

Chapter 10

Conclusions



In this chapter we will round up our discussion of 4C and horizontal collaboration by formulating some main conclusions based on the previous chapters.

Sustainability as the Underlying Goal

4C is a means to an end. The only reason to invest in the 4C concept is that it is believed that it will bring significant changes in main KPIs such as reduction of CO₂ emission and kilometers travelled by road. This might be an explanation for the sometimes disappointing success of some articulated collaboration projects: they might have conveyed a somewhat distorted message. The positioning of a project is clearly important. A project positioned as “aimed at collaboration” will be more difficult to fund within a company than a project “aimed at reduction of costs and emissions,” while they could be the exact same projects. In Chap. 2, we have discussed a number of recent logistics developments that impact collaboration in the logistics industry. Most often, these developments are aimed at improving efficiency and as a result reducing the negative impact of transport on our climate. In the end, transport is not a goal in itself. It enables consumption, it does not generally improve it: a product is produced at location A and will be consumed at location B, all transport in between should be minimized, as well as the emissions that come with it. The Paris agreement, the Green Deal, ALICE’s roadmap of sustainable transport, they all have the same goal, which is to make the global economy sustainable and safeguard our standards of living for the next generations. The transport industry will play an important role in achieving this ambition.

Finding and the Right Incentives

For collaboration to succeed, it needs to be absolutely clear which problem it can solve (or which value it can create) for the companies involved. Before looking into the opportunities of collaborative logistics companies should be confident that it will help them to achieve their mission. For the more ambitious forms of 4C, the incentive of cost reductions alone is not enough to move towards collaboration.

Companies might acknowledge the opportunities, but at a very early stage they most likely will also see many impediments and threats. For these more complex forms of collaboration a more holistic approach with a clear set of incentives is needed. For many companies, the first steps towards collaborative logistics need to be presented in a very straightforward manner. Most SMEs, for example, do not have the resources to confidently make a first step. Providing easy to use tooling or external services that look for collaboration opportunities on their behalf turn out to be successful. Another way of looking at incentives is that market circumstances will automatically lead to more structural forms of collaboration. In 2020 we have seen collaboration between shippers being setup due to COVID-19 disruptions in their supply chains. Sustainability imposed by government regulations can also provide an external influencing factor enabling the further uptake of collaboration. In many cases, the sense of urgency must be very strong to move towards collaborative logistics.

Practice vs Theory: An Inconvenient Truth?

Collaborative logistics has become a hot topic in all kinds of media, ranging from rigorous academic journals to mainstream and social media. In addition, numerous case studies and analyses have shown the great potential of 4C and horizontal collaboration to reduce cost and emissions and improve service levels and robustness. Undisputedly, collaboration works in theory, but long-term and scalable success in practice has proven to be difficult to accomplish. As noted by Basso et al. (2018) and others, this can be explained by the practical difficulties in the areas of collaboration design, planning and operations, market circumstances, and managerial behavior. In addition, it can also be that most of the publications on collaboration are relatively often written by “believers,” i.e. people who in principle have a positive attitude towards horizontal collaboration. With all good intentions, their contributions are meant to stimulate collaborative behavior in SCM, although sometimes by pointing out to the challenges and disappointments. Even more than in academia this holds for subsidized collaboration projects as usually in the project proposals the consortium members commit to a certain measure of success.

The Netherlands as a Supply Chain Collaboration Front Runner

As we have seen in Chap. 5, it took until 2007 before more than four papers per year were published about horizontal collaboration in supply chains. In the Netherlands, however, it was already regarded an important strategic for the logistics industry years before. The Dutch Ministry of Traffic and Water Management (2001) already wrote that to support the economy, reduce congestion, increase quality of living, and improve safety, the transport sector must be facilitated to bundle their transport flows. In the same report it was also concluded that pricing policy, such as toll per kilometer or a carbon tax will be essential to reduce CO₂ emissions. Such measures will increase the marginal costs of kilometers driven and will strengthen the quest for transport efficiency through intensified transport collaboration initiatives. The term 4C was coined in 2008 already and since then both the number of academic publications and the number articles in mainstream media and industry journals have increased rapidly. The importance of collaboration was further established in

the implementation agenda of the Paris Agreement. It is clear from the literature review in Chap. 5 and the applications discussed in Chaps. 7 and 8 that horizontal collaboration is needed to achieve the contribution to abating climate change that is expected from the transport industry. The Dutch idea of a 4C is a good attempt to attach a viable business model to the concept of horizontal collaboration.

The Role of the New Giants

In Sect. 3.5 we have discussed the so-called Amazonization¹ of logistics. In a way this is an alternative for collaborative logistics and 4Cs. Bundling of flows and efficiency of transport is reached by the sheer size of the dominant company. Although this might be beneficial for a few macro logistics KPIs, this comes with several threats. First, one single commercial entity will control transport, see buying behavior and own loads of consumer data. This renders this company powerful and difficult to regulate for governments. In an extreme scenario, the fragmented transport industry may even develop into an oligopoly or in the end a monopoly which is not in the best interest of consumers. It also makes it impossible for SME transport entrepreneurs to do business as they cannot compete against the dominant player. Under a 4C concept these disadvantages are not there, but if it takes too long for 4Cs to establish the Amazons may have gained a deciding advantage. Therefore, it is good to keep focusing on strengthening the Dutch and European logistics industry by stimulating horizontal collaboration and other innovations.

Automation and the Physical Internet

Technology is developing rapidly and will keep changing the logistics industry in the years to come. This makes control tower concepts with a (much) smaller required human workforce per 1000 operated truck more viable. Technology in the end might make collaboration concepts unnecessary or implicit in normal planning operations. In line with roadmap of ALICE in Fig. 3.5 this development will culminate in what we call the Physical Internet (PI). Today, PI is still a concept, not a reality. But if PI will become the new standard in future logistics, it most likely will be realized in a gradual process where global supply networks evolve through three subsequent stages:

1. Fully owned supply chains, where the assets and services are key constituents of the company products/services, as differentiators for the customer. This is the current situation.
2. Horizontal collaboration and vertical coordination in a limited network of companies, sharing what are considered “commodity” assets and services.
3. Physical Internet for most goods, in a collaborative network involving many parties who are implicitly collaborating, with the lowest costs and maximum availability and service level.

From step 2 onwards, the PI has many commonalities with the 4C concept. Whereas the PI originates from a mostly technical idea, 4C focusses more on the

¹Note that this is not limited to Amazon. Peers like Alibaba or Uber have similar ambitions.

organizational or business model questions around collaborative and integrated logistics processes. In a way, the PI is the automation of a 4C, and 4C a business model within the PI.

Collaboration and Trust

Trusts manifests itself at inter-personal, inter-group, inter-organizational and inter-network levels (see Sect. 5.3) and all of these areas should be carefully considered to make a collaboration work. This is especially important when collaboration takes place between competitors. In such cases, the interaction between the collaborators is referred to as *Coopetition*, which is a whole research area on its own. Coopetitive interfirm relationships differ from collaboration between non-rival partners on several important aspects. Collaboration between competing firms is marked by inevitable tensions generated by the conflicts between (1) cooperative intent in a jointly run project and inter-partner rivalry in the broader market, (2) collective efforts at creating value in a partnership and competitive attempts at capturing the outcomes of collaboration, and (3) the need to invest intellectual resources into common activities and the necessity to protect the firm's knowledge and other intangible assets from appropriation by rivals.

This stresses the importance of a careful implementation of collaborative concepts such as 4C. A one-size-fits all solution will be difficult to find since every application area will have its own peculiarities. It is therefore important that trusted specialist guide companies through the process of setting up collaborations. In the absence of specific legislation or prohibiting costs of inefficiency by means of a high carbon tax, collaboration initiatives will need long-term care and attention to remain competitive.

Can We Learn to Collaborate?

In the western world, generations of students have learned in their industrial economics classes how competitive behavior can help companies reach their goals (Sect. 6.5.1). Concepts such as predatory pricing to push competitors out of the market, profit maximization by monopolists, first mover advantages, etc. are all examples of rather reckless competition that are extensively studied. Much less attention is given to how companies can work together to pursue common goals. And once working for a company, often personal and company targets reestablish the importance of outperforming your competition. In that sense, horizontal collaboration is a true paradigm shift that deserves strong government support. Although the current generation of secondary school and university students learns much more about the benefits of collaboration, and despite the support of organizations such as TSL to make horizontal logistics collaboration work, it is to be expected that still it will take some years before collaboration will be commonplace in the logistics industry.

Data-Driven and Data-Hampered

A lot of formal research has been conducted on the topic of horizontal collaboration. In the first 4 months of 2020 alone over 30 academic papers about it have been published. It seems, however, that the actual problem with the acceptance of

horizontal collaboration in logistics lies more in the governance and scalability area than in the calculation of the envisioned savings. The required knowledge and insights are mostly there and most of shippers and LSPs are aware of it. But still companies are waiting for the “golden” support model for horizontal collaboration to appear. One problem is that usually companies must base their decision to participate in a collaboration on calculations that use static historic data that is gathered for all the potential consortium partners. Currently, these data are not centrally stored and only available in companies’ internal systems and in company-specific formats. The process of data gathering and harmonization usually takes a few weeks or even months and by that time the situation may have changed, and the calculations made do not fully apply anymore. As van der Vorst et al. (2016) in their evaluation of the DaVinc3i project on collaboration in the transport of (perishable) flowers put it: “also information has a best-before date.” It is worth noting that European initiatives such as Secure SCM and iCargo aim to solve this problem.