Implementing new Supply Chain Business Models:

Risk Management in Cross-border Trade

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Preface

Sitting idle is not a strategy

Logistics and international trade both constitute core business at evofenedex. The extra potential that becomes available when you bring together the worlds of supply chain manager and export manager is stunning and this was the main driver for EVO and Fenedex to team up in 2017. Businesses have much to gain when these two fields of expertise join forces.

It is therefore with pleasure that I introduce this white paper to you: 'Implementing new Supply Chain Business Models: Risk Management in Cross-border Trade'. Although it addresses supply chain managers, the white paper also builds a bridge between logistics and international trade, and in doing so opens up new opportunities, also, or especially, for SMEs.

The white paper is yet another gem, cut by Jack van der Veen, holder of the evofenedex Chair Supply Chain Management, at Nyenrode Business Universiteit.

The supply chain manager can play a key role in seeing that new opportunities bear fruit. He has oversight on many of the vital processes in a company and is therefore a good choice to introduce the elements for new business models. He can play a better and far more interesting role in developing new business models, than simply commenting on them when they have been finalized. He's an expert in organizing smooth operations and has a natural disposition for bringing together sales, procurement and logistics specialists and making them work together to implement new ideas. An added benefit is that by participating in innovation from the start, you won't be taken off guard by unwelcome consequences at the end.

But thinking in terms of business models doesn't come naturally to most supply chain managers. They're too busy to seek to improve. More often than not they understand the importance of the subject, but their daily workload makes it hard to actually give it the attention it needs. Thinking about the day after tomorrow competes with the demands of today's goods that have to be shipped out. This paper intends to highlight another outcome of this struggle, apart from the usual, and gives a gentle nudge towards considering the day after tomorrow.

The white paper examines in depth the aspect of risk. New business models always imply risks. But it is important not to shy away from these risks, actively anticipating them instead and seeing them as part of a VUCA world.

I'm sure you will enjoy this white paper and use it as an inspiration to improve.

Sitting idle is not a strategy.

Machiel van der Kuijl
Managing director evofenedex

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Implementing new supply chain business models: Risk management in cross-border trade

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Abstract. The environment in which organizations in general, and shipping firms in particular, operate is one of drastic change. Given the world-wide hyper-competition, firms need to constantly adopt and extend their customer value. At the same time, plenty of new technology is becoming available. In order to create new and additional customer value, the new technology available can be used to create new business models. Implementing such new models frequently requires new supply chains with new (cross-border) partners. The question then becomes one of how to manage the upside and downside risks associated with this. This white paper explores some of the more promising new supply chain business model opportunities and highlights how organizations can manage their implementation risks. To make this a reality, it is argued that supply chain (including logistics and international trade) professionals need to have a leading role in creating new business models.

Introduction

The environment in which firms and their supply chains operate is increasingly volatile, uncertain, complex and ambiguous (all such trends are usually summarized by the acronym VUCA). This is caused by many factors, including world-wide free trade agreements[1] and emerging information and communication technology.[2] The result is that organizations are facing hyper-competition in highly dynamic markets. In order to survive and prosper in such circumstances, individual firms are constantly looking for new ways to create value for existing and new customers.

Over the last few decades, the field of supply chain management (including logistics, operations, purchasing and international trade) has developed into a highly operational field where the focus has been on cost reduction (operational excellence) and dependability (ensuring complete on-time deliveries). The basic premise is therefore usually "do the same as yesterday, only a little bit better". Of course, this makes perfect sense in the short term, after all, this is the key task that supply chains are supposed to be working on every day. However, in the light of the VUCA environment, this will not be good enough. In this white paper it will be argued that supply chain professionals also need to be highly involved in the strategic efforts of an organization, and more specifically in the development and implementation of new business models.

Involving all key functions within organizations in business model renewal is essential because changes in an organization's environment actually make doing business-as-usual an option for the short term only (and sometimes not even that). In this ever-changing environment, organizations need to adopt strategies that are based on clear choices about where and how to compete, be innovative and make their supply chains agile in the process.[3]

The coronavirus outbreak in 2020 provided a case in point. Given the worldwide impacts on supply and demand due to lockdowns and other restrictions, companies can no longer rely on its contracts, forecasts and planning alone. Resilience and responsiveness can only be achieved when companies add value in close cooperation with the network in which they operate.

Needless to say, in order to become agile, a totally different mindset is needed as opposed to the current operational-driven short-termism. Alongside solving urgent daily issues, key efforts are needed regarding the long-term strategic positioning of firms and their supply chains. Rather than being involved in a constant effort to standardize and reduce cost,

1. *These have provided the opportunity for supply chains to become truly global as sourcing from and penetrating word-wide markets became viable. The consequences of the trend towards world-wide outsourcing and its consequences are described well in the book [Friedman, 2005].*
2. *The Internet and social media have drastically changed consumer behaviour and opened up a world of new business opportunities.*
3. *According to [Lee, 2004], contemporary supply chains need to be triple-A: Agile, Adaptive and Aligned.*

the focus will have to shift to value creation and innovation. Rather than working in an isolated way to optimize your own processes, the attention should shift to collaboration with supply chain partners. And rather than relying on top management to determine a firm's strategic choices in isolation, all key functions, and especially the supply chain, should be involved in determining and implementing the way the organization positions itself.

"It is crucial for firms to be on constant watch for fundamental innovation"

Even though drastically changing the way organizations make their supply chains agile already requires a formidable effort, it still might not be enough. Many new (information and other[4]) technologies have become available in the last decade or so. This technology can indeed be used to improve the current supply chain. IoT, Big Data & Business Analytics, Blockchain and AI can all be used for digitization and more efficient internal and external processes, for instance. But, far more importantly, emerging technology can (and therefor will) fundamentally disrupt an organization's business model. Well-known examples include Kodak, which missed the digital photography revolution, Encyclopaedia Britannica, which lost its market to Wikipedia, and video rental chains like Blockbuster, which were replaced by streaming services like Netflix.

Although the term disruption is frequently mentioned in the popular management literature, the number of real-life examples of disrupted companies and industries remains rather limited. In that sense, there is less to worry about in the short term than is sometimes believed. It is not very likely that your organization will be disrupted overnight. However, this does not imply that organizations can simply wait until the hypes around new technology and new business models blows over. Under every hype, there may be fundamental innovation that organizations cannot afford to ignore over a longer period.[5] History shows that, by its very definition, innovation delivers fundamentally improves performance[6] (albeit after going through the, sometimes painful, efforts required to adapt to the innovation), and sooner or later firms will act on such innovation, creating a competitive advantage. The problem then is that, when your competitor has created this advantage, you cannot simply copy what they have done. Instead, you first have to go through all the effort of implementation yourself, which inevitably takes time. And when this takes too much time, you might actually be disrupted and go out of business.

In fact, it frequently happens that organizations have seen the innovations coming well in advance, but not taken them seriously for a long time. There comes a time when this laid-back approach gets companies into great difficulties. Innovations tend to mature suddenly, becoming a true threat.[7] In other words, it is crucial for firms to be on constant watch for fundamental (technological) innovation and take the required steps at the right time.

Although the fear of falling behind is a strong emotion and frequently a reason for companies to do the necessary,[8] there is also another driver for change (which could be considered as the up-side of the risk of being disrupted): the opportunity for an organization to be a disruptor itself. When a firm is an early adopter of new technology, it can create a competitive advantage for itself, gaining the first-mover advantage.

To conclude, whether the aim is to protect an organization against disrupters or to become a disruptor, it is essential for firms to keep track of the options that new technology brings and start experimenting with the ones that are considered promising at an early stage. Not only for enhancing and improving current supply chain performance but also for creating new value in a different way. This white paper is focused on the latter option. More specifically, it discusses how technology and new market requirements can lead to new business models and the impacts for the resulting supply chains.

4. Although new technology is frequently associated with information technology, this is not necessarily the case. For example, the technology being developed for vertical farming could have a huge impact on food production and supply chains. See e.g. [Benke & Tomkins, 2017].

5. This is nicely illustrated in Gartner's hype cycle. See e.g. [Linden & Fenn, 2003].

6. For example, in [Trompenaars & Hampden-Turner, 2010] it is argued that, by definition, an innovation breaks an existing trade-off in performance. In supply chain terms, this implies that better quality and lower cost can be achieved by using an innovative approach, for example. In this sense, innovation creates superior performance compared to existing ways of working.

7. This phenomenon is referred to as the 'innovator's dilemma' and is analysed in [Christensen, 2013].

8. This is also the reason why, in change management, a crisis (or 'burning platform') is frequently seen as a trigger for making changes, hence the saying "never waste a good crisis".

As, on implementation, new (supply chain) business models inevitably come with fundamental changes, attention will be given to the (up-side and down-side) risks associated with this, especially when it comes to cross-border[9] issues. Sure enough, this requires that a firm's supply chain professionals should not be the last to hear about the changes that they need to implement, but be highly involved in both the development and rollout of these new business models.

Since this white paper is targeted at (supply chain) managers, directors and other shipping firm executives who want to increase their understanding of the topic, it starts from scratch by first defining the underlying concepts such as business model, supply chain management and risks. The remainder of this paper is organized as follows. Section 1 explains what a business model is and introduces the frequently-used business model Canvas. This section also highlights some examples of new business models driven by contemporary technology and/or customer needs. Section 2 focusses on the essence of supply chain management and explains how supply chains are essential for building new business models, hence the term 'new supply chain model'. Some fundamentals of risk management are discussed in Section 3. Some of the risks involved in implementing new (cross-border) supply chain business models and ways to manage such risks are reviewed in Section 4 and the white paper ends with a summary and conclusions in Section 5.

9. In this white paper the term 'cross-border' is used for situations where products or services are traded between two countries. In the case of cross- border trade, with or without customs, challenges will include different languages and cultures but also differences in product-standards and labelling, for example.

1. Business model: the essence

A business model is frequently used to describe how an organization creates value for its customers and profits from doing so. By looking at the essence of what an organization is all about, a *business model* is a collection of all the components that describe an organization's approach to developing, creating and distributing a profitable product[10] to targeted customers. In other words, the business model answers questions like "What product-market combinations do we aim for?", "How do our products reach the final customer?", "How can we access the raw materials and components required?" and of course, "How do we make a profit out of this?"[11]

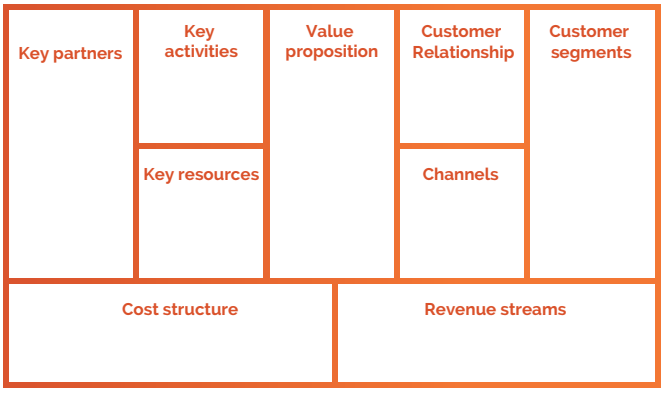

Figure 1: Business Model Canvas (BMC).

Canvas, probably the best-known and most widely used business model, was created by Alexander Osterwalder[12] and contains nine fields; see Figure 1. His paper adopts this model. So, whenever the term business model is used, it relates to the Business Model Canvas (BMC).

Zooming in, the BMC can be viewed from three perspectives, namely (i) the product-market combinations targeted, (ii) the financial drivers and monetary flows that allow companies to make a profit, and (iii) the supply chain creating the value. A brief review of these three perspectives appears further on.

Clearly, the core aim of any company is to deliver products that create value for its customers. The question then is what exactly constitutes this value and who the targeted customers are. The two fields in the BMC that represent this are "value proposition" and "customer segments". It should be noted that there can be multiple product-market combinations, meaning the company can target multiple customer segments through multiple product categories. It is important to see that, rather than talking about products, the BMC uses the term "value proposition". This emphasizes the fact that value is not only created by a product itself, but also by all kinds of services around it. An important example in the

10. *In this white paper the term 'product' will also be used when the output of an organization is a service. For the sake of this paper, making a distinction between the two is irrelevant. In reality, most organizations produce a bundle of products and services. However, the key point is how the product and services supply chain is operated and, at a conceptual level, this applies to both products and services.*
11. *See e.g. [Sinfield et al., 2012].*
12. *See e.g. [Osterwalder & Pigneur, 2010].*

context of supply chain management is that when the same product is delivered faster or more reliably (just-in-time), this feature itself is of value for the customer, meaning the value is not only created by the product itself, but also by its delivery.[13]

The bottom two fields in Figure 1 relate to "cost structure" and "revenue streams", which together determine the way how a company makes money from its activities. It can be observed that such financial considerations can have a huge impact on the supply chain structure. Probably the best-known example of this relates to the outsourcing of logistics activities. Companies might outsource their transportation because it creates lower cost, improved flexibility and/or better customer service,[14] but the reason for outsourcing is frequently financial. Having a fleet of your own constitutes a high fixed cost whereas having a contract with transportation companies generates variable costs and thereby a different financial performance. A similar thing applies to the demand side: it makes a huge difference for the supply chain whether customers pay per use or have a subscription-based contract.

The third and largest subset in the BMC relates to the various supply chain-related activities. From left to right in Figure 1, these can be classified as Source ("key partners"), Make ("key activities" and "key resources") and Deliver ("customer relationship" and "channels"). In terms of selecting a business model, key partners, activities and resources can relate to supply chain perspectives of what is considered to be the core business (or core competence) of an organization[15] and how everything else is sourced (i.e., it relates to make-or-buy decisions). At the customer and channel end, decisions are to be made about what channels to use, e.g., direct deliveries or through intermediaries such as agents, platforms or retailers, having your own local sales representation or partnering with an existing wholesaler etc.

New business models: three examples

In the previous paragraphs, it was explained that a business model can be described by the various BMC fields. In essence, a new business model can be created by changing at least one of the fields of the BMC. Changing one field frequently implies that changes in other fields are needed as well. For example, a shipper might decide to sell its products directly to the consumers via its own web shop. This changes not only the "channels" field but also the "customer relationships", "revenue streams", "customer segments", "value proposition", "key resources" and "cost structure" fields at the same time. In other words, when opening a direct channel, a completely different business model is needed that has little resemblance to the one the organization used to work with. This is also the reason why many organizations struggle with multi-channel distribution;[16] they run multiple business models simultaneously that are quite different in nature, and mixing these in one single approach might cause poor performance overall.[17] In other words, one size does not fit all in this instance.

At the outset, it was argued that new technology and the development of novel customer needs can both be a trigger-point for new business models. In the next paragraphs, the focus will be on three examples of new business models (especially the supply chain components whiting them), namely digital platforms, product-as-a-service and sustainability-driven business. There is a brief discussion of each of these new business models further on.

Digital platforms

As a huge number of digital platforms have been launched over the last decade or so and growing in an amazing pace, platforms should perhaps no longer be considered as a new business model. However, platforms have an enormous impact on supply chains and many shipping firms are either already involved in platforms (as supplier or customer or creating a platform themselves) or soon will be. Compared to the more traditional way of doing business, platforms bring many changes. There is therefore more than enough reason to discuss the business models of platforms here.

It should be noted that platforms have always existed. Stock (and other) markets and flower (and

13. Much more detail about the various dimensions of customer value can be found in the evofenedex white paper [Gülyaz & Van der Veen, 2015]. See also [Gülyaz et al., 2019].

14. An overview of strategic consideration for the outsourcing of logistics is discussed extensively in [Van der Veen. 2015].

15. This is typically where the competitive advantage is to be achieved. This is what the company can do better than anyone else.

16. See e.g. [de Carvalho & Campomar, 2014].

17. In the classic work of strategy guru Michal Porter, this is coined as being "stuck in the middle", see e.g. [Porter, 1980].

other) auctions are well-known examples of traditional platforms, for instance. However, there is little debate that Internet-based (i.e., digital) platforms have revolutionized business. Uber, Booking, Amazon, Takeaway, Airbnb and eBay are just a few of the platforms that are visible in everyday life. The essence of any platform is to connect supply (offered by many different suppliers) and demand (from many different customers) and make money from match-making and associated services.

"Through their aggressive growth strategy, platforms constantly gain in supply chain power"

Platforms come in many shapes and sizes and are as relevant for business-to-business as in business-to-consumer. For example, some relevant platforms matching demand and supply of transportation include TradeLens (global cargo container shipments), Cogoport (sea freight shipping) and Transporeon (truck-sharing). Another interesting example is DiManEx, which provides a network for digital manufacturing and 3D printing.

To understand the success of digital platforms, it is essential to look at the underlying business model and compare it to competitors' more traditional business models. There are various observations that can be made here. First of all, as basically every potential customer can get access to the platform through the Internet, the number of customer segments targeted is virtually limitless. Furthermore, this direct model implies that intermediaries are frequently less in demand, as there are fewer potential coordination and suboptimization issues within shorter supply chains.

Secondly, from the customer-value perspective, the attraction of platforms is easy to understand. Far more choice is usually offered, information is neatly organized in searchable databases and the platform is available 24/7. Products can also be easily compared, especially on price. On top of this, a digital platform can collect huge amounts of customer data[18] and can use it by applying AI and other data analysis methods to create value for its customers by making personalized offers.

Thirdly, platforms are not asset-based. Uber is a taxi company but has no taxis; Airbnb is a hotel chain but owns no hotels. From a financial perspective, this clearly creates a much more favourable business model. It is not for nothing that platforms are sometimes referred to as the darlings of the stock market. In a way, this seems to create a self-fulfilling prophesy: by attracting large sums of money on the stock market, platforms can make huge investments in their IT infrastructure for offering even better services, thereby attracting more customers, hence becoming more attractive to the financial markets, and so on. Through their aggressive growth strategy, platforms constantly gain in supply chain power, becoming very fierce competitors for traditional firms.[19]

Considering the above, the question might be: are platforms superior business models, i.e., will platforms take over all other business models? As has been argued, platforms do come with many advantages. However, this does not imply that platforms are the best business model for everyone and everything, nor that there are no challenges. For tangible products for instance, fast-paced and highly time- and error-sensitive e-fulfilment is frequently a key success factor. If consumers do not get the products as expected, their associated added value clearly drops rapidly.[20] Unfortunately, although many ideas and concepts have been developed and tried, the last-mile e-fulfilment in both urban[21] and rural[22] areas still remains a key challenge. Furthermore, when customers want to try out products or receive advice, regular retail might be the preferred choice.[23] Or, seen from the opposite angle, for Internet-based sales, returns are a major issue that appears to be very hard to resolve.[24]

Servitisation/Product-as-a-Service

Many firms that were originally in the business of producing and marketing tangible products are increasingly moving to offering services by using their products rather than by selling the actual

18. Data is sometimes referred to as the "new oil"; see e.g. [Van't Spijker, 2014].

19. Observers argue that, in the longer run, platform competition is of the "winner takes all" kind, so that in the short term, capturing market share is far more important than making a profit. Once the competition is overtaken, a company can use its power to make money. A further analysis is given in [Molenaar, 2020].

20. As a platform can connect many suppliers to its customers, such issues are usually hard to control. However, in order to prevent this happening, customers have an option to rate the suppliers publicly. This incentivizes suppliers to keep their promises. Reversely, suppliers sometimes have the option of rating customers with more or less the same objective.

21. See e.g. [Janjevic & Winkenbach, 2020].

22. See e.g. [Sousa et al., 2020].

23. The competitive advantage that traditional retail is looking for is to offer an experience for their customers.

24. See e.g. [Robertson et al., 2020].

products. This is a trend known as servitisation. Text book examples are early adopters like Xerox and Canon that, rather than selling copiers and printers, offer document services to their customers. The business then involves (re)placing the right types of machines, maintaining them and repairing any possible defects so that customers do not have to worry about this and always have access to the required services.

Many firms have migrated to this concept or are in the business of doing so. Examples of such Product-as-a-Service (PAAS) include Software-as-a-Service (rather than buying a piece of software, you have access to software in the cloud), Light-as-a-Service (Philips offering to provide proper lighting for buildings), Road-as-a-Service (where a construction firm makes and maintains a road and is paid per use), Truck-as-a-Service (renting rather than owning trucks), Flowers-as-a-Service (where florists ensure that their customers' offices and conference rooms are constantly supplied with fresh flowers and plants) and many, many more.

"It is not their product portfolio that makes them unique but rather their expertise and logistics abilities"

This way of doing business has been greatly enhanced by the now widely available Internet-connected sensors measuring the status of located apparatus and machines. By using such sensors, service providers receive on-line real-time information about what is happening at the customer's premises. By analysing all relevant data and matching these with the in-house resources, better and more efficient preventive maintenance can be implemented. One further step is not only to have sensor equipment but also to build intelligence into systems and to be able to control remotely. This trend is frequently associated with Industry 4.0,[25] an umbrella-term for development and technology for increased connectivity and flexibility such as the Internet-of-Things, 5G networks, 3D printing, robotics, artificial intelligence, quantum computing and autonomous vehicles.[26]

Looking into the business model underlying servitisation/PAAS/Industry 4.0, it becomes clear that the value proposition is drastically different from just selling a product, and that the connection with the customer is far more intense and continuous.[27] The value of PAAS to customers is clearly that they always have access to the product without going having the hassle of owning it.[28] In terms of internal processes and resources, on adopting PAAS, two separate services are integrated, namely selling and product maintenance.[29] Also, in terms of financial flows, the PAAS business model is drastically different, as a company creates a steady flow of income (frequently a fixed fee per time period) rather than seeing spiked income (payment when a product is sold). Furthermore, as products remain the property of the company, new supply chain processes can be triggered. One example would be finding a second life for products or disassembling products for re-using materials.[30]

Many firms have not fully adopted PAAS but have taken steps resembling some of the underlying principles. That is, they still sell products, but are adding additional services to their customers. One of the most spectacular examples of this is the online retailer Coolblue, which decided not to be just another web-shop but to add services to their customers by opening physical shops (so that customers can see and touch the equipment) and to insource their own home delivery service. The added customer value in this business model is to take away the hassle that customers frequently experience when installing and setting up a TV or washing machine etc. Of course, there is the cost of having your own fleet of delivery vans and mechanics. However, Coolblue turned this into a benefit in terms of (on-the-road) advertising and an improved insight into, and connection with, their customers. This example clearly shows that offering a differentiated value proposition does require different resources and capabilities within the supply chain, i.e., a different business model altogether.

Similar developments can be seen at wholesale organizations. Several of them realize that it is not

25. This term indicates that this is the fourth industrial revolution after steam-powered machines (first), railroads, telegraphy and electricity (second) and computers and digitization (third).

26. See e.g. [Tjahjonoa et al., 2017].

27. The impact of servitisation on business models is further explained in e.g. [Coreynen et al., 2017], [Vendrell-Herrero, 2017] and [Palo et al., 2019].

28. As the popular saying goes: "people don't want a drill, they want holes".

29. This has a particular impact on firms where production & sales are organized as two separate business units, each with their own market segments.

30. The cradle-to-cradle concept is greatly facilitated by PAAS here. See for example [Correa, 2018].

their product portfolio that makes them unique (nowadays products are readily available all over the Internet) but rather their expertise and logistics abilities. That is why wholesalers aim to add value by offering expertise, taking over some of the customer's activities and/or special delivery services, e.g., overnight replenishment right into the customer's production lines. These services can often only be performed via digitalized information exchange. As the ability to capture value from additional value propositions requires different pricing schemes, resources and capabilities, it becomes clear that a completely new business model is to be set in place. In more general terms, it can be argued that, in a world where keeping stocks is less desirable (life cycles are getting shorter, freshness/health becomes more important), an organization's performance is determined les by its products and more by the services around it (on-time, flexible, high quality of delivery), making (logistics) partnerships increasingly important. Clearly, the current practice of tendering (with requests for RFI and RFQ) seems less appropriate for establishing these partnerships.

Sustainability driven by transparency

Needless to say, organizations and supply chains are under a lot of pressure to become more (ecologically and socially) sustainable. This is driven by the end-customers who want to buy 'honestly' produced products, direct (business-to-business) customers with sustainability objectives of their own and requiring you to adhere to their standards, governments issuing ever-stronger requirements and stricter laws[31] or by the organization's own aims. Most organizations react to external forces by "doing the same but in a more sustainable way". Examples include replacing diesel trucks with electric cars, placing solar panels on the roofs of distribution centres to create green energy sources, using Fairtrade products in their catering and replacing some of the raw materials with more sustainable ones. All of these efforts are to be applauded, of course. However, our focus here is on far more drastic changes: building a business model around sustainability.

One of the frequently cited cases in this respect is Tony's Chocolonely, the chocolate manufacturer with a mission to deliver slave free chocolate-bars to consumers in a fun way. Although the chocolate itself is fine (or even great), the key differentiator for Tony's Chocolonely is not so much its products but the fact that it positions itself as offering chocolate that is produced slave-free, i.e., the production of the raw materials is done in a more honest way. In other words, Tony's Chocolonely is valued highly by customers for its mission and ability to be socially sustainable, i.e., it has a differentiating value proposition. Clearly, this can only work when the entire supply chain is credible in terms of doing everything in their power to actually deliver slave free products. As a consumer cannot see this from the chocolate bar itself, the Tony's Chocolonely supply chain has to offer full transparency. It needs to be visible to all interested parties where all ingredients come from and how they are processed. This is why Tony's Chocolonely is highly involved in modern information technology for creating such transparency. Although still under development, there is hope that every item produced will soon come with its own un-fakeable product passport so that it can be tracked and traced throughout the supply chain with technology like blockchain. Summarizing, Tony's Chocolonely has adopted a new business model where a sustainability-driven value proposition goes hand-in-hand with technological innovations offering the required transparency.

Based on the idea that sustainability is of the utmost importance but that existing organizations find it hard to change their business model accordingly, many young people[32] are eager to start their own social enterprise. This term itself already indicates that is it is no ordinary firm; the focus is on doing good rather than doing well. From a supply chain perspective, such efforts are not only focused on sourcing in a sustainable way, but also on supplying to what is sometimes described as the bottom of the pyramid: the (very large) group of people who are in an economically less favourable position.[33] Perhaps surprising to some, the people in this market segment are actually relatively well-connected, as

31. Governments guided by "the polluter pays" principle often have a strong desire to bring the cost of so-called externalities (consequences of an activity which affect the environment without being reflected in the firm's costs) back to the to the firms that cause them. It is therefore only natural that firms developing new business models take this strong trend into account, ensuring that externalities become internalities.

32. In e.g. [Bersin, 2018] it is argued that it is not just something for young entrepreneurs but that it is imperative for all businesses to make such a change.

33. This is popularized by management guru C.K. Prahalad. See e.g., his book [Prahalad, 2006].

many do have smart-phones, which can be the source for technology- and sustainability-driven business models.

It is important to note that, despite the purpose-driven goodwill that is associated with sustainability, the objective remains to focus not only on the planet and people but also on profit. After all, when a firm is not making any money, it cannot be considered as truly sustainable in the long term. Therefore, when developing a business model based on sustainability, it is crucial to have clarity on return and investment. To establish this, it is not enough to simply look at what customers are willing to pay. True sustainability efforts often have a holistic approach where, next to customers, the created value to other stakeholders like employees[34] and suppliers also comes into consideration. In other words, a total business model perspective is needed.

"When a firm is not making any money, it cannot be considered as truly sustainable"

One example is Heineken, which has made huge efforts in making its supply chains more sustainable over the last decade or so. One of the issues that Heineken was confronted with is that, due to climate change, there is increasing pressure on the availability of pure water in some production areas (which is clearly a key ingredient of Heineken products). Rather than muscling their way into grabbing their own share of an ever-decreasing water supply, as part of their sustainability efforts, Heineken has worked together with local communities to protect and improve clean water supply in the area. The result of this collaboration is a true win-win: both the local community and Heineken gain long-term benefits from the joint efforts.

34. It is a well-known fact that especially young people are interested to work for organizations that have high ambitions when it comes to their sustainability goals. Therefore, organizations that work with sustainable business models are more likely to attract young talents.

2. Supply chain management for implementing new business models

As mentioned earlier, the nine fields in the BMC should not be considered in isolation; a well-designed business model relies on the interaction between all fields and ideally a synergy is created. Nevertheless, this white paper does focus more on the supply chain function and the professionals working in the related fields. The term supply chain business model (SCBM) then relates to nothing other than taking a supply chain management (SCM) perspective when discussing the design and rollout of a business model. This will be discussed in more depth below.

Unfortunately, there are many different ideas of what SCM is, and many different organizations do in fact use it in a different way. This is not actually a problem in itself. But, in order to get a good understanding of how SCM relates to new business models, it is important to define the term first. The following definition[35] is often used for SCM is frequently used in the academic literature: "*The systematic, strategic coordination of the traditional business functions and tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.*"

From the definition, it is immediately clear that SCM has both an internal and an external component. Internally, it concerns the coordination between the various business functions (e.g., Purchasing, Manufacturing, Sales, Finance, Trade and Logistics). In other words, from the definition, SCM should not be considered as a function (or department) in the organizational chart (which it frequently is) but rather a coordination mechanism between various functions.

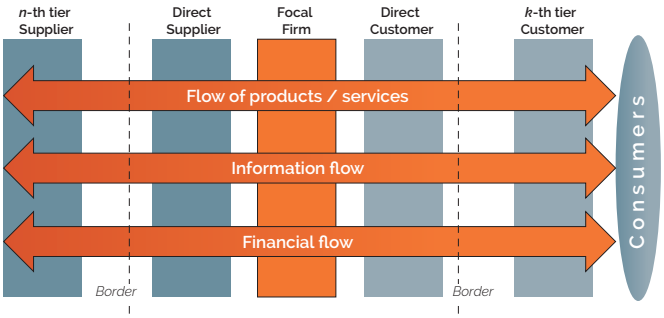

Figure 2: SCM as the management of three flows between organizations.

The external component of SCM concerns the coordination of product flow, information flow and financial flow between the organisations constituting the external supply chain; see Figure 2. As indicated in Figure 2 and as mentioned at the outset, supply chains are frequently global, meaning that

35. *This definition is arrived at in [Mentzer et al., 2001].*

cross-border issues can (and are in fact likely to) appear on both the upstream (sourcing) and the downstream (distribution) side of the supply chain.

Strategic coordination

Another important feature of the SCM definition is that it is about strategic coordination, i.e., about how the organization aims to achieve its long-term goals, including which customers it targets, what value it brings to the market and how it positions itself in the end-to-end supply chain (which includes selecting the business partners and establishing a shared set of joint performance objectives). As argued at the outset, this also implies that SCM is not only about operational, day-to-day activities but also about strategic issues, including the choice and development of (new) business models and the design of associated networks.

As SCM concerns all three – product, information and financial flow, it is imperative that these flows are not considered in a stand-alone fashion.[36] It is particularly vital to connect the information flow and the product flow. In this day and age, when many new information technologies are becoming available, it is tempting to let the IT department decide on and implement new software packages and applications. After all, they are the ones who have the technical skills and backgrounds to make it work. However, implementing new IT systems can only be considered to be solely an IT-project when no users are affected, when things go on just as before but with faster equipment and more user-friendly applications. Unfortunately, this is hardly ever the case. Usually, the work process, i.e., the way the supply chain operates in both design and in planning and control, also changes as soon as new digital technology is introduced. It can be concluded that, whenever fundamentally new technology is introduced at the firm, this inevitably will have a significant impact on the underlying supply chain processes[37]; see Figure 3.

The observation that implementing new technology always goes hand-in-hand with an impact on the supply chain processes is also crucial when the topic of digitization is discussed. All too frequently,

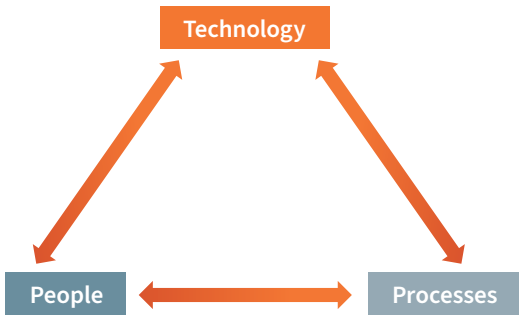

Figure 3: Triangle connecting technology with processes and people.

digitization is considered as "doing the same, but digitally". This approach creates two key issues. First of all, although this is frequently overlooked, things will not actually be the same when these are digitized. People will need to do different things within different systems and will often not see the benefits themselves. Secondly, the true benefits of digitization will not emerge from doing the same thing; the whole reason for getting into digitization is to be able to do things more efficiently and effectively. One example is the introduction of digital freight documentation. Truck drivers, used to paper forms, consider this as a nuisance and it has proved hard to convince them of the benefits simply because these benefits do not come to the drivers but to other areas beyond their responsibility (such as more transparency, traceability and improved planning).

Although change is often triggered by new technology, the ambition to change the processes is sometimes the actual reason for implementing new technology. For example, a desire to source materials from certified suppliers only may be the reason for implementing information systems that can guarantee traceability.

Whether the starting point is technology or a change to processes, the real challenge lies elsewhere. As can be observed from Figure 3, it is the people working in the supply chain who have the dual problem on the introduction of new technology. They have to work in different processes and they have to use a new technology. It is therefore not surprising that it is often people who create a bottleneck when establishing change, this being one of the key risks

36. Unfortunately, this happens all too frequently. At many firms, the IT department and Finance department who are responsible for the information flow and financial flow respectively, leaving little or no direct connection with the departments managing the supply chain processes.

37. Probably the best-documented example of this phenomenon is the implementation of ERP systems. These typically require the reengineering of business processes and a fundamental change to users. See e.g. [Subramoniam et al., 2009] and [Altamony et al., 2016]. It is particularly the failure to approach this holistically that has led to so many problematic ERP implementations.

when implementing new SCBMs (which will be discussed in more detail in Section 4).
Over the last decade, the connection between products and financial flow has been emphasized within the rapidly developing field of supply chain finance.[38] The key underlying idea is that, as financial flows between organizations are the reverse of product flow, financial transactions can be coordinated better than when simply through the dyadic order fulfilment process and invoices etc. The alternative could be that, for instance, a retailer gives guarantees to the entire food supply chain that it will buy the products made and that all supplier tiers are paid by the retailer (directly or via a finance house) as soon as they have concluded their value-adding activity. Interestingly, such payment schemes can be greatly enhanced through blockchains, as they offer built-in smart contracts.[39] The results are a much simplified and steadier financial flow, leading to a win-win situation for all supply chain entities.

Business models from a supply chain perspective

Comparing the BMC and the definition of SCM discussed above, it becomes immediately clear that essentially SCM covers all nine BMC fields. As SCM is strategic in nature and customer-oriented, the starting point is often targeted product-market combinations, i.e., a value proposition for the targeted customer segments.[40] As mentioned in Section 1, SCM is concerned with the impact of the (new) business model on key partners, activities and resources and with channels and customer relations. Finally, as the three flows should be considered integrally, SCM is also involved in monetary flow, hence cost structure and revenue streams. To conclude, viewing business models from a supply chain perspective makes perfect sense and nothing of the BMC is lost or overlooked. In fact, this observation is another way of looking at new business model implementation. Rather than taking a top-down (vertical) approach where business models are the responsibility of top management only, SCM offers a flow-oriented horizontal perspective, taking primary organizational processes as a trigger point. This reinforces the statement at the beginning of this white paper, namely that supply chain professionals need to be highly involved in the development and implementation of new (supply chain) business models.

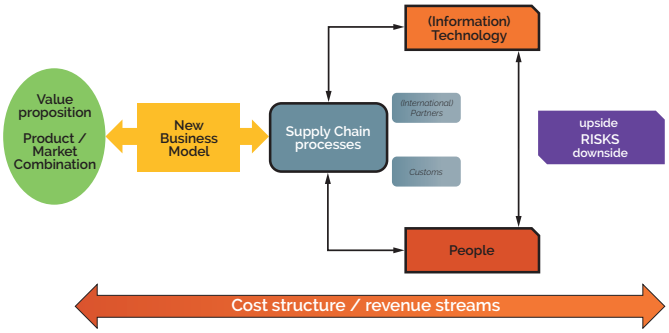

Figure 4: Viewing new business models from a supply chain perspective.

The approach adopted in this white paper is illustrated in Figure 4. Working from left to right, the starting point for the design of a new SCBM is a given value proposition for a given targeted market. The SCBM should then indicate how this value is created and acquired by looking at the supply chain, particularly technology and key human resources used. The last step then involves assessing the risks and mitigating/embracing them.

Interestingly, the approach that companies took as a result of the coronavirus crisis has also demonstrated that the model can be considered to work from right to left. During lockdowns (especially the first ones in China and Italy), many organizations were confronted with unexpected problems in their supply chain. Unexpected because they were not aware that the supplier of their supplier was sourcing from China, yet the fact that somewhere in this supply chain supply had stopped also affected their own production. In other situations, firms delivered a part that their customer assembled with a part coming from China, so when China could no longer deliver, demand for the parts also stopped. Given that such problems were unexpected, there were also no contingency plans in place. In reviewing such situations, it immediately became clear that supply chains lacked transparency and resilience. Confronted with such risks, many organizations have realized that new technology-based SCBMs need to be implemented.

38. *See e.g., the PhD dissertation [Steeman, 2020].*
39. *At the moment, this is a vision for the future rather than a reality. Nevertheless, the underlying logic is very promising. See for example the book [Hofmann et al., 2017].*
40. *Although the name might suggest otherwise, supply chain management is increasingly demand-driven. This trend is sometimes referred to as supply chain reversal.*

3. Risk management: some fundamentals

If the coronavirus crisis made one thing clear, it is that supply chains can, and therefore are, confronted with many threats, including inbound and outbound product flow disruption (e.g., through climate conditions, strikes and power outages), compliance issues and risks related to reputation, financial flow, information flow (including cybercrime), geopolitics (trade wars, closing of borders), volatile markets and much more. However, this paper is not so much focused on risks associated with daily operations in supply chains as on the risks of introducing new SCBMs. Whenever an organization engages with something fundamentally new, many factors inevitably determine the success or failure of any efforts at innovation. Implementing new SCBMs must therefore always be accompanied by some type of risk management. Before going into this in more detail, this section reviews some fundamentals of the relevant type of risk management.

Although the term risk is frequently used in everyday life, it is worthwhile to define what exactly is meant by it in the context of the subject of this white paper. Most dictionaries relate risk to something like "potential for loss of, danger or harm to something of value". A popular way to determine the severity of risk is the formula "risk equals probability of occurrence multiplied by the severity of the consequences". Risk management then reduces down to the actions taken to decrease the probability of occurrence and/or the severity of the consequences.[41]

Although such definitions work very well for the everyday operation of supply chains, they are less suitable for the purpose of risk management when implementing new SCBMs. The difference is the importance of whether something actually works out as planned. In the fast-paced, time-sensitive daily management of highly efficient supply chains, it is crucial that everything goes according to the pre-determined plan. Any deviation from or disruption of this plan is to be avoided, as problems tend to cascade and become worse downstream. In other words, the risk that things do not go according to plan is to be avoided at all costs and risk management based on the above formula is a practical way to approach this.

Roadmap to implementation

However, this is quite different for the once-off (project based) implementation of a new SCBM. A plan will most probably be drawn up for this. But, as it is the first time this is being done, there are inevitably many uncertainties, and unforeseen things can happen.[42] Therefore, the plan should not be carved in stone but be considered as only one

41. A simple example from driving a car illustrates this. One risk related to this is getting severely injured in a collision. Risk management can be related to lowering the probability of occurrence, including the practice of safe driving and technological features built into the car indicating nearby vehicles and obstacles. It can also relate to reducing the severity of consequences, e.g., through using safety belts or ensuring that airbags are built in.

42. Typically, at least two types of uncertainties are to be considered, namely the known unknowns and the unknown unknowns. Clearly, the latter category (situations that are so unexpected that they would not be considered at all initially) requires a different approach from the first one.

possible path forward. In other words, the roadmap for implementation can be considered as a good plan but only until a better plan comes along.[43] Risks are therefore not to be seen as a deviation from the plan but as a deviation from the firm's ultimate goal for the new SCBM. The definition of risk that will therefore be used here is "the effect of uncertainty on reaching the set goals".[44] It should be noted that this definition does take a strategic perspective, as it is goal-oriented. It should also be observed that, according to this definition, uncertainty is not necessarily a bad thing; there can also be an upside.

While most people and organizations are risk-averse, innovators and entrepreneurs[45] tend to be more risk-seeking. Entrepreneurs are certainly no daredevils, but if they never dreamed about all the positive things that can happen when everything works out, but only had nightmares about everything that could go wrong, business renewal would never even begin. Similarly, getting involved in a new SCBM inevitably brings some level of uncertainty with it. To get it going, at least some positive interaction with uncertainty should happen. In other words, when organizations start new endeavours, especially in a highly VUCA environment, unexpected things are bound to happen, and organizations should not shy away from that. Some unexpected events will be setbacks but others will be lucky breaks. Risk management is essentially how you deal with both such types of events.

Decision tree for decision-making

The above deliberations can be explained with a simple example using a decision tree. See Figure 5. In the decision tree, the green square represents a decision; the decision-maker can either take decision alternative number 1 (i.e., to move to Node A) or number 2 (move to Node B). When at A or B, the decision-maker has to wait and see what happens. There are two possible pay-offs in each situation, each with a given probability. It should be noted that the final pay-off (the blue numbers) depends on both the decision taken and on luck. The decision-maker's objective is clearly to get a high pay-off.

Although highly stylized, this model could show that deciding to implement a new SCBM resembles the first decision alternative (there appears to be great opportunity ahead but this is not without considerable risk), whereas continuing with the current efforts relates to the second decision alternative (it is highly likely that nothing drastic will happen, but there is a small chance that you might be disrupted). The simple question is then: which of the two decisions is preferred?

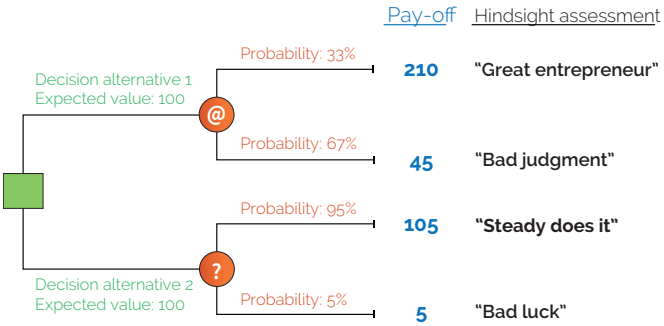

Figure 5: Example of a decision tree for decision-making in uncertainty.

As indicated in Figure 5, both decisions are equally good on average, as both have an expected value[46] of 100. However, the risk of not reaching the targeted average of 100 is much greater for the first decision alternative than for the second.[47] In contrast, the opportunity (upside risk) associated with the first decision alternative is much greater; on the positive side, it may reach a pay-off of 210, which is double the potential of the second decision alternative.

This example clearly demonstrates that deciding what is the best decision is not straightforward, and highly dependent on the decision-maker's appetite for risk. It also shows that when risk is only considered as a negative (adopting the classic definition of risk), decision alternative number 2 is preferred, whereas when the upside risk is also taken into account, the first decision alternative is still attractive.

It is important to note that decisions about whether to invest in breakthrough innovations and establishing new SCBMs inevitably come with what is known as

43. A quotation from Dwight D. Eisenhower applies here: "Plans are nothing, planning is everything".

44. This definition is used in the (Dutch language) book [Van Staveren, 2018].

45. Entrepreneurship is usually associated with starting new businesses (start-ups). However, as similar skills and efforts are required when fundamentally changing the firm's business model, the term can also be applied to these situations (although the term intrapreneurship is sometimes used here to distinguish between them).

46. Expected value = probability x pay-off. The expected value of D1 is (0.33 x 200) + (0.67 x 45) = 100 and the expected value of D2 is (0.95 x 105) + (0.05 x 5) = 100.

47. Taking 100 as a targeted amount and using risk = probability x impact, D1 has a risk of 0.67 x (100 – 45) = 36.67 and D2 has a risk of 0.05 x (100 – 5) = 4.75.

hindsight bias. That is, once the results are known, it is easy to see whether the decision made was a good one or not; see the quotes at the right-hand side in Figure 5. In other words, the quality of the decision (and the decision-maker) is usually measured by its outcome and the underlying decision. However, in reality this outcome is also highly influenced by at least some (good or bad) luck. In other words, judgements should not be based on the end-result alone.

"The whole idea of risk management is that organizations are not helpless victims of a random numbers game"

In all its simplicity, the above model clearly demonstrates that, when deciding on a new business model, firms are inevitably faced with positive and negative risks, and both should be considered.

Unfortunately, not all of these risks can be managed. Moreover, where the simple model shows all possible outcomes and the associated probabilities and pay-offs, such information is usually not available.

Of course, this example does not imply that risks could/should not be managed. In fact, the whole idea of risk management is that organizations are not helpless victims of a random numbers game, but can in fact turn some of the odds in their favour and/or can choose the right paths when this is not possible. In other words, the key advice is to manage the risks that can be managed and keep an eye out for the effects of the risks that cannot be controlled (but do not worry too much about them).[48] Some typical risk management efforts at implementing new SCBMs will be discussed in the next section.

48. This relates to the Serenity Prayer attributed to Saint Francis of Assisi: "Lord, grant me the strength to accept the things I cannot change, the courage to change the things I can and the wisdom to know the difference".

4. Risk management of new cross-border supply chain business models

Below a brief discussion is given of some of the typical risks associated with implementing new SCBMs in this section. It is to be noted that the list is far from complete, and that no priorities are intended. Each implementation of a new SCBM will have its own challenges. Each of the risks will be addressed and some preliminary pointers given for managing such risks.

Finding the right international supply chain partners

With any new SCBM, partnerships with customers and all other strategic[49] external supply chain entities are clearly of key importance. It is essential to note that the term partnership definitely applies here.[50] Unlike regular business, the emphasis in terms of performance is not so much on reliability (complete and on-time) and cost-efficiency but (given the nature of being explorative) on flexibility, responsiveness and agility. This can only be achieved if all supply chain entities are constantly sharing their information and coordinating their efforts (the so-called sense-and-respond paradigm).

Although the firm aiming to launch the SCBM typically leads the coordination, this should not be confused with being in charge.[51] The mere fact that all strategic external supply chain entities involved are treated as equals (i.e., with no hierarchical relationships) means that ideas for further development and innovation (and more traditional risk management[52]) can come from all partners rather than from the focal firm only.

Needless to say, establishing strategic supply chain partnerships does take a lot of time and effort. This is especially the case when supply chains are cross-border because these partners typically operate under different laws, are from different cultures and might have different approaches to doing business.[53] Additionally, a new SCBM is based on the end-to-end chain, but not every chain can be managed integrally from a single organization, certainly not for cross-border supply chains. Importers and local logistics service providers are of course much better informed about (im)possibilities and their own laws and regulations than the local firm in the home country. Here too, partnerships are crucial in order to be able to import and/or export successfully to large parts of the world. To summarize, it is fundamental to realize that international trade relations are the cornerstones of any new SCBM. Giving these connections enough weight might therefore be the most important risk management focus.

Partner selection is clearly key to this. It is important to realize that the best partners for a new SCBM

49. The term strategic refers to those external supply chain entities that are fundamental to the success of the new supply chain business model, i.e., whose involvement cannot be overlooked when working towards success.

50. All underlying concepts of Supply Chain Collaboration apply here. See e.g. [Van der Veen, 2014].

51. In fact, a new service offering with new partners does require a new governance level. For an application to servitisation, see [Forkman et al., 2017].

52. See e.g. [Nyoman Pujanan & Geraldin, 2009] and [Li et al., 2015]

53. The acquired expertise of evofenedex in how to do business with cross-border firms can clearly be put to good use here.

might well be different partners from the ones that organizations now do business with. Firms often do not want to jeopardize existing relations and feel obliged to include their old friends in their new plans. This can have benefits but also some clear drawbacks, like mixing the objectives of existing and new SCBMs and facing resistance to change. Therefore, a realistic downside risk when implementing new SCBMs is to limit the innovation possibilities by being overly focused on the existing supply chain. It should be noted that a new SCBM is just that: new. There is a real opportunity to find new friends, expanding the organization's network (with the additional benefit that resilience can be strengthened).

"Customs is a great asset in international trade facilitation"

A major risk, especially when platforms are used, is the so-called lock-in effect: once you base your SCBM on a platform, you might become highly dependent on it, with no leverage on the way the platform is managed.[54] For example, when a firm decides to sell its items through the Amazon portal, it immediately has access to a gigantic group of customers but at the same time has no other option than to follow Amazon's power-based lead.

Alternatively, a company might want to build its own platform. Clearly, if such efforts turn out to be successful, this might have great benefits. But, unfortunately, such endeavours come with many challenges, as they require major changes in essentially all nine BMC fields and huge efforts in technology development that frequently require endurance and deep pockets.[55] If a company does not want to adhere to a platform driven by an all-powerful leader and does not want its own platform either, there are again alternatives that offer something in between; one example would be Shopify. Clearly, whatever alternative is chosen, each comes with both downside and upside risks that need to be carefully evaluated before starting the new SCBM.

Underestimating cross-border effects

In today's globalized world, when developing their new SCBMs, most organizations see great advantages in operating on a world-wide scale in terms of both sourcing the materials and components and selling their products and services. In fact, the scalability of such new SCBMs often lies in the possibility of entering additional international markets. In such endeavours, it is inevitable that goods and services will cross borders. However, the related issues are frequently dealt with in hindsight (something like we will cross that bridge when we come to it") rather than as the fundamental design-issue for new SCBMs that it is. After all, it really does matter what types of products are brought from where to where, also regarding Customs rules, requirements and procedures.

Although this sometimes appears to be the initial mindset, Customs are obviously not to be considered as an obstacle in supply chains, only causing bureaucratic hassle and waiting time. Rather, a properly functioning Customs is a great asset in international trade facilitation and should therefore be seen as a value-adding link in cross-border supply chains. Taking this one step further, Customs could even be considered as a partner in establishing new SCBMs. Here, it is important to realize that Customs has clear objectives including taxation, security and trade facilitation. Within the collaboration, the participating supply chain entities can make arrangements designed to help Customs achieve their goals by offering the necessary full transparency (sharing all relevant data and arranging all necessary inspections in due time). In return, Customs will be willing to make deals to move products faster. Such Customs-to-Business partnerships, sometimes referred to as a System Based Approach[56] can be certified as AEOs: Authorized Economic Operators.[57]

A totally different approach would be to review the necessity of operating in a cross-border fashion. Under various names such as reshoring and nearshoring, companies are reconsidering their manufacturing location decisions, bringing them closer to the markets. Something similar is

54. As in the famous Eagles song Hotel California: "We are programmed to receive, you can check out any time you like but you can never leave."
55. See e.g. [Cenamore et al., 2019]
56. In Dutch: 'horizontaal toezicht'.
57. For the impact of AEO on global supply chains, see [Karlsson, 2017].

happening in food supply chains where Local-for Local appears to be the trend. Inevitably, such efforts come with pros and cons. Typically, global sourcing is considered as the low-cost solution. This is to be traded off against the benefits of local sourcing that include being more responsible to specific customer needs and the ability to ship faster (less transportation and Customs delay time). One example of this would be Zara, the textile company known for its ability to react quickly on fashion trends and change collections within a matter of days. Part of Zara's success is due to the fact that it does not source mainly from the Far East (like Bangladesh, Cambodia and Vietnam) like most competitors do, but has manufacturing plants to supply the European market in Spain and Portugal.

"The focus should actually be based on a relatively low level of automation"

Clearly, producing locally also has its benefits in terms of (social and ecological) sustainability. By keeping the supply chains short, not only shorter shipments are required, reducing emissions, but supply chain activities are also more traceable and controllable. In this way, end-products can be guaranteed to be made according to sustainability goals. An example of this is can be Kipster, a Dutch based cooperative that provides nearby supermarkets of Lidl (which was involved in developing Kipster in the pioneering phase) directly with carbon-neutral eggs and chicken whilst maintaining the highest animal welfare standards.

Geopolitical developments and government regulations are another important risk to take into account when evaluating new SCBMs. The fast rise of China as a new world power and political developments in the USA and Europe have led to reflections on a new world order. The new Silk Road and the Brexit and US-China trade wars are realities that firms will have to deal with. Although nobody is able to predict what will happen, there appears to be a trend towards strategic autonomy (increasing self-sufficiency and boosting domestic industry) in the USA ("America first"), China ("Made in China 2025") and Europe. Needless to say, such geopolitical trends require consideration when establishing new SCBMs.

Information technology implementation

As most new supply chain business plans include heavy use of new information technology (IT), this is unavoidably a major component of implementation. Unfortunately, implementing IT can be very problematic in practice. Typically, the expectations are far higher than can be realized and implementation projects take far more time and effort than originally anticipated.[58] This is due to key misconceptions about IT, which will be discussed below.

Firstly, as mentioned earlier, there is no such thing as an IT project: all internal and external business processes and the people working on this (i.e., all IT users) will usually be affected. In many organizations, there is the argument that the business should be leading rather than IT. However, there is ideally continuous coordination between the two. IT engineers are often very happy to cater for any demands that the business has. However, such demands often entail new software development, which takes a lot of time and effort, and whether it works remains unproven. Therefore, it needs to be a well-informed joint decision on whether to take that path or to seek easier alternatives.[59] Conversely, IT engineers might know of standard solutions that the business did not even think of asking about. To summarize, IT must not be considered as a black box or separate unit. As with all other functions, it is important to integrate all efforts towards the establishment of the new SCBM.

Secondly, IT is not flexible. Unlike what many people seem to think, IT systems are notoriously fixed. Once an IT system is in place, changing or adopting it can prove to be very difficult. Additional features can certainly be built on the existing infrastructure, but making changes to the infrastructure itself can be nearly impossible. This aspect is problematic enough for the existing business, but of even greater concern for the implementation of new SCBMs. After

58. To many organizations, the implementation of ERP systems is a notorious example of this.

59. A good starting point is probably the rule of always using standard software, unless there are very strong reasons not to do so ("comply or explain").

all, the business model plans themselves are not stable; there might often be reasons for adopting the plans based on experience and learnings. This implies that IT implementation should be kept as flexible as possible. Also, rather than focusing on the need for IT-driven efficiency, the focus should actually be based on a relatively low level of automation.

Thirdly, IT is only as good as the data it processes. While everybody is familiar with the saying "garbage in, garbage out", data management is still underestimated in many firms. The problem is of course that even the fanciest IT system cannot solve data integrity problems. So, before IT systems are installed, initial efforts should be made to ensure data quality.

Fourthly, IT makes data fluid, so a far higher level of protection is required. When comparing digitized information to the old paper archives, it immediately becomes clear that the advantages also come with a downside, namely that digital information can flow all too easily through the various systems. Consequently, there are key challenges in maintaining privacy and other cyber security issues. As developments move fast in both directions (IT firms providing structures for solutions and hackers finding ways around such solutions, and so forth), when implementing IT for new SCBMs, it is important to keep track of the latest developments and to make sure that security issues are at the heart of the value proposition.

One of the major risks that companies face with the implementation of a new SCBM can be its legacy IT system; an information system that is essential for managing current activities but that is based on older technology, so that it cannot or should not be used for the new SCBM. Starting the SCBM with a new IT system is often necessary but comes with many challenges, but building additional features onto the current IT infrastructure might even be riskier. This might also be the reason why IT-based start-ups can be so successful: they can start from scratch.

Getting stuck in the innovation valley of death

Implementing a new SCBM inevitably implies some sort of (product and/or process) innovation. Although innovation is typically welcomed in everyday conversation, it frequently fails in practice. Therefore, one of the key (downside) risks is underestimating the challenges of innovation. In fact, innovation is quite different from everyday business, which drives on repeatability and efficiency. By its very nature, innovation is not efficient, as it takes a lot of time, effort and energy[60] and success cannot be guaranteed. Typically, innovation involves things getting worse before they get better. For example, producing a new line of products might come with a lot of difficulties, which are killing the productivity numbers and adding a lot of frustration for operators, as things are not running nearly as smoothly as they are used to. There is a realistic danger of the plug being pulled in these situations, and the innovation is a victim of what is known as the valley-of-death, see Figure 6.

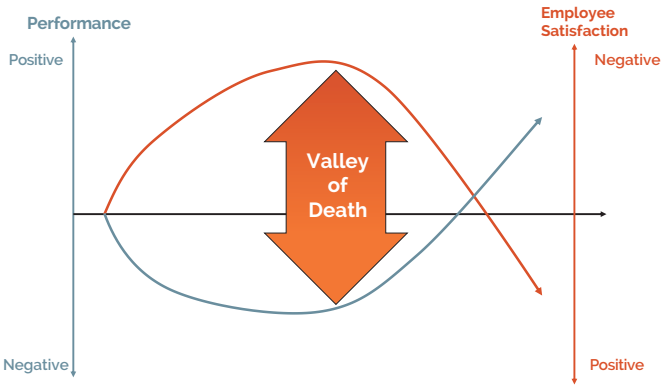

Figure 6: The innovation valley-of-death as the sum of performance setbacks and employee anxiety.[61]

In order to cope with such issues and overcome resistance to change[62], management can change the incentives. Rather than looking for direct results, continuous learning from experiments should be the objective. In this setting, each hurdle is considered as a new challenge and an opportunity to learn. Some companies even go as far as actually celebrating their biggest failures.

60. This phenomenon is explained well in the fascinating book by Nobel Prize Laureate Daniel Khaneman: [Khaneman, 2011].
61. This graph is taken from a lecture on social innovation by professor Henk Volberda (University of Amsterdam).
62. For ways to overcome such resistance to servitisation efforts, see [Lenka et al., 2018].

A totally different approach is to start the new SCBM within a new business unit as if it were a start-up business, leaving regular business unaltered.[63] The advantage of this is that there is nothing to be un-learned or changed and all involved parties are typically enthusiastic and motivated right from the start. One example of this is when Heineken purposely positioned its subsidiary Beerwulf (delivering a wide and continuously changing assortment of local craft beers that can be ordered via the Internet) as a stand-alone business. Although Beerwulf could not benefit from the market power or distribution networks of the parent company with this positioning, the fact that it is was launched as a small company brought many advantages in terms of being able to move fast and adapt to events and circumstances easily.

In a way, the options discussed above, (i.e., adopting change in the firm and starting a new business unit altogether) can be seen as two ends of a spectrum. Sometimes it would be possible to modularize business models so that some parts can be used by all businesses, whereas other parts of the business model are specific to the targeted product-market combination.[64] One famous example is the Volkswagen Group's *Modulare Querbaukasten*, which provides the same components (such as underbody, axles and drivetrains) for 40+ models of not only Volkswagen but also Audi, Skoda and SEAT cars.

Inside-out approach

It is a well-known fact that some 80% of all product launches do not turn into a financial success. Although, to some extent, such a high percentage can be attributed to the very fact that doing something new always comes with a risk, some lessons can also be learned. One important lesson is that product development is all too often an internal process.[65] Of course, companies are customer-oriented and eager to ask customers for their feedback, but practice shows that such inside-out approaches are often not good enough.

Of course, the implementation of new SCBMs goes beyond launching new products. As the amount of uncertainty is even higher and the effort often includes providing services, it is even more important to match supply and demand. To this end, there are two key notions to consider. Firstly, it is crucial that there is a very clear idea of what value is created for the customer within the new SCBM.[66] Secondly, there are good reasons to adopt the agile way of product development. That is, the development the value proposition is ideally done in collaboration with customers by splitting the development into short sprints delivering incomplete but viable products to which customers can react.[67] In so doing, companies keep their options open and customers can not only provide feedback early on in the process but also can give outside-in suggestions that can be incorporated in the further development of the new SCBM.

Top-down approach

As launching a new SCBM is typically a top management decision, it is very tempting to use a top-down approach when implementing it. Although this comes with certain advantages (clear command and decision structures), it often creates many problems. Top management's helicopter view might be good for seeing the big picture, but frequently the devil is in the detail when it comes to implementation. Inevitably, hurdles and opportunities will pop up in all functions associated with the BMC fields.[68] It is therefore paramount for all involved to take ownership[69] of all efforts to implement the new

Figure 7: Catchball process for strategy implementation.

63. This is advocated in the book by the famous change management guru John P. Kotter: [Kotter, 2014].

64. Especially for servitisation efforts, it might be worthwhile to combine a global approach (taking care of the value proposition, service portfolio, brand management and the basic operating model) with local efforts and customers (including service process adjustment, customization and co-creation); see [Hakanen et al., 2017].

65. This is typically done though some type of stage-gate process.

66. See e.g. [Euchner & Ganguly, 2014], where the point is stressed that the company's products must be connected with customer processes.

67. A very good book about this, albeit with a non-representative title, is [Ries, 2011].

68. For servitisation, in [Ahamed et al., 2013] it is demonstrated how all key functions should be involved.

69. This to prevent well-known obstacles such as the "not invented here" syndrome and organizational change fatigue.

SCBM, meaning that a coordinated bottom-up approach should be in place.

To ensure engagement from the work floor, it is important to involve all functions from the very start of the project to develop a new SCBM. A well-known way to do so is the catchball process.[70] As can be seen from Figure 7, each organizational layer can communicate its objectives and ideas and then ask the next layer to fill in the details and provide feedback on the feasibility of the plans. This way, plans travel up and down several times until some form of consensus is reached. The end-result is typically a better plan and, maybe even more important, as everybody was involved in making the plans, there is far more commitment to making it work.

"It is crucial that all team members are willing to accept joint decisions, even when this is not optimal for their own function"

The way to implement a catchball process is normally by starting with a multifunctional team responsible for the initial design of the new SCBM. Typically, all critical functions (such as Finance, Marketing, HRM and Supply Chain) should be represented in the team to facilitate a wide variety of ideas, critical assessment of all ideas from many angles and an initial review of all (upside and downside) risks. After the team has drawn up an initial realistic sketch of the SCBM, this is discussed with all departments, sections and teams in a so-called roadshow. When talking to the various organizational units, the two fundamental questions to address are: "What can you do to make this work?" and "What is needed from others to make this work?". Using this approach, inputs (concerns, ideas and ways to address risks) are collected and discussed at all levels.

It is important to note that supply chain professionals are heavily involved in the catchball process from the very start (being part of the multifunctional team) and all next steps. After all, making better plans is one thing, but executing them is the real key to success. In order to establish continuous internal coordination, a team approach is desired and in fact required. Rallied around the joint objective of making the new SCBM a success, representatives of all functions can discuss all matters, dilemmas and challenges and make joint decisions. Here, it is crucial that all team members are willing to accept joint decisions, even when this is not optimal for their own function. Within the area of SCM this is frequently advocated under the slogan "Supply Chain says yes". That is, whenever a proposal is made by top management, Marketing or Sales, Supply Chain will look into how this can be achieved but will also explain what the consequences are and suggest possible alternatives. Clearly, when all members take such an approach, a true team approach can actually be established

70. See [Tennant & Roberts, 2001].

5. Summary & conclusions

In today's fast-paced and highly volatile business environment, there is no such thing as business-as-usual. In order to be able to compete in the long run, product and process innovations are more important than ever. This white paper focuses on the most far-reaching type of innovation firms can adopt, namely establishing new business models.

Contrary to conventional wisdom, logistics and trade professionals are not there to simply execute the executive plans for new business models. In this white paper it is argued that, along with their colleagues from other departments, they should be at the very heart of designing and implementing new business models. Combing the modern view on supply chain management and the Canvas business model, the desired way of working is referred to as implementing new Supply Chain Business Models (SCBMs). Although there are many other possibilities, the focus has been on three promising new SCBMs, namely platforms, servitisation (also known as Product-as-a-Service) and sustainability-based business models.

Unlike traditional management, where risks are undesired deviations from a predetermined plan, risk management of SCBMs is as much about the ability to create and take advantage of opportunities as about avoiding downside risks. In order to do so, it is paramount for all internal and external supply chain entities to work together as a team towards the joint objectives of the new SCBM.

Several typical risks have been mentioned and risk management activities to address these have been highlighted. Special attention has been paid to cross-border issues, including ways to incorporate Customs as a supply chain partner. By offering a servitisation new perspective on new SCBM development and implementation, this white paper aims to increase the opportunity for shipping firms and their executives, especially from the fields of logistics and international trade, to remove barriers to innovation.

To create a better understanding of shipping firms' current perspectives, a preliminary version of this white paper was discussed in a meeting of the evofendex Council for Logistics Knowledge.[71] The discussion clearly demonstrated the need for new business models. To the question: "In the sector most relevant to me, new businesses are needed within how many years from now, 65% of participants answered "Between now and two years" and the remaining 35% answered "Between two and five years", i.e., all were of the opinion that new business models are needed on the relatively short term. This was in sharp contrast to the perception of what is

71. Meeting of the evofenedex Raad voor Logistieke Kennis on 25 November 2020.

actually being done. In response to the statement: "When talking to colleagues, I see many shipping firms working on new business models", only 25% of the participants answered "agree" or "totally agree". This shows that, although new business models are considered to be a strong requirement, these are still insufficiently on the agenda of many shipping firms.

"It is imperative for supply chain professionals to be pro-active"

The Council meeting also revealed another clear gap. To the statement: "It is desirable that SCM has a proactive role in addressing strategic opportunities", no less than 95% of participants answered either "agree" or "totally agree". However, to the statement: "Logistics is involved in strategic decisions", only 10% answered with "(totally) agree". Although there is a difference between Logistics and SCM and participants can all be considered as supply chain professionals who can be expected to be promotors of their own fields, these results are worrisome, to say the least. As discussed, it is imperative for all types of supply chain professionals to be highly involved in new business model formulation and rollout, yet current practice appears to be different.

When asked about the most important obstacles to more involvement in creating new business models, virtually all of the items mentioned earlier (see Section 4) were mentioned by the participants. The most dominant issues included silo thinking, lack of strategic alignment, short-term thinking, lack of agility and the fact that the main focus of companies is currently on surviving the corona situation first. When asked about the strength of their organizations, which could help in shaping new business models, the quality of professionals and in some cases servant leadership were mentioned.

Reviewing the above findings, it becomes even clearer that new (supply chain) business models are needed and that it is imperative for supply chain professionals to be pro-active, meaning that the purpose of this white paper was reinforced. There is definitely a gap between what is desirable in terms of new business model development and what is actually happing at shipping firms. This white paper can therefore be considered as first step that organizations can use to close the gap. More understanding could be created by addressing the various concepts. This white paper can also be considered as a call for action to supply chain professionals and other key players to start working on new business models.

This white paper will be followed up by a number of case studies at shipping firms in the process of establishing new SCBMs. This is expected to enhance expertise further by providing examples of what works and what does not work in practice.

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evofenedex Supply Chain Management chair

The founding of the Supply Chain Management chair started back in 2013. evofenedex believed it was important to find a place at which SCM could be further studied and where members could be further assisted. The decision was taken to establish a chair at Nyenrode Business Universiteit as this university combines practical relevance with an academic approach.

Nyenrode Business Universiteit

Nyenrode Business Universiteit offers intensive academic courses as well as short and longer-running programs in the fields of business, management, accountancy, controlling and fiscal law. These are also the fields in which the university has conducted academic research for over 70 years.

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