1. Introduction

The technological environment is rapidly influencing the way in which shoppers go about retail activities. The expansion of both brick-and-mortar and virtual retail channels creates a wide range of customer touch points—stores, outlet locations, e-commerce sites, social media commerce, catalogs and possibly seasonal or short-term locations such as pop-up stores. And no matter where the customer makes his/her purchase, he/she expects fast, hassle-free, flawless fulfillment. The use of multichannel retailing (where different channels of shopping are still being operated in isolation) will no longer suffice and retailers will be forced to move towards what is termed Omni-channel retailing.

Omni-channel retailing is all about the continuous enhancement of multi-channel workflow integration within merchandising, order management, marketing, and customer experience. Omni-channel retailing is defined as a set of integrated processes and decisions that support a unified view of a brand from product purchase, return, and exchange standpoint irrespective of the channel (in-store, online, mobile, call center, or social).

In short, Omni-channel distribution is driving companies to think differently about their entire businesses. For example:

• If one channel is out-of-stock, when should you borrow from another channel? What if that other channel has an urgent order pending?

• Can you postpone product packaging so you can share inventory that is normally packaged by channel (in a box, poly-bagged and on a hanger)?

• Are your information systems set up for inventory sharing?

• If you combine the volume from two channels, could you get transportation savings? For example, zone skipping.

• If a store associate places an online order for a customer, which channel gets credit for the sale?

'Omni-Channel Retailing' is the new mantra

Single Channel → Multi-Channel → Cross-Channel → Omni-Channel

Omni-Channel enables single view of the customer

Language	Consumer Behavior	Retailer enablement
Multichannel	Consumers shop across different channels which functions independently of one another	In-store, ecommerce, call center channels function in technological and functional silos.
Cross-channel	Same consumers shop across channels and perceive these channels as part of same brand	In-store, ecommerce, call center and mobile channels are connected through integration of varying sophistication and reliability
Omni-Channel	Consumer does not perceive channel at all, simply a brand	All channels served by common set of technology services, single set of data and visibility beyond individual retailer

So, Omni-channel retailing refers to an integrated shopper experience that merges the physical store with the information rich digital environment, with the aim of providing excellent shopper experiences across all touch points. The potential impact of Omni-channel retailing on the shopper experience is yet to be determined.

The key drivers driving Omni-channel fulfillment are.

| Drivers	Implications
• Convenience • Access to hard-to-find items • Competitive prices • Surge in smartphone users	Save time Save money Reduce stress Exercise greater control Better product comparison

The increased focus on fulfillment in Omni-channel retailing means the supply chain plays as important a role in the shopper experience as the associate on the sales floor, the buyer or the merchandising manager. In the Omni-channel world, all the resources of the retailer's supply chain—from manufacturers to transportation providers to distribution centers to warehouses to the stores themselves—are marshaled to serve a single shopper who has placed a single order. In other words, in Omni-channel retailing, the goal is to create and optimize a supply chain that stretches seamlessly from manufacturer to customer. The new Omni-channel supply chain paradigm is characterized by increasing system complexity, driven in large part by the need to offer multi-channel customers more choices: more SKUs, greater product assortments and increased product diversity. It's also driven by the need to meet individual customers' specific fulfillment preferences and expectations.

Research shows that in the next five years, the most significant changes in Omni-channel fulfillment will be driven by the increasing use of mobile devices. No matter what fulfillment method the customer demands, the supply chain has to be able to deliver according to his or her instructions. With rising channel proliferation, it is imperative for retailers to meet customers' demands and deliver a seamless, integrated experience across channels.

But even with multiple channel routes, shopping at a retail store is still the preferred choice rather than shopping online. All research data including Gartner, reports that brick-and-mortar stores will remain the dominant revenue-generating channel.

	2011 Actual %			2015 Estimated %			2017 Estimated %		
	Total	US	UK	Total	US	UK	Total	US	UK
Brick-and-mortar store	89.5	91.9	83.2	81.3	85.5	70.6	76.5	80.7	66.4
eCommerce	6.9	5.1	11.2	12.1	9.5	18.4	14.6	12	20.8
Mail-order catalog	0.5	0.4	0.8	0.4	0.3	0.6	0.3	0.3	0.4
Call center	1.2	0.5	2.9	0.7	0.3	1.6	0.7	0.3	1.6
Mobile commerce	1	0.7	1.8	4.1	2.7	7.7	6.5	5	10.1
Social commerce	0.2	0.3	0	0.7	0.7	0.8	0.8	0.7	0.8
Other channels	0.7	1	0	0.7	0.9	0	0.7	0.9	0

[1]Source: Gartner (March 2013)

Share of Time Spent Shopping According to Consumers in the UK and US, by Channel, Feb 2013
% of total

Catalog 4%

Mobile 4%

Online 31%

Store 61%
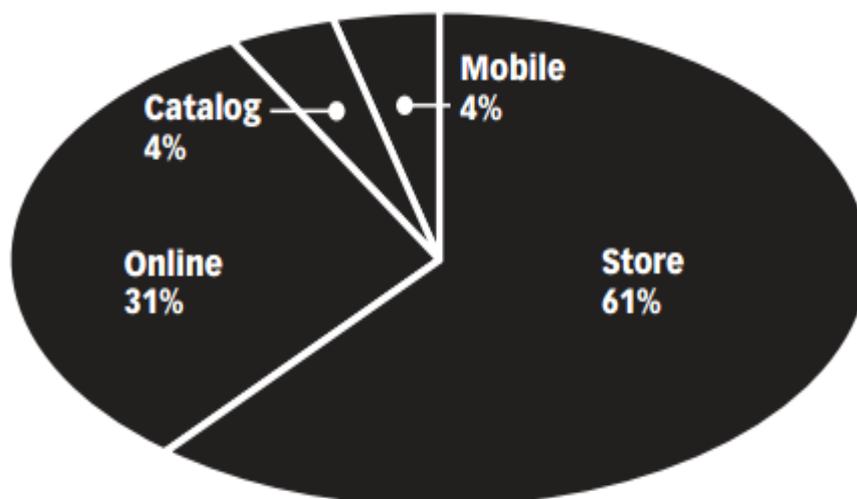
Source: A.T. Kearney, "Recasting the Retail Store in Today's Omnichannel World," Oct 14, 2013

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But it is not good numbers of online users shopping online, rather it is robust growth of peoples who are embracing the technological changes easily. And if retailers do not act now they might find themselves lost in oblivion.

2. Objective of the study

Even the simplest questions in cross-channel fulfillment lead to a Pandora's Box of challenges. Take the most basic: buy online/pick-up in store. As soon as a retailer starts asking questions about how to enable the fulfillment piece - where will the inventory come from? From stores? From ecommerce shipped to stores? - They rapidly find themselves descending into the middle of a strategic review of the entire supply chain network.

The plain reality is that current supply chain models are not suited to an Omni-channel world – a world where consumers increasingly have little care which channel they use to research, select, transact, or collect products. The current supply chain model assumes that the store is the endpoint of the transaction, and further is built to deliver as efficiently as possible to that endpoint, with the assumption that the inventory delivered to the store will live out its life there until some consumer picks it up and brings it home.

But the trade-off to extreme efficiency is a lack of flexibility, and cross-channel fulfillment exposes just how inflexible a store-based supply chain really is. It makes sense when consumer research, select, and transact all in the store. When a retailer doesn't know exactly where the demand is, moving inventory around on the off chance of capturing that demand is risky and expensive. Cross-channel shopping creates the opportunity for greater visibility into demand and enables retailers to find ways to tap into their inventory sources wherever they are in order to meet that demand.

The store-based supply chain is a huge investment that currently yields diminishing returns, particularly in mature retail markets. Online is growing much faster, and as mobile and social efforts continue to grow and roll-up under the ecommerce banner that pace will only accelerate

The implementation of an Omni-channel strategy is not without challenges. Traditional retailers are often efficient at everything that involves retailing, but they are not necessarily equally competent when it comes to the digital environment (Rigby, 2011). Implementing an Omni-channel strategy requires a lot of changes in terms of infrastructure and recruiting competent IT specialists who could help them manage this new concept. Retailers therefore need to realize that the Omni-channel concept may be challenging to implement at first, but the right staff and infrastructure could make the process easier (Gill, 2013).

This study has been done to find out answer to following question.

- Is Omni-channel supply chain really needed?
- If yes, what is current state of the Omni-channel supply chain?
- What are the impediments while implementing the Omni-channel supply chain?
- What are success mantra for a successful Omni-channel supply chain?

3. Literature review

3.1 Theoretical Framework of Maximizing Profitability by Channel Addition

Ecommerce has indisputably altered the manner in which consumers choose and expect to interact with retailers throughout the purchasing process. As such, almost all retailers have developed an online channel to meet consumer demands. Though the addition of an online channel was uncharted territory for retailers, the idea of a multi-faceted direct-to-consumer system predates the inception of e-commerce. Rowland Moriarty and Ursula

Moran (1990) examined the effects of adding additional channels in their Harvard Business Review publication, Managing Hybrid Marketing Systems. Moriarty and Moran explore the concept of a hybrid marketing system, which they describe as a business model that allows customers to directly purchase goods through several different channels. They cite IBM as an example, as the Company created a hybrid marketing system by allowing customers to purchase goods through the mail in addition to through specialized salespeople. Moriarty and

Moran scrutinize the strategy of several other companies that they believe effectively utilize multiple channels and conclude: "a company that makes its hybrid system work will have achieved a balance between its customers' buying behavior and its own selling economics" (Moriarty and Moran). In essence, companies that use multiple distribution channels in their direct-to-consumer operations can greatly increase their customer base and subsequently their revenue generating potential. This is only true, however, if the new channel allows the firm to access a customer segment that was not previously served. If the new channel simply provides existing consumers an alternative means of purchasing goods, it will cannibalize the revenue generating capacities of existing segments. Thus the addition of new business segments is inherently risky, as they may ultimately harm the firm's overall profitability. The obvious shortfall in this analysis in the context of this study is the absence of the internet. The underlying philosophy remains highly relevant, however, as the basic principle is still applicable in a discussion centered on e-commerce. (Moriarty and Moran 1990)

3.2 Conflicting Hypotheses Surrounding the Impact of the Internet on the Retail Industry

The rapid rise of e-commerce throughout the past two decades has left retailers with the undeniable reality that online operations are a necessary part of a competitive strategy. This is where certainty ends, however, as the rapid growth in online spending resulted in a division among retailers as to the value of this new technology. Enthusiasts embrace the complementary hypothesis, which suggests that the internet will allow companies to reach entirely new customer segments without negatively affecting physical store performance.

Conversely, the cannibalization hypothesis contends that online sales are simply displacing in-store sales and are detrimental to in-store performance. Despite extensive research in this subject area, a definitive answer is noticeably absent from contemporary retail knowledge.

The aforementioned increase in e-commerce sales has left retailers little choice regarding the decision to adopt e-commerce as a component of their D2C operations.

Following Moriarty and Moran's (1990) conclusions, this rise in e-commerce sales should benefit firms if the internet is allowing retailers to access new consumer segments. Supporters of the cannibalization hypothesis argue that online purchases are coming largely from existing brick-and-mortar consumers. Forrester Research Director, Carrie Johnson, is one such supporter of this hypothesis. She states that the increase in e-commerce sales is "little more than online cannibalizing in-store sales" (Schuman 2008). Johnson's statement encapsulates the concern shared by many members of the retail industry, who claim that cannibalization will drive them out of profitability.

Supporters of the complementary hypothesis argue that e-commerce is a powerful revenue-generating tool that has allowed retailers to reach entirely new consumer bases. A recent study conducted by PricewaterhouseCoopers (PwC) suggests that consumers are increasing their total purchase volumes, as opposed to simply switching their spending to online channels (Cianciulli and Yeung 2012).

Despite the copious amounts of research surrounding the proliferation of online shopping and its effect on the retail industry, there is a noticeable absence of a conclusive answer. Both the cannibalization hypothesis and complementary hypothesis have presented empirical evidence and case studies that support the

respective positions. Thus the question remains ultimately unanswered as to the exact impact that the rapid rise in e-commerce spending has had on the retail world.

3.3 Rise of Omni-Channel and Implications for Contemporary Retailers

Using several different channels to market goods to consumers (multi-channel retailing) is a strategy that has been employed by retailers for an extensive period of time.

This business model treats each channel as separate business segments that are used to reach different groups of consumers. Multi-channel retailing has become a standard business model in the retail industry, as nearly all major firms have developed online operations to complement their existing stores. This model, however, neglects the increasingly apparent reality that consumers do not exhibit a constant preference regarding the channel through which they purchase goods. This developing consumer behavior trend has given rise to a new breed of retail that has been labeled "Omni-channel retail". Erin Harris (2012) provides insight into this emerging phenomenon in an interview with Ravi Bagal, the vice president and global managing director of retail and distribution at Verizon Wireless. When asked to define Omni-channel distribution, Bagal states, "We went from single channel to multichannel, and in the 2000s, the phrase was cross-channel. We started to see more integration between brick-and-mortar and Web channels as well as more functionality between the two. But, it was episodic.

Omni-channel is the final step of the evolution, from a single channel to a complete and holistic experience that merges these various touch points" (Harris 2012). More concisely, the Omni-channel model assumes that customers will interact with a company using several different channels before making a purchase. For example, a customer may visit a physical store to inspect merchandise before ordering that same product online. The defining characteristic of Omni-channel distribution is the assumption that any given customer will evaluate the product-of-interest at several different points before making their final purchase. This differs from the traditional multi-channel concept because there is no longer channel A and channel B consumers. Instead, there is a single consumer base that interacts with retailers across all available channels. The rise of this phenomenon has resulted in the rise of a behavior

known as "showrooming", which many retailers cite as the cause of the decline in physical store profitability.

Omni-Channel Experience
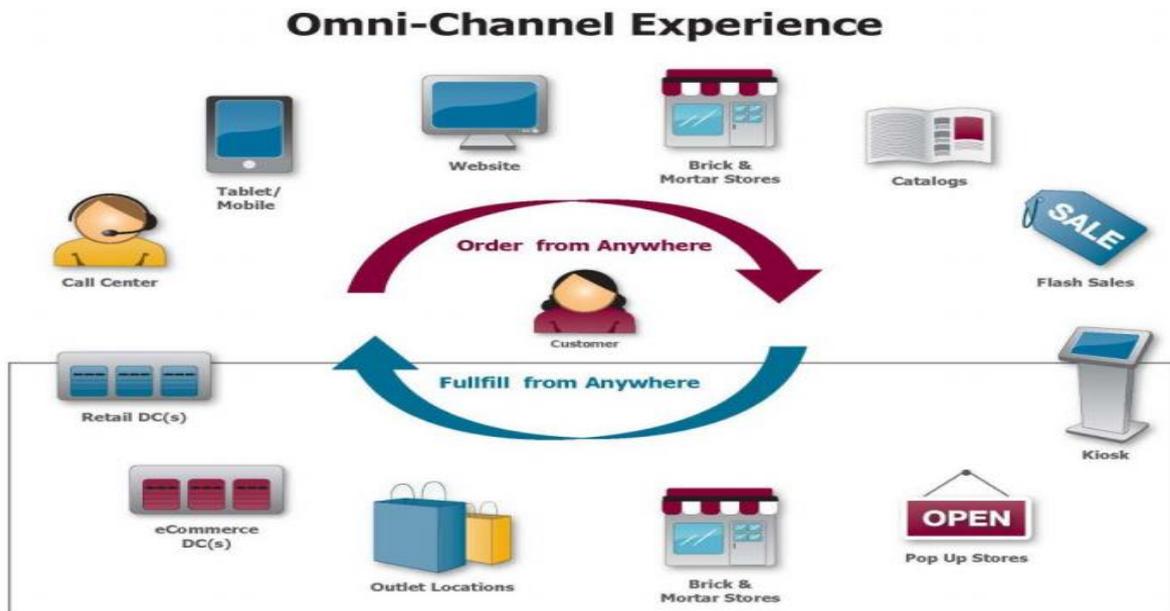
3.4   Omni-Channel Retailers and the Future of Physical Stores

Members of the retail industry have openly predicted the demise of brick-and-mortar retail, which the Burning Platform (2012) describes as "a slow motion train wreck". Martin Manley (2012), a former United States Assistant Secretary of Labor and current CEO of RedLink, analyzes this decline in his article, Store Closing: the Death of Brick and Mortar Retail. Manley states, "Today, e-commerce is not just killing some stores – it is killing almost all stores" (Manley 2012). Manley predicts that the decline of physical-store is likely to accelerate, as physical retailers generally enjoy small profit margins. As such, shrinking in-store purchases combined with high leverage will increase the likelihood that physical retailers will become unprofitable. Manley also notes that online retailers enjoy lower fixed costs, 24/7 operations and a larger product selection. These competitive advantages will likely fuel the expansion of internet retail, which will accelerate the demise of brick-and-mortar retail. (Manley 2012)

The aforementioned showrooming trend is another source of considerable concern for retailers. In their study, Free Riding and Consumer Retention Across Retailers' Channels, Sebastian Van Baal and Christian Dach (2005) examine the validity of retailers' claim that brick-and-mortar stores are becoming showrooms for online purchasing. Based on their findings, they are able to conclude that nature of multi-channel retail is highly conducive to showrooming, the prevalence of which will likely increase as consumers purchase more products on the internet. Van Baal and Dach's (2005) analysis is predicated on the theory of free riding, which states that an inability to prevent use of a resource will produce a suboptimal economic result (Van Baal and Dach 2005). They explain that this theory is applicable to the retail industry because of two inherent characteristics. The first of which is that most retailers are unable to distinguish purchasers from free riders both online and in-store, which makes it impossible to guard against showrooming. The second is that most retail products are available at multiple outlets, which drastically increases the probability of free riding behavior. (Van Baal and Dach 2005)

The large number of outlets through which customers can purchase products is yet another reason that experts predict declining profit margins in the retail industry. Erik Brynjolfsson, Yu Hu and Michael Smith (2003) investigate the implications of this new phenomenon in their publication, Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Bookseller. In this study, Brynjolfsson, Hu and Smith examine the extent to which book retailers are impacted by the introduction of online competitors. The results of their study show that consumers benefit from the addition of outlets from which they can purchase goods. They write, "Limits on the number of titles Internet retailers can present and sell to consumers are substantially lower. As a result, Internet customers have easy access to millions of products that they could not easily locate or purchase through brick-and-mortar retailers" (Brynjolfsson et al. 2003). The implication of this development is the loss of power for brick-and-mortar retail, which loses a large degree of power in determining prices.

3.5   Summary of the Current Retail Environment and Literature Reviewed

Internet spending has greatly increased over the past decade and is projected to grow in both total dollar volume and as a percentage of total retail spending. The extent to which this has negatively or positively impacted retailers has been the source of considerable debate.

Optimists have argued that aggregate spending has increased due to retailers' newfound ability to reach new consumers segments, which Moriarty and Moran (1990) is the key determinant of multi-channel success. Pessimists have rejected this idea, and contend that new retail sales are simply displacing brick-and-mortar purchases.

As consumers and companies have become more sophisticated, the Omni-channel retail system has emerged. This model is predicated on the idea that the new-age shopper interacts with retailers across multiple channels. Optimists have applauded this evolution, as traditional brick-and-mortar locations have benefited from consumers' ability to shop from home. Skeptics have voiced concern over the emergence of showrooming behavior, in which consumers use brick-and-mortar locations to examine products before purchasing goods online. The answer to this controversy remains unanswered, and has resulted in widespread doubt regarding the future and current utility of brick-and-mortar retail.

4. Research Methodology

Project work undertaken was to develop the concept of implementing Omni channel supply chain of the future. The project was divided in 3 phases.

Phase 1: Finding out the current state of Omni-channel supply chain.

Phase 2: Identifying success factors and impediments in implementing the Omni-channel supply chain

Phase 3: Evaluation and analysis of the recommended solutions in various research papers and reports to find out best fit model.

Each phase required different approach. Below are the details.

Phase 1: Finding out the current state of Omni-channel supply chain.

For developing a model for Omni-channel supply chain it was important to understand differences between existing models i.e. cross channel etc. Understanding the current state of Omni-channel supply chain required studying initiatives and decisions taken by the retail companies in US and UK. This includes companies ranging from big stalwarts to medium companies. In total 18 companies were studied in detail. Resource of information were primarily from research reports, Industry analysis by consulting companies and news articles related to these companies.

Phase 2: Identifying success factors and impediments in implementing the Omni-channel supply chain

Omni-channel is a recent phenomenon. Very few companies has put their foot forward to embrace the change. Many subject matter expert has come up with different models and approaches to successfully embracing the Omni-channel supply chain. Impediments were mainly in the form of technological challenges especially in the field of Big Data and its collaboration with mobile. So, a reference was also made to know the current state of technological advancement in the field of Big Data.

Phase 3: Evaluation and analysis of the recommended solutions in various research papers, expert views and reports to find out best fit model.

Indeed finding the best fit model for the current requirement was the toughest job because of little progress in the field. It was very difficult to come to a conclusion that a particular model will work mainly due to high investment and uncertain environment across the globe. So a holistic approach has been taken to address the problems where most of the analysis is done through extensive research on interviews, current practices followed by leading retailers and research published by the experts.

5. Findings

What has kept retailers from plunging into Omni-channel more quickly? A lack of urgency is partially to blame. In-store sales still dominate overall retail sales, which may lull some into putting off Omni-channel implementation efforts. Compounding this, implementation requires a series of difficult steps, including inventory, data integration and revamped business operations. Without a sense of urgency and adequate customer intelligence to guide them, many retailers may hesitate in their commitment to make the changes necessary to offer an Omni-channel experience. Below are the prominent challenges faced by the companies be it big companies or mid-sized companies and other key findings.

Physical stores still generate most sales

For many subsectors of retail, such as food and automobiles, the numbers are even smaller. "That's why the retailers have not felt the need or the necessity to change yet," said Marshal Cohen, chief industry analyst at The NPD Group. "They're exploring with it. They're dabbling with it. They're recognizing the future of it. But they're not rushing to change. That's OK for the moment, but very quickly that's going to become a necessity."

Integrating and analyzing data remains a challenge

A second major challenge for companies is tracking the effectiveness of Omni-channel strategies, especially in light of the continued dominance of the physical store at the end of the purchase path. Bridget Dolan, vice president of interactive media at personal care and beauty retailer Sephora, said, "You wish that the client walked around with a barcode on her forehead, but she doesn't. So it's really hard to track a client as she goes through different channels."

Right now, according to industry insiders, the biggest bottleneck to such integration is mobile. Scott Zalaznik, vice president of digital at Sprint, said, "The hard part is going to be attribution from desktop to mobile, and then from desktop and mobile to retail."

Level of Integration of Company's Online and Offline Analytic Capabilities According to Marketers Worldwide, Q1 2013
% of respondents

Completely integrated across all functions
3%

Well integrated online, not well integrated offline
5%

Well integrated offline, not well-integrated online
3%

Not integrated at any level
20%

Struggling to integrate online with offline
23%

Getting better across the board, but still room for improvement
46%
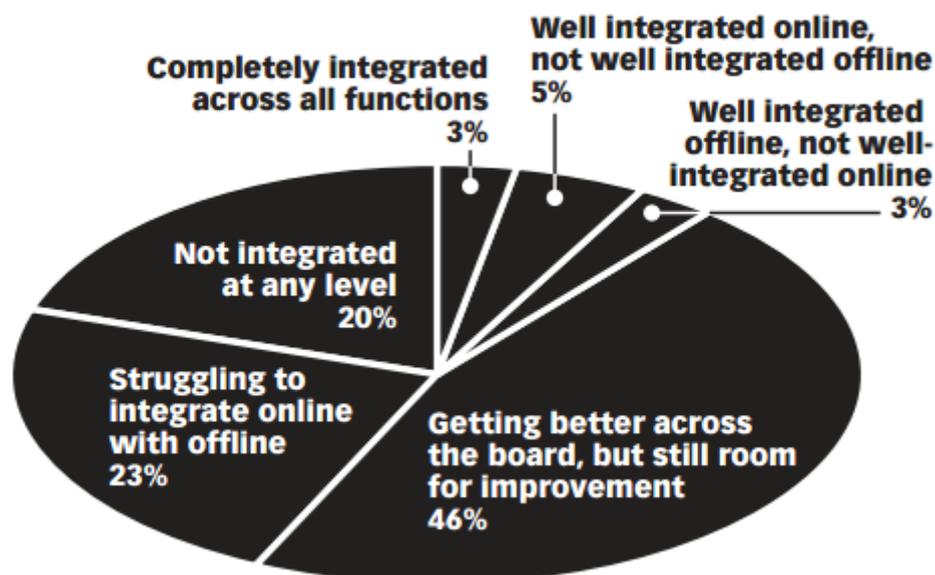
Source: CMO Council and SAS, "Aligning the CMO & CIO," March 28, 2013

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The slowness of data integration is in part a result of the way ecommerce has developed among already-established retailers. "When ecommerce emerged on the scene, most retailers built their online initiatives independently from brick-and-mortar stores, setting them up as separate businesses with separate technology, sales goals and initiatives," said Ed Stevens, founder of ecommerce platform Shopatron. "Now, all of a sudden, Omni-channel is bringing those channels back together. Closing the loop on the 'silo effect' requires merging technologies and figuring out how to efficiently execute fulfillment efforts from stores."

In order to create an Omni-channel experience, retailers need back-end systems to integrate and manage all types of data, including inventory, customer analytics and fulfillment. "Pulling all of that data together in order to build a comprehensive consumer profile requires creative and flexible tools and technology, which most retailers don't yet have in place," Stevens noted.

Aligning Inventory with Omni-channel Demands

With an increasing number of channels becoming available for consumers, the challenge is providing a clear picture of inventory requirements across the enterprise that are supported by the retail value chain.

Compressed order cycle time

In the ecommerce world, not only do customers expect to get exactly what they want, but they also expect to get it fast without paying a lot to do so. With a lot of retailers offering low cost or even free, expedited shipping, it is a huge challenge to contain costs while meeting the customer's expectations.

Operations require extensive planning and prioritizing

Integrating Omni-channel retailing requires extremely detailed operations planning. All departments, from web to in-store operations to delivery, must work cohesively to generate a sale. This means that retailers should prioritize the most important steps in the buying decision process, starting with an understanding of who their customers are and how they interact with every department.

Depending on the retailer's overall business strategy, they may aim to seal the purchase in-store by inviting customers to visit the physical location for more information, or encourage them to shop online by offering exclusive discounts through their social media channels. Inventory may need separate distribution networks, each customized for a certain type of customer. While Omni-channel includes a range of platforms, retailers do not need to give the customer all the pieces on every level, just enough to encourage them further down the sales funnel.

The Real Organizational Inhibitor

All internal challenges around supply chain design and systems aside, the real organizational inhibitor to Omni-channel fulfillment is the organization itself. Survey respondents in benchmark report, RSR research aid that that there is no lack of ownership when it comes to channel supply chain processes – unfortunately, few owners control more than one little piece of the puzzle.

Organizational Responsibility for Fulfillment-Related Channel Operations

■ Store assortment ■ Store fulfillment
■ Store-to-store transfers ■ Store fulfillment of online orders
■ In-store kiosk sales ■ Site-to-store transfers
■ eCommerce assortment ■ eCommerce fulfillment

Supply Chain
- Store assortment: 5%
- Store fulfillment: 54%
- Store-to-store transfers: 37%
- Store fulfillment of online orders: 16%
- In-store kiosk sales: 5%
- Site-to-store transfers: 46%
- eCommerce assortment: 5%
- eCommerce fulfillment: 42%

Merchandising
- Store assortment: 64%
- Store fulfillment: 5%
- Store-to-store transfers: 5%
- Store fulfillment of online orders: 0%
- In-store kiosk sales: 3%
- Site-to-store transfers: 8%
- eCommerce assortment: 42%
- eCommerce fulfillment: 0%

Store Ops
- Store assortment: 15%
- Store fulfillment: 28%
- Store-to-store transfers: 37%
- Store fulfillment of online orders: 34%
- In-store kiosk sales: 21%
- Site-to-store transfers: 8%
- eCommerce assortment: 2%
- eCommerce fulfillment: 2%

eCommerce Ops
- Store assortment: 5%
- Store fulfillment: 8%
- Store-to-store transfers: 5%
- Store fulfillment of online orders: 16%
- In-store kiosk sales: 8%
- Site-to-store transfers: 5%
- eCommerce assortment: 30%
- eCommerce fulfillment: 25%

Source: RSR Research, March 2011

According to survey respondents, the supply chain organization tends to own store fulfillment, and to a lesser degree site-to-store transfers, as well as ecommerce fulfillment and store-to-store transfers. Merchandising clearly owns store assortment, and increasingly ecommerce assortment, but little else.

With so many cooks in the kitchen, it's no wonder that the ROI is the number one business challenge, followed by executive leadership and analytics to determine cross-channel influence. No single group has the full picture of supply chain activities – or benefits – related to cross-channel fulfillment.

6. Recommendation

One result of Omni-channel retailing is that the supply chain has become more complex, largely due to the growing need for the efficient handling of cross-channel inventory location and allocation. Forward-looking retailers are planning and upgrading their entire Omni-channel supply chains to avoid these kinds of issues by building in a number of critical management capabilities. And, for most, the driving force is providing visibility, accuracy, control, flexibility and efficiency.

Visibility

To meet customer expectations, you've got to be able to see what you have and know exactly where it's located across all supply chain channels. When a customer buys an item online and wants to pick it up in the store, or wants it shipped for next day delivery, system wide visibility is critical. You can't promise a customer you have a certain color in a certain size unless you're sure it's actually available, and you can't promise you'll meet delivery expectations if you don't know if the product will be ready for shipment in the requested time frame. In managing the Omni-channel supply chain, end-to-end cross-inventory visibility is vital

Accuracy

The benefits of supply chain visibility are reliant on the accuracy of the available inventory information. The system says a product is available for two-day shipment from an East Coast distribution center, so an associate promises that time frame to the customer. But what if the information in the system is incomplete or wrong? The ramifications are serious: a lost sale, a dissatisfied customer. The same goes for fulfillment accuracy; delivery of an incomplete and/or incorrect order guarantees an unhappy customer. Supply chain systems capable of providing accurate, supply-chain-wide inventory data and visibility are crucial in Omni-channel retail environments

Flexibility

Today's retailers can no longer afford to have rigid supply chains. Having multiple sales channels requires the supply chain to respond to, accommodate and anticipate a great many external and internal inventory needs.

In an Omni-channel environment focused on meeting customers' requirements, flexibility is mission critical.

Control

Today's connected consumers not only want to be able to buy when and where they wish, they also want to have their order fulfilled to their exact specifications. To efficiently deliver consistent experiences to customers who shop via one or more channels, retailers need real-time access to—and dynamic control over—their entire inventory. The days of inventory silos for in-store and online fulfillment are gone. Being able to control total inventory access, availability and allocation is key to the ability to deliver merchandise to the right place at the right time and keep Omni-channel customers satisfied.

Efficiency

In a multiple channel retail environment, maximizing efficiency in every part of the supply chain—in-store, at the warehouse, in transit—is necessary for meeting customer expectations, for ensuring that inventory is capable of serving multiple channels, and last but not least, for controlling costs. Omni-channel efficiency takes many forms.

For most, the driving force in providing visibility, accuracy, control, flexibility and efficiency is mobile technology. So you need to get a lot of things right

The to-do list for Omni-channel supply chain managers is not short:

• achieve accurate inventory visibility across the whole supply chain

• maximize on-shelf availability

• sweat the inventory

• understand where cost is incurred

• create efficient stock pools to support click & collect

• manage reverse logistics cost-effectively

• reduce phantom inventory with automated stock-checking

Another key things while implementing a successful supply chain channel strategy is to start with the most important component – the data. In many retailers today the key pieces of data that are needed in the store are located in different places and in different formats which will prevent retailers being agile in response to competition and changing business needs. This needs to be fixed and standardized before adding more data elements in stores and in the wider Omni-channel environment.

In Omni-channel retailing, the goal is to create and optimize a supply chain that stretches seamlessly from manufacturer to customer. The new Omni-channel supply chain paradigm is characterized by increasing system complexity, driven in large part by the need to offer multi-channel customers more choices: more SKUs, greater product assortments and increased product diversity. It's also driven by the need to meet individual customers' specific fulfillment preferences and expectations.

HOLISTIC VIEW OF OMNICHANNEL FULFILLMENT

P.O. ISSUED — RECEIVED AT DC — SHIPPED FROM DC — IN TRANSIT — REPLENISHED AT STORE — PURCHASED ONLINE — PURCHASED IN STORE — SHIPPED TO HOME — PICKED UP IN STORE — ARRIVED AT HOME

DIRECT-TO-CUSTOMER SHIPPING

Not so long ago, retail supply chains were focused on one relatively simple task: sending bulk shipments of merchandise to warehouses and stores to replenish inventory. Although bulk shipments remain a retailing staple, the rise of omnichannel retailing is placing new emphasis on fulfilling "eaches," the increasing number of one-at-a-time customer orders. How are they doing that? With direct-to-customer shipping.

Direct-to-customer shipping is the critical final step in the end-to-end customer experience. But because omnichannel customers have a multitude of shipping choices, it's hardly a simple one. Motorola Solutions' Retail Vision Survey, May 2012, reveals the magnitude of the fulfillment changes that are underway. The age-old paradigm—buy a product at the store and take it home with you—is still important, but it's starting to lose ground to other fulfillment methods. According to the research, although almost 85% of fulfillment operations use this method today, retailers estimate a drop to 66% in five years.

This new emphasis on streamlining fulfillment for individual customers is causing many retailers to take a more holistic view of their supply chains. Certainly omnichannel systems include traditional supply chain components: manufacturers, distribution centers, warehouses and the transportation that carries goods between them. But omnichannel supply chains also go beyond the traditional to include enterprise and individual store systems, providing store-level inventory management and real-time visibility and control of cross-channel inventory from the supplier to the shelf. And, ultimately, to the customer.

Much of the successful implementation of Omni-channel implementation lies in determining which systems and processes need to be put into place to enable the complete Omni-channel customer experience. The key to success is to leverage a repeatable, proven process to identify the correct technology components, the sequence in which they should be implemented and the optimal integration between each component.

Below is the model for core commerce technologies that would be needed.

CORE COMMERCE TECHNOLOGIES

ORDER CAPTURE

BUSINESS PROCESSES

Mobile

UNIVERSAL CRM

BUSINESS TOOLS

Catalog

> Omnichannel order management and network inventory availability
> Store fulfillment
> Store inventory management
> Omnichannel workforce management
> Channel-agnostic returns management

Online

CUSTOMER ANALYTICS

BUSINESS INTELLIGENCE

In-Store

PRICING AND PROMOTIONS MANAGEMENT
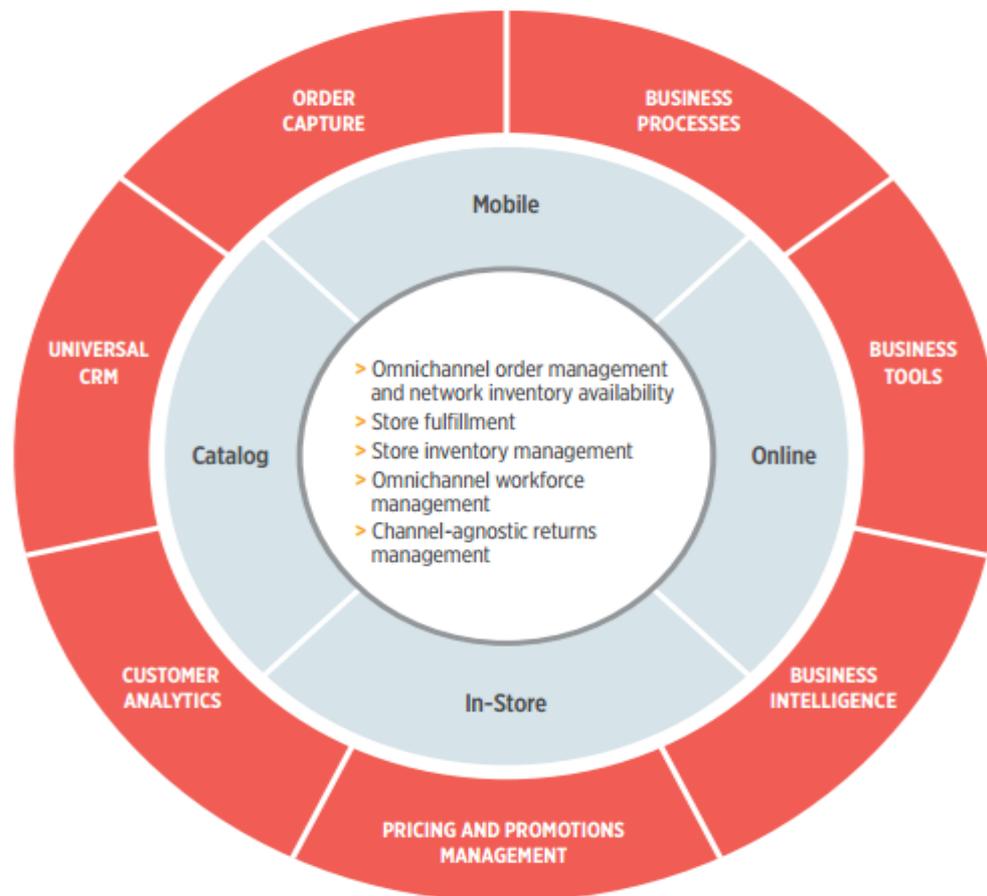
Although every company is unique, there is a common methodology for getting to the best fulfillment strategy for Omni-channel distribution. The "secret sauce" is a five-step process that revolves around your data and gets into deeper levels of analysis as you go through the steps:

1. Evaluate Synergies across Channels

2. Find the Best Operating Methods

3. Choose Technologies/Processes for Each Operating Method

4. Define Optimal Flow Paths

5. Choose Specific Technologies

Step 1: Evaluate Synergies across Channels

The first step in designing Omni-channel fulfillment operations is to look for similarities across your channels in each of these areas:

- Cycle Time
- Inventory Sharing
- Receiving/Cross-dock
- Order Profiles
- Product Packaging
- Outbound Packaging
- Picking Methodology
- Fixed SKUs vs. Fixed Orders

A good way to analyze similarities across the areas is to use a chart like this one. You can see that this company has similarities across their channels in Picking Methodology. They were able to leverage the same pick module across all three channels.

	Retail & Wholesale	Retail & eCommerce	Wholesale & eCommerce	All Three
Cycle Time	No Correlation	Some Correlation	No Correlation	Some Correlation
Product Packaging	Very High Correlation	No Correlation	No Correlation	Some Correlation
Inventory Sharing	Very High Correlation	Some Correlation	Some Correlation	High Correlation
Outbound Packaging	Some Correlation	No Correlation	No Correlation	Some Correlation
Order Profile	Some Correlation	Very High Correlation	No Correlation	Some Correlation
Fixed SKUs vs. Fixed Orders	No Correlation	No Correlation	High Correlation	Some Correlation
Picking Methodology	High Correlation	Some Correlation	High Correlation	High Correlation
VAS/Packing	No Correlation	High Correlation	No Correlation	Some Correlation

● Very High Correlation   ◕ High Correlation   ◑ Some Correlation   ○ No Correlation

Step 2: Find the Best Operating Methods

Once you know where your synergies are, the next step is to dig deeper into your order profiles to find the best operating methods. For example, do you need a static module or dynamic pick locations for picking? When one large retailer analyzed their SKU velocity, they found a set of SKUs that were consistently fast movers throughout the year. For these SKUs, it made sense to use a static module

for high pick productivity. But for the rest of their slower-moving SKUs, a dynamic pick area with advanced slotting logic was the best answer. Their WMS system dynamically brings these items forward as needed to balance pick productivity with space utilization.

Static Pick Module	
Lines per carton	Low
Destinations per wave	Large #, unknown
SKU breadth	Small/Medium
Batch Line Reduction	Low

Dynamic Fulfillment Module	
Lines per carton	Low
Destinations per wave	Large #, Unknown
SKU breadth	Larger count, Seasonal
Batch Line Reduction	High + some full case pulls

Step 3: Choose Technologies/Processes for Each Operating Method

Once you've analyzed your order profiles and chosen the best operating methods, the next step is to choose the best technology/process for each operating method. And there are a lot of functions in a distribution center requiring these decisions: e.g.

• Receiving

• Picking Method

Step 4: Define Optimal Flow Paths

Once you've figured out what technology to apply to each function, you can turn to identifying and sizing your fulfillment engines. Here, you'll look for synergies between flow paths, too. In the example below, the Goods-to-Person technology can be applied to Retail and Wholesale orders, but for sortation and packing, ecommerce and certain Wholesale orders can share the unit sorter.
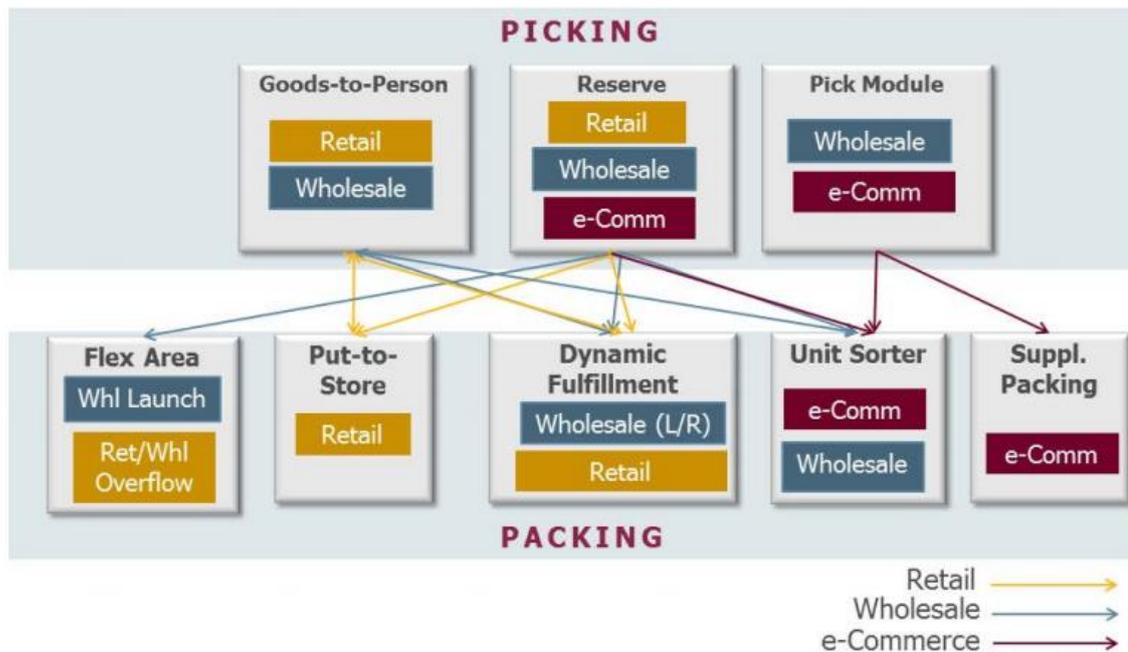
The graphic shows common flows and connection points between picking and packing. By assigning volumes to each arrow you can begin to define conveyor rates and product handling requirements (carton, tote, bag, and unit) in order to avoid future bottlenecks. This approach provides the ability to re-purpose a fulfillment engine, active pick area or reserve storage from one channel to the other.

Step 5: Choose Specific Technologies

The last step is to identify the very specific technology that is best for each function in the DC. For example, you can pick by paper, by RF, by voice or by light. And sorters come in a variety of types (cross-belt, tilt tray, bomb bay, shoe, etc.) And goods-to-person technologies vary as well (carousel, AS/RS, etc.)

When evaluating and choosing the specific technology, look for the best balance between performance, flexibility and cost. And consider how the requirement might vary between daily and peak operations, when you may have an influx of seasonal workers to train.

7. Conclusion

Consumers' adoption of technology as part of their shopping experience is rapidly driving a complete retooling of retailers' businesses. By breaking down the walls between channels and demanding Omni-channel services, consumers are forcing retailers to reconsider everything from marketing to merchandising to supply chain.

Omni-channel is all about managing and organizing data to provide an agile infrastructure for retailers to integrate online and offline so that customers can seamlessly shop between devices and channels with consistent information. From ratings on shelf edge labels and digital signage to product recommendation on touch screen kiosks and web sites Omni-channel ensures the availability of information across all touch points.

The secret of success is to create a solid foundation and implement Omni-channel in planned steps where value can be added at each step with deliverable benefits.

Where does your Omni-channel retail operation stand in utilizing mobile technology to optimize your supply chain operations and streamline customer fulfillment? Many, if not most, retailers are still in the beginning stages of designing and deploying a multi-channel fulfillment strategy and network. Many are struggling with both strategies and details. For these Omni-channel retailers, it makes sense to partner with a technology and systems integration provider with long-term expertise in wireless networking as well as long-term experience in retail operations. Together, they can work to provide the inventory visibility, accuracy, control, flexibility and efficiency to optimize fulfillment and maximize Omni-channel customer satisfaction.

For getting initial success retailers should be careful. They need to prioritize based on consumer needs. Not every retailer will need to be able to fulfill every SKU from every channel for every demand source. Before rushing to create a new delivery model, retailers should take a moment to consider consumers' evolving shopping habits across channels, the types of goods in question, and whether they will need to either pull inventory out of stores to meet a wider population of demand or move inventory that might never be regularly carried in a store to a specific store location.

For unmet customer demand, the opportunity to truly identify what that demand is, and how much it is costing the retailer not to meet it, is right around the corner.

8. Limitations of the study

- The study has been done keeping developed markets in mind. Some of the findings and suggestion may not be suitable for the other markets.

- The study has been done keeping retail sector as a whole but it is known fact that demand for some of the products are stable and uniform across channel, so a separate model may be required for meeting such demand.

- The study has not dealt with technological needs in detail which is most important for success. Challenges mentioned are holistically put in umbrella name technical challenges but these can be branched out under different categories and each may need different solution.

9. Future scope of the study

- The study can be extended to know technological advancement or digitization needed to support the Omni-channel.
- Study can be further done to know the views of all the stakeholders in the chain.
- A separate study can be made to understand the consumer behavior to come up with a better solution for the development of Omni-channel supply chain.

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