

23rd Cambridge International Manufacturing Symposium  
University of Cambridge, 26 – 27 September 2019

## New Business Models as Regulation Changes: Case of Finland and Russia

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### Abstract

Changes of legislative and contractual environment of international business and trade have their impacts on used and successful business models. In this research, we examine such changes between Finland and Russia as a case study. Research is using qualitative approach, involving relevant companies and experts from the two countries. The empirical research includes 10 semi-structured interviews and a survey for manufacturing and logistics service provider companies located next to Russian border. Three example business models (blockchain-based, platform-based and innovative subcontracting-based) were generated during the semi-structured interview phase and tested in the survey phase. Blockchain was seen as immature technology in terms of perceived benefit for the companies, thus not widely implemented yet. All the proposed business models can be integrated with circular economy, which was found to be a relevant new practice among general growing emphasis on environmental sustainability in the studied companies. Presented models in this research are generalized to industry level and should be used as a reference to create specific company level business models that fit in the unique context of the given company, industry and type of business.

Keywords: Regulation; Business Model; Logistics; Finland; Russia

### 1. Introduction

As early as 1948 a contract concerning the interconnection via railway between Finland and Russia was signed (at that time the Union of Soviet Socialist Republics; SopS 1, 1948). Thereafter, legislation and contracts have been gradually allowing more trade between these two countries. The latest changes are coordinated with the railway legislation in European Union (EU). The aim is to liberate competition on railways and to stimulate international trade (European Commission, 2018). Consequently, this may open up a market for new business models.

Railway transport is a convenient way to transport large quantities of freight with ease and in an ecological manner. On the other hand, road transport offers higher mobility and flexibility (Catrina, 2012) and it is often used to support other modes of transport. The concept of sustainability in supply chains is not a new concept (Fahimnia et al., 2015), but it is not extensively considered in business practices (Dey et al., 2011). Key drivers for value in logistics are shifting from a strict cost orientation to other aspects, such as environmental sustainability (Arvis et al., 2018). It is also emerging as a relevant topic in maritime traffic, mainly due to pressure from emission standards and stakeholder demand (Jasmi and Fernando, 2018). This suggests that modern transportation and logistics should utilize different available modes of transport and external supply chain activities to achieve higher competitiveness. However, intermodality and information sharing is required to reach the benefits of a loose supply chain (Bretzke, 2009). Modern technologies, such as Logistic Unified Information (Wei, 2011) and geographical information (Lin, 2011) could be utilized to support supply chains involving multiple separate actors.

World is constantly changing, thus requiring business models to evolve rapidly in order to continue to retain an adequate level of profitability (Zott and Amit, 2010). In addition, to capture the value of an innovation, the business model should be built upon said innovation (Chesbrough and Rosenbloom, 2002). Boons and Lüdeke-Freund (2013) further argue that there is a strong linkage between a company's business model and its innovation activities, i.e., business models enable innovative outputs, but also the renewal of the business model itself to acquire competitive advantage. Although business model innovation is vital for prolonged success, many attempts fail (Geissdoerfer et al., 2018). In pursuit of an enhanced degree of environmental sustainability, companies should not only transform themselves, but also their business models to more network-oriented ones (Pieroni et al., 2019). Business models and innovation connect with the logistics services provision, when the emerging trends and stakeholder demands in this field are addressed. As discussed, in order to benefit from innovation, the companies should revise their respective business models accordingly (Boons and Lüdeke-Freund, 2013; Chesbrough and Rosenbloom, 2002; Pieroni et al., 2019). Based on the research of Arvis et al. (2018) as well as Jasmi and Fernando (2018), it can be observed that environmental sustainability is one of the important growing trends within logistics. This would cue the logistics service providers to rethink their business model with environmental sustainability as the central building block. As discussed in more detail later on, the liberation of railway traffic for competition in Finland and between Finland and Russia is creating a more servitized market around railway traffic in this context, which acts as another cue for the companies – to manage the possible multitude of new actors in this field.

The discussed changes in legislative environment enable new business models, but these should be supported by demand and modern practices. Therefore, this article focuses on answering the following questions.

*Q1. What is the impact of legislative changes on business environment between Finland and Russia?*

*Q2. What kind of new business models are enabled by the change?*

*Q2.1. What is the role of innovation and technology in enabling these new business models?*

The rest of article follows structure of explaining the used methodology of identifying new business models and testing their viability in border area of Finland in Section 2. Thereafter, the results of the empirical study are presented in Section 3. Lastly, the article is concluded in Section 4, where the results are discussed and combined with the theoretical baseline. We also draw some suggestions for future research.

## 2. Methodology

To recognize and predict new emerging business models, a series of semi-structured interviews were carried out to produce an exploratory qualitative study on the topic. Qualitative approach with semi-structured interviews targeting experts and professionals of the transportation industry was chosen to study the current situation and future prospects in the border area of Finland. The interviewees consisted of company representatives, professionals in Finnish state funded projects and Russian experts of their national transportation industry. Seven of the interviews took place in Finland, whereas the remaining three were conducted in Russia. Interviews were carried out in the native language, Finnish or Russian, of the interviewee and took time between 30 minutes to one hour. The semi-structured interviews took place in the summer and autumn of 2018.

Based on the findings of these interviews, a general level web-based questionnaire was distributed for local companies in South Karelia (Finland) to recognize trends for emerging business models and to chart the attitudes of said companies towards innovation and new technology. The questionnaire was divided into five sections about internationalization practices, legislative environment, partnerships and subcontracting, innovation and new business models. Target companies were those with core business in logistics (Finnish industrial classification 2-digit level codes 49-53) or manufacturing (10-33). This resulted 1200 target companies for the survey. However, the response rate was relatively low (Baruch and Holtom, 2008), since only 26 companies (2.2 %) participated.

Survey companies differed from those in the semi-structured interviews (latter ones acted mostly in railway transportation, medium to large in size). Over half (53.8 %) of the survey respondents were operating in the manufacturing industry. Other significant group were companies in the transportation industry (42.3 %). The rest of the sample group worked in forwarding, retail and industry maintenance. Furthermore, most of the survey respondents were micro sized companies, i.e., 10 or fewer people in the organization. The size division in the survey was more specific to recognize companies potentially growing in the nearest future by dividing the micro-sized category into companies with 1-3 and 4-10 people (latter ones having more potential for growth). All survey companies were small enterprises (less than 50 people), except for one medium-sized with over 50 people.

The materials and goods that the sample group are handling consists of wood and timber (15.4 %), steel (7.7 %), other raw materials (30.8 %) and different products or semi-finished products on pallets. In addition, the sample group had companies handling passengers, food products, alcohol, earth (earth moving) and small machinery.

## 3. Case Study Findings

The main topics emerged in the interviews carried out in Finland and Russia are presented below in Table 1. The results of the semi-structured interviews are used to support the findings from the survey distributed to South-Karelian companies.

**Table 1.** Overview of the emerged topics from semi-structured interviews

Railway infrastructure in Finland	Competition of freight traffic on Finnish railways
State level development is going on and there are future plans to continue that. General disagreement on the focus points of development. Railway between Imatra and Svetogorsk (border crossing point) could be utilized more.	The railway industry has demand for more actors to create larger and more flexible supply networks. Competition in the Finnish railways is dire; only few actors specialized in bulk material can really compete. Railway freight traffic competition needs stimulation in form of state initiatives. Currently potential competition could be generated in supporting operations for freight traffic (e.g., shunting). Demand for subcontractors.
International railway logistics operations	Russian logistics industry
Traffic of goods is growing between Finland and Russia. Railway connection from Finland to China is challenging; specifically at the Russian-Kazakhstan border. Companies in Finland have internal operations in CIS-countries, Mongolia and China. CIS-countries, Mongolia and China are desirable targets for further direct investments. The Russian market has changed. Formerly few larger customers, but now numerous smaller ones.	Although infrastructure is suboptimal (especially in Central and Eastern Russia) it is being developed actively. Northern Sea Route and supporting infrastructure. Russian railway corridor connecting Western Russia and Far East as an alternative to traditional sea routes. Containerization rate is lower compared to Europe. Fierce competition. Russian railways (RZD) is an important actor in the industry. Imports are decreasing and structure of exports is not changing. Political and economic instability and uncertainty. High development and growth potential. Usage of transit countries is planned to be reduced to rely more on local ports.

Innovation in Finnish logistics	Innovation in Russian logistics industry
Company R&D is focusing on environmental sustainability. Blockchain technology could improve information flow, communications and tracking, as well as reduce costs significantly in logistics processes. Main point is to eliminate unnecessary slack within the processes.	Ongoing project of unifying separate actors in the cluster to common platform. Blockchain technology is being studied both in academic and business worlds. Environmental sustainability was not seen as topic of high importance.

### 3.1. Internationalization of the companies of South Karelia, Finland

Half of the respondent informed that they have international practices. Approximately quarter (23.1 %) of the companies reported that they focus solely on exports. The rest of the companies involved in international business were either focusing on importing to Finland (11.5 %), practicing both export and import (7.7 %) or doing other international business (7.7 %), e.g., intermediary business. International activities emphasized other EU countries (69.2 %), possibly due to low barriers for internationalization. In addition to EU, many respondents (38.5 %) had established international operations toward Russia. Other reported target markets included China and other far eastern countries, Nordic countries as well as other CIS countries in addition to Russia. None of the companies without established international operations were interested in expanding to foreign markets.

### 3.2. Impact of the changed legislation to South Karelian SMEs

The impact of open competition on Finnish railways was rated low or non-existent, except for 10.8 % of the companies rating it moderate or moderate high. The liberation of the international railway traffic competition toward Russia was perceived as low or non-existent – 7.6 % rated it moderately high or high. Similar results were obtained for the perceived effect of the railway infrastructure tax removal: most rated it low or non-existent; however, 10.8 % rated it moderately high or high. The need for an equipment leasing company within the sample group was negligible – merely 3.8 % rated it to be moderate, whereas others reported the need as low or non-existent. The interviewed experts indicated the liberation of railway traffic having potential to completely renew the industry, but that the entry barriers for possible new operators block widespread competition.

The effect of the sulphur directive targeting maritime transport was rated as low or non-existent, except for 11.4 % of the respondents rating the impact as moderate or high. The effect of the nitrogen directive was rated lower – only 7.6 % reported moderate or moderately high impact, which could possibly be explained by the fact that the nitrogen directive will come into effect in 2021. However, policies that lower the competitiveness of maritime transport could at the same time grow the feasibility of other modes, like road or rail.

Majority of the companies reported road transport as central part of their supply chain, thus the impact of the EU carbon dioxide directive was seen as significant. While the results were still leaning towards low effect or no effect at all, 15.3 % rated the impact moderate or moderately high and 7.7 % rated it high. It is difficult to evaluate the long term impact, but directives concerning CO<sub>2</sub> emissions will eventually force the truck vehicle fleet renewal.

### 3.3. Partnerships and subcontracting

Almost half (46.2 %) of the companies signalled their need for new subcontractors as their core business is expanding. Although most of the companies were micro-sized, servitization of the separate business processes could explain the observed phenomenon. In other words, the components of business that were formerly carried out internally within companies, are increasingly offered as a service by external parties that specialize in the respective component. The respondents were interested (57.7 %) in offering subcontracting as a part of other companies' operations. Some of the interviewed representatives of larger enterprises saw a need for more subcontractors to enable flexible transportation chains, thus more value for their customers. According to Yakunina (2014) and some of the interviewees, service demand and production is growing also in Russian logistics sector. Companies' views toward subcontracting and the demand or supply concerning new, innovative subcontracting services was open-endedly asked. Subcontracting was perceived as increasingly difficult due to the increased requirements concerning certificates and inspections as well as the current price levels. However, at the same time the answers claimed that the industries are becoming more fragmented, i.e., growing supply of subcontracting. In addition, companies were said to even subcontract for each other as peer-to-peer. Hedenstierna et al. (2019) highlight similar kind of subcontracting in their article considering the European 3D printing industry.

### 3.4. Innovation and new technology diffusion

Using the semi-structured interviews as a reference point, innovations and new technologies for potential basis of new business models were studied. In the survey, companies were asked to rate their interest towards following topics: blockchain, internet of things (IoT), artificial intelligence (AI), liquefied natural gas (LNG), sulphur emission cleaners, bio-economy or renewable energy sources, and circular economy.

There exists emerging solutions in transportation industry that are based on blockchain. For example, the Danish Maersk has a blockchain-based ledger solution, i.e., they are using their partners as trusted peers in the blockchain to track their shipments (Maersk, 2018). However, the solutions based on blockchain are still relatively scarce, and only a few have been successfully implemented in logistics service providing. This accompanied with the stage of

diffusion towards this innovation in South Karelia resulted in relatively low interest towards it: Only 3.8 % of the sample group rated the interest as moderate, while the rest had low interest towards it or no interest at all.

IoT was coined already in 1999 by Kevin Ashton in a presentation at Procter & Gamble concerning the role of radio frequency identification (RFID) in supply chain (Ashton, 2009). Even though it is not a new concept, IoT and related solutions have just recently gained more attention, and new ways to implement IoT to business are being developed. In contradiction to the above mentioned blockchain technologies, IoT is already relatively accepted concept by the pragmatics in the business world. Surveyed companies, perceived IoT as somewhat interesting innovation: 15.4 % of the respondents rated the interest toward IoT to be moderate, and furthermore 7.6 % of the respondents stated that their interest is moderately high or high. In addition, 15.4 % reported that they have already implemented or plan to implement IoT solutions to their business practices.

Currently AI solutions could enable machines to carry out simple tasks. However, as AI applications develop, they could execute certain tasks more effectively and efficiently than humans could. Some of the respondent companies rated AI as relatively interesting solution: 19.2 % rated their interest as moderate or moderately high. Interestingly, 15.4 % of the sample group were planning or had already implemented some sort of AI solution.

Regulations and stakeholders demand solutions for fuels with lower environmental impact. LNG could be one of the feasible solutions. Although mostly implemented in maritime transport, it is also feasible in road transport (Osorio-Tejada et al., 2017). LNG truck experiments in Finland resulted in mitigation of approximately 50 tons of carbon dioxide emissions annually over conventional trucks (Cision, 2018). However, the companies did not see LNG as an interesting solution: 7.7 % rated their interest as moderate and 11.5 % were moderately high or highly interested. Nonetheless, 3.8 % of the sample group reported using or planning to use LNG in their operations.

One solution to reduce sulphur emissions from maritime transport is to install cleaners in the vessel that remove the sulphur from emissions with water and store the contaminated water into a container to be disposed of later. The interest toward this innovation was extremely low in the context of this research, but as a note, the maritime transport companies, rated it as highly interesting. Population of 10.8 % of the sample group rated their interest towards this innovation as moderately high or high, and furthermore 7.7 % of the group reported that they had implemented or plan to implement it as part of their maritime transports.

Bio-economy and extended use of renewable energy sources also enable environmentally sustainable business practices. The respondents were exceptionally interested in this over the other sustainability related topics. From the sample group, 19.2% were moderately or moderately highly interested and 11.5% were highly interested. The interest could correlate with the ongoing trends in the cluster, and with the possibly easier comprehension of renewable energy sources to other discussed topics. Almost a quarter (23.1 %) of the sample group reported that they are using or planning to use bio-economy and renewable energy resources in their business.

Lastly, the interest toward circular economy practices was measured. Continuing the trend of interest toward environmental innovations in the survey, circular economy was the most interesting topic for the respondents: 26.9 % of the sample group indicated their interest toward circular economy to be moderate or moderately high and 11.5 % rated it to be high. In addition, a significantly large share of the companies in terms of this study (42.3 %) claimed that they have implemented or plan to implement circular economy practices in some manner.

The studied innovations are presented collectively in Table 2. The diffusion of circular economy seems to be the most successful, although the grading for interest and relevancy is below average (scale from 1 to 5). To explain the low grade, this particular innovation might divide opinions in the sample group: Organizations without any circular economy activities could view it as irrelevant, whereas those who have implemented it might have internalized it as a routine part of the business and therefore perceive it as uninteresting. In addition, sustainability seems to be relevant theme in the sample group, since the renewable energy sources and bio-economy activities were graded similarly and their diffusion is higher compared to the other studied innovations. It should be noted that all of the studied innovations could be utilized in pursuit of environmental sustainability.

**Table 2.** Diffusion of the studied innovations in South Karelian SMEs

Innovation	Mean grade for interest (0-5)	Percentage of implementation or planned implementation (0-100%)
Blockchain	0.5	0
IoT	1.2	15.4 %
AI	1.2	15.4 %
LNG	0.9	3.8 %
Sulphur emission cleaners	0.6	7.7 %
Renewable energy sources, bio-economy	1.9	23.1 %
Circular economy	2.1	42.3 %

### 3.5. Interest towards new business models

Perceived validity, feasibility and interest towards new business models that emerged from the semi-structured interviews was measured. First proposed model is based on real time tracking of material flows and communication between companies increasing efficiency within supply chains enabled by blockchain ledgers. Second proposed model involves a platform that would enable open and transparent information flow between partners concerning materials, customers and orders to create a supply network. The first two models are quite similar, but the

distinction between them is that in the platform-based model there exists an intermediary entity between the different actors. The final model was concerning traditional subcontracting, but in processes that have been carried out internally in the given context until current times. Many of the interviewees voiced the need for this particular type of business, which reflects the trend of servitization and division of business into smaller specialized parts in the studied industry. Models based on blockchain were not deemed as feasible: 3.8 % of the companies rated the feasibility as high, while 11.5 % rated it to be moderately feasible. Blockchain-based models in the context of transportation industry are difficult to comprehend in terms of benefits, thus challenging to implement into practice. Although there is blockchain solutions in transportation, business models based on it have not been widely implemented. Business requires assurance and pragmatism, which could explain why this model was rated low. The platform-based model received a slightly higher rating. Similarly to the first, 3.8 % of the sample group rated the feasibility of the model as high, whereas 14.4 % rated this as moderate or moderately high. Similar business models have been introduced in different contexts, which makes them more comprehensible. In addition, some platforms have been introduced to the logistics industry in Finland, but none have been successfully established as industry standard (which could result from neglecting them in business model design). Intuitively, but not necessarily correctly, failed attempts could create distrust toward platforms in the studied industry. The final proposed model was traditional approach with a new twist. As already mentioned, demand toward subcontracting was signalled in the interview phase. Especially in the railway business where the competition has been liberated merely for a few years, there could be demand for new subcontracting services targeting formerly internal practices of the state owned railway company. In respondent group, 19.2 % rated the feasibility of this as moderate, 7.7 % as moderately high, while 15.4 % rated it highly feasible. The feasibility rating for this model could be explained by the closeness to standard practices as well as the revealed demand for subcontracting.

#### 4. Concluding Discussion

Changed legislative environment between Finland and Russia has liberated the railway freight traffic significantly, i.e., virtually any business could utilize the railway connection. As railway logistics often requires support in the beginning and end of the chain, accompanied with the stricter global as well as local (Baltic Sea) regulations on maritime traffic, road transports and logistics service providers offering them become more relevant. Consequently, as more actors are entering the market the demand for means of managing the logistics networks is increasing. In other words, a platform for communication is vital for not only the logistics service consumers, but providers alike. There exists a myriad of novel methods enhancing connectivity between separate actors, enabled by state-of-the-art technology, and some of these methods seem to be utilizable in the context of this research. However, some promising cases in terms of railway-based trade exist. There are some possibilities for food, and particularly meat railway transports from Northern Europe to China (in addition to current wood, pulp and metal industry product transports; Hilmola et al., 2018). Also new cargo handling businesses, which specialize in railway freight between Finland and Russia, have emerged and beyond that prosper. As discussed in the previous studies of business models (Amit and Zott, 2001; Zott and Amit 2010; Chesbrough and Rosenbloom, 2002; Lai et al., 2006; Osterwalder and Pigneur, 2010) the rapid development of business model theory and its implementation to practice is challenging for companies, but at the same time vital for competitiveness. By studying this in the focus area of this research, the three discussed business models were proposed: blockchain-based, platform-based, and innovative subcontracting-based models. These are mainly directed to innovative, flexible SMEs. The models follow Chesbrough's and Rosenbloom's (2002) description of optimal utilization of innovations and novel technologies. Furthermore, competitive advantage via innovation (Boons and Lüdeke-Freund, 2013) is focus of these models. Technologies, such as IoT solutions for the logistics companies (Wei, 2011; Lin, 2011) were seen as desirable or even already implemented. In addition, environmental sustainability was addressed in some manner already by many of the companies. Similar to the Jasmi and Fernando (2018), the studied companies explained this by a growing stakeholder awareness and legislations concerning emissions. However, it should also be a central part of business model to reach the potential benefits (Pieroni et al., 2019). As evident from the results of this study, the contemporary practice does not closely follow theory in terms of using innovation or technology as a baseline in business model design. In the future, it would be beneficial to pilot new business models, especially those that are based on new technologies, in order to establish and reinforce linkages between practice and theory, e.g., effect of business model design in utilization of innovations (Pieroni et al., 2019 call also more experimentation and learning from practice).

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