



# OMNI-CHANNEL LOGISTICS

A DHL perspective on implications  
and use cases for the logistics industry

2015

Powered by DHL Trend Research

**PUBLISHER**

DHL Customer Solutions & Innovation  
Represented by Matthias Heutger  
Senior Vice President  
DHL Customer Solutions & Innovation  
53844 Troisdorf, Germany

**PROJECT DIRECTOR**

Pang Mei Yee  
DHL Asia Pacific Innovation Center

**PROJECT MANAGEMENT AND EDITORIAL OFFICE**

Tamanna Dahiya  
DHL Asia Pacific Innovation Center

**IN COOPERATION WITH:****RESEARCHER**

Daniel Kraemer



## PREFACE

Consumer buying behavior is changing drastically with growing adoption of the Internet, smartphones, and handheld devices worldwide, especially in Asia. The surge in Internet sales and in consumers using different channels to evaluate products, order, pay, collect, and return their purchases has driven companies to investigate the omni-channel approach.

Retailers and manufacturers in all industries will need to adapt to this new reality to thrive. From being an emerging trend, omni-channel will be a key requirement in the future, presenting challenges and significant opportunities to all businesses. We invite you to join us on a journey to discover its potential!

Logistics is a key enabler for omni-channel, and the success of the omni-channel approach hinges on how businesses adapt to evolving consumer journeys. They must move away from channel-based structures and networks, and seek to personalize their engagement with consumers.

This DHL Trend Report discusses the impact of omni-channel on logistics, and underscores DHL's interest and commitment to helping our customers stay ahead in a fast-changing marketplace. It answers several key questions:

- **What is omni-channel?**
- **What are the best practices in omni-channel?**
- **What are the implications of omni-channel on the logistics industry?**
- **What are the omni-channel trends in Asia?**

Jointly developed with IDC Manufacturing Insights, a global provider of market intelligence and advisory services, this report goes beyond the media hype. We offer real-world examples of how companies are embracing omni-channel strategies to transform their business, and we take a close look at the enablers of omni-channel supply chain management.

To better understand the impact of omni-channel on companies in Asia – the fastest-growing region and yet one where omni-channel research is sparse – IDC and DHL conducted a survey with 56 fast-growing companies. As well as a changing sales channel mix, this survey highlights consumer preferences and shows how logistics can address these issues over the next few years.

We hope that this report sparks your interest and enthusiasm for this exciting topic and provides you with actionable insights for success. Thank you for choosing to join us on this journey.

Sincerely,



Pang Mei Yee



Matthias Heutger

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# 1. UNDERSTANDING OMNI-CHANNEL

The face of retail has changed completely. Today's digitally connected consumers are more empowered and well-informed than ever before, giving rise to the descriptor 'omni-channel shopper'. The word omni means "all: in all ways, places, etc." and "without limits".<sup>1</sup> The modern omni-channel shopper is always connected via mobile or the Internet. This person is well informed about their choices, finds the best deals, and expects to receive each purchase at their preferred time and place.

**The modern shopper's journey cuts across different channels including the physical store, online, mobile,**

**and social media, bringing into focus several new factors that influence sales and consumer decisions (Figure 1).** It is shifting from a sequence of actions in a single channel to a continuum of action across multiple channels. A 2013 study by Accenture found that 88% of US consumers admit to "web-rooming" – browsing online and then buying in-store.<sup>2</sup> On the other hand, Best Buy, a US-based electronics multi-channel retailer, found that almost 70% of its consumer electronic products in the United States are purchased via showrooming – consumers visit a physical store to touch and feel the product before purchasing it online.<sup>3</sup>



**Figure 1:** The modern shopper's omni-channel journey

<sup>1</sup> Definition by Merriam-Webster

<sup>2</sup> <https://newsroom.accenture.com/industries/retail/accenture-study-shows-us-consumers-want-a-seamless-shopping-experience-across-store-online-and-mobile-that-many-retailers-are-struggling-to-deliver.htm>

<sup>3</sup> <http://business.illinoisstate.edu/bestbuy/situation.shtml>

Today's consumer journey typically moves across channels, starting and ending at different points based on individual preferences. A traditional multi-channel approach just cannot achieve the information availability, delivery speed, and personalized experiences that modern shoppers expect.

Currently most businesses employ a traditional multi-channel approach, seeking to optimize the consumer experience in each channel. The channels operate independently and often in competition with each other. And there can be considerable variation across the different channels in customer experience, product information, pricing, and service levels.

The omni-channel approach is the next logical evolutionary step after a multi-channel approach (Figure 2). It requires the previously separate sales channels to converge into a single seamless channel of orchestrated product flow – this flow must be designed to deliver not just products but also the highly personalized shopping experience customers have come to expect. Omni-channel is therefore driving a rethink and a makeover of everything from marketing and merchandising to ordering systems,

fulfillment, and returns. It is a new and different way of managing and incentivizing business.

The omni-channel approach is more complex than the traditional multi-channel approach because the customer experience in every channel must be identical, and switching from one channel to another must be seamless. If the retailer knows the preferences of an in-store customer, this information must be shared with the online channel (and vice versa). This must be done in a timely manner, ideally in real time, as this information could impact buying decisions. Similarly, the retailer must capture each customer interaction in each channel and leverage these purchasing behavior insights to build the optimal omni-channel strategy.

**Logistics and supply chains are the backbone of every omni-channel strategy. They are the key enablers to consistently and cost-effectively deliver personalized service and flexible fulfillment.** And they enable retailers to achieve cross-channel inventory visibility and optimization (crucial to the success of omni-channel implementation) and meet customer expectations, generating higher satisfaction and loyalty.

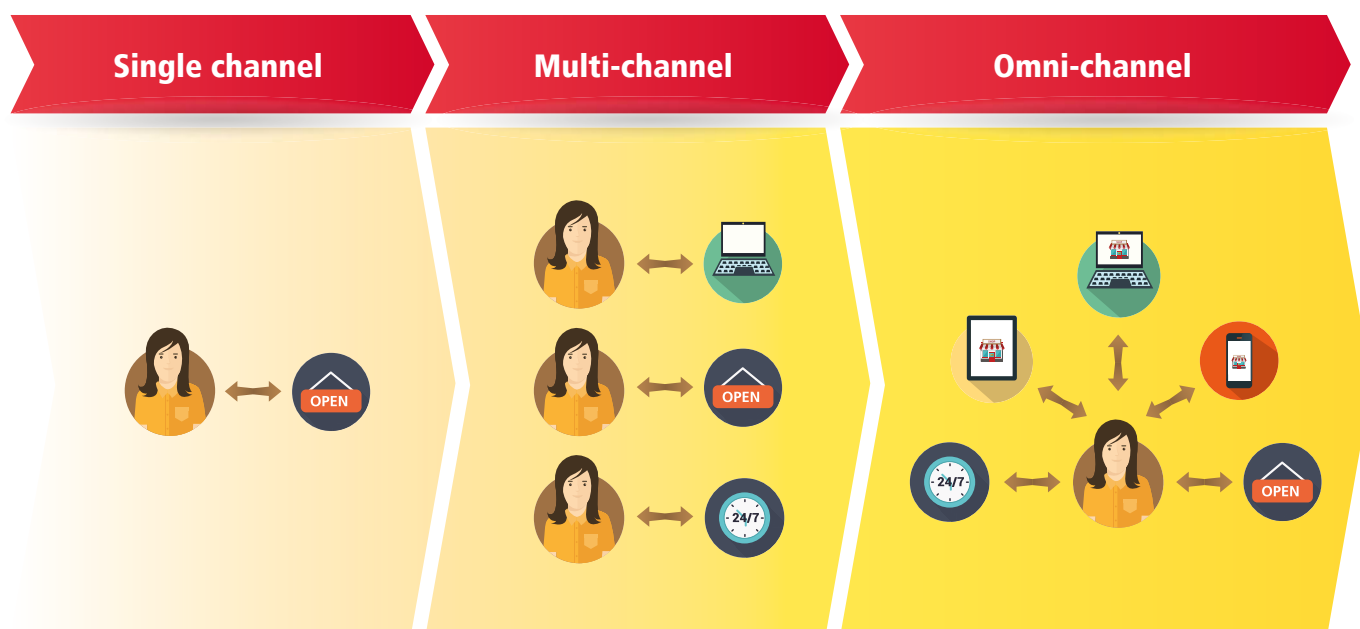


Figure 2: Omni-channel delivers a seamless customer experience across all channels

## 1.1 Why Invest in Omni-channel?

Meeting the omni-channel shopper's expectation is complex and expensive. So it's essential to build the business case. In this section, we review the factors that are driving omni-channel growth before discussing the return on investment.

The number of smartphone subscriptions is expected to increase from 1.6 billion in 2013 to 5.6 billion in 2019.<sup>4</sup> By 2019, 90% of the world's population will be able to access fast mobile Internet connection. The popularity of smartphones and growing Internet penetration will only magnify omni-channel customer behavior. These trends greatly increase 'one-click shopping' expectations and make omni-channel the only sustainable way of doing business in future.

Innovations in technology are also driving the uptake of omni-channel retailing, supporting new **capabilities in personalized consumer engagement**. These game-changers include smart sensor-based systems that enable customer recognition, advances in store digitization technologies, predictive logistics, and virtual assistance. These new technologies have the potential to disrupt existing business models in the same way as Amazon disrupted traditional brick-and-mortar sales many years ago. And bear in mind that after this kind of shift, customer behavior doesn't revert back.

**In future, competition models will be very different**, driven by the modern consumer preference to engage across several channels. Already e-commerce giants are trying to get closer to customers; they are starting to add physical presence by collaborating with local retailers.

Meanwhile, brick-and-mortar retailers are seeking to strengthen their competitive advantage by adding online stores while also reinventing the customer experience and the role of their stores (for example, by using stores as fulfillment centers for online orders).

As consumers spend more and more time on social media, this in itself is becoming an increasingly powerful sales and marketing channel. Online companies own rich consumer



data and they can easily use this to personalize offers and target customers more effectively, driving more **'social commerce' – the convergence of social media and e-commerce**. And this new phenomenon of social commerce is set to accelerate. Facebook recently announced the use of payment platforms and functionality to talk to customers via its Messenger platform.<sup>5</sup> Google is working towards establishing a payment channel which will save customers having to go to a different site to purchase products located with the Google search engine.

## 1.2 Finding the Return on Omni-channel Investment

The change to omni-channel is justified by the benefits. Retailers that have already invested in omni-channel strategies report an **increase in customer base and loyalty, and improved profitability**. Cross-channel fulfillment strategies help to **move store inventory faster and save the sale** that may have been lost (if, for example, the traditional multi-channel approach meant that a product was unavailable).

The CEO of US clothing retailer Ann Taylor says that using omni-channel strategies such as ship-from-store improves margins. "We are able to liquidate product on markdowns at a much higher gross margin rate." Similarly, Macy's CEO Terry Lundgren believes that **avoiding markdowns is well worth the cost of shipping products from store to home**.<sup>6</sup> Cross-channel inventory visibility also reduces costs through inventory optimization.

<sup>4</sup> <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-november-2013.pdf>

<sup>5</sup> <http://newsroom.fb.com/news/2015/03/send-money-to-friends-in-messenger/>

<sup>6</sup> DHL White Paper, „Fashion in Flux: Mastering the Omni-Channel Supply Chain,“ p.7

Omni-channel shoppers **spend 15-30% more than traditional shoppers**. So it's no surprise that businesses are investing in omni-channel. According to IDC Retail Insights' 2014 Top 10 Predictions, 20% of the top 250 retailers will embark on transforming store, mobile, and e-commerce channels, supply chains, merchandising, and marketing for the omni-channel customer experience.<sup>7</sup>

**Manufacturers** also benefit from leveraging digital channels and an omni-channel approach – these investments allow **for direct product feedback, testing, and fostering of direct customer relationships**. Manufacturers can then leverage these new insights in marketing and merchandising decisions across all sales channels. As manufacturers build direct relationships and develop more direct selling avenues, they get closer to being retailers themselves.

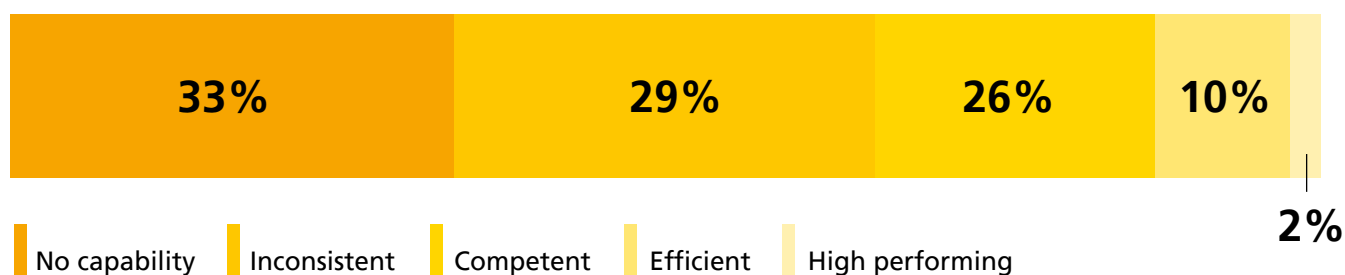
Despite the potential and promise of an omni-channel approach, omni-channel supply chains remain relatively immature. As **Figure 3** shows, most respondents in the 2015 Annual Third-Party Logistics Study believe they do not have the capability to handle omni-channel retailing.

The reason for the immaturity of omni-channel supply chains is **significant investments are required to create cross-channel visibility** and business rules must be adapted. This represents a substantial undertaking and a daunting challenge, **requiring a transformation of organizational structure and metrics** to optimize and incentivize marketing, merchandising, and fulfillment across channels as opposed to individual channels.

There are some further reasons for the immaturity of the omni-channel supply chain. It can be difficult to quantify the benefits of omni-channel transformation. Legacy application integration may cause a roadblock, and unless everyone appreciates the potential gains of omni-channel it is unlikely to earn a place on the corporate IT roadmap. For all of these reasons, **an omni-channel transformation needs to be led by the CEO and CFO, not just by IT or Digital Marketing**.

In this report, several case studies acknowledge companies that have already invested in omni-channel strategies. But it is important to recognize that no company has yet mastered the omni-channel approach. The omni-channel space continues to evolve and we anticipate substantial innovation in this area in the coming years.

### How prepared do you think your organization is to handle omni-channel retailing?



**Figure 3:** Omni-channel supply chains remain immature; **Source:** 2015 19th Annual Third-Party Logistics Study

<sup>7</sup> <http://www.idc.com/getdoc.jsp?containerId=RI245468>



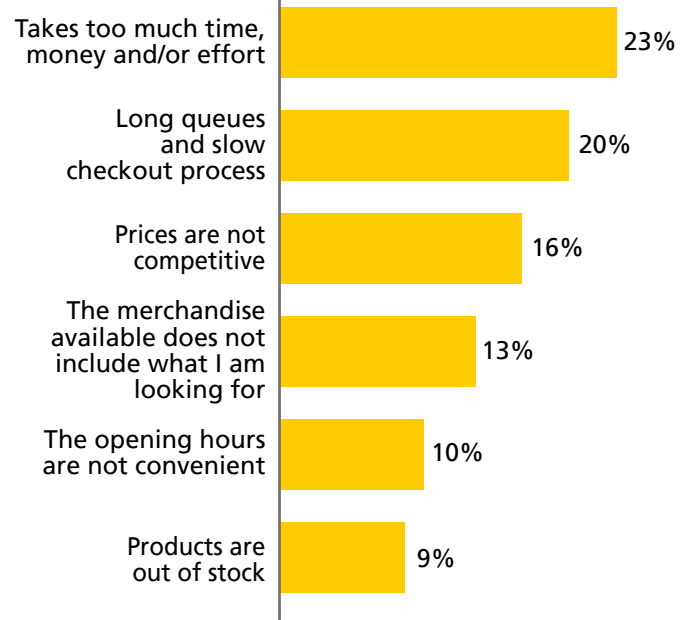
## 2. OMNI-CHANNEL BEST PRACTICES

The omni-channel approach aims to **enable a seamless personalized customer experience anytime, anywhere, on any device**, as shown in **Figure 4**.

Today's leading omni-channel adopters typically focus first on personalizing the in-store shopping experience (stores are and will continue to be the dominant sales channel globally). Leveraging new technologies, these adopters aim to simplify the consumer's in-store journey by removing any friction factors. The second area of focus for today's omni-channel adopters is to personalize customer engagement beyond the store via online, mobile, and social media interactions.

### 2.1 Personalized In-store Shopping Experience

A study conducted by IDC Retail Insights in June 2015 among more than 2,600 consumers in Asia found the top two reasons that prevent shoppers from buying products in shops: the time it takes and the inconvenience of the shopping experience (**Figure 5**). The omni-channel approach has the potential to overcome both these objections.



**Figure 5:** Top shopping inhibitors; **Source:** IDC Retail Insights Survey, June 2015



**Figure 4:** A seamless personalized customer experience inside and beyond the store

### 2.1.1 Merging Online and Offline Experience in the Store

The auto industry has pioneered the in-store integration of digital technologies. In 2012, **Audi City** opened its first **digital car showroom**, providing an interactive brand experience for customers.<sup>8</sup> The customer can view every possible combination across the entire model range in a way never seen before in a traditional showroom. They can use multi-touch tablets in order to select designs and the color of a full-size car presented to them on a video wall.



**Figure 6:** Audi's digital car showroom merges the customer's online and offline experience; **Source:** Audi

Today, customers are expecting to receive contextual information while shopping in-store. Many retailers are therefore looking at **leveraging mobile phones for real-time in-store communication with customers**. Recent consumer research by IDC has shown that across the Asia Pacific region, 71% of shoppers (who own a mobile device) currently use their mobile device in the store to look for information about the products they intend to buy.<sup>9</sup>

Increasingly, retailers are using **beacons** to recognize customers as they enter the store; these detect nearby smartphones and give the sales staff relevant information (e.g., data on the customer's purchasing behavior). Advertisements, coupons, and other supplementary product information can be transmitted to in-store screens located near the customer, and may also be used

in point-of-sale systems. Retailers also gain vital in-store customer information, particularly on how shoppers maneuver through the store.

An innovator in the airline industry, **Virgin Atlantic**, began an iBeacon trial at London's Heathrow Airport in May 2014.<sup>10</sup> During this trial, the airline's premium passengers received personalized notifications and offers via their iPhones. Virgin used beacons to:

- Remind customers to have their electronic boarding passes ready on arrival at a security check
- Send tailored offers to customers as they moved through the airport (for example, commission-free currency exchange deals as passengers arrived in the departures section)
- Let customers know about in-flight entertainment specials before boarding the plane
- Inform ground staff when the temperature dropped outside their airport lounges (so staff could offer blankets to customers who were sitting on outdoor decks)

Another example of combining a physical store and state-of-the-art digital technology to enhance the shopping experience is **Burberry's** store in London's Regent Street, which opened in 2013.<sup>11</sup> **Radio identification technology (RFID) tags** are embedded into fashion items and accessories, enabling customers to view multimedia content via the 100 digital mirrors and 500 loudspeakers in the store. When customers hold an item near one of the mirrors, it turns into a huge screen displaying information about the product.

Denim apparel shop **Hointer** in the United States uses a holistic omni-channel approach in stores using mobile technologies, **e-Tags**, and in-store sensors.<sup>12</sup> In its smart showroom, items of apparel are marked with e-Tags and shoppers scan these codes using Hointer's omni-cart mobile app to get product information. Hointer has also ensured that in-store shoppers get the same range of information as online shoppers. Store associates use the omni-cart app to get information on the shoppers, such as their purchase history and style preferences.

<sup>8</sup> <https://www.audi.co.uk/audi-innovation/audi-city.html>

<sup>9</sup> IDC Retail Insights Global Shopper Survey, 2015

<sup>10</sup> <https://www.umbel.com/blog/mobile/15-companies-using-beacon-technology>

<sup>11</sup> <http://retail-innovation.com/burberry-regent-street>

<sup>12</sup> <http://retail-innovation.com/us-retailer-hointer-uses-robots-to-deliver-your-selections-to-the-fitting-room/>

Customers do not have to be in the store to buy from Hointer; they can as easily use the omni-cart application on the go. The store is used only as a showroom displaying only one kind of every product. The inventory is stored in an adjacent automated **microwarehouse** that links to the fitting room system. With one click of the app, the shopper can have the item sent directly to the “Whoosh” fitting room within 30 seconds or call for assistance without leaving the fitting room. The approach increases utilization of the space, removing the clutter of shapes and sizes in addition to providing a highly personalized and seamless customer experience.

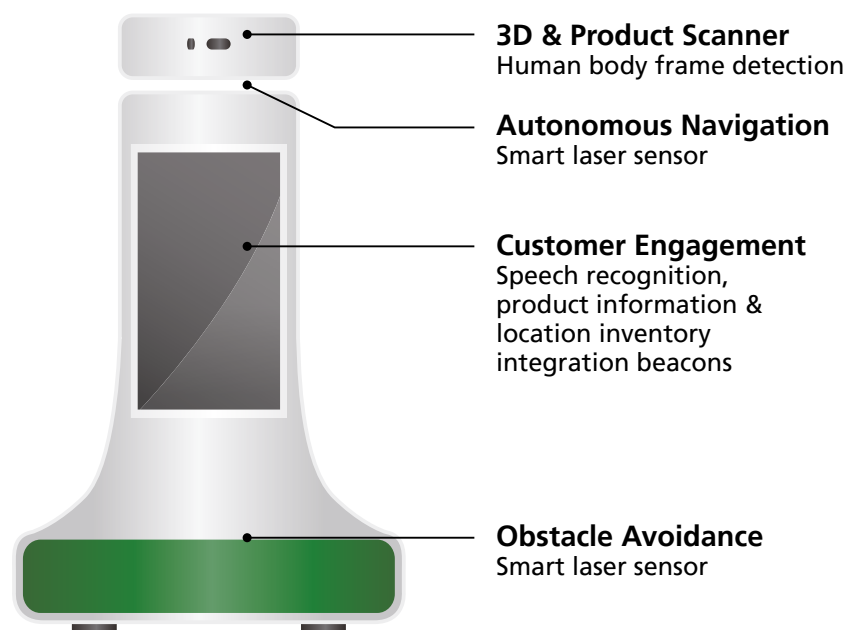
### 2.1.2 Easing Navigation with In-store Robots

An example of how artificial intelligence helps to personalize customer experience and improve in-store navigation is a pilot project by one of the largest hardware store chains in the United States. Lowe’s stores are typically quite large. Hence, finding the product you want and getting help to understand which one to buy can be quite challenging.<sup>13</sup> To address these friction factors, Lowe’s has

installed **robots to greet consumers at the door, field product inquiries, and escort shoppers to the exact in-store location of the merchandise.**

They provide product and real-time inventory information and instruct video screen interfaces. The robots speak multiple languages, and supplement the role of store employees. The technology helps to improve customer experience while ensuring the cost-effective and consistent delivery of personalized assistance services in large stores. **Figure 7** provides a high-level illustration of the robotic system.

The **AndyVision robot**, a pilot by researchers at the Carnegie Mellon University in the United States, aims to improve the shopping experience in a similar way.<sup>14</sup> The robot patrols and scans the retail aisles and shelves for inventory, and generates a detailed map that is projected on a digital sign inside the store. It accomplishes this through the real-time fusion of image-processing and machine-learning algorithms, a database of images of the store’s products, a basic map of the store’s layout, and sensors to help the robot navigate autonomously and to prevent it from running into things.



**Figure 7:** Components of the Lowe’s robot; **Source:** Lowe’s

<sup>13</sup> <http://www.lowesinnovationlabs.com/innovation-robots/>

<sup>14</sup> <http://www.cmu.edu/homepage/computing/2012/summer/robots-in-retail.shtml>

### 2.1.3 Driving Traffic to Stores with 'On-the-Go' Promotions

Omni-channel retailers are also leveraging mobile phones to drive traffic to the physical store network. Imagine you are at McDonald's in a neighborhood. A nearby retailer realizes you are close by based on your GPS location and decides to offer you special offers to entice you to drop in to the store and purchase something.

To maximize effectiveness, the personalized promotional offers sent by the retailer are based on your profile and purchase history gathered from a combination of sources. This is what is referred to as "on-the-go" promotions: **incentivized coupons that can be redeemed in store via a phone or tablet and are targeted to the location when people come in close proximity to the store.** The customer insights database triggers targeted offers when the

customer enters specific geo-fencing codes (pre-defined locations) that increase the chance of getting the customer to visit the store.

### 2.1.4 Providing Store Shopping Assistance from Home

Tesco has developed a mobile application called MyStore, which lets shoppers prepare a shopping list at home and directs them to the items in the store.<sup>15</sup> Another example of Tesco's vision for the future is its prototype of a virtual reality supermarket in which customers can **browse using Oculus Rift virtual reality eye gear**.<sup>16</sup> Although customers cannot pick anything off the shelves, they are able to travel through the store and look at the brands and products offered. Tesco sees this kind of augmented reality and virtualization as an aid to online purchasing (**Figure 8**).



**Figure 8:** Supermarket of the future leverages augmented reality

<sup>15</sup> <http://www.mediapost.com/publications/article/222767/tesco-trials-ibeacons-with-a-mystore-app.html>

<sup>16</sup> <http://www.independent.co.uk/life-style/gadgets-and-tech/tesco-dreams-big-with-fully-immersive-virtual-reality-tesco-store-for-the-oculus-rift-9211854.html>



## 2.2 Personalized Customer Engagement Beyond the Store

Omni-channel customer engagement continues beyond the store via online channels. These are designed to build relationships with customers and influence their opinions and purchase decisions, especially for those customers who prefer to do their shopping outside brick-and-mortar stores.

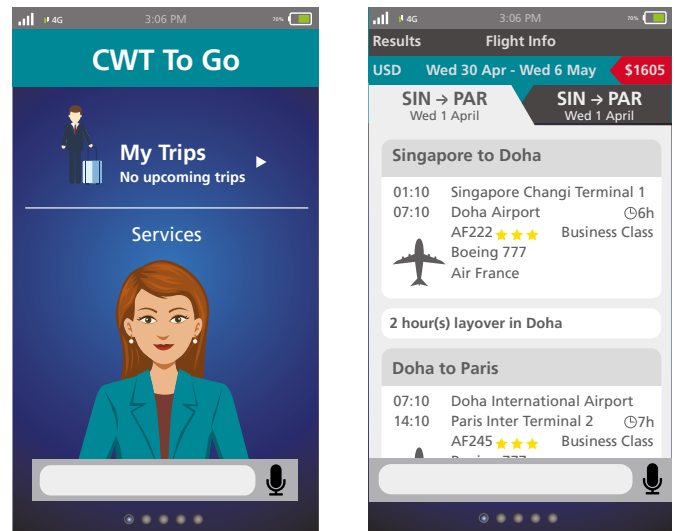
### 2.2.1 Offering Virtual Expert Advice

To support the shopping experience, it is essential to provide expert advice. This is particularly true when customers are not in the store. One solution is to offer a videoconferencing application mobile device, connecting each customer to a real person who is able to deliver expert advice. This becomes ever-more feasible with cheaper video networking and improved camera quality. Since early 2015, Google customers have been able to use a video chat function in the Google Play Store to be connected to a customer service representative and receive expert advice on selected gadgets.<sup>17</sup>

Personalized expert advice is taking on a new dimension with ‘**virtual avatars**’ that provide real-time expert advice using advanced cognitive capabilities. A current example of this is the Personal Virtual Travel Assistants pilot by **Carlson Wagonlit Travel** (Figure 9).<sup>18</sup> The virtual avatar **CWT Carla** listens to customer requests and recommends transportation and hotel accommodation in real time with conversation and comprehension skills similar to human interaction.

### 2.2.2 Utilizing Social Media

Social media has shown to be an effective platform for consumers to discuss and voice opinions about products and brands, as well as for businesses to communicate with consumers. **From a mere 8% in 2005, the percentage of Internet users who are active on social media grew to 72% by 2013.**



**Figure 9:** Carlson Wagonlit Travel uses virtual avatars to enhance the shopping experience; **Source:** CWT

In the US, UK, and Australia, users are spending 13-16 minutes per online hour on social media.<sup>19</sup> With smart handheld devices becoming ubiquitous, consumers are increasingly likely to use these platforms as part of their shopping journey. So it is imperative for companies to understand how to actively leverage social media to advance their omni-channel strategy.

Many companies now use social media to monitor customer sentiment and, where possible, take corrective action to recover any negative customer experience. **Tesco** has formed a separate **social media business unit** and hired experienced customer service agents with social media skills.<sup>20</sup> The key objectives are to deliver great customer service, drive action through customer insight, build customer advocacy, and build a contemporary image for the brand.

Customer service is at the core of every interaction, with social media helping to ensure that issues and complaints are attended to and resolved quickly. **Tesco** uses a **sentiment tracker** to monitor positive and negative comments, and leverages social media to proactively respond to customers and foster better customer relationships.

<sup>17</sup> <http://www.csmonitor.com/Technology/2015/0209/Google-introduces-expert-gadget-advice-through-live-video-chat>

<sup>18</sup> [www.cwtcarla.com](http://www.cwtcarla.com)

<sup>19</sup> <http://www.jeffbullas.com/2014/01/17/20-social-media-facts-and-statistics-you-should-know-in-2014/>

<sup>20</sup> <http://www1.planetretail.net/news-and-events/rob-gregory/blogs/tesco-looking-grow-engagement-through-orchard>

### 2.2.3 Leveraging Customer Loyalty

In today's environment where choices abound, customer loyalty is a key focus area for businesses. Many e-commerce platforms offer customer loyalty points for sharing product reviews or rewarding customer loyalty on social media platforms, thus building positive customer currency. With big data analytics and an omni-channel approach, several companies are developing membership cards to improve the customer experience across all channels. A good example is the **Tesco 'Clubcard'** which has been issued to more than 16.5 million customers.<sup>21</sup> Tesco wants to make this card a common currency that can be used across its chain, along with a digital card to be used on mobile phones. In addition, Tesco has launched its own social network, Orchard, to connect customers. The company uses the wealth of customer data gathered via its loyalty card and social network to analyze shopping behavior and execute more targeted promotions.

### 2.2.4 Simplifying Replenishment and Automated Services

One of the ways in which retailers seek to simplify the consumer experience and reduce expended time and effort is to install automated replenishment systems. With an automated ordering process, an automatic order is generated when a product runs out, and either a replacement item is sent directly to the retailer or a reminder is sent to

the customer. **Amazon** is enhancing the home shopping experience with its **Dash Button**, a physical hardware device that simplifies product replenishment.<sup>22</sup> As an example, a button for Tide washing powder could be attached to a customer's washing machine. When it is pressed, an online order would be generated and sent to the customer for completion through Amazon's smartphone application (**Figure 10**).

As more products become connected, more opportunities are emerging to provide customers with **seamless and personalized services**. Many manufacturers now see their role extending beyond production to also include longevity, assured through effective service. For example, automotive companies and dealerships with connected car programs offer additional services such as vehicle health analysis; customers can use onboard diagnostics, vehicle dashboards, and smartphones to proactively communicate with their vehicle regarding its 'health'. Vehicle services can be scheduled including ordering of parts and accessories, using any channel or device. Another example is the **Maintenance on Demand** project that aims to develop a commercially viable truck capable of deciding autonomously when and how it requires maintenance. This would reduce downtime and improve fleet management and the environmental footprint.<sup>23</sup> With this initiative, the manufacturer and the product interact autonomously to ensure product upkeep and maximum utilization, saving time and money for the customer.



**Figure 10:** Amazon's Dash Button works with a smartphone application

<sup>21</sup> <http://www.telegraph.co.uk/finance/personalfinance/household-bills/10273842/Tesco-Clubcard-vs-Nectar-Best-loyalty-schemes.html>

<sup>22</sup> <http://www.businesswire.com/news/home/20150423006485/en/Amazon.com-Announces-Quarter-Sales-15-22.72-Billion> " \ „.VbWuWvmqqko"

<sup>23</sup> DHL Internet of Things in Logistics Trend Report, 2015

### 2.2.5 Customizing Products

Digital showrooms such as Audi City enable customers to tailor a product to their specific requirements. The same can be achieved via online channels.

As a core business strategy in 2015, **Haier**, a global home appliances and consumer electronics brand based in China, announced it would develop **online factories**.<sup>24</sup> These enable mass customization of production by allowing Internet-connected consumers to cost-effectively customize their products online and place orders directly with the factory. Haier's refrigerator factory in Shenyang, China, now supports more than 500 different types of product from a set of different subsystems and options.

German company **Outfittery** has installed photo booths equipped with **3D body scanners** near train stations and airports. Customers can walk in and have the scanner capture thousands of detailed body measurements.<sup>25</sup> While standing in front of a digital mirror, the customer can see clothes superimposed on their body, saving the time it usually takes to try on outfits. A style expert then sends tailor-made clothes to the customer in the size, color, and materials of their choice.

The trend toward greater personalization of products will increase, especially as new production technologies such as 3D printing improve. Future possibilities include factories of 3D printers located in towns and cities close to end consumers; these factories would print and deliver customized products cost effectively and with very short lead times.



## 2.3 Case Study: Macy's Omni-channel Journey

This case study reveals a retail giant's comprehensive approach to omni-channel. With a revenue of US\$ 28 billion in 2014, 885 stores across the US, and an established online presence, Macy's began its omni-channel journey in 2008, aiming "to better serve the needs of customers".

Macy's research showed that about **two-thirds of all shopping trips start online** with customers researching options on their desktops or handheld devices. Customers then visit the store to touch, feel, and try on the merchandise before buying the item in-store or online at home. This research exposed the limitations of Macy's channel-specific approach and convinced management of the need for an omni-channel strategy.<sup>26</sup>

Today, Macy's operates as an omni-channel retailer with a single view of customers, inventory, and business. Its strategy is based on the following key initiatives: the **My Macy's localization program**, **omni-channel integration**, and **Buy Online, Pickup in Store**.

- The **My Macy's localization program** was launched in 2009 to **deliver a merchandise assortment and personalized shopping experience that is unique to the individual customer**. It offers customers the ability to predetermine what is available in shops.

With an ongoing commitment to leverage technology to enhance the customer shopping experience, Macy's joined a list of retailers in support of **Google Maps 6.0 to display detailed indoor floor plans**. These plans have been included in **Macy's smartphone app** with other associated mapping systems. According to Mashable.com, shoppers now have a utility to get around stores, find products, and sign up to receive offers based on their location in the store.

<sup>24</sup> [http://www.haier.com/my/newspress/pressreleases/201502/t20150217\\_262012.shtml](http://www.haier.com/my/newspress/pressreleases/201502/t20150217_262012.shtml)

<sup>25</sup> <http://www.dailymail.co.uk/news/article-2947866/Is-future-clothes-shopping-men-Train-station-3D-body-scanner-spells-end-ill-fitting-attire.htm>

<sup>26</sup> <http://macysinc.com/macys/m.o.m.-strategies/default.aspx>

- Macy's initiative for **omni-channel integration** brings the online and brick-and-mortar channels together in a single integrated approach. It enables **visibility and management of inventory across channels**. In addition, it allows store associates to rapidly check system-wide availability, locate an item, and facilitate delivery or next-day pick-up by the shopper. And when fulfillment center inventories are depleted, it can even **make store inventory items available to fulfill online orders** on the retailer's website.

Instead of separate teams for each channel, **Macy's now has a single integrated merchandising and marketing team**. This implementation started with aggregating consumer data (such as preferences and ongoing purchasing patterns) to achieve a 360-degree view of each customer, and then the retailer analyzed the data, gathered meaningful insights, and combined this information into new processes to deliver a seamless customer experience.

- In 2014, Macy's rolled out its **Buy Online, Pick Up in Store initiative** nationwide. In the same year, some US\$ 1 billion of Macy's direct-to-customer shipments

originated from Macy's stores. As the name suggests, this new process combines online and in-store channels, establishing a new dimension in customer access and convenience, according to Terry J. Lundgren, Macy's Chairman and CEO. As well as improving the customer experience, all of the above initiatives have achieved cost savings from inventory optimization.

Having reviewed retailer approaches to a personalized and seamless customer experience across channels, the next chapter considers implications for the physical supply chain and its information systems.

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**"We are working to provide our customers with seamless experiences, no matter how they choose to shop with us, and to utilize the strengths of each channel to satisfy demand and service customers' needs better than we could if we did not operate multiple channels."**

**– Karen Hoguet, CFO, Macy's**

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### 3. OMNI-CHANNEL LOGISTICS

## FULLFILLING THE CUSTOMER PROMISE

Traditional supply chains are coming under considerable pressure as demand for ‘anytime, anywhere, from any device’ service and the use of new technologies extend the range and breadth of consumer choice. Currently an evolving approach, **seamless omni-channel logistics will become a key requirement in the future.**

Technology trends already on the supply chain agenda include data analytics, Internet of Things (IoT), and automation. As organizations transform to omni-channel, they can leverage these new capabilities. **Companies must rethink existing logistics structures and network strategies, and adopt a far more active role in managing and delivering the consumer promise.**

Emerging strategies that blend in-store operations with traditional and e-commerce supply chains expect to deliver profit and performance gains. To design and develop a cost-effective omni-channel supply chain, companies must focus on two key areas (**Figure 11**).

DHL’s vision for the omni-channel supply chain is illustrated in **Figure 12**. This supply chain is demand-oriented, flexible, highly responsive, and channel-agnostic. It focuses on optimizing the consumer experience while ensuring ‘anytime, anywhere, from any device’ service.

This chapter explores the key areas of focus for the omni-channel supply chain and showcases some exciting future possibilities for omni-channel logistics.



**Figure 11:** Key areas of seamless omni-channel logistics

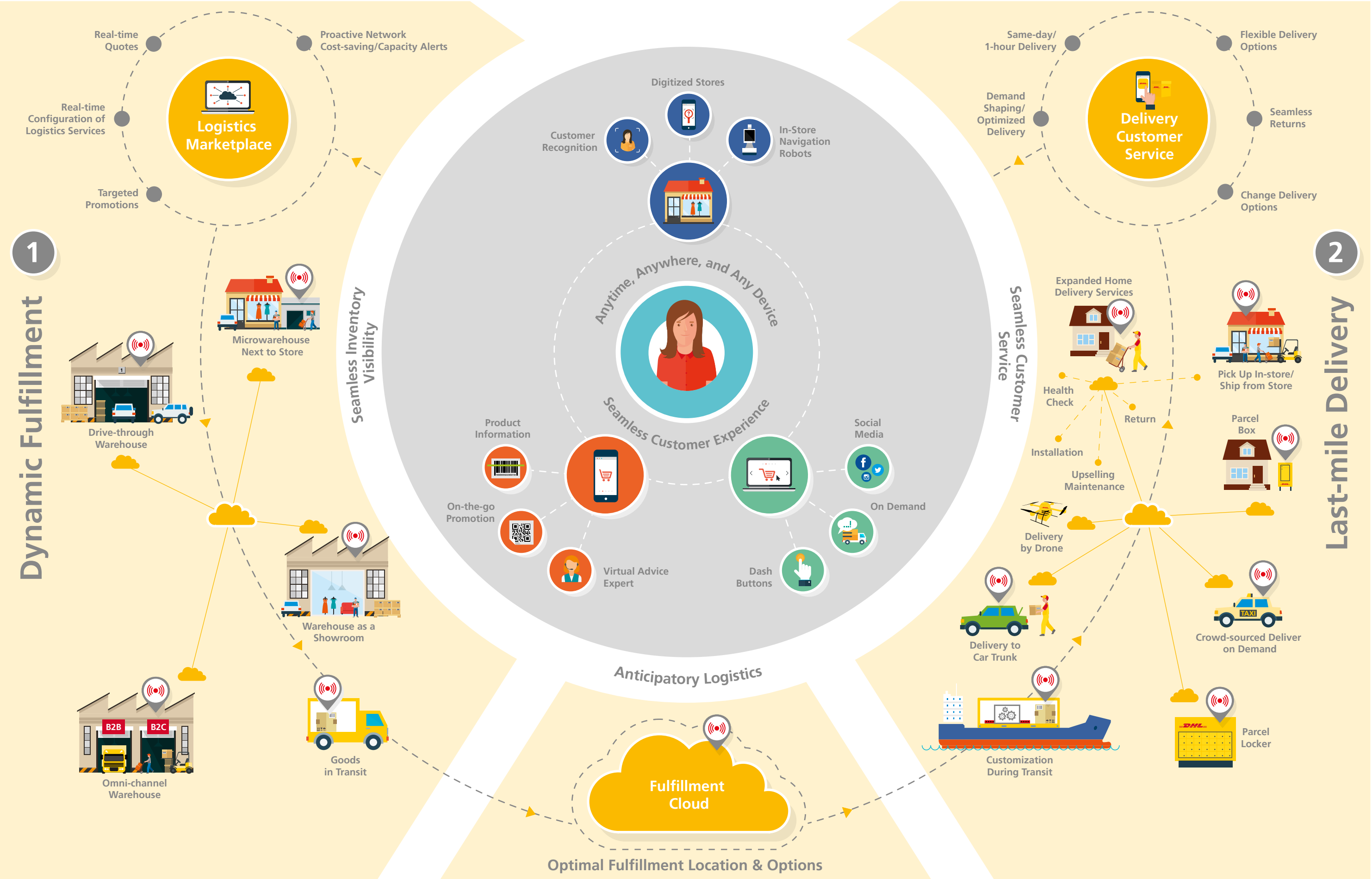


Figure 12: DHL's vision for the omni-channel supply chain

3.1 Enable High-performing, Cost-effective Omni-channel Fulfillment

Orchestrating flexible fulfillment options across channels requires much greater flexibility in supply chain networks. An omni-channel fulfillment network differs from traditional ones in a few ways (Figure 13). Let us go deeper into these elements, reviewing examples of company practice today, and sharing the anticipated direction and vision for the future.

3.1.1 Seamless Inventory Visibility and Optimization

According to an RSR (Retail Systems Research) study of retail ‘winners’ and ‘laggards’, enterprise-wide inventory visibility is a key differentiator in omni-channel execution. Approximately 63% of ‘winners’ said they have access to inventory across the entire enterprise, while only 25% of ‘laggards’ are in the same position. Poor visibility “prevents laggards from fulfilling non-store customer orders from store inventory”, the report revealed.<sup>27</sup>

Leading retailers are now using converged inventories to optimize enterprise-wide stock levels while maximizing availability across channels. Fewer than 10% of respondents in a 2014 survey by the software firm JDA expect to still have dedicated inventories three to five years from now (Figure 14). Instead, it will become the norm to share inventory at the store and distribution center for online order fulfillment.

Inventory sharing strategies in 3–5 years

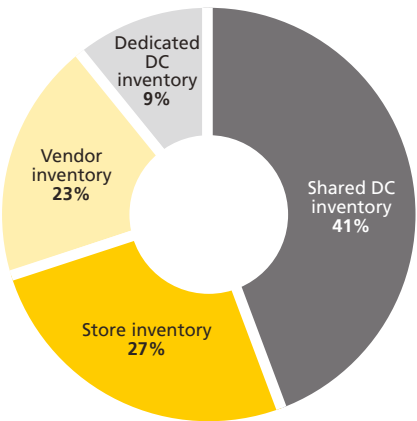


Figure 14: Inventory sharing strategies in 3–5 years; Source: JDA

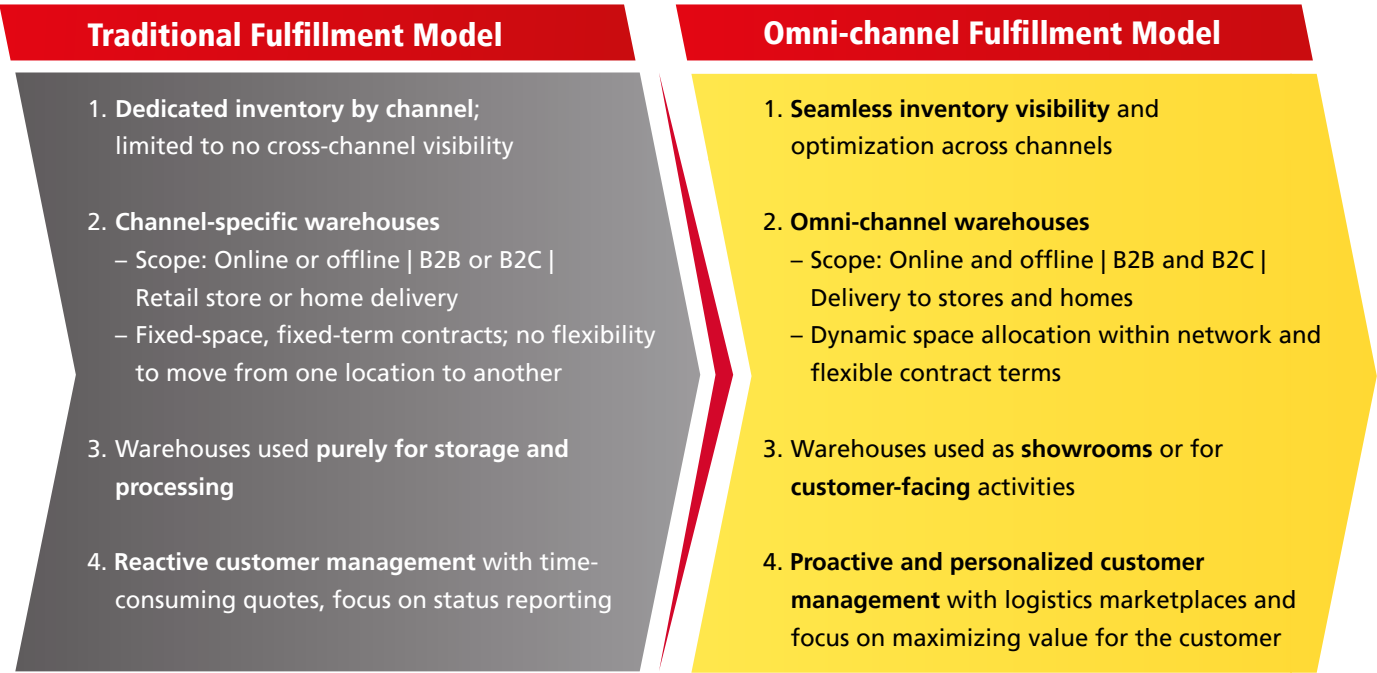


Figure 13: Differences between traditional and omni-channel fulfillment

<sup>27</sup> <https://www.rsrresearch.com/2014/01/08/retail-analytics-moves-to-the-frontline-benchmark-2014/>

Retailers must be able to dynamically allocate and fill orders across the omni-channel enterprise.

One of the core challenges in this transition is real-time inventory visibility of the merchandise in retail stores. According to global management consulting firm Kurt Salmon, inventory accuracy in traditional retail stores ranges from 50–80%.

Technology is now ready to address this issue. Apparel powerhouse **Inditex SA** plans to roll out RFID technology throughout its **Zara** store operations to improve accuracy. RFID chips can store information about the items they are attached to, and emit this data to a scanner when prompted.

Inditex is burying the chips inside its garments' plastic security tags, an innovation that allows the fashion chain to reuse them after the tags are removed at checkout. By the end of 2015, more than 1,000 Zara stores will be using this technology.<sup>28</sup>

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**"Omni-channel is very much about inventory optimization through technology. Inventory visibility across all stores and channels is the key enabler."**

**– Terry Lundgren, Chairman, President and CEO of Macy's Inc.**

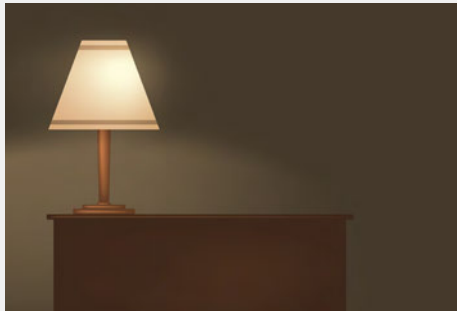
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Advances in inventory visibility, and using that visibility to manage inventory across channels, promises multiple benefits to retailers. The Australian retail chain **Harvey Norman** has undertaken this journey and its case study demonstrates a successful approach to cross-channel inventory optimization.



<sup>28</sup> Christopher Bjork, "Zara Builds Its Business Around RFID," Wall Street Journal, September 16, 2014

## Harvey Norman



**Harvey Norman** noticed that, before visiting a store, its customers regularly went online to check in-store product availability. Clearly, no-one liked making a wasted journey. So the retailer decided it had to make in-store product availability clearly visible to customers online. To achieve near-real-time inventory visibility for all its stores, the company had to integrate legacy systems and build a new and robust order management system. This system incorporates fulfillment optimization algorithms based on Harvey Norman products and its business model.

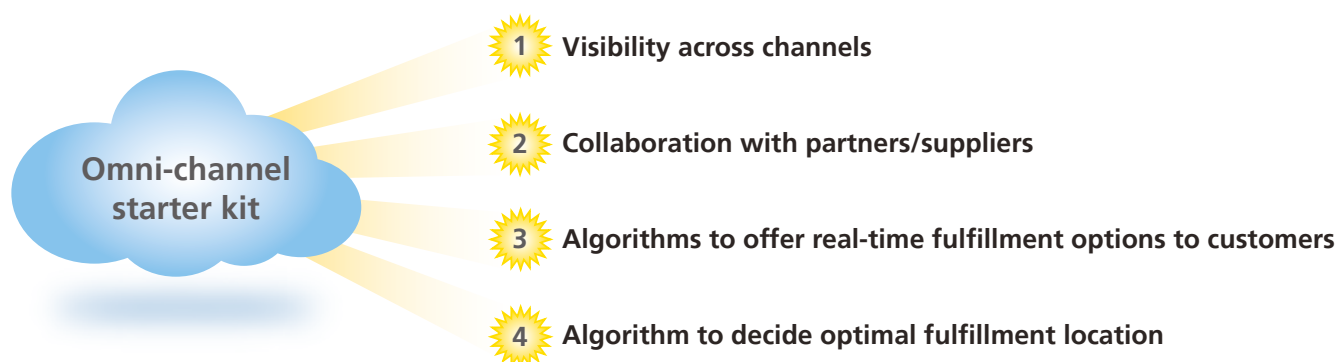
Online customers can now undertake real-time searches to find their closest store with the item in stock. They can also select their preferred delivery options – such as click-and-collect at a nominated store, or home delivery. The online system distinguishes between smaller items that can be trucked all the way across Australia and larger items (for example, a refrigerator) that can only be delivered within a defined radius of the store.

It also reflects online orders in the store's POS system, just as if the order had been taken in-store. Harvey Norman sees further opportunity in a direct-ship model. With this, if the customer orders a fridge that is currently unavailable in a Harvey Norman store but available from a nearby supplier, the item is dispatched directly from the supplier to the customer as this reduces the turnaround time. This model requires visibility of supplier inventory and better collaboration between the retailer, its suppliers, and its logistics provider.

### Omni-channel Starter Kit

As these various case studies demonstrate, the omni-channel approach requires significant IT investment. Forward-looking organizations have already committed the required expenditure, time, and effort; but many more have yet to make this investment. One way to get an omni-channel approach off the ground is **for logistics providers to offer a replicable, standardized, and cost-effective IT solution: an omni-channel starter kit (Figure 15).**

The concept is quite simple. This kit would provide a pay-per-use cloud-based solution that is easily integrated across multiple supply chain channels and partners. Set up as a control tower above the stores and online channels, it would enable seamless information flow and inventory visibility. Suitable for small and large organizations alike, it would allow return on investment (ROI) to be proved prior to making a more substantial and widespread investment.



**Figure 15:** Differences between traditional and omni-channel fulfillment



### 3.1.2 Omni-channel Warehouses

**Omni-channel warehouses serve both online and offline, B2B and B2C channels, and are managed as part of a flexible fulfillment network that can easily respond to changing demand.**

Today, there's a tendency to segment supply chains by channels, which results in duplication of inventory and infrastructure. Some companies such as **Vargo** are beginning to offer omni-channel distribution center designs.<sup>29</sup> Separate channel spaces within the same warehouse and **different automation solutions are used to fulfill the varying supply chain requirements of B2B and B2C channels, yet inventory is shared across both channels.**

Other companies are choosing to develop an **omni-channel campus** with space allocated for multiple types of pick-and-pack operation. An example is **Heilan Home**, a major clothing manufacturer in China, which sells high-end business clothes via stores and online.<sup>30</sup> When online sales increased and its customers started to expect faster delivery, the organization opted to establish a single highly automated logistics campus for both B2B and B2C activities. Today, an intelligent warehouse system (IWS) handles the entire fulfillment process. This system

comprises two automated storage and retrieval systems (ASRS), three delivery halls, and one distribution center. The IWS covers automated storage, batch picking, automated sorting, delivery and returns processing. As well as ASRS, it includes voice picking, case conveyors, spiral conveyor systems, and cross belt and pop-up wheel sortation systems. A unique barcode identifies each item, enabling accurate storage, distribution, and sales processes. Automation helps to increase fulfillment capacity and shortens lead times and, by combining B2B and B2C volumes, the order profile becomes more evenly distributed (with fewer peaks and troughs), achieving labor management savings.

In future there could be facilities such as **hyper multi-sector warehouses built** with high automation to support small quantity picking in shorter timeframes with almost 100% accuracy. These new types of warehouse must be managed as part of a dynamic and flexible network. Companies will no longer accept fixed-space and fixed-term contracts. The **omni-channel business approach requires capacity to be managed across multiple locations with space traded as a virtual asset.** It will become the norm to share warehouse space between multiple organizations (see the **Flexe** case study). Omni-channel warehouses will play a more active and direct role in order fulfillment for all channels.

## Flexe



Seattle-based **Flexe** is a first-of-its-kind 'shared economy' online marketplace for warehousing space. It connects organizations in need of flexible warehousing capacity with warehouse owners that have available space. A cloud-based software platform enables Flexe customers (goods owners, retailers, and manufacturers) to locate warehouse space (in 20 markets across North America) that best meet their specific needs, and then manage their inventory 24/7, across all facilities, from their desktop. This provides immediate access to warehouse space without committing to a long-term lease.<sup>31</sup>

<sup>29</sup> <http://www.vargosolutions.com/vargo-partners-to-design-waveless-distribution-center-for-large-retail-client/>

<sup>30</sup> [http://go.dematic.com/gs\\_gated\\_short?doc=http://now.eloqua.com/e/er?s=2102163319&lid=1132](http://go.dematic.com/gs_gated_short?doc=http://now.eloqua.com/e/er?s=2102163319&lid=1132)

<sup>31</sup> <http://www.prnewswire.com/news-releases/on-demand-warehousing-start-up-announces-north-american-expansion-150000-pallet-positions-now-available-in-85-locations-across-us-canada-300100377.html>

### 3.1.3 Warehouse as a Showroom and Pick-up Location

Along with more flexible space, omni-channel warehouses of the future are likely to offer new capabilities.

Warehouses can become retail showrooms. The concept of merging retail front and warehouse is not new. IKEA successfully uses this model for a highly cost-efficient supply chain. Warehouses can also be used as a pick-up location for online orders. Reports indicate that Amazon may launch pick-up points for Prime Now orders at its fulfillment facilities.<sup>32</sup>



Imagine a warehouse that offers a drive-through capability like a McDonald's fast-food restaurant. This is being piloted by **Walmart**<sup>33</sup> as a free service to its customers (particularly senior citizens, people with disabilities, and parents with young children). They can place their orders online anytime from two hours to three weeks in advance, and then drive up to the warehouse kiosk; a Walmart associate brings their order out to the car. As well as providing added customer convenience, this encourages customers to use Walmart's digital platform, and the company gathers valuable information from customer searches and shopping habits.

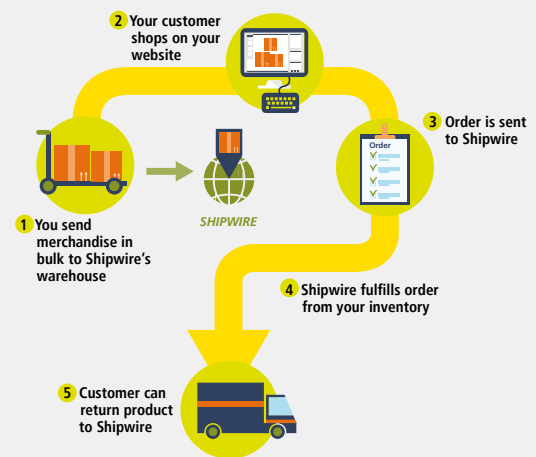
### 3.1.4 Logistics Marketplaces and Real-time Customer Engagement

Today companies can already access end-to-end orchestration and fulfillment capabilities on web-based enterprise fulfillment platforms. **Shipwire** is one among many others



that provides this type of logistics marketplace (see the **Shipwire** case study). These make it easy to access specific services and grow into new markets. In the future, we could see more and more retailers, manufacturers, and online marketplaces such as Alibaba and Amazon incorporate a logistics marketplace approach as part of the B2B and B2C ordering process. Customers can choose their preferred transportation option and this is factored into the total cost of the product (see the **FreightOS** case study).

#### Shipwire



Source: Shipwire

- Runs network of fulfillment centers worldwide with high levels of automation and a variety of value-add services
- Companies send inventory to any warehouse and store on demand in a very easy and stress-free way
- Direct integration with order entry systems handling the pick up of goods, order fulfillment, and delivery

<sup>32</sup> <http://www.geekwire.com/2015/amazon-set-to-launch-new-amazon-flex-package-pickup-service-in-seattle-area-with-prime-now/>

<sup>33</sup> <http://www.forbes.com/sites/retailwire/2014/10/02/walmarts-drive-through-grocery-concept-is-a-head-scratcher/>

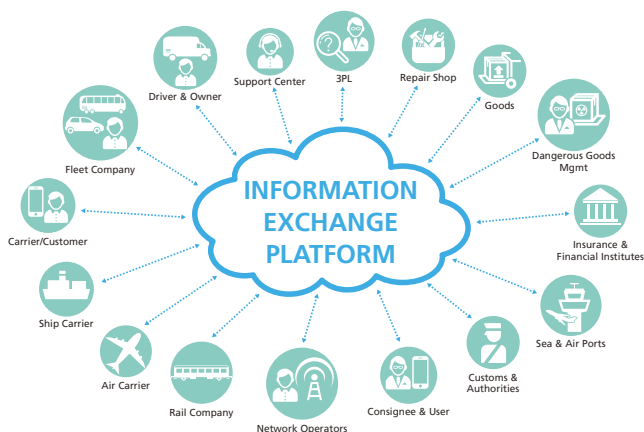
## Logistics Marketplace – FreightOS

✓ USD 415.84 5 days	Queens County PREMIUM	US 🚚 JFK ✈️ LHR 🚚 Southall, GB
✓ USD 412.24 7 days	Queens County REGULAR	US 🚚 JFK ✈️ LHR 🚚 Southall, GB
✓ USD 294.53 28 days	Queens County	US 🚚 USEZA 🚚 GBLON 🚚 Southall, GB

- An Expedia-like platform for freight providing instant, online real-time quoting for all legs of shipment
- Shippers can generate and book instant, door-to-door quotes directly online, using their own internal negotiated rates or rates shared online by forwarders

With more transparent supply and demand, logistics providers can also proactively deliver **personalized promotions** to customers. For example, companies can make a special offer to optimize the customer's total network cost (based on a comparison with other logistics companies) and inform the customer of cost-saving alternatives and opportunities. Targeted promotions could be triggered automatically to inform specific customers of discounted storage space or transportation as these options become available.

The new phenomenon of **SuperGrid networks** promises **real-time visibility**.<sup>34</sup> These next-generation transportation networks integrate swarms of production enterprises and logistics providers to provide full visibility on the entire multi-modal supply chain; they require standardized data and a common information exchange platform (**Figure 16**).



**Figure 16:** A common information exchange platform enables supply chain visibility

Private and public sector organizations, particularly in Europe and Asia, are in active discussion about SuperGrid networks. Their potential to simplify information exchange and compliance processes while **adding visibility and transparency to global supply chains** is highly attractive.

How can small businesses benefit from omni-channel? The cost of going online can be prohibitive for small traditional retailers. Similarly, it can be difficult for online businesses to justify building a brick-and-mortar store. **Logistics providers can work with regional or city governments to develop networks that support small businesses** (see the **Online City Wuppertal Project** case study).<sup>35</sup>

## Online City Wuppertal Project



Wuppertal City in Germany has embarked on a collaborative journey. The **Online City Wuppertal Project** is a public/private initiative to create an omni-channel framework for small local retailers comprising:

- **Shop station:** a centrally located city showroom where retailers can showcase/test products
- **Service station:** closely integrated with the shop station, this centralizes goods delivery and returns processes; DHL is enabling local specialists to provide (local) same-day delivery services
- **Training:** for brick-and-mortar retailers that want to establish a new online sales channel

<sup>34</sup> <http://www.ericsson.com/news/1884299>

<sup>35</sup> <http://www.onlinecity-wuppertal.de/home/>



### 3.2 Enhance Speed, Flexibility, and Convenience in Last-mile Delivery

The last mile is important for everyone. For the customer, it's the moment when they hold their new purchase for the first time. For the company, it's the most expensive step in the entire delivery process. So it's no surprise to find substantial last-mile innovation in traditional and omni-channel logistics. We review these innovations below.

#### 3.2.1 Leveraging Stores for Pick Up and Delivery

**Brick-and-mortar stores remain a crucial component of the global shopping experience, and their role is changing in the omni-channel business model.** Stores are becoming fulfillment centers, serving as pick-up locations for online orders (buy online, pick up in-store) and fulfilling local deliveries in the city (ship-from-store). More businesses are likely to adopt these programs in the omni-channel journey to generate maximum return on their brick-and-mortar investments.

The **buy online, pick up in-store** cross-channel fulfillment option has many benefits. Both the customer and the company save money. And when picking up their orders in the store, customers often make additional purchases.

**Walmart** embraced the showrooming trend about six years ago by enabling customers to purchase online and pick up their items in the store of their choice. Since then, the retailer has added services like web returns centers and additional pick-up locations to boost online sales and meet customer expectations. This strategy has been a success – 50% of Walmart's online sales are now picked up in a store, leading to huge savings in inventory and transportation.<sup>36</sup>

A handful of early-adopter retailers offer ship-from-store programs. Leveraging store merchandise to fulfill online orders, the US retailer **Nordstrom** saw annual inventory turnover rise to 5.41 from 4.8. Retailers also benefit from being able to move products on markdown at a much higher gross margin rate. One major department store reported a significant increase in same-store sales growth resulting in a US\$ 200 million improvement in gross margin.<sup>37</sup>



Collaboration is fueling another innovation. Today, many **e-tailers are partnering with brick-and-mortar retailers to enable speedy and cost-effective delivery by leveraging store merchandise.** The stores benefit because the e-tailer provides an additional sales channel. The e-tailer benefits by leveraging stores as fulfillment centers (see the **Tmall.com** case study on next page).

There are some difficulties with this model, however. Most retail stores are not set up to fulfill orders. Traditional stores typically lack good inventory visibility (see Chapter 3.1.1.) and backroom space is limited (it is usually devoted to merchandise and store supplies). Also, store employees are trained to sell and are not motivated as warehouse workers.

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**As the store evolves to be more of a showroom and take on greater fulfillment responsibilities, we may see more 'microwarehouses' in the future.**

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To overcome these challenges requires several solutions. Store backrooms could be organized as 'microwarehouses', particularly to stock smaller items. The store can evolve into a showroom, displaying just one kind of each product with variants stored in an automated storage area nearby (see the **Hointer** example in Chapter 2.1.1). And retailers could outsource store fulfillment activities to third-party logistics providers.

<sup>36</sup> [http://www.nytimes.com/2012/07/05/business/retailers-lure-online-shoppers-offline.html?\\_r=0](http://www.nytimes.com/2012/07/05/business/retailers-lure-online-shoppers-offline.html?_r=0)

<sup>37</sup> Dave Lodwig, „Winning the Omni-channel Fulfillment Wars,” W&H Systems, 2014, p. 2.

## Tmall.com Collaboration with Jack & Jones



China's largest B2C website **Tmall.com** is currently exploring a 'bricks-and-clicks' delivery system with Jack & Jones, a popular Danish male apparel retailer.<sup>38</sup> The service, currently only available to Beijing consumers, speeds the receipt of orders because online purchases are shipped directly from Jack & Jones' physical stores, and not from warehouses. When Tmall.com receives an online order, the IT system analyzes merchandise availability and dispatches from the store that's closest to the customer. Orders are picked up by Winshine Logistics couriers (a partner of Alibaba's logistics arm Cainiao) and delivered to each customer's home.

### 3.2.2 Anytime, Anywhere Delivery Models

Consumers expect delivery anytime, anywhere. We no longer tolerate limited store opening hours. Modern shoppers have a growing number of options, many of which exploit new technologies.

**Parcel lockers** automate and simplify the process of parcel collection and drop-off on a 24/7 basis. Invented in Germany, the DHL Packstation solution is now available in more than 2,000 locations countrywide. **In future, retailers in Germany could use this network of parcel lockers to sell items, transforming them into parcel vending machines.** This network could also be used to enable consumer returns.

Innovation beyond the parcel locker concept has achieved **a more personalized solution, the Parcel Box**. Located next to the consumer's home, this dropbox provides a convenient location for parcel delivery and pick-up (see the **DHL Paketkasten** case study).

A recent innovation is to **deliver parcels into a car trunk**. Via a smart mobile application, the delivery agent receives the exact location of the car along with an access code to its trunk. **CarDrops.sg** already offers this service in Singapore, and **DHL, Amazon, and Audi** are piloting car

### DHL Paketkasten



- Parcel locker solution offered to customers in Germany
- Bought or rented, and installed near the customer's home
- Accessed via RFID chip or the delivery courier's hand scanner

trunk delivery in Germany.<sup>39</sup> Similarly, items (particularly heavy goods) can be delivered directly inside the customer's home or garage.

This requires the installation of Internet of Things-enabled doors and locks.

<sup>38</sup> <https://www.cep-research.com/news/alibabas-tmall-tests-deliveries-in-3-hours>

<sup>39</sup> <http://postandparcel.info/64623/news/dhl-parcel-amazon-and-audi-launch-pilot-project-for-car-drop-delivery/0>

**Uber-style 'on-demand delivery' services** leverage the existing movement of cars and taxis to deliver parcels. Orders are delivered by drivers either within the next hour or during a customer-selected timeframe. Pilots providing this type of service have been recently launched in Hong Kong and Singapore, and companies such as **EasyVan** (launched under the name of Lalamove in Bangkok) and **GoGoVan** are offering similar smartphone app-based on-demand delivery services.<sup>40</sup> **MyTaxi Delivery** offers customer delivery of German retailers' products (e.g., Media Markt).<sup>41</sup>



Companies like **Amazon**, **Google**, and **DHL** are piloting the use of **drones**, delivering at this early stage to remote or dangerous regions.<sup>42</sup> In future, drones may be deployed in the first- and last-mile of parcel movement. Combining the

flexibility of a DHL Packstation with the speed of a drone could achieve new levels of service for urgent deliveries.

Pilot projects and emerging models will lead to longer-term solutions that enhance the consumer experience. Uptake will vary between countries according to market specifics such as population density, infrastructure, regulations, and local preferences.

### Dynamic Customer Service for the Last Mile

Consumers don't want rigid delivery times and options. Using the DHL Parcel service in Germany, customers can easily change their minds about delivery times and locations via a single personalized online platform, Paket.de. On the web or via a mobile app, they can set up and change their delivery preferences.

Consumers also demand flexibility in the communication channels beyond the web and mobile apps. They demand the same logistics access and interaction via WhatsApp, Vchat, and other unstructured channels. For logistics providers and retailers, the challenge is to create and maintain a single view of all customer service channels (a single platform, see **Figure 17**) to enable seamless and streamlined communication. The fact that cost per transaction for these channels is much lower than traditional customer service channels provides an added incentive to implement such platforms.



**Figure 17:** Integrating all customer interactions in a single platform provides a single view of the omni-channel customer

<sup>40</sup> <https://www.techinasia.com/hong-kongs-easyvan-rebrands-aslalamove-just-in-time-for-launch-in-bangkok/>

<sup>41</sup> [http://www.dhl.com/en/press/releases/releases\\_2013/logistics/dhl\\_crowd\\_sources\\_deliveries\\_in\\_stockholm\\_with\\_myways](http://www.dhl.com/en/press/releases/releases_2013/logistics/dhl_crowd_sources_deliveries_in_stockholm_with_myways)

<sup>42</sup> <http://www.livescience.com/48032-dhl-drone-delivery-service.html>

### Increasing Need for Speed: Same-day Delivery and Anticipatory Logistics

Delivery lead times are decreasing. Many companies – **Shutl** (eBay), **Amazon**, **Google Express**, and **DHL** – now offer same-day and one-hour delivery services in several cities. Businesses also have to balance customer requirements of speed with the cost of fulfillment. Rather than setting up its own delivery hubs, many companies save money by leveraging **Postmates**, **Deliv**, **Uber**, and other service providers for on-demand delivery.

Meeting the need for same-day speed requires companies to look beyond the traditional approach of route optimization. In the same way as retailers offer real-time promotional discounts to sell over-stock, companies can incentivize customers to select its most profitable delivery services by providing free add-on features, reduced fees, and other special offers.

Predictive analytics allows companies to look into future demand patterns, and locate products closer to the customer to enable speedy and cost-effective delivery. Taking this one step further, it may even be possible to ship to the customer **ahead** of the order. This approach is called **anticipatory logistics** (see the **Amazon** case study).<sup>43</sup>

#### Amazon's Predictive Purchasing



- Patent for anticipatory delivery of parcels
- Aims to ship high-demand products (e.g., newly published books) close to expected customers
- Planning to go one step further by sending goods directly to customers who haven't yet ordered the item

### 3.2.3 Omni-channel Value-added Services

#### Increasing the Scope of Home Delivery

Home delivery is the most typical method of delivery for online purchases, and its role is getting redefined in the omni-channel context. **A problem for e-tailers is that online transactions involve no direct contact with the customer.** This is likely to change.

In future the delivery courier could provide additional value-added services to improve the consumer experience – for example, installing the delivered product on behalf of the e-tailer. During a delivery, this person could also perform simple health checks on elderly customers, an initiative that DHL is trialing in Germany. Other tasks for the delivery courier could be to identify upselling opportunities, and to facilitate product returns by immediately (or at an agreed date and time) taking back unfit-for-purpose products, such as ill-fitting clothes.



#### Customization and Postponement

Customers want speedy delivery but they also want more product customization and personalization. How can companies provide both? The solution is to undertake customization activities during transit or at the last stage of the supply chain.

Customization and postponement services done at the distribution center have been increasing in skill level. Examples include technical inspection, rework services, consolidation, final assembly, and product customization. To fulfill merchandise for one of the world's leading football clubs, DHL customizes products at its distribution center.

<sup>43</sup> <http://techcrunch.com/2014/01/18/amazon-pre-ships/>

Customization can also be undertaken during transit. Many manufacturing companies are creating modular designs to build much greater flexibility into their demand forecasts and to enable manufacturing to be located as close as possible to the customer (see the **Bayer Process Equipment Container** case study).<sup>44</sup> The new concept of ‘**manufacturing in a container**’ would allow some manufacturing and customization activities to occur during transit in future.

### Bayer Technology Services – Process Equipment Container



Source: F3Factory

- Successful pilot for a multi-step synthetic batch process for pharmaceutical intermediates
- A fully continuous manufacturing process in a modular, flexible infrastructure

### Enabling Seamless Returns Logistics

A high percentage of purchases are returned in omni-channel and e-commerce models. It seems that some 27% of all online-ordered clothes are returned by customers.<sup>45</sup> Many people order multiple items (for example, in different sizes or colors) with the intention of keeping only one of them. It is therefore important for e-tailers to offer a hassle-free, convenient, and seamless returns process, as this will attract online customers. Fashion retailers and department stores such as **Zara**, **Mango**, **Macy’s**, and **Target** offer a seamless returns process regardless of purchase origin – online or offline. When the customer wants to return an item, they can bring it back to any store, have it collected from home, or use any of the various drop-off methods discussed earlier (including parcel lockers, parcel boxes, and car trunks) with the convenience of **anytime, anywhere returns, 24/7**.

There are many challenges to managing returns. Retailers and manufacturers can find the cost of returning a product back to origin exceeds the value of the product. Also in many countries there are no clear regulations on returns processing, leaving either the customer or the retailer/manufacturer legally exposed. Logistics providers today extend beyond basic warehousing services to provide on-site or in-warehouse evaluation of returns and advise the retailer or manufacturer on the best course of action.

## 3.3 Starting the Omni-channel Journey: Key Success Factors

From companies that have undertaken the omni-channel journey, there is clear evidence of how to start an omni-channel implementation and identify the key success factors:

### 1. Focus on the consumer journey

Great customer experiences start with great interactions at every opportunity. It is essential to **understand the end customer’s cross-channel journey and develop solutions and systems that meet the customer’s expectations**.

It is important to realize that what works for one customer in one segment or geography may not work for another. There can be tremendous variation in customer preference for buying, receiving, and returning merchandise, and for required levels of customer service and human interaction. It’s therefore essential to localize omni-channel supply chain solutions, and give special consideration to local regulations (e.g., consumer data protection and privacy) when defining the omni-channel strategy.

### 2. Organize as per the consumer journey

To create a seamless consumer experience, the organization may have to change, aligning itself with the omni-channel shopper. Companies cannot retain separate online and offline organizations for marketing, merchandising, and logistics. Instead, they must create one common strategy and vision for an omni-channel customer experience. Incentives and metrics must be aligned to this common strategy to ensure successful implementation.

<sup>44</sup> [http://www.f3factory.com/scripts/pages/en/about\\_f3/industrial\\_case\\_studies/cs5/index.php](http://www.f3factory.com/scripts/pages/en/about_f3/industrial_case_studies/cs5/index.php)

<sup>45</sup> <http://www.aftermarketsuppliers.org/Doc-Vault/AASA/E-Commerce-Reverse-Logistics.pdf>





### 3. Optimize the omni-channel supply chain network

Optimizing the supply chain network in support of an omni-channel approach requires the following steps:

- **Integrate inventory across channels and in transit.**  
This requires significant technology investment and may also require a review of the existing inventory allocation and ownership model.
- **Design a flexible and dynamic distribution network.**  
Can existing storage and processing capacity be translated into a virtual network? Can this be managed and reallocated based on demand? Are suppliers and logistics providers appropriately aligned with flexible, dynamic contract terms?
- **Expand the utilization of physical assets in support of the omni-channel strategy.** Could stores, warehouses,

and distribution centers serve a greater role in direct-to-consumer fulfillment (in some or all locations, and possibly with phased introduction)? Is it possible to segment and evaluate fulfillment options based on product characteristics such as value, volume, seasonality, service requirements, and margin?

- **Consider innovative last-mile delivery options.**  
Do last-mile capabilities complement the product portfolio and omni-channel customer expectations? Companies must model the preferred delivery options for cost impact to select the right approach. Would it be better to develop in-house delivery centers or outsource to service providers?

For all the above steps, **technology is a key enabler**. The combination of new IT solutions and strong ROI projections will help to drive omni-channel strategy at every level of the business.

## CONCLUSION AND OUTLOOK

Omni-channel is here to stay. Companies that enable consumers to find, buy, receive, and return goods most conveniently and at the lowest cost are being rewarded with increased customer loyalty, revenue growth, differentiation, and profitability.

Right now, omni-channel is bringing companies closer to customers with more real-time and personalized engagement. Looking ahead, we expect to see the physical assets of logistics networks being virtualized and managed much more dynamically in line with customer demands. We also anticipate more focus on predictive logistics and analytics to support the omni-channel network. 3D printing will take cost-effective product customization to a new level and predictive technologies enabled by smart sensors will improve customer service and convenience.

Will omni-channel completely transform the way businesses are managed? The answer is yes, but this will not be a sudden transformation. Retailers in mature e-commerce markets such as the US and UK have been on this journey for more than a decade.

Implementation requires significant organizational change and investment.

Internet businesses such as Google and Facebook are at an advantage, as they started out as user-centric organizations with a wealth of customer insights generated via online usage profiles. To compete effectively, traditional businesses must leverage new technologies and big data analytics. Locked-in assets in the form of brick-and-mortar stores can be turned to competitive advantage by rethinking their role and scope in the new omni-channel business.

For any company embarking on the journey to omni-channel, the starting point is clear. You need to consider how your customers would like to shop, and then commit to enhancing and personalizing the customer experience.

A special insight chapter follows on omni-channel trends in Asia, the largest and fastest-growing B2C e-commerce market in the world.

## SPECIAL INSIGHT: OMNI-CHANNEL IN ASIA

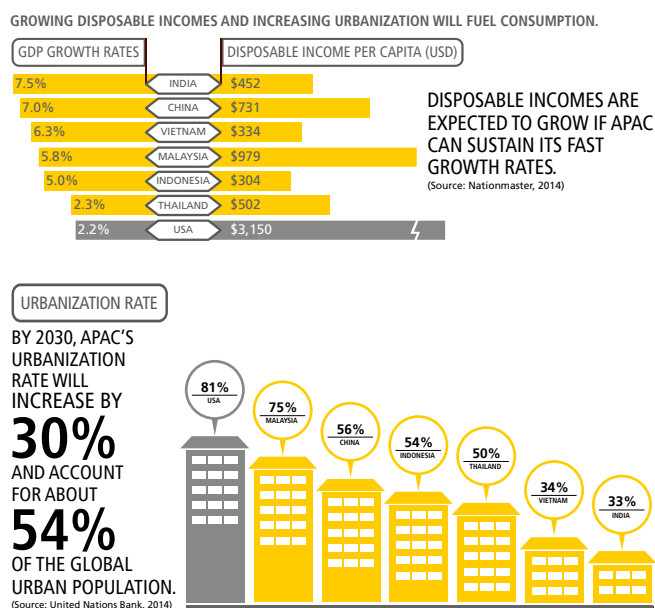
Asia is experiencing a digital revolution fueled by strong economic growth and increasing consumer buying power. Despite low Internet penetration rates, 45% of all global Internet users today are from Asia. E-commerce growth is being fueled by increasing consumption (driven by economic growth and urbanization) and fast-growing Internet and mobile penetration (**Figure 18**). According to the Ecommerce Foundation, Asia Pacific is now the largest and fastest-growing B2C e-commerce region in the world (valued at US\$ 567 billion).<sup>46</sup>

While Asia offers a lot of opportunities, it is also a highly diverse and complex region. Emerging economies are developing faster than the infrastructure that is required to support that development. The poor transportation infrastructure is increasing trade costs and delivery lead times while reducing flexibility. Sub-optimal supply chain infrastructure can directly affect the consumer. For example, it can take up to six weeks to send mail from Singapore to Indonesia, despite the fact that they are neighboring countries.<sup>47</sup>

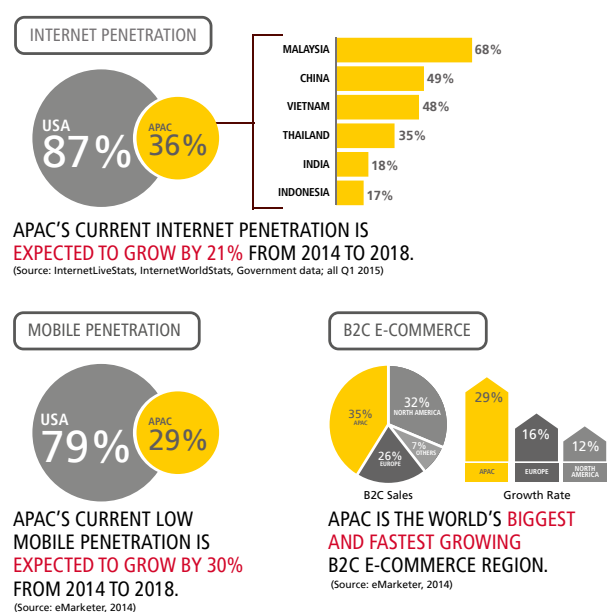
The complex customs and regulatory environment is another key challenge in the region. There are more than 50 borders in the region with no single unified customs procedures. The cultural preferences, levels of trust, and payment practices in these countries are very different. And all of these factors impact the go-to-market approach.

Asian consumer expectations for an omni-channel experience are growing, yet there is sparse research on omni-channel trends in Asia. To better understand the trends and needs of companies in the region, DHL and IDC Manufacturing Insights conducted a web-based and telephone survey with 56 fast-growing companies in the region across the retail, consumer, and technology sectors with participants from over 10 countries (see the profile in the Appendix). The following pages highlight the key findings from this survey on omni-channel trends, consumer priorities, and planned investments in Asia.

### Increasing Consumption



### The Rise of E-commerce



**Figure 18:** Increasing consumption and urbanization fuel the rise of e-commerce in Asia

<sup>46</sup> <http://www.ecommerce-europe.eu/news/2015/asia-pacific-strongest-e-commerce-region>

<sup>47</sup> SingPost



## Consumer Expectations

Fast delivery, and product variety and availability are key consumer expectations in Asia (**Figure 19**), and this is in line with global trends. The survey provides a very interesting insight: that consumers in Asia value speed more than flexible delivery options. Also, consumers expect enhanced search functionalities on mobile and

Internet that enable them to get the fastest possible delivery. These expectations reflect consumer preferences, lifestyles (advanced mobile phone use), and the fact that fast, free delivery is used to differentiate or incentivize in many competitive markets (especially China and India) to convert the sale.

### What are your consumers' expectations for omni-channel experience?



**Figure 19:** Top 5 consumers' expectations; Source: DHL-IDC Manufacturing Insights Survey, 2015

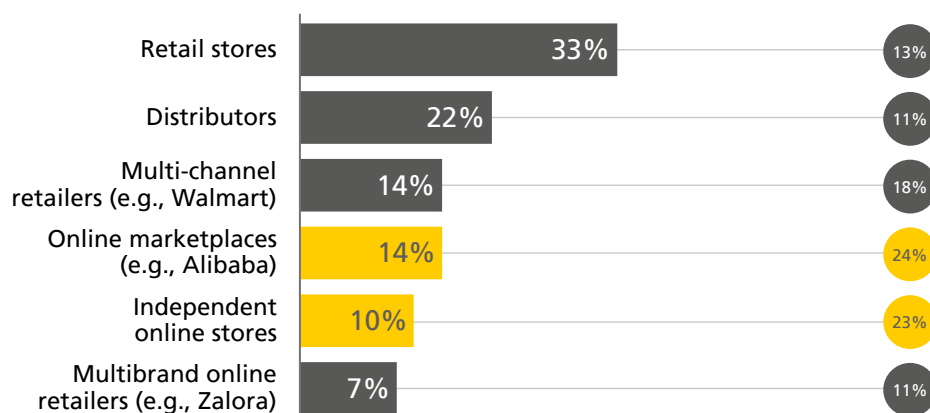
## Sales Channels Mix

Changing consumer behavior also impacts the sales channels mix. While the brick-and-mortar stores and distributors remain the biggest sales channels for companies in Asia, **Figure 20** shows that in the next

2–5 years, online marketplaces and online stores will enjoy higher growth. As a result, the sales channels mix will be more evenly spread and will necessitate an omni-channel strategy.

### What are your current sales channels? – Current % of sales

### Where do you expect most growth in 2–5 years?



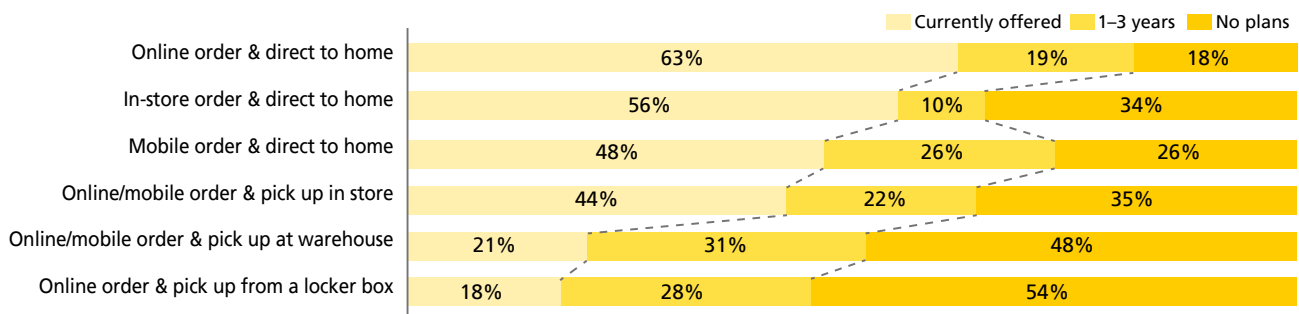
**Figure 20:** Shifting sales channels mix; Source: DHL IDC Manufacturing Insights Survey, 2015

## Order Fulfillment Models

Regardless of the purchasing channel, customers in Asia have a preference for home delivery (**Figure 21**). The next closest preference is to pick up in-store. Currently, few customers like to pick up their purchase from a warehouse or locker box. While locker box pick-up is common in Europe (particularly in Germany),

it is only an emerging trend in Asia. Logistics providers have an opportunity to be first movers in this space. In small geographies and in environments with high real-estate value (e.g., Singapore), businesses should also consider investing in facilitating warehouse pick-up.

### What are the order fulfillment models that you currently offer and plan to offer in the next 1–3 years?

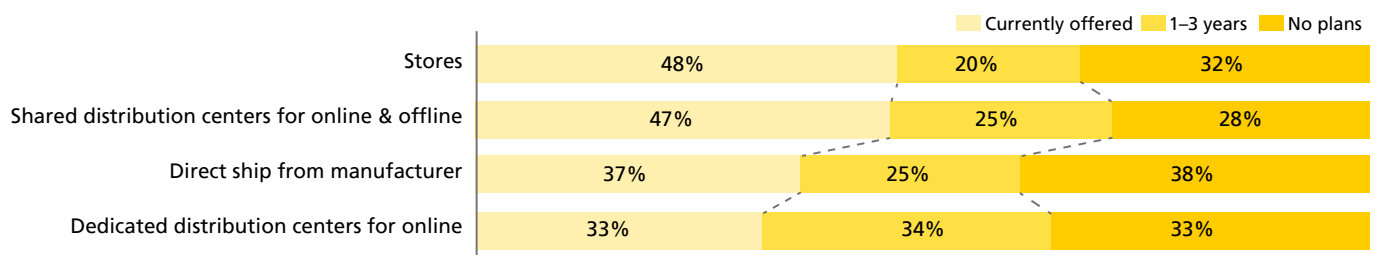


**Figure 21:** Types of order fulfillment model; **Source:** DHL-IDC Manufacturing Insights Survey, 2015

Increasing online sales is a key regional trend. **Figure 22** shows how companies in Asia facilitate the fulfillment of online sales today and plan to do so in future. Most companies are currently fulfilling their online sales either via stores or shared distribution centers for online and offline

Looking to the future, there is an even spread of choice, showing that there is no single preferred method for all companies to follow. This also reflects the fact that different approaches are required in different Asian countries (according to geography, local infrastructure, volumes, and market maturity).

### Which fulfillment models for online sales do you currently use and plan to use in the next 1–3 years?



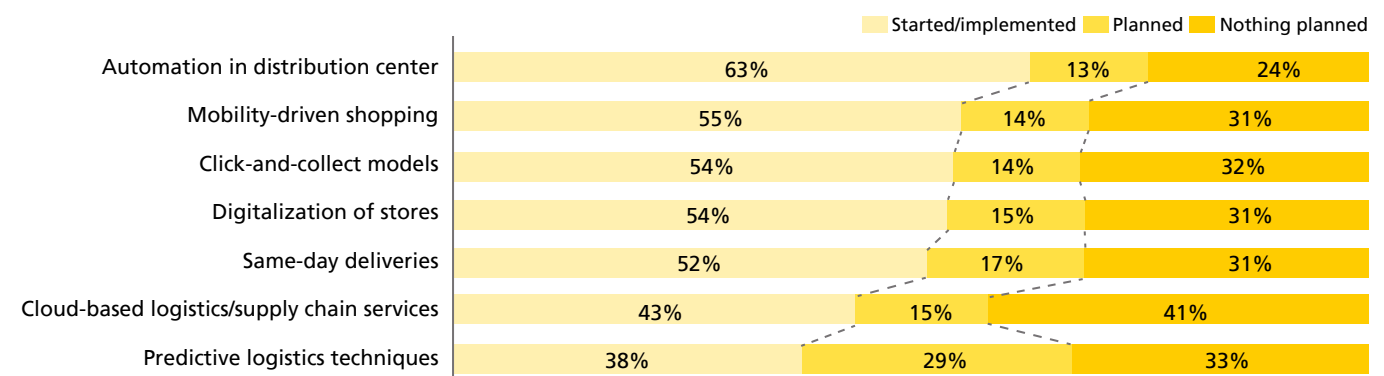
**Figure 22:** Order fulfillment for online sales; **Source:** DHL-IDC Manufacturing Insights Survey, 2015

## Key Supply Chain Investments

Companies have already started to invest in omni-channel facilitation (**Figure 23**), including automation, mobility-driven shopping, click-and-collect models, digitalization of stores, and same-day deliveries. Some 58% of respondents have invested or plan to start investing in cloud-based logistics/supply chain services,

as this is a key enabler for visibility, real-time engagement, and supply chain collaboration. The key growth area highlighted by the survey is 'predictive logistics techniques'. As discussed in Chapter 3, these techniques change the meaning of fast, cost-effective delivery in the logistics world.

### Have you or are you looking to invest in these areas of your supply chain?



**Figure 23:** Key investment areas to support the supply chain; **Source:** DHL-IDC Manufacturing Insights Survey, 2015

## Overcoming Implementation Challenges

The survey shows a key challenge in driving omni-channel implementation in Asia is justifying ROI (**Figure 24**, and see the ROI section in Chapter 1). With Asia's growth potential, companies are struggling to strike the right balance of immediate and downstream investment. Businesses must appreciate that omni-channel investments will future proof the supply chain and prepare

the organization for growth. Logistics providers can play a valuable role in ROI justification by designing standard, replicable tools and assets for multiple companies to use for omni-channel fulfillment, delivery, and returns. Given the particularly high expectations of Asian consumers, investing in faster, more flexible delivery will provide substantial benefit to the business.

### What are the top challenges for implementing omni-channel strategy?



**Figure 24:** Challenges for omni-channel adoption; **Source:** DHL-IDC Manufacturing Insights Survey, 2015

## Role of Logistics

Companies in Asia have the highest expectation that logistics providers should integrate multiple payment options (**Figure 25**). This is because of diverse payment practices and payment options (mobile/credit card/cash on delivery) in the region. In India and some other

Asian economies, consumers have a preference for cash on delivery. To achieve omni-channel commerce in the region, it is therefore essential to integrate locally preferred payment modes and practices into the fulfillment model.

### What do you expect from logistics providers to enable omni-channel experience?



**Figure 25:** Expectations of logistics service providers; **Source:** DHL-IDC Manufacturing Insights Survey, 2015

## Summary and Key Takeaways

The omni-channel trends and implementation challenges that Asia faces are similar to those in developed countries. However, the pace of change is much faster with extremely rapid growth of mobile and Internet technologies.

**Given the diversity of the region, it is of utmost importance to understand the consumer journey and local preferences when defining the omni-channel approach.**

Businesses in Asia are used to working in complex environments and are quick to innovate to meet changing consumer demand. These companies are likely to create varied omni-channel approaches, based on local market realities while also learning from global trends. Examples of innovative approaches that have been pioneered and developed in Asian markets include on-demand delivery services, collaboration between e-tailers and stores to enable speedy delivery, and establishing online factories to enable product customization.

Now is the right time for companies in Asia to prepare for an omni-channel future. Strategy should be influenced by the key findings of this survey:

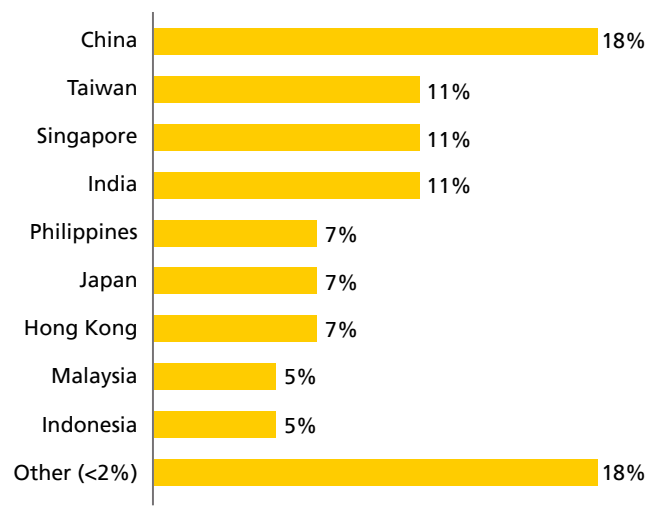
- Asian consumers value speed more than flexible delivery options.
- The biggest growth is expected to come from online stores and online marketplaces.
- Home delivery is the most prevalent delivery model.
- Consider a range of options for fulfilling online sales either via stores or shared/dedicated distribution centers based on location and accessibility.
- Current supply chain investments are being made in the automation of distribution centers, mobility-driven shopping, click-and-collect models, digitalization of stores, and same-day deliveries. Future investment is expected in predictive logistics techniques.

# APPENDIX

## Survey Respondents' Profile

The survey was run online and by telephone with 56 companies. The figures below show the profile of the survey respondents. In addition, more than 10 detailed interactions were held with decision makers in companies that are in various stages of omni-channel adoption.

### Headquarters

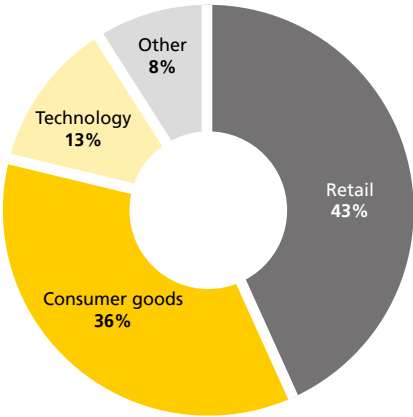


We would like to thank the following people for sharing their valuable insights with us:

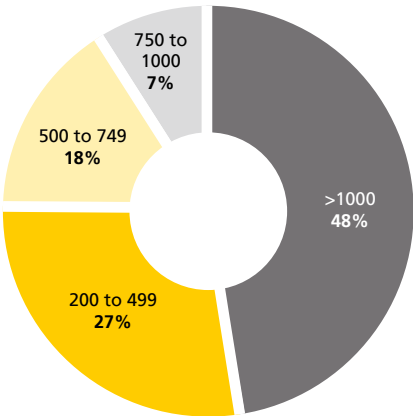
- Gary Wheelhouse (Harvey Norman)
- David Hogg, Amit Bikram Mukherjee, Anuj Malhotra and Ajay Kushwaha (IBM)
- Robert Mellin and Marcus Velin (Ericsson)
- Andrew Welch and Nicholas Kontopoulos (SAP)

We would also like to thank our customers who shared their insights with us.

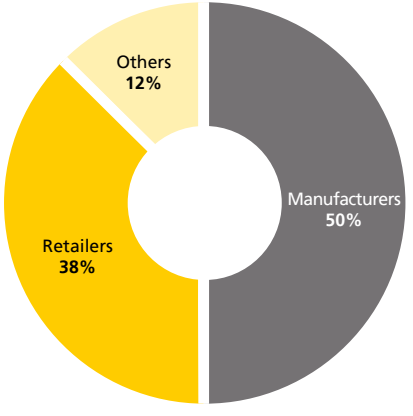
## Operation Industry



## Revenue in 2014 in mn USD



## Nature of Operation



Others: Distributors, raw materials component supplier, online retailers, import/export

## SOURCES

### 3D Body scanners

Take exact body measurements and make online shopping for tailor-made clothes easier.

URL: <http://www.dailymail.co.uk/news/article-2947866/Is-future-clothes-shopping-men-Train-station-3D-body-scanner-spells-end-ill-fitting-attire.html>

### Accenture

Reported in a 2013 study that 88% of consumers admit to browsing online and then buying in a store.

URL: <https://newsroom.accenture.com/industries/retail/accenture-study-shows-us-consumers-want-a-seamless-shopping-experience-across-store-online-and-mobile-that-many-retailers-are-struggling-to-deliver.htm>

### Amazon Dash Button

A physical hardware that lets the consumer press the button to replenish a particular product.

URL: <http://www.businesswire.com/news/home/20150423006485/en/Amazon.com-Announces-Quarter-Sales-15-22.72-Billion#.VbWuWvmqgko>

### AndyVision robot

A pilot by researchers at the Carnegie Mellon University to improve in-store navigation.

URL: <http://www.cmu.edu/homepage/computing/2012/summer/robots-in-retail.shtml>

### Audi City

Launched a digital showroom of the future.

URL: <https://www.audi.co.uk/audi-innovation/audi-city.html>

### Bayer

Bayer Process Equipment Container pilots a multi-step synthetic batch process for pharmaceutical intermediates.

URL: [http://www.f3factory.com/scripts/pages/en/about\\_f3/industrial\\_case\\_studies/cs5/index.php](http://www.f3factory.com/scripts/pages/en/about_f3/industrial_case_studies/cs5/index.php)

### Beacons

Technology used to recognize customers by detecting smartphones.

URL: <https://www.umbel.com/blog/mobile/15-companies-using-beacon-technology/>

### Best Buy

A U.S.-based electronics retailer.

URL: <http://business.illinoisstate.edu/bestbuy/situation.shtml>

### Burberry

Opened a physical store with state-of-the-art digital technology in London.

URL: <http://retail-innovation.com/burberry-regent-street/>

### CommerceHub

Provides hosted integration and fulfillment services.

URL: <http://www.commercehub.com>

### CWT Carla

A Personal Virtual Travel Assistant introduced by Carlson Wagonlit Travel to provide customers with personalized services.

URL: <http://www.tnooz.com/article/cwt-brings-virtual-face-to-mobile-service/>

### DHL

DHL Car Trunks is a service that delivers parcels to the consumers' car trunk.

URL: <http://arstechnica.com/business/2015/04/amazon-audi-and-dhl-want-to-turn-a-car-trunk-into-a-delivery-locker/>

DHL Drones currently being tested.

URL: [http://www.dhl.com/en/press/releases/releases\\_2014/group/dhl\\_parcelcopter\\_launches\\_initial\\_operations\\_for\\_research\\_purposes.html](http://www.dhl.com/en/press/releases/releases_2014/group/dhl_parcelcopter_launches_initial_operations_for_research_purposes.html)

DHL Myways provides crowdsourcing deliveries in Stockholm.

URL: [http://www.dhl.com/en/press/releases/releases\\_2013/logistics/dhl\\_crowd\\_sources\\_deliveries\\_in\\_stockholm\\_with\\_myways.html#.Vdw\\_2vmqBc](http://www.dhl.com/en/press/releases/releases_2013/logistics/dhl_crowd_sources_deliveries_in_stockholm_with_myways.html#.Vdw_2vmqBc)

DHL Pack Station are automated self-service booths for collection and dispatch of parcels.

URL: <http://www.dhl.de/en/paket/pakete-empfangen/packstation.html>

DHL Paketkasten are parcel boxes located right next to the consumer's home.

URL: [https://www.paket.de/pkp/appmanager/pkp/desktop?\\_nfpb=true&\\_nfxr=false&\\_nfxr=false&\\_pageLabel=pkp\\_portal\\_page\\_info\\_depotbox](https://www.paket.de/pkp/appmanager/pkp/desktop?_nfpb=true&_nfxr=false&_nfxr=false&_pageLabel=pkp_portal_page_info_depotbox)

DHL Internet of Things in Logistics Trend Report.

URL: [http://www.dhl.com/en/about\\_us/logistics\\_insights/dhl\\_trend\\_research/internet\\_of\\_things.html#.VgimF8uqqko](http://www.dhl.com/en/about_us/logistics_insights/dhl_trend_research/internet_of_things.html#.VgimF8uqqko)

DHL Fashion in Flux: Mastering Omni-Channel Retail White Paper.

URL: <http://supplychain.dhl.com/Fashion-in-Flux>

### Demand Shaping

Can help to meet customer's fast delivery requirements cost-effectively.

URL: [http://www.supplychain247.com/article/demand\\_shaping\\_with\\_supply\\_in\\_mind/supply\\_chain\\_insights](http://www.supplychain247.com/article/demand_shaping_with_supply_in_mind/supply_chain_insights)

### EasyVan

Known in Bangkok as Lalamove.

URL: <https://www.techinasia.com/hong-kongs-easyvan-rebrands-as-lalamove-just-in-time-for-launch-in-bangkok/>

### Ecommerce Foundation

Reported that Asia-Pacific is the strongest B2C e-commerce region in the world.

URL: <http://www.ecommerce-europe.eu/news/2015/asia-pacific-strongest-e-commerce-region>

### Ericsson

Published the Ericsson Mobility Report, On the Pulse of the Networked Society, November 2013

URL: <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-november-2013.pdf>

### Facebook

Announced a new feature in Messenger that gives people a more convenient and secure way to send or receive money.

URL: <http://newsroom.fb.com/news/2015/03/send-money-to-friends-in-messenger/>

### Flexe

Seattle-based on-demand warehousing start-up.

URL: <http://www.prnewswire.com/news-releases/on-demand-warehousing-start-up-announces-north-american-expansion-150000-pallet-positions-now-available-in-85-locations-across-us-canada-300100377.html>

**FreightOS**

An Expedia-like platform for providing real-time quotes.  
 URL: <https://www.techinasia.com/hong-kong-startup-dragging-international-shipping-industry-21st-century/>

**GoGoVan**

Offers a smartphone app-based on-demand delivery service.  
 URL: <https://www.techinasia.com/hong-kongs-easyvan-rebrands-as-lalamove-just-in-time-for-launch-in-bangkok/>

**Google**

Google Maps 6.0 displays detailed indoor floor plans on smartphones.  
 URL: <http://googleblog.blogspot.sg/2011/11/new-frontier-for-google-maps-mapping.html>

Google Play store customers connect with service representatives via video or voice chat.  
 URL: <http://www.csmonitor.com/Technology/2015/0209/Google-introduces-expert-gadget-advice-through-live-video-chat>

**Haier**

Developing online factories to provide customized products.  
 URL: [http://www.haier.com/my/newspress/pressreleases/201502/t20150217\\_262012.shtml](http://www.haier.com/my/newspress/pressreleases/201502/t20150217_262012.shtml)

**Harvey Norman**

Fully embraces omni-channel retail.  
 URL: <http://www.cmo.com.au/article/559744/harvey-norman-finds-value-omni-channel-retailing/>

**Heilan Home**

A China B2C retailer.  
[http://go.dematic.com/gated\\_short?doc=http://now.eloqua.com/e/er?s=2102163319&lid=1132](http://go.dematic.com/gated_short?doc=http://now.eloqua.com/e/er?s=2102163319&lid=1132)

**Hointer**

Reinvents the in-store experience.  
 URL: <http://retail-innovation.com/us-retailer-hointer-uses-robots-to-deliver-your-selections-to-the-fitting-room/>

**IDC Retail Insights**

IDC Retail Insights Global Shopper Survey, 2015  
 URL: <http://www.idc.com/getdoc.jsp?containerId=RI245468>

**IDC Retail Insights' 2014 Top 10 Predictions**

URL: <https://www.idc.com/getdoc.jsp?containerId=prUS25233514>

**Lowe's Robot**

A pilot at Lowe's stores to improve in-store navigation.  
 URL: <http://www.lowesinnovationlabs.com/innovation-robots/>

**Macy's**

Omni-channel success based on a three-pronged strategy.  
 URL: <http://macysinc.com/macys/m.o.m.-strategies/default.aspx>

**MyTaxi**

Crowd delivery or Uber-style on-demand services.  
 URL: <https://de.mytaxi.com/blog/mytaxi-delivery-wir-liefern-im-studentakt.html>

**Oculus Rift**

Virtual reality eye gear used in Tesco's virtual reality supermarket prototype.  
 URL: <http://www.independent.co.uk/life-style/gadgets-and-tech/tesco-dreams-big-with-fully-immersive-virtual-reality-tesco-store-for-the-oculus-rift-9211854.html>

**Omni Definition**

By Merriam-Webster  
 URL: <http://www.merriam-webster.com/dictionary/omni->

**Online City Wuppertal Project**

An example of a public-private partnership in Germany to offer a shared fulfillment network.  
 URL: <http://www.onlinecity-wuppertal.de/home/>

**Outfittery**

Installed photo booths equipped with 3D body scanners near train stations and airports in Germany.  
 URL: <http://www.dailymail.co.uk/news/article-2947866/Is-future-clothes-shopping-men-Train-station-3D-body-scanner-spells-end-ill-fitting-attire.html>

**SuperGrid logistics**

Will greatly facilitate cross-border fulfillment.  
 URL: <http://www.dcvelocity.com/articles/20120403-brave-new-world-of-logistics/>

**Target**

American retailer offers a seamless returns process regardless of purchase origin, online or offline.  
 URL: <http://www.aftermarketsuppliers.org/Doc-Vault/AASA/E-Commerce-Reverse-Logistics.pdf>

**Tesco**

Launched a social media network for customers called the Orchard.  
 URL: <http://www1.planetretail.net/news-and-events/rob-gregory/blogs/tesco-looking-grow-engagement-through-orchard>

Tesco Mystore mobile application lets shoppers prepare a shopping list.  
 URL: <http://www.mediapost.com/publications/article/222767/tesco-trials-ibeacons-with-a-mystore-app.html>

Tesco Clubcard is used by more than 16.5 million customers.  
 URL: <http://www.telegraph.co.uk/finance/personalfinance/household-bills/10273842/Tesco-Clubcard-vs-Nectar-Best-loyalty-schemes.html>

**Tmall.com**

China's largest B2C website is exploring a „bricks and clicks“ delivery system.  
 URL: <https://www.cep-research.com/news/alibabas-tmall-tests-deliveries-in-3-hours>

**Vargo**

Offers omni-channel distribution center designs by allocating separate spaces within the same warehouse campus and using different automation solutions.  
 URL: <http://www.vargosolutions.com/vargo-partners-to-design-waveless-distribution-center-for-large-retail-client/>

**Walmart**

Implemented a successful strategy to lure online shoppers offline.  
 URL: <http://www.forbes.com/sites/retailwire/2014/10/02/walmarts-drive-through-grocery-concept-is-a-head-scratcher/>

Half of Walmart's online sales are now picked up in a store  
 URL: [http://www.nytimes.com/2012/07/05/business/retailers-lure-online-shoppers-offline.html?\\_r=0](http://www.nytimes.com/2012/07/05/business/retailers-lure-online-shoppers-offline.html?_r=0)

## OUR PARTNERS



### **Words Europe Limited**

Kay Mussellwhite  
Suite 211  
80 High Street  
Winchester SO23 9AT, UK  
Phone: +44 208 144 1340

e-mail: [kay@words-europe.com](mailto:kay@words-europe.com)  
[www.words-europe.com](http://www.words-europe.com)



### **Rasterpixel Mediendesign**

Sebastian Narloch  
An der Gumpgesbrücke 26  
41564 Kaarst, Germany  
Phone: +49 2131 5247331  
Mobile: +49 176 61628125

e-mail: [narloch@rasterpixel.de](mailto:narloch@rasterpixel.de)  
[www.rasterpixel.de](http://www.rasterpixel.de)



## FOR MORE INFORMATION

About 'OMNI-CHANNEL LOGISTICS', contact:

### Dr. Markus Kückelhaus

DHL Trend Research  
Junkersring 55  
53844 Troisdorf, Germany  
Phone: +49 2241 1203 230  
Mobile: +49 152 5797 0580

e-mail: markus.kueckelhaus@dhl.com

### Pang Mei Yee

DHL Asia Pacific Innovation Center  
1 Greenwich Drive  
Singapore 533865  
Phone: +65 6879 8365  
Mobile: +65 8127 2775

e-mail: Pang.MeiYee@dhl.com

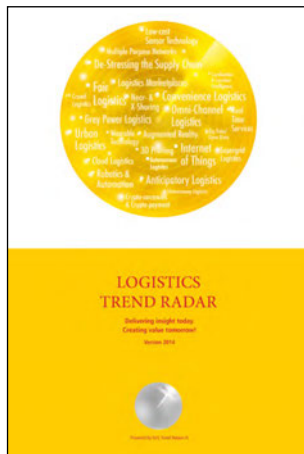
### Tamanna Dahiya

DHL Asia Pacific Innovation Center  
1 Greenwich Drive  
Singapore 533865  
Phone: +65 6879 8331  
Mobile: +65 9826 2043

e-mail: T.Dahiya@dhl.com

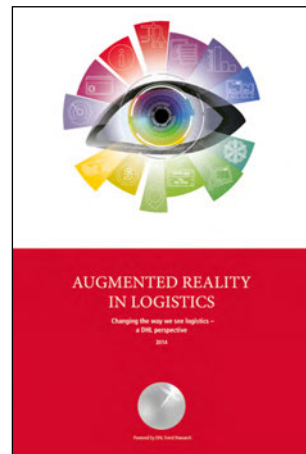
## RECOMMENDED READING

### LOGISTICS TREND RADAR



[www.dhl.com/trendradar](http://www.dhl.com/trendradar)

### AUGMENTED REALITY IN LOGISTICS



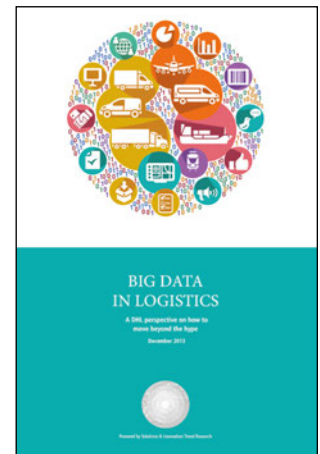
[www.dhl.com/augmentedreality](http://www.dhl.com/augmentedreality)

### LOW-COST SENSOR TECHNOLOGY



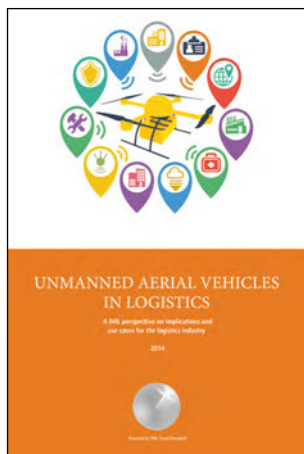
[www.dhl.com/lcst](http://www.dhl.com/lcst)

### BIG DATA IN LOGISTICS



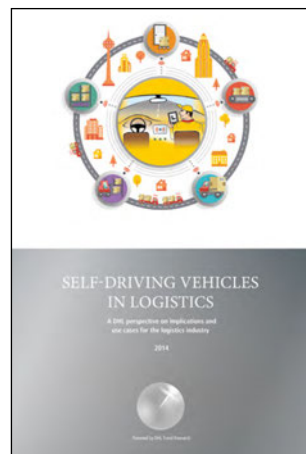
[www.dhl.com/bigdata](http://www.dhl.com/bigdata)

### UNMANNED AERIAL VEHICLES IN LOGISTICS



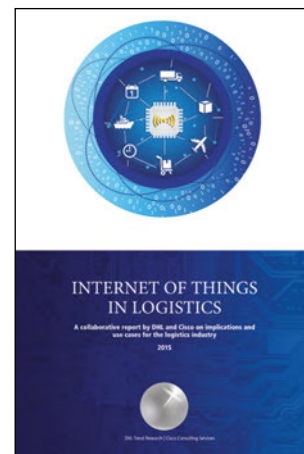
[www.dhl.com/uav](http://www.dhl.com/uav)

### SELF-DRIVING VEHICLES IN LOGISTICS



[www.dhl.com/selfdriving](http://www.dhl.com/selfdriving)

### INTERNET OF THINGS IN LOGISTICS



[www.dhl.com/IOT](http://www.dhl.com/IOT)



