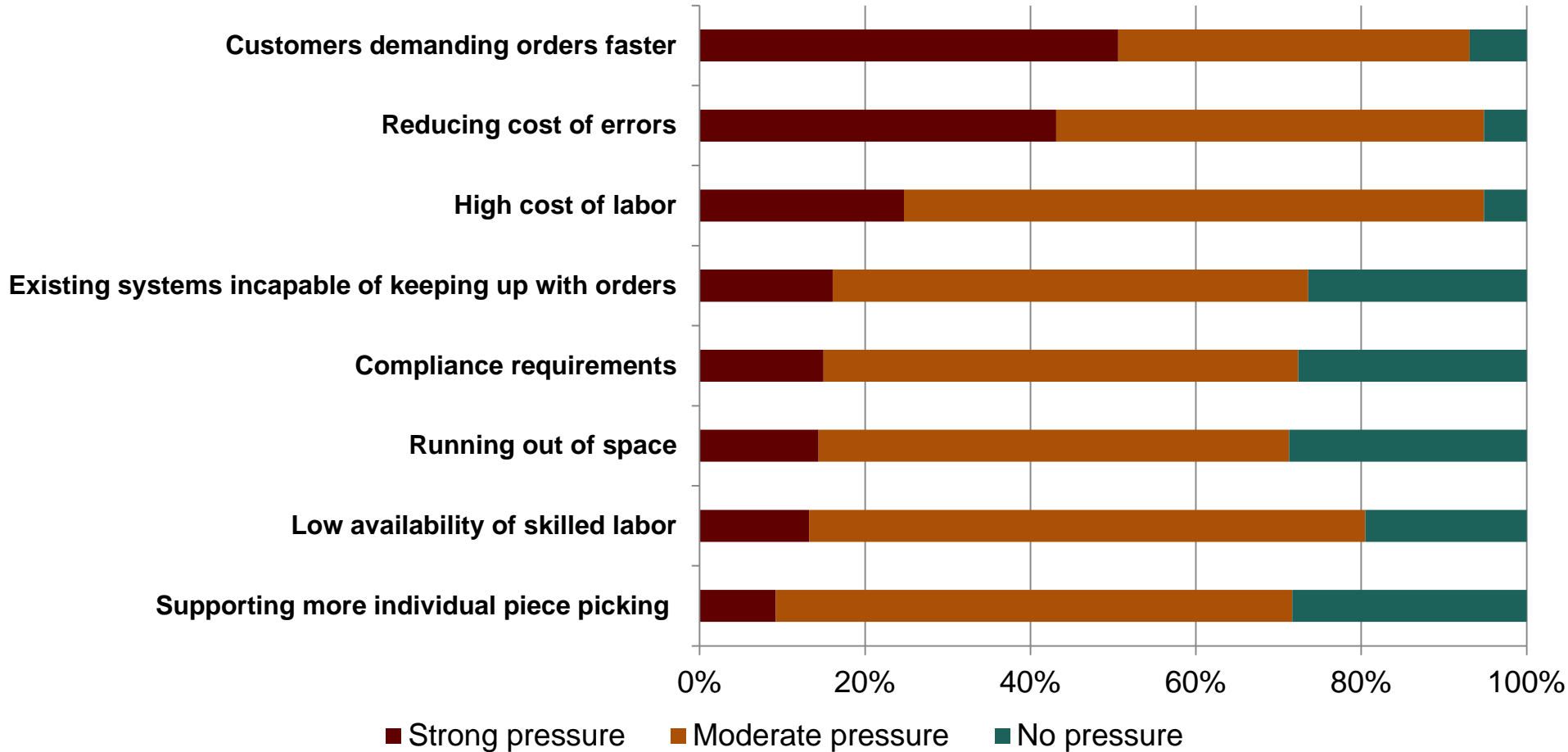
# Omni-channel fulfillment driving requirements for greater WH process efficiencies AND flexibility

- Perfect order: picking accuracy, on-time delivery rate, shipping without damage & order entry accuracy



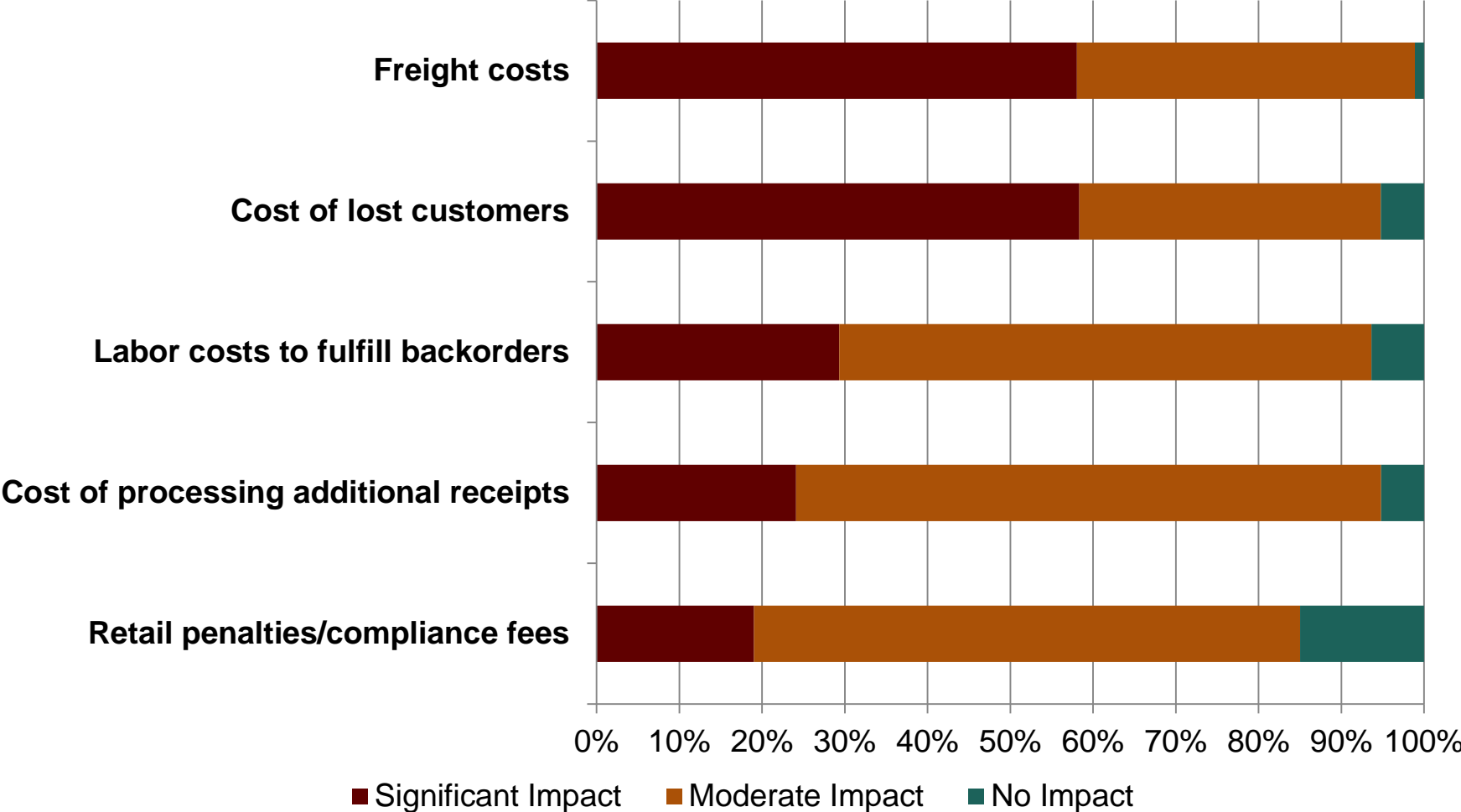
# However, fulfilling orders through multiple channels creating pain points

## Pressures to optimize WH performance



Source: Capgemini Group. & VDC Research

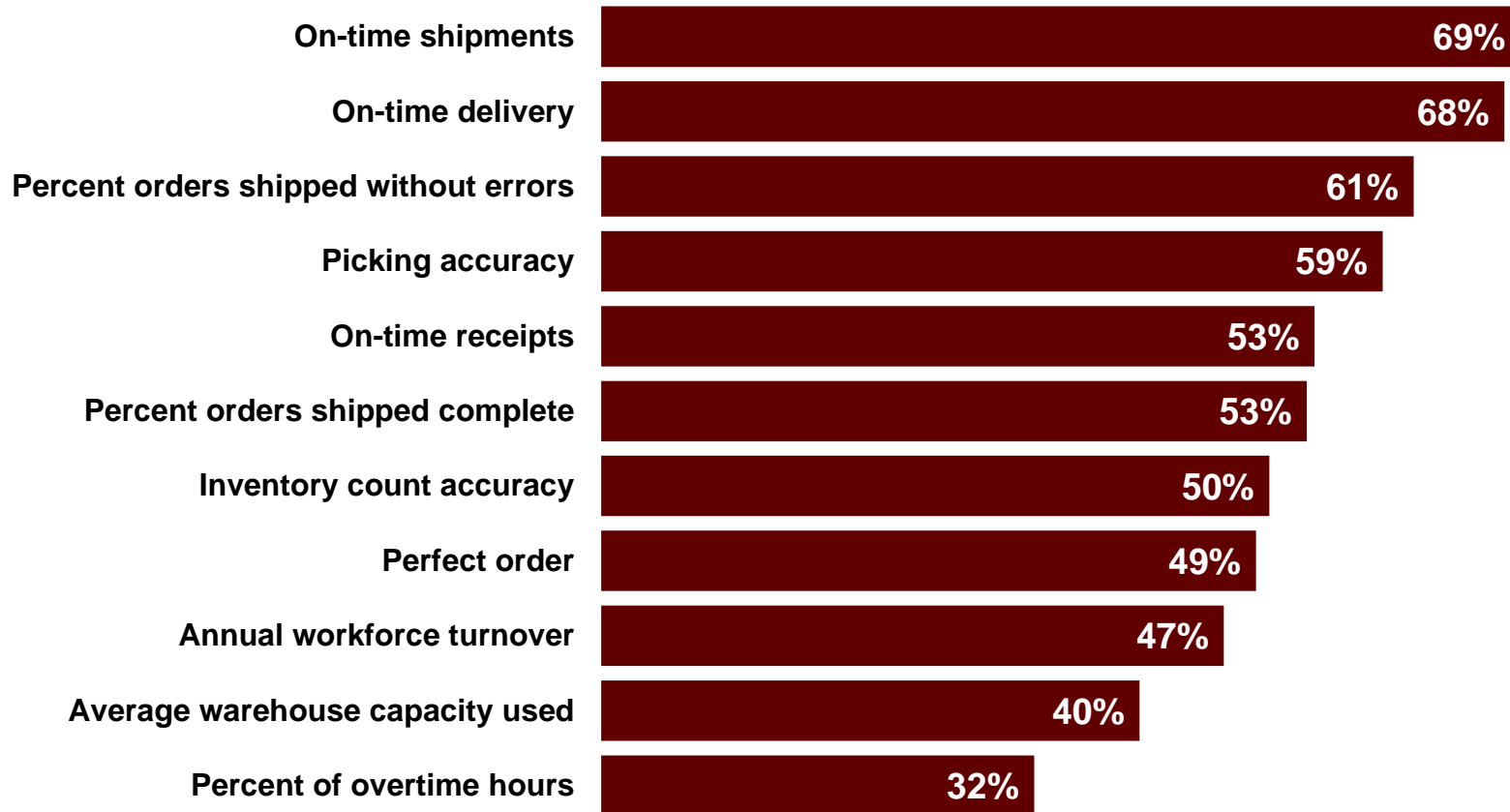
# Further exposing the financial impact of warehouse errors



Source: Capgemini Group. & VDC Research

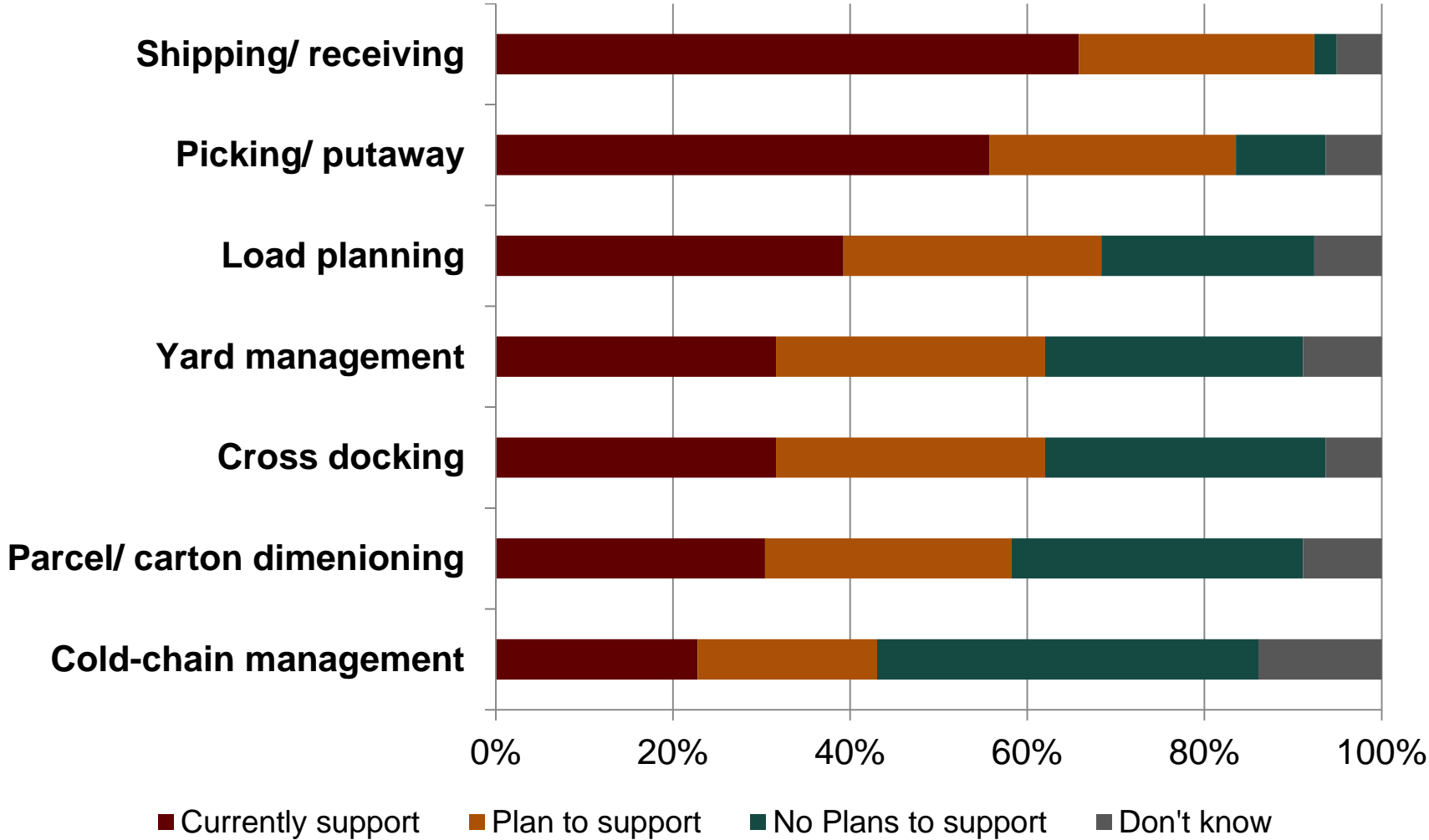
# Revisions to warehouse performance metrics tracking and scoring

## Warehouse Performance Metrics Tracked



Improvement in on-time delivery and shipment and orders shipped without errors have provide greatest economic benefit to organization

# Mobility central to warehouse optimization efforts

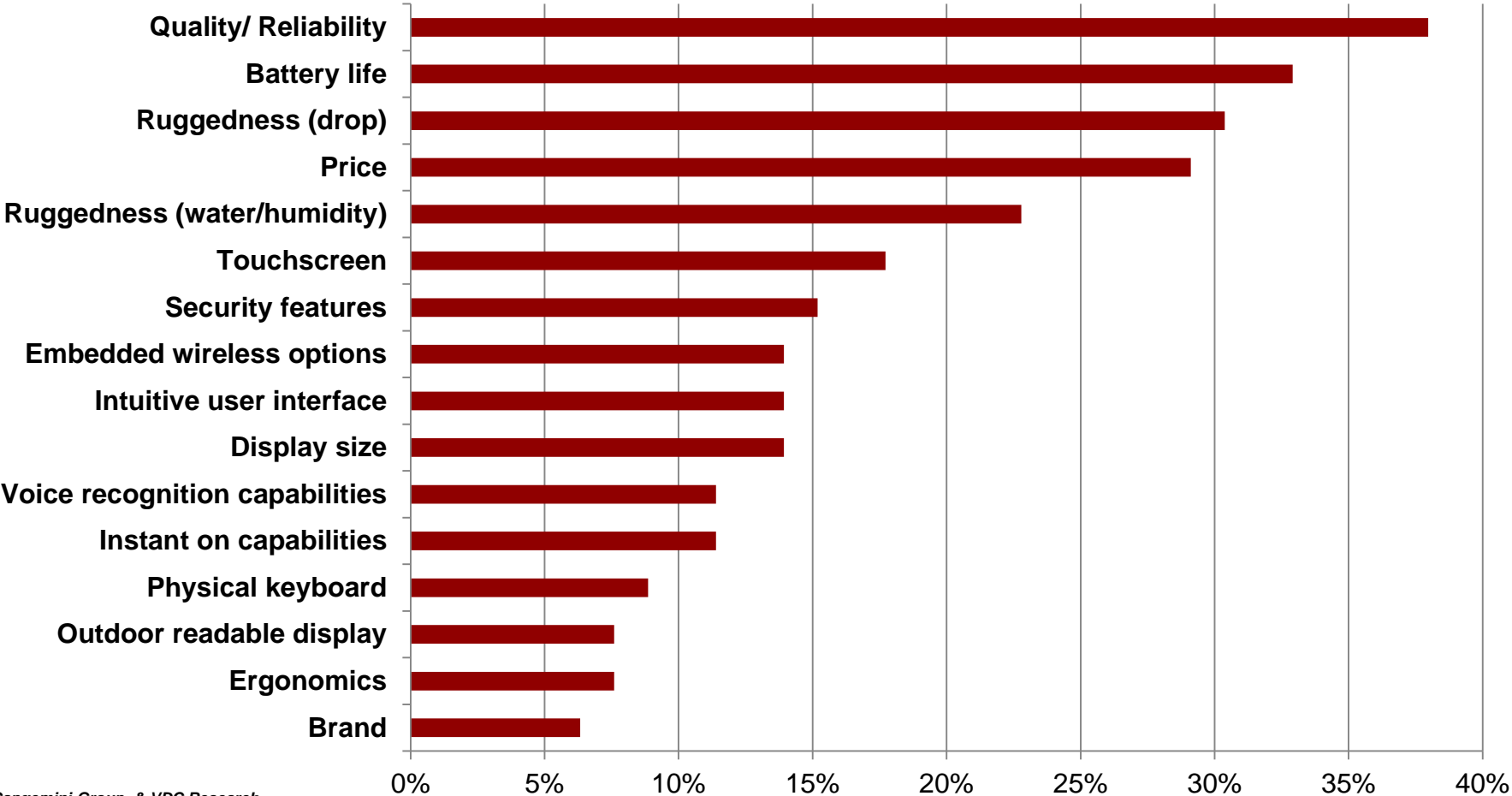


Source: Capgemini Group. & VDC Research



# Critical to align mobile devices with environment and applications

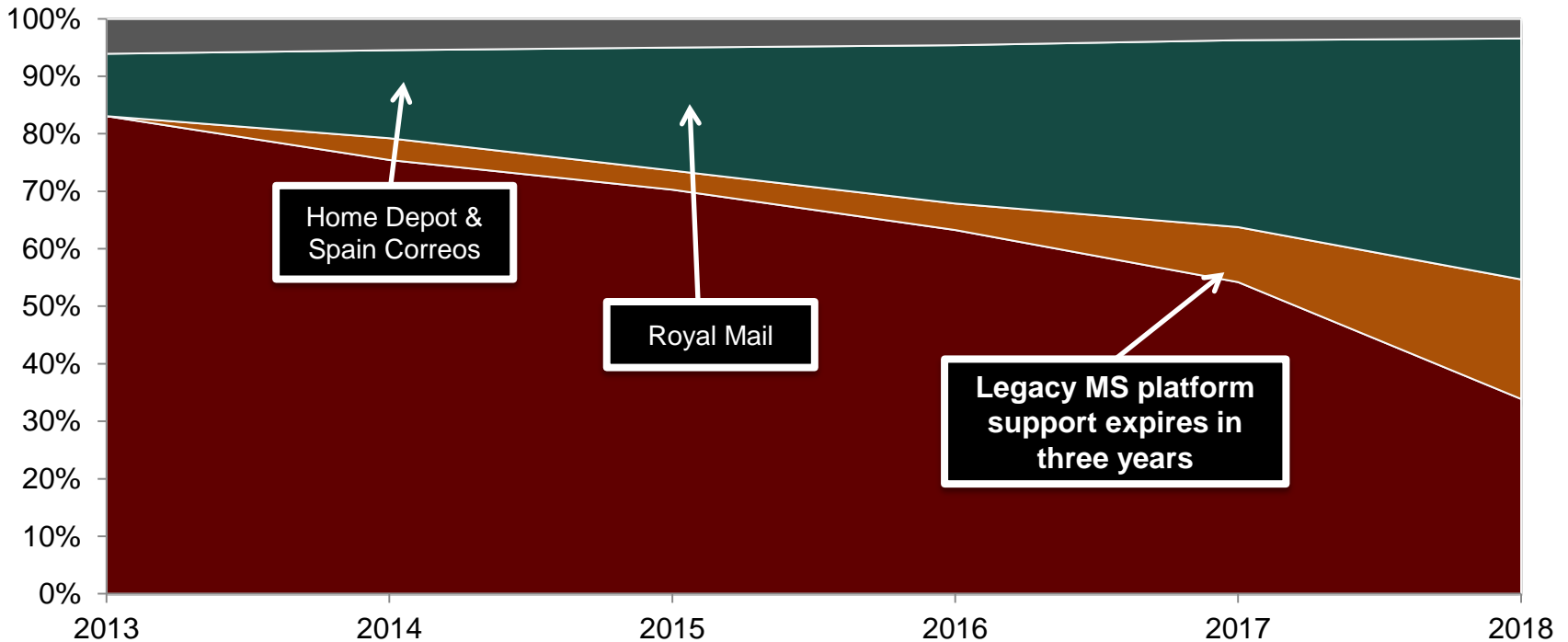
## Mobile Device Requirements for Warehouse Apps



Source: Capgemini Group. & VDC Research

# Four incompatible OS vying for control of the rugged handheld market

Rugged Handheld OS Outlook: 2013-2018



- Other
- Android
- Windows Embedded Handheld 8.1/10
- Windows Legacy (Embedded Compact; Embedded Handheld 6.5; etc.)

# Modernizing the Telnet Experience



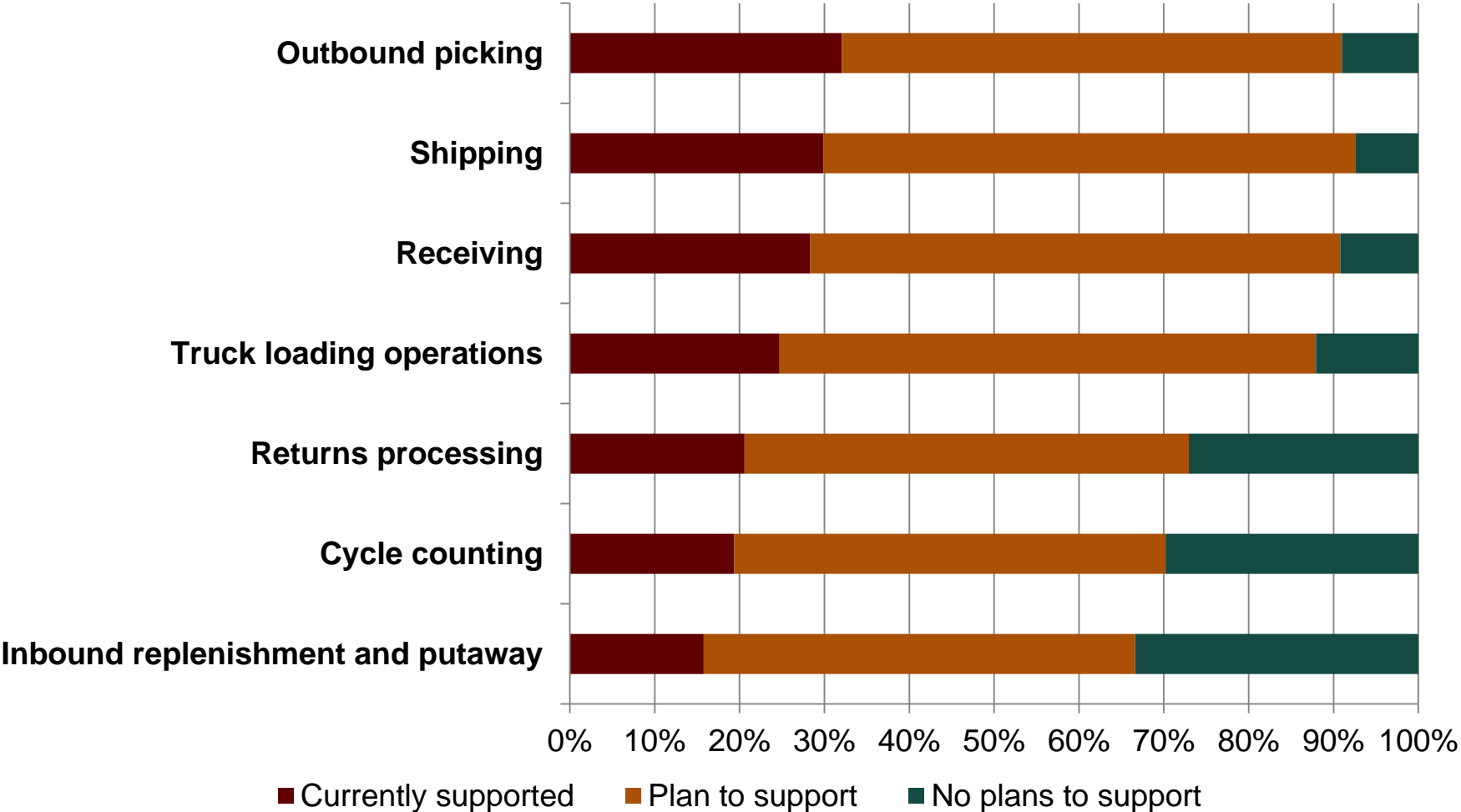
# Warehouse worker of the future?



# What is Voice-Directed Warehousing?

**Voice-directed warehousing** refers to the use of the voice direction and speech recognition software in warehouses. Voice-directed warehousing is typically used as a **'hands free'** alternative to paper or mobile computer-based systems to **enhance worker productivity and accuracy.**

# Application of voice technology continues to scale

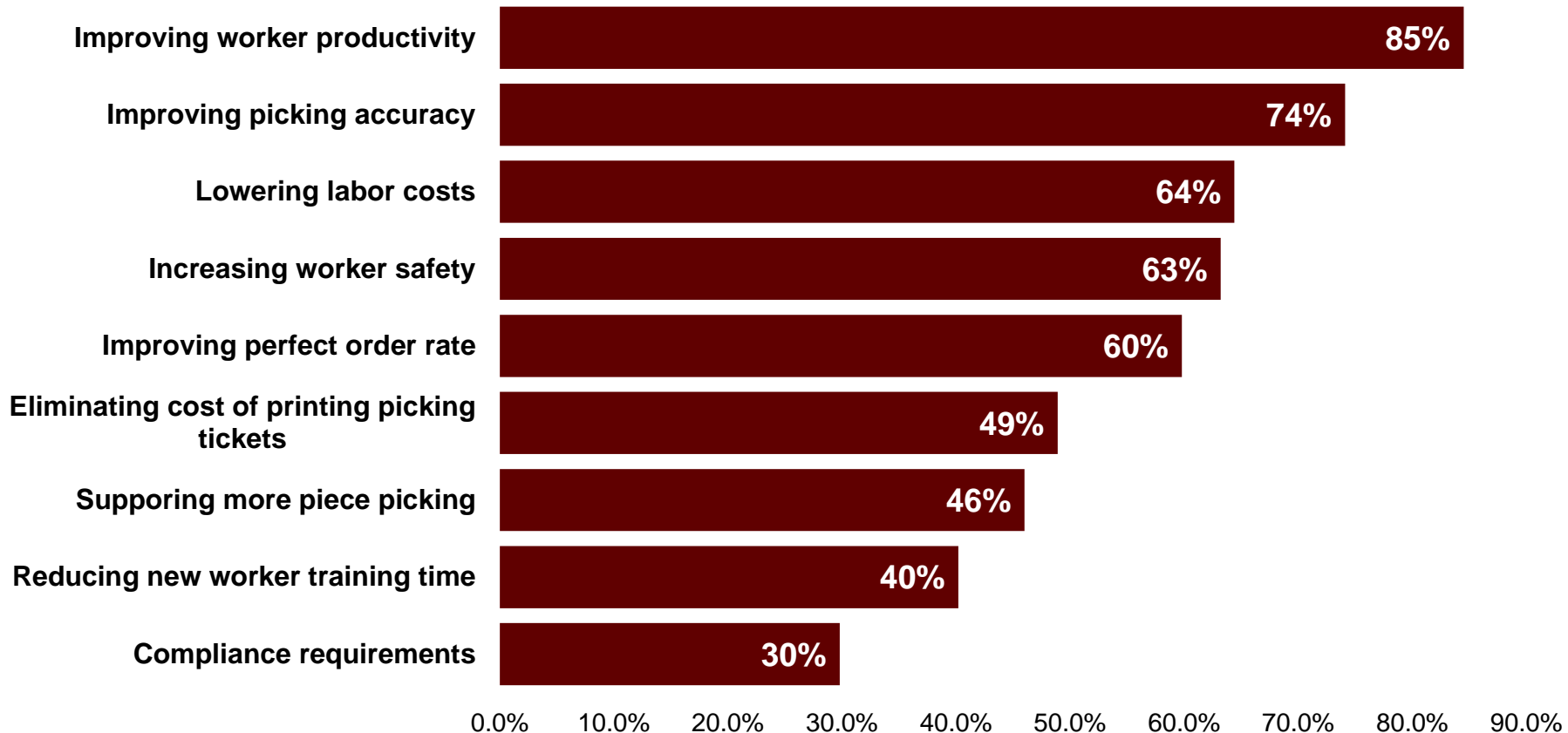


Source: Capgemini Group. & VDC Research



# Workforce productivity and picking accuracy are greatest adoption drivers

## Voice Adoption Drivers

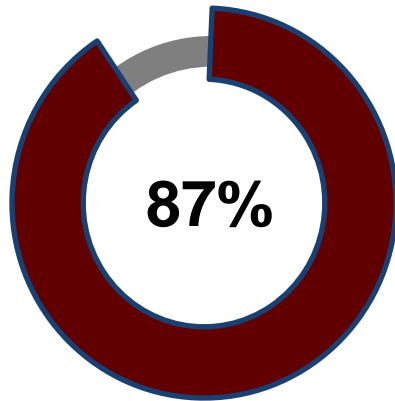


Source: Capgemini Group. & VDC Research

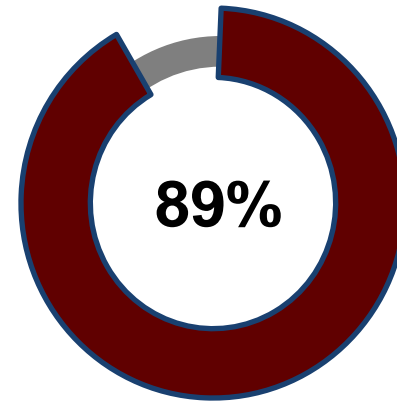
Worker productivity and picking accuracy benefits driving voice investments...however, value exceeds well beyond workforce efficiency improvements

# Impact of Voice Solutions on Core Warehouse Operations is Substantial

Voice impact on warehouse performance...



**Organizations experiencing  
AT LEAST a 10% improvement  
in picking accuracy**



**Organizations experiencing  
AT LEAST a 10% increase on  
worker productivity**

Source: Capgemini Group. & VDC Research

# Voice Technology Investment Strategies

- **Voice technology end users are highly satisfied with the value of their solutions...driven by the improvements in quality of operations (improved accuracy/productivity of operations)**
- **Next generation voice solutions addressing many of the technical issues and adoption barriers of legacy solutions**
- **With greater order complexity, the need for accuracy and solutions that optimize labor efficiencies only accentuated**
- **Value of voice solutions proven to enhance workforce productivity and picking accuracy...however, value extends well beyond these factors**
- **Often a disconnect between individuals looking to deploy voice solutions and supply chain executives signing off on technology investments**

# Key Takeaways

- **Omni channel fulfillment goes beyond warehouse and distribution – requires a more integrated solution across channel owners**
- **Mobility is only becoming more integrated with a variety of workflows supported providing greater end to end visibility**
- **Next generation WH platforms and infrastructure evolving to more seamlessly support greater variety of material handling and mobile technologies**

# Conference Cloud Additional Resources

- [www.vdcresearch.com](http://www.vdcresearch.com)

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