

The Supply Chain Insider



2017 Edition

CONNECT-EDUCATE-DEVELOP



**Council of Supply Chain
Management Professionals**

The World's Leading Source for the Supply Chain Profession.™

Editorial Note

Hello everyone and welcome to the first European Supply Chain Annual Magazine! My name is Chrisoula and I am the Editor-in-Chief for the magazine as well the Chair of Education for the CSCMP Benelux R/T.

For a while now all the board members of the European roundtable were flirting with the idea of developing a channel to capture the “what’s happening and who” in the European Supply Chain arena and share it with the global CSCMP members and fans. Shortly after our annual CSCMP European meeting in Spain we decided to create this publication into order to capture the main events and innovations in supply chain that will critically influence the development of the supply chain in Europe. Parallel to this we also wanted to showcase the level of professional volunteerism and high level of business collaboration and networking that all European CSCMP board members, corporate members and members are putting on a daily basis to make CSCMP experience second to none. As a result, the The Supply Chain Insider (SCI) was born. CSCMP member providing their views and insides of the supply chain.

The focus of SCI is to provide an inside snapshot of the trends and thoughts of the supply chain industry development the year before. All selected articles fall under one of the three core CSCMP values; connect, develop and educate. At the end of the magazine there is a list of the major events that will take place in 2017 in Europe.

At this point I would like to thank all the “early adopter” authors and everyone else who volunteered their free time and effort to make SCA a reality.

I hope that you all enjoy our articles and find this publication useful. Our next magazine will be out in December 2017.

Warm Regards,

Chrisoula Papadopoulou

*Editor-in-Chief, SCA
Chair of Education, CSCMP Benelux Roundtable*



President's Welcome



“Our profession is based on managing scarcity: getting the right quantity in the right place at the right time against the right cost”

I have been helping my customers with actionable and tangible strategies on sustainability. Being a long time and active CSCMP member has helped me keeping track of global developments, and enriched my global network on this topic. Although sustainability has been somewhere on the priority list in the last couple of decades, the last few years it has been put much higher by consumers, governments, shareholders and employees, impacting all supply chains globally. What does this mean for the supply chain industry?

A significant development is that due to the Paris agreement and its clear targets, governments, companies and researchers are trying to quantify the daunting task of reaching them. What do we need to do today to reach a milestone in 2050? And how do we know when it is sufficient? I am delighted to see several efforts to take actionable steps to quantify the task ahead of us.

For example, in the Netherlands it has been calculated that considering the expected economic development on the one hand, and the CO2 emission targets for 2050 on the other, the Dutch need to become a factor 6 more efficient. In terms of transportation that means they need to be able to move the same ton of goods with a factor 6 smaller carbon footprint. In China, researchers found that the Chinese need to increase their CO2 efficiency even more, calculating a mind-boggling factor 13. Although I find it quite satisfying to have an actual number we can work on, realizing these factors seems very challenging if not impossible.

But wait: isn't the supply chain professional perfectly equipped for this job? Our profession is based on managing scarcity: getting the right quantity in the right place at the right time against the right cost. And managing environmental issues is very much about managing scarcity as well. However, to help you achieving factor 6, 13 or any other factor you might be dealing with like increasing protectionism or keeping up with technological advancements, I would like to introduce the supply chain X-factor.

The X-factor, as you know, is that special something that makes the difference between good and extraordinary. CSCMP can help you to get your X-factor, by providing an international network to educate, connect and develop yourself.

Our global network will expose you to vibrant events, the latest developments and international professionals enabling you to exceed all expectations. Speaking for myself, it surely has given me an edge to deliver the best results for my customers. Please join us at our next event to discuss your biggest challenge and share your experiences. I am confident you will learn something new, expand your network and return to your office with new ideas and energy. Are you ready for some X-factor?

Jeroen Bolt

President
CSCMP Benelux Roundtable



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The Future for Transportation Systems

New Drivers at the Wheel

27th State of Logistics Report

*CSCMP has (again) published the "State of Logistics Report" reporting figures for 2015. The Report was presented at the CSCMP Annual Conference in Orlando in September 2016. Author of the Report is A.T. Kearney supported by Penske Logistics. The Business Logistics cost in the U.S is 7,85 % of the GDP, which means over 1.408 billion USD (**1.267 billion EUR**). The GDP for EU-countries is 16.477 USD and with the same share as in the U.S. (7,85%) it means 1.294 billion USD (**1.164 billion EUR**) of Logistics Costs. Experts' means that the actual figure for EU-countries could be as high as 12 – 14 %.*

Truck-transportation and Parcels more than half of Business Logistics spending

The main part of the U.S. Business Logistics cost is allocated to Truck transportation and Parcels delivery. The figure is 665 billion USD (**598,3 billion EUR**). As shown in the summarized figure below we can see that the largest spending else is on Inventory carrying costs (Storage, Handling, Financial Costs, Shrinkage etc.). This counts up to 427,3 billion USD (**384,6 billion EUR**).

What is the figure for Business Logistics spending in Europe?

Actually, I have not seen a consolidated figure defined for EU and the different EU-countries. Therefore, I have brought up the idea to make a similar study for Europe under the wings of CSCMP. I met with Kevin Smith, Chairman of CSCMP globally, and discussed how we can start up this work. As been working in the Logistics industry in Europe for a long time, I am sure that this study will be of great interest for companies in this field.

EU and the participating countries Governments

Of course, a standardized way of looking at Business Logistics spending in Europe is relevant for political and regulation Authorities. When such an important part of the European economy is in play for political initiatives, it is significant to understand all the foreseeable aspects when making a decision.

Competition between the worlds Regions

To really understand the cost drivers and its influences of Business Logistics for the competition between countries and macroeconomic regions must be compared. For instance, how does the "level of infrastructure" influence, what about fuel tax levels, cost levels for different industries, trade relations etc.

A robust analysis to work out the "**present situation**" in a standardized process (including definitions) for countries and regions is a "must" to understand and plan for the future.

*"If you do not know where you come from, then you don't know where you are, and if you don't know where you are, then you don't know where you're going. And if you don't know where you're going, you're probably going wrong." - Terry Pratchett, **I Shall Wear Midnight***

Carl-Axel Eriksson

President of CSCMP, Roundtable Sweden

Figure 1

US business logistics costs

\$ billion

	2015	YoY 15/14	5-yr. CAGR
Transportation costs			
Full truckload	278.8	3.0%	7.1%
Less-than-truckload	63.7	7.0%	3.4%
Private or dedicated	240.1	1.0%	5.3%
Motor carriers	582.6	2.6%	5.9%
Parcel	82.2	8.0%	6.7%
Carload	60.8	-12.0%	4.4%
Intermodal	19.9	2.0%	2.1%
Rail	80.7	-8.9%	3.8%
Airfreight (includes domestic, import, export, cargo, and express)	67.4	2.1%	4.6%
Water (includes domestic, import, and export)	47.6	2.1%	3.9%
Pipeline	29.5	-11.8%	2.7%
Subtotal	889.9	1.3%	5.5%
Inventory carrying costs			
Storage	141.0	2.5%	4.7%
Financial cost (WACC x Total Business Inventory)	158.1	7.4%	0.9%
Other (obsolescence, shrinkage, insurance, handling, others)	128.2	5.1%	2.6%
Subtotal	427.3	5.1%	2.6%
Other costs			
Carriers' support activities	45.7	2.0%	6.3%
Shippers' administrative costs	45.3	6.3%	4.8%
Subtotal	91.0	4.1%	5.5%
Total US business logistics costs	1,408.2	2.6%	4.6%

**State of Logistics Report®**

Authored by A.T. Kearney and supported by Penske Logistics, this report is widely used by professionals as the premier benchmark for US logistics activity.

You can order the 27th State of Logistics Report from www.cscmp.org (USD 295) – for members free.

Blockchain & Logistics

Win-Win!

A new technology has the potential to finally eliminate paper documents in international trade. I believe that a new concept in distributed computing, known as Blockchain, could finally spell the end for time-honored concepts such as the paper bill of lading, air waybill or letter of credit.

Blockchain technology has been on the rise all around the world in recent years. The technology, which uses an open network of databases and functions as a public, digital, distributed 'ledger', has a wide range of applications.

The distributed ledger is continually updated, and all parties in the open network have access to the database. The distributed ledger is a database that can be shared across multiple sites and users, with all participants within a network having their own identical copy of the ledger. Blockchain algorithms allow transactions to be aggregated in 'blocks' which are added to a 'chain' of existing blocks using a cryptographic signature.

Bitcoin is one of the most known examples at this moment. The technology has been finding new applications in recent years, particularly in the financial sector. There are a lot of companies experimenting with Blockchain solutions at this moment worldwide. The expectation of the market is that there will be realized business solutions based on the Blockchain in 2017.

In the Netherlands we are exploring the possibilities in a big research project with 16 partners. We have built up a consortium with companies of the whole global supply chain.

The cross-point in this research is to bridge between logistics, finance and fintech knowledge. The Supply Chain Finance community (www.csfcommunity.org) is one of the partners and is well known for bridging the academic and business worlds in the field of the physical and financial supply chain.



Blockchain and Logistics Project TKI-Dinalog

In a major TKI Dinalog project, TU Delft, ABN AMRO, the SCF Community, the Port of Rotterdam, Royal FloraHolland, SmartPort and 10 other partners will set to work using Blockchain technology in the logistics sector.

The total scale of the project amounts to €2.2 million. This is the first time anywhere in the world that a concrete Blockchain project of this standard has been launched with various partners in the logistics chain. In the coming two years, the project will focus on developing the contours of a new information infrastructure based on Blockchain technology, uniting operational information, financial flows and contracts.

Three Concrete Use Cases

In this project, the use of Blockchain technology for logistics purposes will be concretely set up, tested and live tested. Johan Pouwelse, Project Manager and Associate Professor at TU Delft, confirms this point. 'This project is not about discussing potential, we are actually going to put words into action'.

The final result of the project is centered on delivering three concrete Use Cases: chain financing, supply financing and circular economics. TU Delft will concentrate on creating an open-source core business infrastructure that will make the blockchain suitable for mission critical usage.

Improved Collaboration Throughout the Chain

Martijn Siebrand, identifies a wealth of opportunities for this project. 'If you ask me, using Blockchain technology for the financial routes in logistics is just the beginning. I see this as a stepping stone towards a logistics sector with improved collaboration throughout the entire chain.'

Partners

The 16-partner consortium features a balanced blend of various parties in the chain. TU Delft, Windesheim, the SCF Community, TNO, Centric, Exact, ABN AMRO, SmartPort, Royal FloraHolland, the Port of Rotterdam, FBBasic & Cirmar, BeScope

Solutions, NBK, Innopay, and TransFollow together provide the force to drive this project to success. This project is complementary to the public-private initiative to establish a national research institute for Blockchain (working title: Blockchain Core Competence Center), initiated by the Ministry of Economic Affairs.

Supply Chain Finance Community

The SCF community is one of the partners of the project. The interesting aspect of the Blockchain is that there is a possibility to realize transparency through the whole supply chain. In recent years we have seen a lot development on reverse factoring solutions. For a Supply Chain Finance ("SCF") solution for the whole chain there is information needed about who is the second and third tier supplier. Blockchain has the potential to inform the chain partners with uniform data at the same time.

The potential of this technology could be a breakthrough for optimizing the financial supply chain for all the chain partners. Within the SCF community there are a lot research projects with regards to SCF subjects like inventory financing via the logistic service provider, reverse factoring and SCF solutions for SME's. The knowledge that we have built with the members of the SCF community will be used to strengthen the SCF Blockchain solutions. The SCF Community receives questions about the possibilities to realize deep tier financing. We think that we are able to realize deep tier financing during the research project.

I'm a believer of the technology and the new possibilities for business solutions. There are still questions to solve but the potential and the concept is worth solving this question. Logistic companies could become a major player in the supply chain with Blockchain technology. If you would like to receive more information or you have some remarks please send me an email.

Martijn Siebrand

SCF Dinalog and, SCF Community Blockchain Workgroup

Planning the Future Supply Chain

Designing valuable supply chains would be easy if we could predict the future effectively. However, history has shown the opposite. Chris Caplice — Executive Director of the MIT Center for Transportation and Logistics and Chief Scientist at Chainalytics, states that we humans are so bad at planning for the future, because we try to predict the future — and we are horrible at that! Look for example to the oil prices, adoption of mobile communication, digitization or even Brexit: the harsh reality is very much different than predicted.

Prepare and Do Not Predict

If predicting the future is not very effective, what can we do instead? One solution is to shift the focus from prediction to preparation.

According to Caplice, we must create a handful of plausible, alternative future scenarios that together contain the most relevant uncertainty dimensions. And then we should focus on preparing for the effects, rather than predicting individual events.

Scenarios are typically sets of driving forces: events that you typically cannot control, neither can influence, nor know the effect. Here's a handful driving forces that has a huge impact on today's supply chain solutions and approaches.

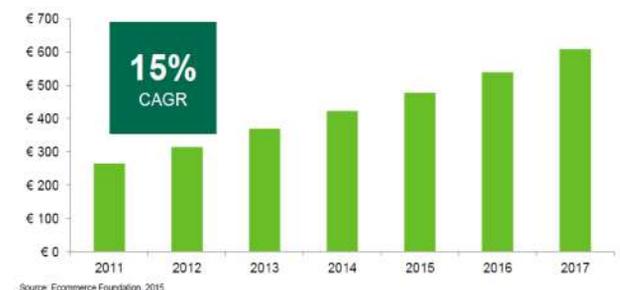
Economic Forces

According to Gartner, the Emerging 7 economies including countries like China, India, and Russia are expected to grow faster in GDP than the G7, and will have a larger influence on future demand.

The interest rate has been very low the last years, and probably will remain low for quite some period (despite the recent FED decision to raise the rates). Many companies seem not to be acting according to this new reality, as reducing working capital is still seen as a priority. Another example is the steep rise of labor wages in China.

As a result of this companies are building in additional resilience by re-shoring or near-shoring part of their supply chain. Shifting part of their supply chain close to the end customer will contribute to the need for faster time-to-market deliveries and to manage fast changing market dynamics.

European Business to Consumer online sales turnover (€ bn) 2011-2017



Technological Forces

Consumers are adopting new technologies quicker and quicker. Take for example a car. It was introduced around the 1900s but it took 75 years to get to an 80 percent adoption rate. The TV was introduced in the 1960s, but only needed 25 years for that. Today new technologies like the mobile phone have been adopted within less than 10 years. As a consequence it is vital for each business to understand what new technological developments will mean for their futures. New technologies that will impact many supply chains over the next 10 years are 3D printing, Robotics, Automated Vehicle Technology (AVT), and Internet of Things (IoT).

AVT will significantly change our lives and businesses. With the technology already in place and beta testing already deployed in multiple countries, these new “driverless” trucks will have a major impact on supply chain and distribution networks, as the technology and efficiencies will allow longer long-haul distances as well as better spreading transportation over time.

More "Things" are getting connected every day.

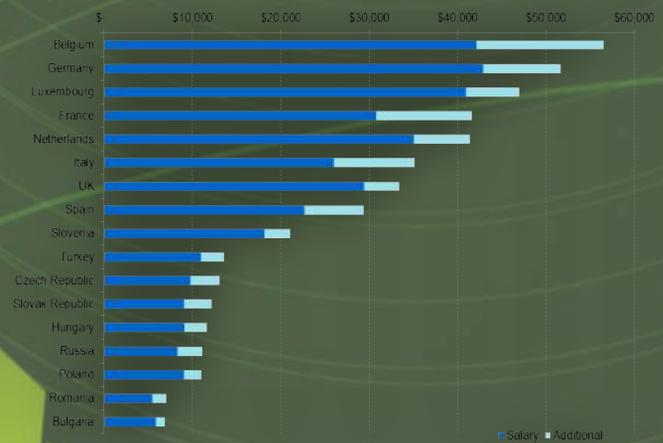
An excellent example of “digital business network innovation” is the Hamburg smartPORT, presented by Michael Burkett — research VP at Gartner at the Gartner Supply Chain Executive Conference in London 2016: Productivity has been increased by more than 12% by applying IoT and big data technology effectively. Traffic is managed using sensors in bridges and roads. Water way information, tides, occupancy of docks, container ID and location are processed centrally to enable smooth trade flows.

Geopolitical Forces

Next to Brexit (domino-effect with other countries?) we should consider multiple other geopolitical forces, and prepare for the effects. An example is the political instability in geographies like Turkey or Ukraine and the migration flows. But also changing country/EU legislation (CO2), or changing cost differences between countries in transportation, labor and real estate will impact future supply chains.

European labor costs, warehouse and logistics operative 2015

Next to these economic, technological and geopolitical forces, you can think of many more like social, and environmental. Each of them may be useful to investigate the impact and prepare for those.



Scenario Planning should be an Integral Part of Future Supply Chain Planning

All these driving forces can be taken into account when creating a good set of future scenarios. These scenario plans will then have to be incorporated into the formal process of future supply chain planning and defining effective supply chain strategies w.r.t. supply chain networks, operating model & organization, inventory policies and asset & tax optimization

Erik Diks & Bas Daver
Chainalytics Europe



Do Logistics Service Providers Hold the Keys to the Supply Chain?

While banks and technology firms battle for business in the financial supply chain, it is logistics service providers (LSPs) who may have the best chance of taking the high ground, says Michiel Steeman.

The safe arrival of goods in the right place at the right time is critical to the success of international trade flows. Equally important are the financial flows – without which those goods couldn't be paid for.

But think for a minute about the third flow in this model: the flow of *information*: Where are the goods? Who owns title to them? Has the buyer paid for them yet? Has the supplier received the cash? This is an area where

logistics service providers (LSPs) could play a much greater role.

Leveraging their knowledge about the information flows, LSPs can, in effect, become the bank of the supply chain. This means that traditional banks will have to seriously look at how they cooperate with the LSPs that sit on heaps of information – information that makes the supply chain easier to finance – or even enter into joint ventures with LSPs.

The information they have could lead LSPs to extend their service offerings even further, to include administrative processes around invoicing, ordering, customer helpdesk services and so on. Why would they? Because the margins could be considerably better than in their core businesses.

Consolidation Needed

Look at all the players in the supply chain and it's not a great leap of the imagination to predict that even harbor management companies or airports – which have a lot of information about the goods flowing through them – might actually reach out to become an orchestrator for the financial flows that go through them.

Certainly, this would be a huge challenge for some LSPs. This is a sector which is both fragmented and very traditional in outlook: there are only a few players who are truly global and which can offer these kinds of financing solutions.

Consolidation could deliver the scale and financial strength to bring about a transformation of the industry. So what might happen?

One strong possibility is that some of these transportation companies will cede their traditional role to others and become information management companies: rather than performing the A-to-B logistics services themselves, we would have operators who would actually carry the goods and other companies that orchestrate and organize it all.

Only four or five of the world's largest LSPs could probably do both because of the scale that they have. But the group of players below them will have to choose – or transform.

The Changing Role of Banks

If LSPs step up to this challenge there could be a changing role for the banks, as well. They have the cash and the funding, but without the information they don't necessarily become the orchestrator of the supply chain the way that LSPs can.

Banks may have the balance sheet and the cash, but they need the information and so may have to work with these transformed LSPs.

The biggest banks may see this as an opportunity rather than a threat. A decade or two from now we may see banks acquiring these transformed LSPs which will then become part of the banks' offering to clients.

Technology Steps Up

The third player in this new world is likely to be the technology platforms or providers that already help analyze this information flow and could potentially grow into SCF orchestrators as well as being operators in the financial streams.

It's a busy environment – many different types of organizations are trying to play a pivotal role in this information space in the supply chain. Who will win?

It's far too early to say. But the one big advantage that the LSPs have is the information stream on the physical flows.

Michiel Steeman

Windesheim University of Applied Sciences and Supply Chain Finance Community

Discover Greek Logistics

“Discover Greek Logistics”, is the title of the 6th International Logistics and Supply Chain Exhibition that aims to present Greece -and its logistics capabilities-, as a link in the Global Supply Chain Network, providing Supply Chain Managers with the necessary information to take into account in their quest to find the proper solution to their logistics project.

Logistics in Greece, contributing by 10.8% to GDP, is among the key sectors that will leverage the Greek economy in the coming years.

The recent large scale successful investments in infrastructure and privatizations, indicate the significant importance given to a robust supply chain network, a value network, that the Greek market can provide.

In addition, ports with constant depth, able to accommodate large mother vessels, strategic country location, as a natural gateway to SE European Market, intermodality possibilities, a plethora of qualified LSPs, the formation of business clusters, and the recently updated legislation, constitute a clear picture that Greek logistics industry has been steadily improving over the recent years and is ready to undertake the increasing demand of logistics services.

As the number of Logistics executives that participate in pan-European fora is increasing and so is the executives that receive significant European level awards, aid towards developing the image of the country to an investment destination. Greece offers significant investment opportunities due to its geographic position in South East Europe and its proximity to the Middle East and the Arab world.

The 6th exhibition «Supply Chain & Logistics» 2017, goes beyond the Greek boundaries, seeking partnerships with foreign markets, traveling to Germany’s “Transport and Logistics Exhibition” in May 2017, and will be advertised through the special edition of Supply Chain & Logistics magazine in both English and German languages.

There are potential benefits in the areas of Trade, Logistics, Transportation and Energy, as Greece, as a natural gateway to SE Europe, aims to become a transit and energy hub, implying significant investment opportunities. Our aim, through the synergies that will be created, is to contribute to the uplift of the Greek economy and to the strengthening of Greece’s image as a hub of International Trade.

Fotis Daoussis



Industrial and Logistics Real Estate 2016

Schiphol – 14 February 2017.

With a total take up volume of almost 1.9 million square meters in Industrial and Logistics real estate, 2016 sets a new all-time record.

This is the conclusion of INDUSTRIAL real estate partners' latest research report.

The report is based on all registered 2016 occupier and investment transactions as of 5,000 square m excluding lease renewals and owner-occupier developments.

The main interesting outcomes of the 2016 report are:

1. More than **70%** referred to logistics real estate.
2. **9 out of 10** large scale projects were Build to Suits.
3. Increasing number of specific developments.
4. Investment volume of **€ 890 million**.
5. Prime yields decreasing **below 5,5 %**.

INDUSTRIAL real estate partners is a brokerage firm with primary focus on industrial and logistics real estate.

The company exist 5 years already and from their offices in Amsterdam, Rotterdam and Tilburg the team is in daily contact with logistics occupiers, investors, developers, constructors and public authorities.

In 2016 INDUSTRIAL real estate partners was involved in 325,000 square meters occupier transactions and € 128 million investment deals.

Future Integration?

As the New Year starts for some of us, it is often the time to reflect on the past and wonder about the future. 2016 was momentous in many ways with major developments in medicine, technology, space science, understanding of brain functioning, social media while there were political attacks on experts and liberal and international thinking, with concerns about unverifiable news reports and the oversimplification of complex issues typified by the phrase 'Brexit is Brexit'!

Specialization

In the business world, I argue that we have had decades of over specialization and often special pleading as one or other subset of the total business task looks to enhance its relative position and influence. For example, as someone trained initially as an engineer in the UK, I have been professionally registered with three different but cognate engineering based professional bodies and at the last count on the management side, there are another three. The supply chain itself demonstrates this where we have one or more professional groupings as representatives of Logistics, Procurement, Transportation, Operations, Contract Management and more generally, Legal and Commercial managers, not to ignore the Design, Marketing and Sales and Finance functions. Of course businesses need all of these activities and more and someone has to make the different cogs mesh into an effective machine but which professional body can truly claim to represent all of these groups?

I would argue we need more people able to see the business 'big picture' and how the relative importance of the disparate activities ebbs and flows as customer requirements and competitor actions dynamically change. Functional areas often need to perform sub-optimally for the overall system effectiveness to be enhanced but this is difficult to achieve without this wider vision and systems to implement it.

Technological developments

Most extended supply chains will already be working with GPS supported vehicle routing and tracking processes, automated warehouses and

distribution centers using RFID interfacing with computer aided warehouse management systems as part of Enterprise Resource Planning systems connected with customers and key suppliers, but what is just over the horizon is the application of driverless vehicles and drones.

Beginning to make a big impact across the supply chain are approaches to data mining using AI (artificial intelligence and software agent technology) to perform more quickly and more efficiently, analysis and decision making beyond the capability of any human brain. Any work that includes the application of more or less routine data gathering, analysis and optimizable decision making can already be done more reliably by software than by humans with all of their frailties and time allocations for their personal needs and wellbeing.

In manufacturing supply chains the impact of 3D Printing or Additive Manufacturing will fundamentally change the need for transporting of items, sub-assemblies and complete products around the globe. In fact the concept of sub-assembly might disappear as a redundant concept of old style product design as the printed product emerges complete from the printer with no intermediate stages. Now that the printing materials are beginning to include biological materials as well, we can envisage new industries to build the printers to replace bodily parts in support of medical interventions.

Putting the printers in the hospitals, the space ships or the home, fundamentally changes the nature of supply chains and removes the need for global supply chain and transportation systems.

Disintegration of globalization

Globalization has been a tremendous success in bringing poor people into the productive work force and in allowing less developed countries to catch up to and often replace their competitors in terms of economic measures. However this can come with less developed controls on abuses of power in employment and lack of consideration of pollution effects more generally.

However, what 2016 demonstrated in the UK and in the USA is that those workers displaced by the globalization surge and the move to outsourcing (often driven by the pursuit of profit without recognizing enough of the consequences), are victims, whose plight has been largely ignored by political processes until given a new voice or new (in some ways old or nostalgic) view of what might be possible.

Whose responsibility is it to do something for the 'left behind' workers who were often recruited for their motor skills but were historically able to build a life for their families with some security but who are now locked into housing and neighborhoods with no current way out? Freer world trade and the reduction in trade tariffs to promote flows across the globe, is not addressing their concerns in any way.

Was this a failure of the business model which decided to relocate the jobs or the politicians who believed, but did not act on the economic mantra, that new industries and jobs would replace old technology and jobs. That belief might be proved right in the long run and in the aggregate but not necessarily for those individuals and communities.

Of course, the rise in the newly developing economies also raises spending power for their citizens and so new market opportunities appear to challenge old and new companies to supply them and as long as new trade barriers are not raised then a market solution might still have attractions for all effective competitors. Of course we now have global companies from China and India for example taking leading positions in a variety of industries which might need outsourcing solutions of their own. If so, global flows might still take place but perhaps in different directions.

Working against this however is the realization that climate change and pollution is adversely impacted by global transportation systems. Transportenvironment.org declare that pollution from shipping in the EU area accounts for 50 thousand premature deaths per year. Now technologies can be put in place to reduce the emissions but increasing pressure from this kind of consideration might cause society

to reevaluate its attitude to global sourcing and raises the possibilities of more local market solutions. This, allied to the declared antithesis to global trade suggested by president elect Trump might change the ways in which supply chains are configured. Other concerns about the rise of China and its approach to territorial waters while USA possibly retreats from its international presence might also be a concern.

Political Will

As suggested earlier the issue of addressing the problems of the 'left behind' communities can be argued as an economic issue or a wider political problem and both groups could be part of a possible solution. It would certainly be a complicating factor in the business case for outsourcing if some residual costs to contribute to re-training for example were to be incurred for the company planning the outsourcing. On the other hand, even if the politicians recognized the need to do something there is the issue of how to raise the funds to pay for interventions.

Here again we might need to recognize the need for 'big picture thinking'. Most economies are more or less dependent on consumer spending to drive at least some (often quite large) portion of their economic activity. Now if the 'left behind' have no spending power then what is bad for them is also bad for a consumer driven economy. At the moment politicians try and cope by designing ever more complex benefits systems but that has its own problems and definitely creates an 'us and them' differentiation in society. It is from considerations like this that the increased interest in a Universal Basic Income approach is gathering strength.

Much work needs to be done but experiments are being undertaken in different parts of the world. At one level it allows the 'left behind' to still participate meaningfully in society and perhaps develop the new skills needed for new job opportunities or make other contributions to society. There is never a shortage of things that could be done in all communities if we can find the appropriate incentives to make it possible.

Narrow, self-interested capitalism on the American and Anglo Saxon model does not seem to be addressing these concerns. In Europe, societal benefit has always been more of a consideration than the Friedman or Gordon Gecko 'Greed is Good' mantra, so maybe the future could be driven by a more European vision but the signs are not good if the Brexiteers are truly in charge and other parts of Europe take a similar path!

Environmentalism and the need for peaceful living together on our finite planet so that all of us can benefit, are values that are surely more sustainable in the longer run but just as we need in business to look more widely then so also in our political and wider societies. Perhaps in our own supply chains we can start the process and see if we can join with others to grow a more extensive and inclusive network where integration of the individual parts is not necessarily needed but integration of consideration certainly is.

Douglas Macbeth

Special Annual Report



SmartYard

*In-Process Optimization by Algorithm
based on
Continuous Rescheduling*

The Container Terminal Industry

Since the mid 50's of the previous century, trade goods logistics spanning multiple handling 'modes' like ocean freight, inland shipping, trains and trucking, standardized on containers in standard shapes and sizes. This made the mode-transition and with that the end-to-end shipping time significantly shorter and increased the international trade velocity dramatically.

There are currently over 17 million shipping containers in the world, and five or six million of them are currently shipping around the world on vessels, trucks, and trains. In total, they make around 200 million trips a year.

With four global leading players (Hutchinson Wampoa, Singapore Ports, Dubai Ports and APM Terminals) some 80% of the container terminal market is covered. APMT operates some 60 container terminals globally and some 40 inland depots.



Container Terminals Operations

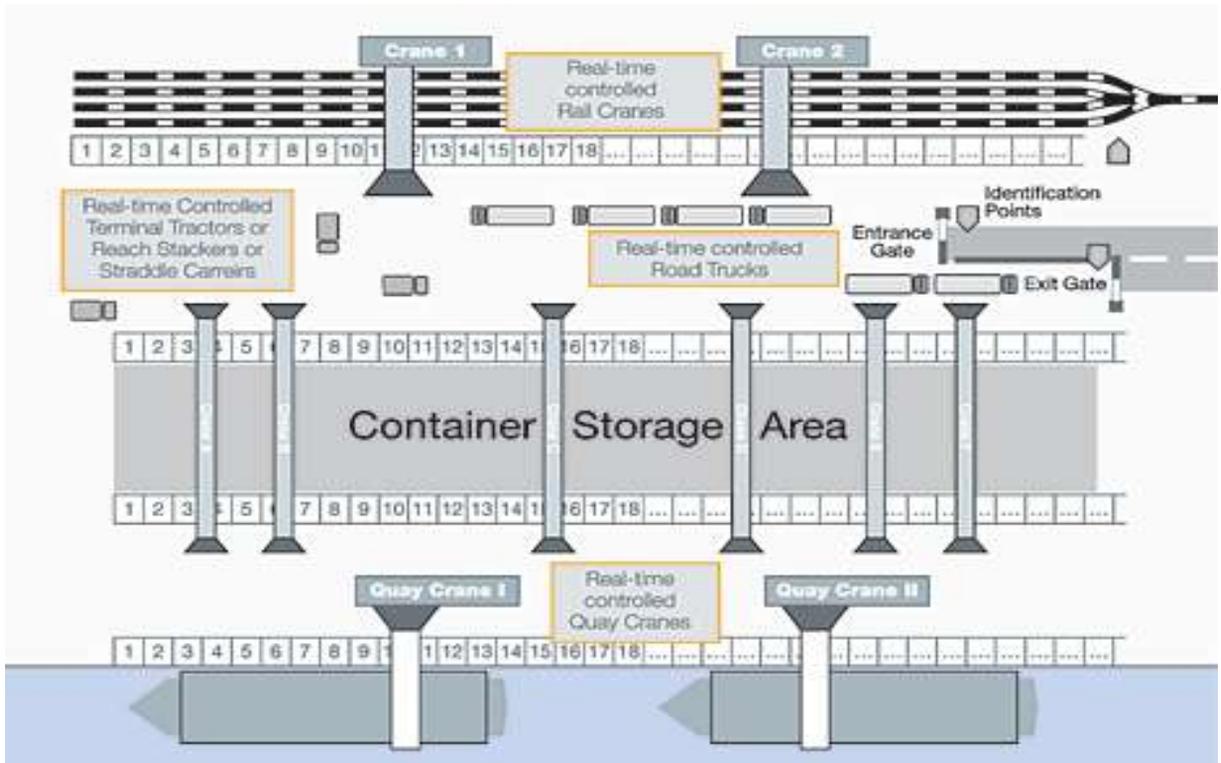
Major Container Terminals are grouped in the dominant 'source' countries (e.g. China), the dominant destination countries (e.g. EU and USA) and in Hub locations (e.g. Malaysia, Singapore, Red Sea).

Size is measured in TEU; Twenty-foot Equivalent Unit; meaning that the first standard size 'box' of twenty foot is kept as a measuring unit. Most containers are twice that size (40 or 45ft) to fit one trailer for either a train or a truck.

Shanghai, the world's largest container terminal has an annual throughput of some 35 million TEU's in 2014.

Any port will operate with the same principals, albeit the emphasis will depend on the function of the port: import, export or transshipment. All ports consist of the same operating entities; a quay so a ship can dock, a quay-crane can lift boxes off- or on a ship. A quay area; where trucks and quay-cranes can exchange boxes. A storage area yard where Yard-cranes can exchange boxes with trucks for storage, a hinterland exchange where boxes can be exchanged with inland-shipment, trains or trucks.

Rank	Port	Economy	2014	2013	2012
1	Shanghai	China	35,268	33,617	32,529
2	Singapore	Singapore	33,869	32,240	31,649
3	Shenzhen	China	23,798	23,280	22,940
4	Hong Kong	Hong Kong	22,374	22,352	23,117
5	Ningbo-Zhoushan	China	19,450	17,351	16,670
6	Busan	South Korea	18,423	17,690	17,046
7	Qingdao	China	16,624	15,520	14,503
8	Guangzhou	China	16,160	15,309	14,744
9	Jebel Ali (Dubai)	UA Emirates	14,750	13,641	13,270
10	Tianjin	China	14,050	13,010	12,300
11	Rotterdam	EU	12,453	11,621	11,866
12	Port Klang	Malaysia	10,736	10,350	10,000



Working a container terminal productively is all to do with the efficient allocation of the various resources:

- Quay-crane
- Horizontal transport
- Yard-crane
- Storage location
- Gate-crane (rail, truck and/or barge)
- Human resources

From the above picture anyone can understand how a box on a ship is picked up by a quay-crane, put on a truck, picked up by a yard-crane and stored.

Inversely, picked up by a yard-crane, put on a truck, brought to a gate-crane and put on a truck, train or barge. Reversely the same. Ideally in any case a box is lifted and dropped three times: entry, storage, and exit.

A couple of peculiar specifics around containers: storage.

Containers are stacked, not stored on shelves or racks. So it actually makes sense to really think through whether the box you put on another box is sure, or very likely to leave that spot before the one underneath does. Else you would need to lift the box twice.

The number of lifts (handlings) times the number of containers to be handled determine the amount and timing of resources.

Knowing the number of containers to be offloaded, stored and unloaded over a period of time determines the number and length of resources to allocate. This is the role of planners. They review order bookings and plan ahead shifts to complete a series of activities.

Reality Hits: Playing Chess with Centerboard Tactics.

Typically a terminal would work with a ratio of one planner to 4 dispatcher; 1:4. A dispatcher is someone who during the course of the execution of a plan (i.e. in the shift) manages the continued execution of the plan, given reality.

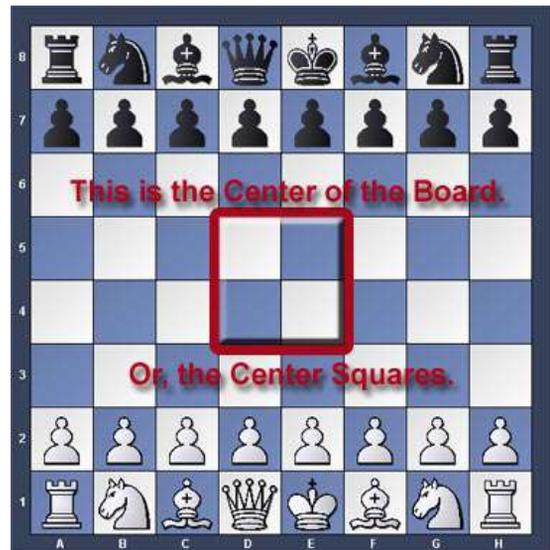
What that means is that if a certain box is NOT at its expected location (either on the ship or in the yard), some other boxes need to be handled FIRST. These extra handlings cause problems of course. A dispatcher will try to solve these problems with the least possible effort. He will try and shift the plan around so that a new sequence of 'events' will give the same end-result but in a different series of steps.

A dear friend of mine is an astute chess-player. He is a grand-master. There is no way for the next probably hundred years I can beat him at a game. So I play him, knowing I won't win. Regardless. But I have a plan; I focus my full attention on the control of the four squares in the middle of the board: D5, E5 and D4, E4. These four squares form the crossing of the space between his and my pieces and the dominant routes between the two sides. I call my tactic 'Centerboard Tactics'. With this in mind I frustrate him enormously.

It frustrates him because my objective is no longer to win the game, but to lengthen the time to play. I just want to prolong my execution that is inevitable.

For him it is still a reason to play me and see-through the sometimes 'strange', un-expectable and at times irrational moves. I got it up to 25 moves one time. A record! Of course an amateur against a near-pro is no match by any standard. Or is it?

Looking back at Terminal Operations, what has happened with the dispatchers is more or less the same. They cannot 'win' the game anymore; the plan is out the window with the very first confrontation of reality as soon as the ship mores and the hatches are lifted. So dispatchers are like me; they focus on a few 'holy' aspects, keeping some metrics satisfied and strive for a highest possible productivity, given the challenges they face by the exceptions they would need to handle. They focus on their own four squares; centerboard tactics.



Deep Blue first to beat Kasparov

Deep Blue versus Garry Kasparov was a pair of six-game chess matches between world chess champion Garry Kasparov and an IBM supercomputer called Deep Blue. The 1997

match was the first defeat of a reigning world chess champion to a computer under tournament conditions.

Obviously the game of chess is a limited game. A vast amount of possible moves, routes, plans, strategies but limited in the end. Sooner or later it was bound to happen that modeling the rules of chess, given all options at hand, could be calculated by a computer. The construction of algorithms; a process or set of rules to be followed in calculations or other problem-solving operations. Lovingly called “Algo’s”.

Apparently 1997 was that year. Funny enough 10 years prior to the launch of the iPhone which by now any single one phone (another decade gone) could probably beat Deep Blue. We’ve come to know this phenomena as Moore’s law.

A third phenomena is equally important; the digitization of process flows. Over the course of the last decade of the previous century and the first decade of the current, a massive amount of processes in business were digitized. Massive systems and the rise of companies like Microsoft, SAP, IBM, Dell and Cisco were based on the growing digital registration of events in records, transactions and structured storage throughout the enterprise.

With growing computer power, widespread digital event-capturing and the ability to develop AND run (near) real time Algo’s because of that gives rise to a whole new chapter in the container industry.

The Olympic Champion of container terminal operations; SmartYard

Basically the crux of running a container terminal is velocity. The speed at which you can complete a series of set tasks is going to allow you leverage the asset “container terminal” the best. Ideally done with as little as possible handlings. The handlings require resources and resources represent cost.

So allocating as few as possible resources while maintain the highest possible speed is the Olympic champion of container terminal operations.

In its core (and concept) it’s simple. In its execution it is anything but easy. SmartYard combines the three digital powers:

1. Computing power
2. Digital event capturing
3. Algo’s

And drives an iterative planning cycle. Continuously. In short. Previously we would have a “plan”.

This plan consists of the ID’s of the containers to be offloaded, loaded and stored on the yard.

According to plan, the first box was a box with ID “ABC”, handling “123” and storage “XYZ”. Low and behold that either box “ABC” was under another box. Or handling “123” was not available or storage “XYZ” was taken.

SmartYard just calculated of the total of handlings and expected handlings and storages for the foreseeable future (for as long as they were known in any way shape or form) what to do with the first box under the hatch.

Then SmartYard re-calculated that same routine for each and every box it occurred. SmartYard’s algo’s could actually re-calculate the entire throughput of a port in 2.45 minutes. That’s once every 165 seconds.

From a higher level SmartYard did the “Planning” in the pace of “Dispatching” similar to what Deep Blue did to Kasparov and what I tried (but couldn’t) to my Grand-Master friend.

As said, easy to explain, very difficult to execute. One of the immediate hurdles we had to take was human interaction. Think the navigation system in a modern car.

It will guide you through the most obscure cities with ease however in your home-town you will beat it at any turn because you know much more of the specifics of the situation.

Exceptions that are not accounted for in the model of the algo: a series of traffic lights that never seem to sync. A school with notoriously late hanging out teenagers you need to avoid.

The Algo in SmartYard wasn't any different in some respects.

In decisions it took; sometimes after a drop, way out in the back of the yard, the "system" would leave a yard-crane operator just "sit" there for tens-of-minutes (feels like eternity, trust me it does) because it's the most efficient use of the resource.

That's hard to explain and hard to execute. Shift leads take decisions on having the best of both worlds. Like you do in that care. You take a turn against the optimal route but still arrive home early.

New research and the next steps

SmartYard is very promising and yield huge results. Promising 100's of millions of annual operating costs savings, it is a massive step forward.

Next steps would include to introduce machine learning aspects. With a given (static) algo, its not too hard to conceive that the knowledge that exists on the 'home-town' aspects of a particular situation can be adopted in the model.

In fact the algo should learn directly from the shift-lead and weigh its decisions against its results.

That way it could 'rank' its suggestions. Like an algo would rank "finds" in a search-engine operation or in the distribution and allocation of advertisement in social media, like Facebook's edge rank.

Such a new Machine Learning based algo could be name YardRank; a next step up from SmartYard.

Geert Jan Dirven

SmartYard

My Learnings CSCMP Annual Conference

Under the main title *"End-to-End Supply Chain Solutions"* more than 3,000 executives & Supply Chain professionals from +40 countries meet at Orlando (FL, US) on last week of September.

The event atmosphere is always great: dozens of people self-introducing to others, more than 100 top speakers (including thought leaders, academia, executives and Supply Chain professionals) sharing their best practices, insights and learnings from real business cases all over the globe.

The Supply Chain topics covered an incredible wide range of areas, divided in 15 tracks including Research, Innovations, Regulations, Integrated SCM, Leadership, Technologies and all the Supply Chain functions such as: Planning, Procurement, Transportation, Warehousing, and others.

It was challenging for the attendees to select one track to attend and listen while the other 14 tracks were held in parallel at same time.

From my perspective a summary of an event always come from its TOP QUOTES, the ones that you'll always remember because they contain a clear concise message.

One keynote speaker was Captain Scott Kelly, the History-Making US Astronaut and the only human being who has spent one year in space.

He shared his learning's on the high capacity of human beings to overcome any challenges, even those that may represent greater difficulty, under the title "The sky is not the limit".

After having successfully managed to overcome limits of human endurance, his three key insights were the following:

"Always look for the things that are unlikely to happen but would have serious consequences"

"You have to make very small constant corrections all the time"

"You can never be comfortable with the Status Quo"

Second keynote speaker was Mr. Seth Bornar, Chief Digital Officer of GE Transportation, who shared how technology can be used to improve supply chain management & performance.

While sharing some of his learning's from his previous military experience, he self-answered a question: How do you change a military culture?

His answer: In the same way you change an organization: with metrics. Which is clearly also applicable to SCM.

He pointed that GE is still on the move because it's "constant willingness to reinvent itself as a company". GE is the only one still alive of the 12 initial Dow Jones Index companies. His most powerful quote was:

"Concentrate on the outcomes that matter MOST your customer"

Amongst over than +100 tracks offered, I had the opportunity to listen to executives of leading global companies: Nike, Roland, Siemens, Johnson & Johnson, Coca-Cola, Intel, Staples, L'Oreal, and Mars.

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RECEPTIONS



NETWORKING EVENTS



EXHIBITION

From them, I want to highlight here these simple but extremely powerful, two insights:

1. The game changers for Supply Chain innovation (by NIKE) are these four:

- A. Deploy inventory visibility in the Marketplace
- B. Shape demand Marketplace
- C. Assign fulfilment to must-win cities and same day/next-day service
- D. Scale manufacturing agility, speed and responsiveness

2. "To be high performing you should be competent in both enhancing Product development & Supply process competences, to reduce risks" by Jorge Calvo (Roland) and Professor Michaya (Japan)

And to finish my summary learnings, I want to briefly share about innovations & SC trends that were also discussed in several tracks. Main topics covered were IoT (Internet of Things), 3D-Printing and Drones.

As many experts pointed, in short time 3D-Printing is the one impacting more in processes of designing, creating & manufacturing new products.

The 3 key advantages that are enabling 3D-printing are:

1. No cost for complexity: Today you can do things that were previously impossible to design.

2. Extreme Customization: No need to achieve economies of scale. You can have unique pieces printed at very low unit cost, so each customer can get exactly what he/she wants

3. Much easier to test markets, which will bring to easier zero inventory opportunities

After these three intense days being surrounded by these huge knowledge sharing opportunities, it's clear to me that the key personal takeaways are really worth the effort of a long overseas trip & the difficulties associated with "jet-lag". Attending is not an option but a must.

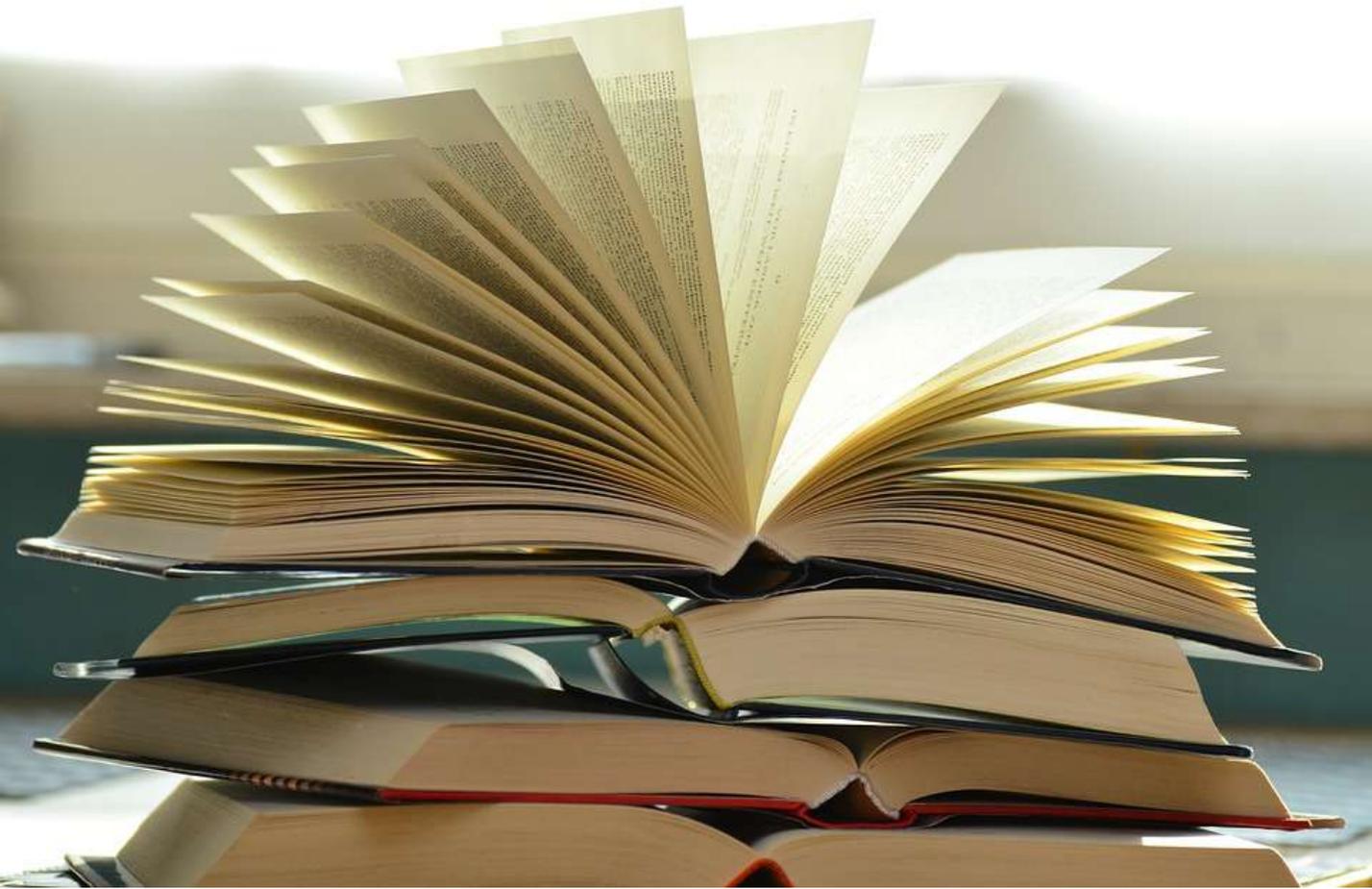
I want to conclude this summary by highlighting the extraordinary work of CSCMP volunteers who help the organization globally. Without them it will be impossible to achieve level of excellence demonstrated in this past annual global event at Orlando.

Miquel Serracanta

European Regional Advisor CSCMP

Spain RT President

Marketing Process Team Chair



Choosing the Right Professional Training

The DRIVEN Toolkit

We are living in the era of educational and professional training obsession. Having the right knowledge and qualifications supported by the right educational degree(s) and /or certificate(s) is not a wishing thought anymore but rather a professional requirement of how to secure employment relevance in the ever-growing global talent competition. It is therefore not a surprise that we are witnessing the rising of “academic and executive” training commercialization.

The “right program” selection process is rather complex at times even for the most experienced in the education industry. Questions such as what, where, when, or how to study, become even more difficult to answer especially when lined with the level of credibility and reputation of the educational provider. Timing and commitment is yet another factor added to this decision process.

So how do we select among such a wide range of educational and professional training alternatives? Is a university program better option than an executive program? Is a certification from a professional institution more credible than a MOPs? What about internal-organization trainings? Are they better than the skill-based coaching programs? How often should a professional opt for new trainings, degrees or certifications? Is it what is expected in Europe as a universal requirement?

The truth here is that it does not matter what, where, when, how you study or whether one degree is more credible than the other. What is important is that education and training should be used as a tool for keeping any professional at any level or position knowledgeable, relevant, creative and productive.

If you want to compete in a marathon you don't need to attend the best school but you do need to follow up on all relevant medical, fitness and training equipment updates that will add value to your end goal. Accordingly, to continue being competitive as a supply chain professional you need to continuously “sharpen the saw”, however not randomly.

The choice of education and training should reflect the evolution of the professional growth and career goals.

In other words, each type of education and training options serve a different purpose and can be the “best” option. Which brings us to the final question:

1. How do we select the best education and training alternative?

The answer is by making always a **DRIVEN** selection.

- **Determined:** make sure you really want to commit your time, effort and cost to the specific program.
- **Relevant:** opt for programs that are directly relevant to your work.
- **Interesting:** always select a program that suit your learning style.
- **Variable:** always opt for blended methods of training as they are more effective in terms of learning impact.
- **Excellence:** always select the educational providers which put academic excellence as their priority.
- **New-Fangled:** always select programs and educational providers that invest on new-fangled training content and training platforms.

We may live in the era of education and professional training obsession but it is a necessary obsession. And if it is a DRIVEN one then is can only be highly rewarding and fun.

Chrisoula Papadopoulou
CSCMP Chair of Education

The Future of Logistics



Supply chain management and logistics is shaped by innovative and disruptive emerging technologies. This means that they will have an increasing impact on the supply chain, by realizing new efficiencies and by adding value according to the changing customer requirements.

The main trends have been mapped by DHL in the report published in 2016 and entitled “Logistics Trend Radar”. According to the report, two main trends are identified:

1. Social & Business Trends;
2. Technology Trends.

For the Social & Business Trends category, with the highest impact trends identified within 5 years are:

- A. Anticipatory Logistics
- B. Omni-Channel Logistics
- C. On-Demand Delivery

The first social trend, Anticipatory Logistics, is about the use of big data within companies to perform predictive analytics for determining potential demand before it takes place, in order to respond faster and to increase the efficiency and the quality of the supply chain.

The second social trend, the Omni-Channel Logistics, represents the integration of both on-line and off-line channels existing in the retail sector, within the supply chain network, for creating an overview of the customer by providing fast fulfillment, agile solutions, while managing customer service.

The third social trend, On-Demand Delivery, defines the customer as a centric point in the supply chain, where the last-mile delivery part is essential to be custom-tailored based on customer delivery preferences.

Accordingly, the Technology Trends category, with the highest impact in the next 5 years, are the following:

- A. Big Data
- B. Cloud Logistics
- C. Internet of Things

The first technological trend, Big Data, represents the leverage of information gathered from different supply chain sources in order to provide supply chain visibility, to enhance the operational efficiency, and to elevate the customer relationship management by gathering more data about the customer and creating tailored solutions.

The second technological trend, Cloud Logistics, is an informational enabler, by supporting the exchange of information between the supply chain partners in real-time, by improving the overall control, and by providing additional storing capacity of data, accessible by any supply chain partner, any time, facilitating full transparency.

The third technological trend, Internet of Things (IoT), is an intensely discussed topic in the world of supply chain management due to its potential. IoT enables the connectivity of any physical device with access to the Internet, by capturing data through sensors. The main benefits of IoT include transparency through performance measurement and monitoring, cost-reduction by eliminating waste in the supply chain and by optimizing the asset utilization.

In conclusion, this article informs the supply chain professionals of the emerging trends, with a high-impact, within the next 5 years, in order to provide insight in the latest supply chain management developments, and to enable their decision-making process in their organizations.

Christian Plesca

CSCMP Young Professional

Events & Social



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Cornerstones of Supply Chain Management



SCPro™ Level One: Cornerstones of Supply Chain Management

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The eight content areas (i.e., Learning Blocks) below with a focus on topics such as concepts, processes, strategies, technology, global, and assessment:

1. Integrated Supply Chain Management
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4. Manufacturing and Service Operations
5. Transportation
6. Inventory Management
7. Warehousing
8. Order Fulfillment and Customer Service

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SCPro™ Certification is a three-tiered program that assesses progressive knowledge and skills across integrated supply chain activities. This process validates an individual's ability to strategically assess business challenges and effectively implement supply chain improvements through the analysis of real-world case studies and developing a comprehensive project plan to achieve results such as a positive ROI.

As of March 2017, the new and improved SCPro™ Certification features the most up-to-date industry intelligence and virtual learning technology. It is the only program developed in partnership with supply chain experts and academics and is recognized by both companies and educational institutions as the most comprehensive certification available in the industry.

1. **Leveraged for career growth**, SCPro™ is the only industry certification that requires knowledge of the 8 learning blocks that comprise the end-to-end supply chain.
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[SCPro™ Level One: Cornerstones of Supply Chain Management](#)

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