

Revolution is Supply-Chain Management with Digitalization

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In a revolutionary twist, the digital tsunami (Internet of Things, advanced robotics, big data and artificial intelligence) is making supply chain the driver of sales, making traditional supply chain management concepts, tools, experience and frameworks obsolete. Due to the rapid deployment of these new technologies, companies need to rethink their supply chain strategies. Once focused on efficiency, working capital reduction and inventory management, the supply chain is now driving sales in digital channels – sales that can be measured and, therefore, put on the business case for supply chain investments.

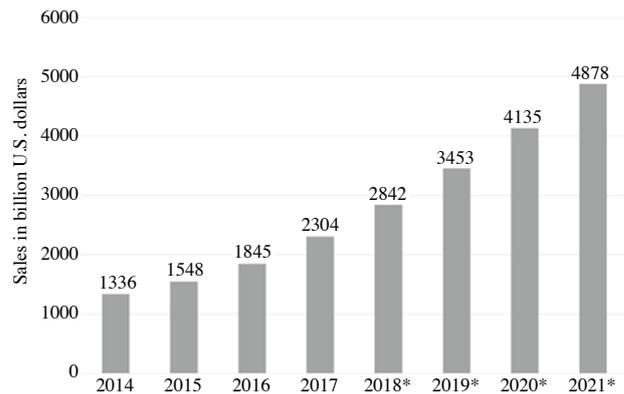
In the past supply chain was forced to justify any capital expenditure by showing the savings obtained by such an investment. It was known that better service or better quality would increase sales. However, because it was not known with accuracy how much sales would increase, supply chain executives usually put a very accurate (but definitively wrong) figure, 0% increase in sales. Now, with digital technologies, we can estimate the effect on sales of supply chain initiatives. It is a game changer, supply chain driving sales increase.

The raise of the omnichannel and the omni-chain

Globally, e-commerce is rising very fast and it is changing dramatically the way retail works and the supply chains behind it. As shown in *Figure 1*, retail e-commerce sales worldwide amounted to US\$2.3 trillion, and they are projected to grow to US\$4.88 trillion by 2021. Mobile devices are driving the biggest part of this growth. In fact, according to PwC's Global Consumer Insights Survey 2018, the number of people who use their mobile phones to shop has grown by 133%, which has resulted in mobile commerce more than doubling from 7% of total retail sales in 2013 to 17% in 2018.ⁱ

The way customers are shopping is evolving substantially,

ⁱ <https://www.pwc.com/gx/en/industries/consumer-markets/consumer-insights-survey/new-consumer-habits.html>



Source: <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>

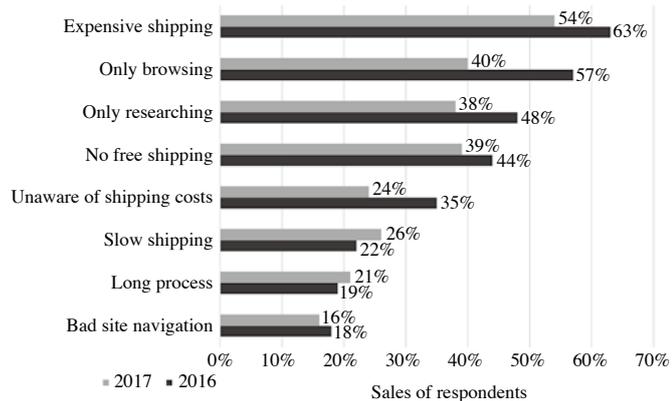
Figure 1 Retail e-commerce sales worldwide from 2014 to 2021 (in billion U.S. dollars)

they want to be able to buy everywhere by every channel, what is called the omnichannel. Consumers want to be able to use their smartphones to buy in the shops and to get deliveries either in the shop or in a point of collection or at home. The “digital natives” expect a seamless and easy shopping experience, with very fast delivery (even same day delivery). As a result, many retailers are enabling these consumers to research, compare, purchase and return products across channels.ⁱⁱ This requires a supply chain capable of managing in an integrated way all of these channels, what we call the omni-chain.

For example, adidas Russia/CIS launched a significant omnichannel initiative in the middle of a crisis facing the Russian economy. Or, Amazon's recent move toward setting new service standards with its Prime subscription service and the use of drones.

It is known that shipping costs and perceived slow deliveries cause abandoned online carts (*see Figure 2 below*). Also, slow deliveries result in more returns, which decreases sales and increases logistic costs. Amazon has raised the bar in terms of meeting the shipping expectations of its

ⁱⁱ <https://www.strategyand.pwc.com/reports/2017-global-omnichannel-retail-index>



Source: <https://www.statista.com/statistics/379508/primary-reason-for-digital-shoppers-to-abandon-carts/>

Figure 2 Primary reason for U.S. digital shoppers to abandon their carts in 2016 and 2017

customers with Prime’s “free” shipping. The objective is to reduce abandoned carts or, in monetary terms, increase sales. With 100 million Prime members globally, that fast and free service translate in sales increases. However, some estimates put the cost of shipping five billion deliveries to Prime members in 2017 at \$20 billion.ⁱⁱⁱ Logically, Amazon would welcome anything that could reduce these logistics costs, but the objective of Amazon is not about the costs; it’s about increasing sales and providing higher levels of service to its customers.

For example, many logistics executives view Amazon’s proposed use of drones for deliveries as an “extravaganza,” but in some cases it could make a lot of sense. For decades, the world of logistics has been obsessed with lowering costs. As one logistics executive put it, “We look at savings in terms of cents, not dollars or euros.” Delivering by drones looks crazy to them. However, if Amazon can lower the rate of product returns because it can deliver faster, and faster deliveries mean fewer returns, the result will be more sales and, therefore, more profits. The comparison is not just about lowering costs but also about increasing sales and service levels.

Until now, we have been looking at supply chains as cost drivers, not sales drivers. We have a lot of tools to understand supply chain costs, like “total cost of ownership,” “spend analysis” or “total landed cost,” but none about increasing sales. However, now for the first time, we can evaluate the effect of supply chains on sales and to enhance the customer experience. This requires a deep understanding of customer behavior and customer needs.

ⁱⁱⁱ <https://www.reuters.com/article/us-amazon-com-prime/amazon-says-over-5-billion-items-shipped-in-2017-via-prime-idUSKBN1ER111>

adidas Russia/CIS – Mini-case example

In 2014, the Russian economy was in a very bad situation because of a sharp decline in oil prices, a weak ruble, the political fallout from the annexation of Crimea, Western sanctions and inflationary pressures. All of these events lead logically to a dramatically lower consumer and investment spending. Thus, most companies like adidas suffered a substantial drop in demand.

adidas Russia/CIS had been one of the adidas Group’s most important markets, but by mid-2014 sales and profits began to decline further amid the struggling economy and Western sanctions. The ruble’s collapse (it lost 40% against the dollar in just six months) reduced revenues and profits since most suppliers were paid in US dollars. On top of this, adidas Russia/CIS’s IT organization and systems were obsolete and needed a serious overhaul.

In this context, Joseph Godsey was asked by the headquarters to go to Russia as part of a “dream team” to improve dramatically the situation. His first mandate was to stabilize the IT systems. His second mandate: Take the company into the future.

Joseph’s journey was quite unique, he became the vice president of supply chain management and information technology at adidas Russia/CIS. These two roles are almost never held by the same person in any company. In his VP role, he should take the company into the digital future by re-engineering the IT systems and supply chain to deliver profitable omnichannel growth. Already other retailers in the Russian market were becoming more sophisticated on the omnichannel front. By contrast, adidas Russia/CIS had nothing and it was feeling the pressure to become more sophisticated. The big difference is that adidas in Russia owns more than 1.200 stores, a unique situation for adidas in the world. The effect of owning so many stores and having a direct contact with the consumer is that adidas is the number one sports brand in Russia, way ahead of all of the other competitors

Joseph realized that the adoption of the internet and smartphones in Russia had generated a boom in e-commerce and presented a big opportunity for omnichannel retailers. Furthermore, he believed that adidas could position itself in a unique space relative to its competitors in the market because of the ownership of the retail chain.

Joseph wanted to push the business to respond to latent as well as visible needs of the customer and develop the

capabilities to offer new solutions for them. For the consumer, this would mean getting the right product to the right place at the right time – the ultimate experience of accessibility and convenience. For the stores, it would mean making their lives easier so they could better serve the consumer and ultimately drive higher sales and profitability. For the back office, it would mean making the end-to-end processes more efficient from a profitability perspective but also reducing working capital needs. On the agenda were digital initiatives like Click-and-Collect (C&C), Ship-from-Store (SFS), Endless Aisle (EA) and Radio-Frequency Identification (RFID), but they required substantial investments on the part of the adidas Group during a time of crisis.

Initially, adidas implemented a C&C pilot program in Moscow in November 2014, whereby consumers could order multiple sizes, models or colors, try them when they went to pick them up and keep only what they wanted – all for no additional cost. The initial expectation was that they will get 10 to 20 orders per week per store; instead, consumers loved the idea and orders surged to about 1,000 per week. Given that adidas only had two stores in Moscow as picking stores, there was a massive affluence of consumers to those stores, the stores couldn't manage that volume and the company was forced to put the program on hold until it could build the infrastructure needed to support such demand. Going into 2015, Joseph quickly restarted the rollout of C&C, but in a controlled manner, instituting careful change management to ensure its success. The implementation required a Point of Sales (POS) software upgrade and a rollout of C&C to 200-plus locations at the rate of 30+ stores a week. The big surprise here is that this supply chain initiative lead to a substantial increase in sales, a double digit increase in sales!!! Actually, today, an amazing 70% of online sales are through C&C, which shows how much consumers love this concept.

A second supply chain initiative of adidas Russia/CIS had an even stronger effect on sales. The company introduced the concept of SFS with the idea of providing a faster delivery to the customers who ordered on-line. Russia is the biggest country in the world by landmass, making it a big challenge to deliver fast in every part of the country. By introducing SFS, adidas was able to reduce the delivery time for online orders, because of instead of delivering from a central warehouse in Moscow, customer orders could be delivered by stores close to the customer. This also required the implementation of RFID, so there was an accurate

information about the inventory in the central warehouse, in the distribution chain and in the stores. The initial objective was to provide a better service to the customers, although it was assumed that logistic costs would eventually increase. That increase was expected because from a logistic point of view, collecting products from different stores is less efficient than collecting the products from a central warehouse. Also, in e-commerce sales returns might be as high as 70%, making the return logistics a high cost for the supply chain.

The big surprise was that the behavior of consumers made all of the assumptions wrong. It turned out that consumers who received a product 3 days after being ordered, return around 70% of the deliveries. However, when they receive the product in one day only 50% is returned. A plausible explanation is that consumers might buy the product as the result of an impulse. Then, the emotion involved in the purchasing goes down with time. Thus, as the delivery takes longer the higher the probability of the consumer making a return. While other reasons might be also involved, the important fact is that return rate went down from 70% to 50%.

The first reaction from a supply chain professional might be that this reduction in returns implies a reduction in logistic costs. That's absolutely right and the savings are important. However, a second reaction is an amazing WOW!!! by delivering faster, sales on-line increase by 66%!!! With a three-day-delivery the company sells only 30% of what is delivered (because 70% is returned by the consumer). However, with a one-day-delivery, the company sells 50% of what is delivered. So from 30% to 50%, the sales increase is 66%. The amazing fact for a company like adidas is that logistics costs are on the order of a single digit euro per order, while margins are double digit. Thus, the increase in sales is an order of magnitude more important than any logistic costs. In other words, logistic costs might be irrelevant when compared to the effect on sales. Furthermore, thanks to the fact that these sales are on e-commerce the company has data to precisely calculate the effect of SFS on sales.

This is a huge revolution in supply chain management. We have a lot of models to calculate costs, service and quality, like the Total Cost of Ownership (TCO), Total Life Cycle Cost or the widely used Supply Chain Management Model of SCOR^{iv} where the metrics are classified as follows:

^{iv} SCOR (Supply Chain Operation Reference) model is a process reference framework to describe and analyze the supply chain process, which developed by APICS Supply Chain Council.

- Supply Chain reliability • Supply Chain responsiveness
- Supply Chain flexibility • Supply Chain costs
- Supply Chain asset management

All of these measures do not mention potential sales increases because that's assumed to be the territory of sales and marketing, not of supply chain. However, as the example of adidas as shown, there is a strong effect of supply chain on sales. It can and should be measured and it should be part of the criteria to invest and manage the supply chain.

The big challenge is that we do not have models or frameworks develop for supply chain to consider the effect on sales. It is a huge challenge because for many companies and products the effect on sales is much bigger than any effect on costs.

Consider the idea of Amazon (and others) testing the idea of delivering products by drone. From a logistic cost point of view it outrageously expensive. From a sales point of view it might be very sensible. It could be that by delivering by drone in 15 or 30 minutes the rate of return of products by consumers might go down dramatically. Thus, depending on the margins of products (think about the margin on a smartphone) drone delivery makes a lot of sense. For example, some organizations have estimated the cost of delivering by drone at about \$1 for Amazon. Some experts estimate that the average rate of return for Amazon is around 10%. With those numbers, if delivering by drone will diminish the returns to 5%, it would be profitable for any basket above \$20 of margin ($\$20 \text{ margin} \times 5\% = \1).

Thus, it is a question again of sales increasing. For quite a few products, the margin opportunity is an order of magnitude bigger than the supply chain costs. Also, again, we have no model or framework in supply chain to evaluate these new trade-offs.

In fact, we accept so much that sales are no part of supply chain that we find almost always contracts of delivery where the constraint is a 99% service level, or 95% or 99.9%, or a number like this. However, there is absolutely no science and no calculation why is 99% and not 99.34% or 98.45%. We fix those numbers because they are used and because we have no data to calculate the optimal service level. Now, for the first time it would make sense to calculate what is the optimal trade-off between costs of supply chain and profit opportunities.

Again, this is an amazing change for supply chain management, although one that would amuse traditional

academics. There is a very old operations research problem that is exactly the situation in which supply chain is today, the newsboy problem^v. It is a fundamental piece of operations research theory, but we never got enough data to use it effectively. Thanks to the digital revolution we are for the first time in a situation to use those insights extensively.

Executives have always known that improving supply chains ultimately improves sales. However, because the impact was very difficult to evaluate accurately, companies traditionally approved investments in supply chains based only on the expected reductions in costs and working capital.

Back to the example of adidas when the IT/supply chain roadmap was initially proposed, it was very controversial within the company. Among the issues raised were:

1. Are we taking on too many intersecting and complex initiatives all at once?
2. Could we build a team that could successfully implement and roll out the capabilities?
3. How to manage the enormous change that would be required at the retail level?
4. What would be the payoffs?

Implications for Managers

Through that journey adidas learned the following lessons for supply chain going digital:

- The business case for supply chain investments must include effects on sales, not just cost savings.
- The digital supply chain offers the data to justify those sales increase through the use of testing (as adidas did in Moscow with C&C)
- Change management is critical for successfully rolling out disruptive technologies in retailing environments.

Conclusion

The world of supply chain is going under the major revolution in decades because of the digital revolution. From a mission of “deliver what is demanded with the right quality, right service level and lowest cost” to “create a digital demand chain that drives sales increases and maximize profits”. As a professor, I conclude that more than half of what supply chain executives need to know today is in the process of discovery. A great digital learning journey is ahead of us.

^v The newsboy problem is a mathematical model in operations management and applied economics used to determine optimal inventory levels.