

Department of Information and Service Management

Sustainable transport logistics in Russia

Examining the railway industry

Marta Malik

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Sustainable logistics and supply chain management is a hot topic in modern business. Although it is developed countries that exhibit the highest concern about sustainability, most of the environmental footprint is generated in developing countries. As supply chains grow global, with freight transportation spanning multiple countries, it is of vital importance to understand the impact caused on a country level. Hence, this dissertation covers sustainable transport logistics in Russia. Russia is a rail-reliant economy, where the railways represent the safest and most reliable mode of transporting the cargo over long distances and a backbone for developing infrastructure and industry. Being owned by the state, the railways take a lead in national sustainability transition. Hence, this dissertation builds on three essays that draw a comprehensive picture on sustainability of transport logistics in Russia and of the railway industry, in particular.

Essay I explores key drivers behind operational and financial performance of logistics service providers (LSPs) in selected countries, including Russia. The study finds that customer technology uncertainty affects LSPs operational performance and that long-term customer relationships have a positive influence on LSPs financial performance, while LSPs' IT capabilities mediate their financial performance. Essay II looks at corporate social responsibility (CSR) and its disclosure in the Russian railway industry and compares it to Finland. The study finds that both railways use the international legal framework GRI G4 as a core legal framework for designing and reporting CSR. Both companies report on economic, social and environmental dimensions of CSR, yet interpret them differently. Essay III dives deeper by exploring sustainability of railway freight operations in terms of economic and environmental dimensions of sustainability. The study finds that in its current organisational setting, the freight traction process is too fixed to let the company achieve an optimal performance on economic and environmental dimensions of sustainability simultaneously.

This Dissertation contributes to both academic knowledge and practice. It contributes to the established literature exploring the railway operations in Russia, where data collection faces many obstacles due to its distinctive culture and language. The Dissertation unites the three theories of operations management – the resource-based view, the stakeholder theory and the theory of performance frontiers – under a single research umbrella to illustrate how they contribute to studying sustainability comprehensively. The Dissertation opens up the role of the railways in the Russian economy and its transition towards sustainability.

Keywords Logistics, Transportation, Railways, Supply Chain Management, Sustainability, CSR, Logistics Service Providers, Government-Linked Companies, Stakeholders, Russia

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Espoo, 3 November 2021
Marta Malik

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List of Abbreviations and Symbols

LSP	Logistics Service Provider
GLC	Government-Linked Company
CSR	Corporate Social Responsibility
CSRD	Corporate Social Responsibility Disclosure
RR	Russian Railways
VR	VR Group

List of Essays

This doctoral dissertation consists of a summary and of the following publications which are referred to in the text by their numerals

- I. Kuula, Markku; Malik, Marta; Raitasuo, Pinja; Ruiz-Torres, Alex. 2017. The effect of long-term customer relationships and customer-related business uncertainty on the performance of logistic service providers. Inderscience. *International Journal of Integrated Supply Chain Management*, volume 11 (2-3), pages 172-192. 1477-5360. doi: 10.1504/IJISM.2017.086243
- II. Malik, Marta. Corporate social responsibility disclosure in the railway industry: comparing Russia to Finland. Unpublished manuscript.
- III. Malik, Marta; Kuula, Markku; Larson, Paul D.; Koskinen, Pekka. Reaching for an optimal performance in the railway industry: the case of exporting paper from North West Russia. Unpublished manuscript.

Author's Contribution

Essay I: “The effect of long-term customer relationships and customer-related business uncertainty on the performance of logistic service providers”

Markku Kuula is the primary author who proposed the research idea and design. Marta Malik took part in writing literature review, translated the questionnaire into Russian, collected the data on the Russian market and performed evaluation of results. Pinja Raitasuo took part in developing the questionnaire, writing literature review. She collected the data in Finland, performed results evaluation and took part in finalizing the paper. Alex Ruiz-Torres developed the research idea and design together with Markku Kuula. He performed data collection in Panama and Puerto Rico and performed data analysis.

Essay II: “Corporate social responsibility disclosure in the railway industry: comparing Russia to Finland”

Marta Malik is the sole author.

Essay III: “Reaching for an optimal performance in the railway industry: the case of exporting paper from North West Russia”

Marta Malik is the primary author who proposed the research idea and chose theoretical framework. Marta Malik developed research design and collected the data. She performed modelling under supervision of Markku Kuula. She analysed and discussed results. Markku Kuula formulated the mathematical model, performed data evaluation and modelled multicriteria analysis. Paul D. Larson wrote the literature review, together with Marta Malik, and performed linguistic check. Paul D. Larson verified the quality of English language. Marta Malik wrote the results and discussion. Pekka Koskinen gave feedback on the manuscript during work in progress and took part in formulation managerial implications.

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1. Introduction

The dissertation includes two parts. The first part draws a comprehensive picture from the three essays presented in the second part. Therefore, the first part starts with an introduction; continues with literature review and methodology; and concludes by highlighting key results and discussing them through the lens of theoretical contribution and practical implication. The second part offers all the three essays in full.

1.1 Motivation and background

Although logistics roots back to the military sector, through the course of time the discipline has expanded to other branches of economy and thus formed a standalone field of research and practice aimed at managing freight operations in general. On top of it, sustainability of logistics and supply chains is becoming a burning issue of the modern life. High concentration of transportation and industry lead to increasing greenhouse gas emissions, among which carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄) represent major contributors into climate change (Eurostat, 2014). To maintain a capability of an existing infrastructure in absorbing hazardous environmental impact caused by economic activity, governments have to intensively invest into the environmental infrastructure. Today many researchers discuss sustainability-related notions and merits, elaborate on how important it is for policy-makers and business strategists to develop appropriate environmental strategies for greening their business, and monitor an attitude of enterprises towards the issue (Orsato, 2006; Buysse and Verbeke, 2003; Banerjee, 2001; Hyatt and Berente, 2017). At the same time, many states introduce laws in order to deal with and mitigate the current environmental consequences of economic activity. Although corporate sustainability is viewed as '*the incorporation of social, environmental, economic, and cultural concerns into corporate strategies*' (Eweje, 2011, p. 125), introduction of an environmental component into corporate decision-making process so that companies could manage their environmental footprint in the long run is not widely discussed, especially when it comes to developing economies, which generate most of that footprint (Panapaan et al., 2003). However, maintaining environmental sustainability is critical as environmental superiority in operations turns into a competitive advantage today (Liu et al., 2012).

No less important is the social aspect of sustainability. After all, it is human beings who act as agents of change on the path towards a sustainable future. Companies play an important role in promoting social sustainability as governments transfer the burden of social care on their shoulders (Steurer, 2010). Social sustainability actions of companies range from fulfilling obligations as a tax payer, allocating budget for social benefits to support socially vulnerable

groups of people, like children or veterans, and own employees, to investing in regional development of the country and thus creating new jobs on the labor market. In all these ways companies build a platform for developing a sustainability-oriented mindset on a national level. Social sustainability is of critical importance in the context of developing countries, where abusive labor practices continue to exist (Mani et al., 2016). Moreover, social injustice in one node of a supply chain results in losses along the whole chain (Mani et al., 2016).

Russia is an economy in transition that is still a mystery for many businesses and many researchers. For businesses, it is a mystery because of lack of transparency, and for researchers, it is a mystery because of the language barrier and lack of reliable data sources (Leinonen et al., 2008). Meanwhile, the country is a key supplier for various natural resources. For example, 19% of the world forest reserves are located in Russia (Smith 2015). Russia has several transport corridors, including the well-known Transsiberian railway that connects the West to the East across. Being in close proximity to EU, North West Russia offers high renewable energy potential due to a large renewable resource base, which would allow EU to cheaply decarbonize its electricity supply, and allow Russia to start developing a national renewable energy industry (Boute and Willems, 2012). Russia has already gained a share in exporting wood pellets to the European market (Proskurina et al., 2016). The country area accounts for over 17 million square kilometers¹. Such a scale accentuates the importance of maintaining logistics infrastructure and logistics processes that allow smooth connection within and across the country. Logistics service providers (LSPs) play an important part in connecting remote areas into a single state, yet the market is underdeveloped in comparison to Europe, mainly due to shortage of competent and powerful LSPs able to manage a large network².

It is the railway industry that operates the largest logistics network in Russia. Through the course of history, the railway infrastructure in Russia has extended to over 85 thousand kilometers of operational length and has connected most of the federal areas³. It sets regional development in remote areas like Far East, where further exploration of the mineral resource base affects the latitudinal and the meridian direction of logistics infrastructure (Valery and Varvara, 2014). Railways has become the safest mode of transporting freight over long distances in Russia. With pipelines considered, rail freight turnover accounts for 46% in Russia. About 60% of Russian container traffic goes through seaports Saint-Petersburg, Novorossiysk and Vladivostok (Korovyakovskiy and Panova, 2011), which are well connected to the railway network. Railways has become a major mode of securing cargo flows to the ports, and hence, further development of port infrastructure also depends on proximity of the railways. Thus, the railway industry has grown into a giant that carries the Russian economy and, as a result, affects Russian journey towards sustainable future through their corporate social responsibility (CSR) and their sustainable management of freight operations. Hence, this dissertation will focus on sustainable transport logistics in Russia, paying special attention to sustainability of the railway industry.

¹ Страны мира по площади список. Самые большие страны мира по площади - http://www.stat-data.ru/largest_countries_by_area – Accessed on 18.05.21

² Russia 3PL Market - Growth, Trends, Forecasts (2020 - 2025) - <https://www.marketresearch.com/Mordor-Intelligence-LLP-v4018/Russia-3PL-Growth-Trends-Forecasts-13243686/> - Accessed on 20.05.21

³ The Company | Russian Railways - <https://eng.rzd.ru/en/9498?redirected> – Accessed on 18.05.21

1.2 Research aim and questions

The dissertation focuses on transport logistics in Russia, specifically on the railway industry, and sustainability of its operations. The thesis pursues two aims. Firstly, to explore the current state of sustainability of the sector and the key factors behind, and, secondly, to explore the complement use of resource-based view, the stakeholder theory, and the theory of production performance frontiers in constructing a comprehensive picture of the studied phenomenon. While the first aim is practice-oriented, the latter serves to contribute to theory. Thus, the work seeks to combine the theoretical and practical perspective to offer the best value to both domains. To reach the aims, the following research questions (RQ) are formulated:

RQ 1: What key relationships determine operational and financial performance of the LSPs' in selected countries, including Russia?

RQ 2: What is the current state of CSR and its disclosure in the railway industry in Russia?

RQ 3: How optimal is cargo assignment in rail freight transportation across Russia in terms of economic and environmental sustainability dimensions?

Thus, the dissertation consists of three essays, each answering one of the research questions above. The following section provides details on the essays and, correspondingly, on the research process.

1.3 Outline of the study

The essays that comprise the dissertation are the following:

Essay I. Kuula, M., Malik, M., Raitasuo, P., & Ruiz-Torres, A. (2017). The effect of long-term customer relationships and customer-related business uncertainty on the performance of logistic service providers. *International Journal of Integrated Supply Management*, 11(2-3), 172-192.

Essay II. Malik, Marta. Corporate social responsibility disclosure in the railway industry: comparing Russia to Finland. (unpublished manuscript)

Essay III. Malik, Marta; Kuula, Markku; Larson, Paul D.; Koskinen, Pekka. Reaching for an optimal performance in the railway industry: the case of exporting paper from North West Russia. (unpublished manuscript)

Figure 1 illustrates the relationship between the essays comprising this dissertation. Essay I serves an overview of key factors that determine solid operational and financial performance of logistics service providers (LSPs) in selected countries, including Russia. The data were pooled in such a way that the survey results characterize each of the studied countries and hence, Essay I opens the dissertation to describe key factors behind operational and financial performance of LSPs in the Russian market. However, Essay I excludes the railways. The railways in Russia represent a state-owned natural monopoly that has access to a wider range of resources and regalia that private LSPs do not possess and thus, inclusion of the railways would create a bias to the data. Yet, Essay I establishes key characteristics of the LSPs operating environment, to which the railways still belong. The two following essays, then, specifically focus on the railways in Russia and provide insights into its unique role and operations from a sustainability perspective. Essay II studies corporate social responsibility as disclosed by the company to understand corporate positioning on the matter. Being a culture of mistrust (Komina, 2016), Russia is compared to Finland, which, in contrast, represents a culture of trust, and is ranked among the top on environmental performance index, unlike Russia. Moreover, the countries shared history during the time when construction of the railways began. For example, the railway line that connects Helsinki to St. Petersburg as well as the Finland Railway Station in St. Petersburg used to belong to the railways of Finland. Such a comparative study ensures understanding of where the corporate social responsibility and its disclosure is in Russia comparing to outperformers. However, bearing in mind that corporate social responsibility disclosure may be biased, the research in Essay III dives deeper into the operations by utilizing an annual data for freight flow. Hence, Essay III analyses how optimal the utilization of railway infrastructure for freight traction in Russia is from the economic and environmental perspective, exemplified with exports from the North West. Thus, the essays evolve from general to specific.

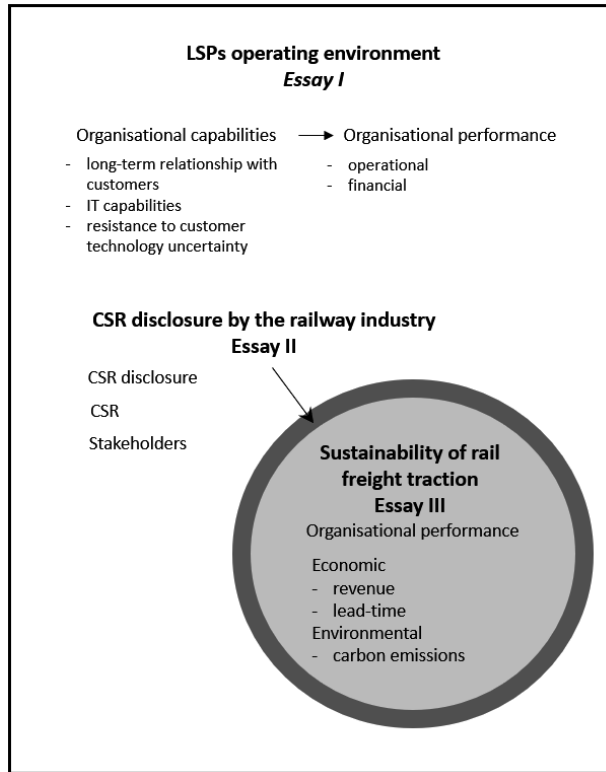


Figure 1. Relationship between the essays

Figure 2 describes the relationship between the theories used to ground the research. Both Resource-Based View (Essay I) and Theory of Performance Frontiers (Essay III) study the company from the viewpoint of resources that the company has in possession. Resource-Based View looks at the resources as potential enablers of corporate competitive advantage, thus linking them to the external operating environment (Barney, 1991). In contrast, the Theory of Performance Frontiers analyses the resources as inputs to the production process, which is a transportation process in the context of this dissertation, that aims at producing a particular outcome, thus linking them to internal operating environment of the company (Schmenner and Swink, 1998). Stakeholder Theory (Essay II) aims at analysing the values and management practices of the company through the lens of its stakeholders, including employees, customers, suppliers, or the state (Freeman et al., 2010). Thus, the combination of the theories ensures a comprehensive analysis of the company, embracing both the hard and the soft side of operations, explaining the connection between the external and internal operating environment.

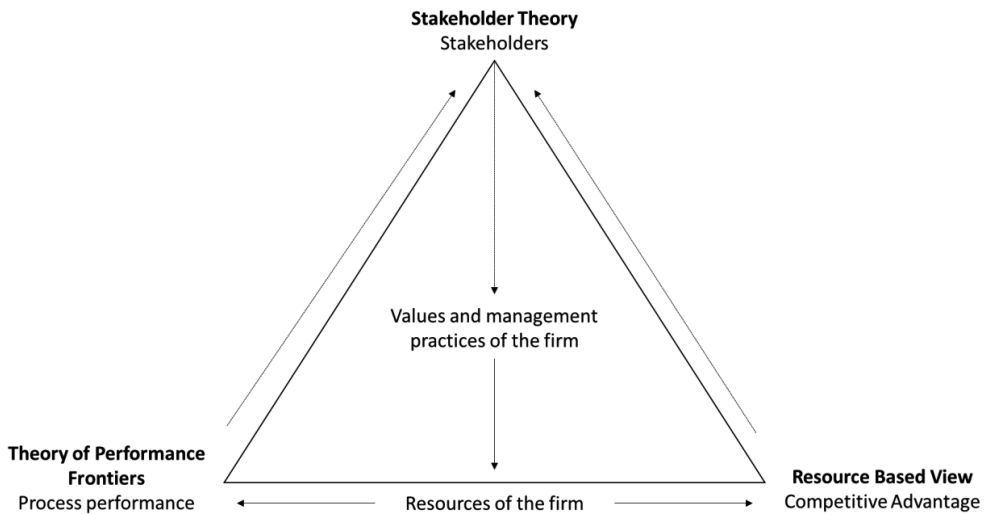


Figure 2. Relationship between the theories

Figure 3 describes the research process. The research was conducted from general to specific. Firstly, transport logistics industry was studied for key factors that ensure solid operational and financial performance for LSPs. For the following stages, the research focused on the railways in Russia for its operational scale and unique role in the economy. Hence, secondly, the corporate positioning for the corporate social responsibility was studied, over-viewing management practices and corporate actions on corporate social responsibility as disclosed to stakeholders. To best illustrate the current state of corporate social responsibility and its disclosure in Russia, it was compared to Finland. Finally, the way the company utilizes the existing railway infrastructure from the point of view of environmental and economic performance was examined by studying freight traction for export. Thus, every stage of the research process is reflected in a corresponding essay.

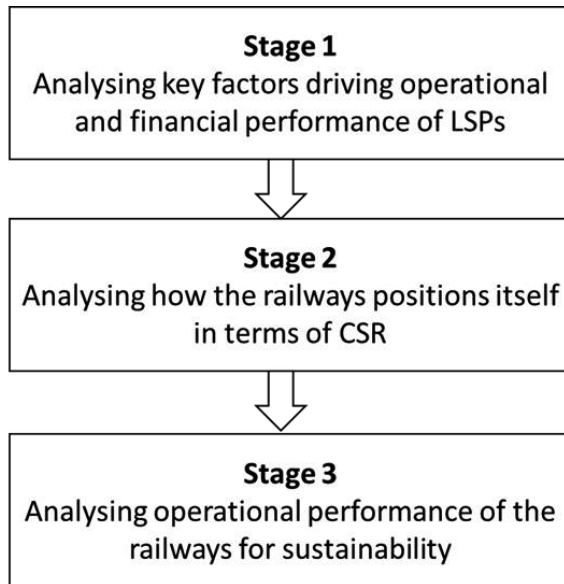


Figure 3. Research process.

The following literature review presents key concepts and terminology used in the study.

2. Literature review

This chapter is dedicated to a literature review that discusses key concepts, terminology, and evidence from established research, which are in line with the studied theme. The literature review is developed funnel alike. Thus, it starts with a broader discussion of sustainability that further narrows down to a more and more specific theme in line with the thesis focus as following. Section 2.1 elaborates on sustainability and the transition towards it. Section 2.2 focuses on corporate sustainability. Section 2.3 elaborates on sustainable logistics and supply chain management. Section 2.4, the final section, uncovers sustainability in Russia.

2.1 Sustainability and the transition towards it

Sustainability is defined through its various facets that unite under conceptual framework. Many studies have contributed to defining sustainability as a concept, such as Johnston et al. (2007), Sen (2013); Sikdar (2003); Fiksel (2006); Hult (2011); Marshall and Toffel (2005); Morelli (2011); Griessler et al. (2005). Building on limitations of the definition by World Commission on Environment and Development, Seghezze (2009) draws together a framework of sustainability that embraces “Place” for dimensions of space; “Permanence” for dimensions of time; and “Persons” for human dimension. Alternatively, Sikdar (2003) distinguishes the sustainability metrics that embrace the content and performance, or, put differently, describe the state and behavior of the system. Extending the idea, Lozano (2008) builds a representation of sustainability that illustrates complexity and dynamics of the three aspects in the short-, long- and longer term perspective. One of the most typical ways to define sustainability is through the triple bottom line framework (Elkington, 1998). The triple bottom line is originally an accounting framework that embraces three dimensions, namely, social, environmental, and financial performance of a firm, and has been integrated into the concept of sustainability by John Elkington (Elkington, 1998; Slaper and Hall, 2011). Within the concept, Elkington (1998) defines economic bottom line as economic capital, or what one can see in profit and loss account, balance sheet and statement of total recognized gains and losses; the environmental bottom line as environmental impacts caused to natural capital; and social bottom line as a contribution to social capital, including human capital embracing public health, skills and education and a range of other indicators of society health- or wealth-creation potential. By considering the three aspects of the triple bottom line altogether, one can see how balanced an organisation is in terms of what it takes from and what it gives to society. By now, triple bottom line and sustainability have become the two concepts used interchangeably in the literature (Alhaddi, 2015). However, sustainability is and will remain a contested concept. The latter and the fact that the concept of sustainability undergoes a continuous transition process by itself,

makes transition towards sustainability such a complex task (Hallin et al., 2020). However defined, sustainability is a system problem that requires a coordinated effort by industry, government, academia and the public to bring the transition (Fiksel, 2006).

The goal of sustainability is socio-political (Sikdar, 2003). Sustainability transition is a long-term process of transformative change to a more sustainable community (Avelino and Wittmayer, 2016). According to Abson et al. (2017), the triggering points for sustainability transition are reconnecting people to nature; restructuring institutions; and rethinking how knowledge is created and applied in pursuit for sustainability. With respect to knowledge creation, Meadowcroft (2011) highlights that so far, scholars have invested their attention in understanding what sustainability policy is and what it should be, whereas, due to the power of politics, more light needs to be shed on the political circumstances that make policy implementation feasible. Meadowcroft (2011) sets understanding the politics as a prerequisite to understanding the policy. As per Ji and Miao (2020), in developing countries, the government support plays a significant role when it comes to boosting the positive effect of environmental CSR on collaborative innovation, while indirect government support leads to enhanced corporate governance collaborative innovation. It is worth mentioning how crucial the government financial support is for maintaining sustainability of supply chains and its resilience to immediate shocks in the light of COVID-19 pandemic, especially in the emerging economies (Karmaker et al., 2021). Dwelling deeper into the power behind sustainability transition, Avelino and Wittmayer (2016) accentuate that understanding the politics starts with understanding the involved actors and how the power shifts between them. They point at the power switch between the state, market, community and the third sector, as well as between organisations. In line with the above, in Essay II, this dissertation approaches sustainability transition in Russia exemplified with the state-owned railway monopoly in relation to its stakeholders.

2.2 Corporate sustainability

Role of business in sustainability transition deserves closer attention. The interpretation of corporate social responsibility has evolved from being just an obligation to society in the 50s to including integration of social and environmental concern, voluntariness, ethical behavior, economic development, improving the quality of life of the citizens, human rights, labor rights, protection of the environment, anti-corruption activities, transparency and accountability in the 21st century (Rahman, S., 2011). Based on analysis of 37 existing definitions of corporate social responsibility, Dahlsrud (2008) develops its five fundamental dimensions that include the stakeholder dimension, the social dimension, the economic dimension, the environmental dimension and the voluntariness dimension, highlighting that there is 97% probability of at least three of the five dimensions to be included into a context-driven definition of CSR. For instance, Dyllick and Hockerts (2002) view corporate sustainability through the lens of economic, social and environmental capital, which, again, corresponds to the concept of triple bottom line introduced earlier by Elkington (1998).

Sustainability drivers lie behind the corporate evolution from doing business as usual to becoming truly sustainable. It is driven by external and internal triggers, the most powerful of which are reputation, customer demands and legislation, alongside with the corporate leadership and business case (Lozano, 2013). The study by Sánchez-Torné et al. (2020) demonstrates that the companies with an adequate level of corporate social responsibility enjoy better reputation. In addition to that, Awaysheh et al. (2020) find that CSR outperformers also show higher market valuations. Yet, Singh and Misra (2021) clarify that it is the CSR oriented at external stakeholders that affects organisational performance, whereas CSR oriented at

internal stakeholders, such as employees, has no significant influence on corporate performance. Corporate sustainability strategies can be categorized into introverted; extraverted; conservative; and visionary (Baumgartner and Ebner, 2010). The standard for sustainability increases on the trajectory from introverted to visionary strategy, from solely risk mitigation to the highest possible commitment to sustainability that unites outside-in and inside-out perspectives in order to achieve a unique competitive position. Yet again, it is the corporate governance that defines what the business is for, in whose interests it operates and how (Elkington, 2006). Aras and Crowther (2008) add that the goal of corporate governance is to formulate the role of management and to develop and balance the control mechanisms aimed at increasing the shareholder value or satisfaction. Thus, corporate governance is good, if it creates sustainable value, achieves the corporate goals, and keeps the balance between economic and social dimensions, alongside with offering some long-term benefits, such as risk reduction or capital injection to the company.

The leadership is at the steering wheel for corporate sustainability. Rauter et al. (2017) investigate drivers in developing business models for sustainability and find no significant difference between traditional business models and the business models that integrate sustainability. Yet, they highlight the importance of business leaders in integrating sustainable business practices into corporate processes. Schaltegger et al. (2012) argue that the business model innovations may be required to support a systematic, on-going creation of business cases for sustainability. The sustainability business model is, thus, a model where the sustainability concepts drive decision-making of the firm (Stubbs and Cocklin, 2008). Stubbs and Cocklin (2008) find that organizations adopting a sustainability business model must develop internal structural and cultural capabilities to achieve firm-level sustainability and collaborate with key stakeholders to achieve sustainability for the system that an organization is part of. Abdelkafi and Täuscher (2016) explore the variables that make the people who affect the business and are affected by it behave in a sustainable manner that extends beyond the economic rationale. They conclude that “The beliefs of the decision-maker with respect to ecological capital translate into behavior that aims to adapt the business model according to sustainability aspects or to develop a new business model for sustainability” (p. 89) and thus, the change in sustainability-related beliefs and norms of the decision-maker leads to a changing behavior.

Formentini and Taticchi (2016) discuss sustainability governance mechanisms specifically related to sustainable supply chain management. By investigating seven case studies, they classify sustainability profiles based on how ambitious the sustainability approach is into sustainability leaders, practitioners and traditionalists. They highlight that relevance of supply chain governance mechanism depends on corporate sustainability approach, yet to implement it management is to break the knowledge barrier and develop critical understanding of the mechanism. Bush et al. (2015) argue that the conceptualization of sustainability governance mechanisms of chains and networks, including supply chain management, is, in fact, inadequate. As Chen et al. (2017) accentuate, it is supply chain collaboration that speeds up the process of transformation towards sustainability. In Russia, where, given the scale, the railways become a critical link for supply chains of many industries, understanding sustainability of the railway operations becomes of critical importance as the railways often cover most of the total distance travelled.

2.3 Sustainable logistics and supply chain management

Rajeev et al. (2017) overview the topic of sustainable supply chain management through an evolutionary lens by analysing trends across industries and economies. With a comprehensive thematic analysis of 1068 filtered articles published between 2000 and 2015, the authors highlight lack of research focusing on all the three dimensions of sustainability simultaneously, along with lack of industry-specific research, especially on emerging economies. In one of such studies, Mota et al. (2015) introduce multiobjective programming model for supply chain planning and design that integrates the three dimensions. With in-depth analysis of oil and gas supply chain in Brazil, Silvestre (2015) finds that supply chains face wider range of barriers to sustainability transition in developing and emerging economies due to institutional voids and uncertainty-based complexity of the business environment. Yet, for the core factors influencing supply chain sustainability, Schaltegger et al. (2014) name orientation towards sustainability, continuity, collaboration, risk management and proactivity. According to Giannakis and Papadopoulos (2016), the highest sustainability-related supply chain risks are brought by the environmental externalities among different industries. The study by Yadlapalli and Rahman (2020) identified 96 existent unique definitions of CSR within the supply chain research, highlighting the drastic difference in the way the researchers addresses CSR dimensions while defining CSR.

This dissertation focuses specifically on transport logistics as a subfunction of logistics and supply chain management that plays a role in value creation. Topolšek et al. (2018) define transport logistics as *“crucial part in the supply chain that in its essence organizes, manages, optimizes and ultimately performs physical distribution of goods and information through the whole upstream and downstream chain in an efficient and effective manner. Its activities and functions go beyond the traditional transport function in so that they also include integration with other supply chain functions such as warehousing, accounting, marketing, or customer relations, while taking into account the organizational, financial, commercial and operational aspects of the supply chain as a whole.”* (p. 1201).

2.4 Sustainability in Russia

Sustainable development reflects the historical process. Studying the period of 1991-1999, Yagnitsky (2000) accentuates that Russia has taken a step forward in transforming into a society of all-encompassing risk. The society itself has turned into a risk-producer and risk has become a part of life. As a result, the society has lost the capability to react adequately to economic or social changes, and hence, survival rather than development has become the goal. Examining the period of 1991-2005, Mol (2009) reveals environmental deinstitutionalization in Russia, defined as the process wherein an environmental institution aimed at advancing the environmental reform, is eroding or, worse, reversing. Yet, Bartniczak and Raszkowski (2017) observe gradual improvement during 2004-2013 in terms of sustainable development in Russia. Among national sustainability priorities, Andreassen (2016) names transport modernization, environmental security, and sustainable management, and accentuates that it is the politico-economic context that has led the development of the sustainability concept in the country. Nowadays, sustainability management in Russia can be, on average, characterized as mature (Fomina and Apenko, 2020). Thus, through the course of time, a shift towards a positive trend has taken place. Examining the oil and gas industry in Russia, Orazalin and Mahmood (2018)

find that the disclosed sustainability information is more transparent among the companies with a share of foreign ownership than the companies held by local investors, yet the companies publishing sustainability reports only in Russian disclose more valuable information than the ones that report in both Russian and English. Studying influence of internalization, along with innovativeness, risk-taking, collaboration and integration on adoption of sustainability initiatives in supply chains in Russia, Aray et al. (2020) find a positive association between sustainability performance and sustainability transition being mediated by company's innovativeness and internalization. To facilitate sustainability transition of supply chains in Russia, Panova et al. (2017) suggest reliance on piggyback transportation that combines both road and rail in a shipment. With a comprehensive outlook at the transport industry, including the inland waterway, maritime, air and rail in Russia, Trofimenko et al. (2018) also support redistribution of both passenger and freight flows from the road and air to less energy-intensive modes, among which the rail is. Thus, the rail as a path to more sustainable future deserves further investigation, to which this dissertation contributes.

3. Methodology

The chapter is devoted to methodology. Section 3.1 explains the research approach and design. Section 3.2 elaborates on theories, methods, and data. Section 3.3 concludes the chapter with positioning of the study.

3.1 Research approach and design

Prior to going into detail on the individual essays, there are two themes to elaborate on. They are research approach and research design that stands on the shoulders of the three giants, which are philosophical worldview, strategies of inquiry and research methods (Creswell, 2009).

Although this dissertation aims at prescribing a way to improve within the studied context, the prescription is symptom-based and hence, the elements of the thesis adopt both descriptive (Essay II) and prescriptive (Essay I and III) approaches. As Smith (1989) indicates, the real-world problems are complex and problem definition in the prescriptive research must encompass the complexity, yet it cannot be achieved in the concise verbal portrayal. Although prescriptive statements contradict the nature of qualitative research, the qualitative assertions as prescriptive statements are important as the qualitative research aims at starting a new conversation (Nolen and Talbert, 2011). Nolen and Talbert (2011) highlight that the qualitative research is rather oriented at capturing life as it is than making conclusions, as the procedures that the researcher follows are shaped by his or her philosophical worldviews and established literature.

Creswell (2009) defines the philosophical worldview as a general orientation about the world and the nature of research that a researcher holds. While the elements of this thesis adopt post-positivist (Essay I and III) and constructivist (Essay II) lens, the work in chorus follows the pragmatist thought. As explained by Creswell (2009), the assumptions behind post-positivism, also known as positivism, are relevant to quantitative research and imply that there is a cause behind a particular outcome and thus, the ideas are to be reduced to a small set to test as hypotheses or research questions. In other words, within post-positivism, the knowledge develops from careful observation and measurement of the reality that exists around (Creswell, 2009). In contrast, constructivism, being often combined with interpretivism, is an approach to qualitative research, which is based on the assumptions that humanity seeks understanding of the world in which they live and thus, they develop subjective meanings of certain objects or phenomena, and it is the complexity of the meanings that the constructivist researcher is to study (Creswell, 2009). Put differently, the constructivist research builds on the interpretation of the meanings by the researcher, rather than theory testing. A constructivist researcher inductively develops a theory that represents a pattern of meaning (Creswell, 2009). Finally, belonging to none of the philosophical worldviews unanimously, pragmatism involves a mixed method research where quantitative and qualitative assumptions meet and takes a stance that

combining the two builds the best understanding of the world as every phenomenon occurs in a social, political or other context, thus leaving the researcher with a freedom to choose the methods that meet the aims best (Creswell, 2009). With the above being said, the present thesis centers around a problem of pragmatic nature that is examined with empirical observation and measurement by positioning the phenomenon within a context.

There is a plethora of strategies of inquiry for both quantitative and qualitative research, of which survey (Essay I) and case study (Essay II and III) form the thesis. Creswell (2009) defines the aim of the survey as providing a quantitative explanation of trends or other characteristics of the population by examining a sample representative of that population, through employment of such data collection methods as structured interviews or questionnaires. In contrast, case studies imply a strategy of inquiry, wherein the researcher explores an activity, process, or alike, in-depth by collecting detailed information through methods that allow it (Creswell, 2009). As all the methods have their limitations, mixing them allows to exclude the deficiencies and hence, the present thesis follows the concurrent mixed method strategy, wherein the qualitative and quantitative data meet to build a comprehensive analysis of the phenomenon in tandem (Creswell, 2009).

To build the most comprehensive view of the studied phenomenon, both quantitative and qualitative research methods were applied. Although the quantitative methods ensure that the results are objective from the statistical point of view, the qualitative methods serve well when studying a phenomenon in-depth and producing an illustrative information as an outcome, thus enhancing understanding of the phenomenon from various perspectives (Queirós et al., 2017). Thus, the thesis adopts a mixed method approach, where a qualitative method was applied to understand an unquantifiable aspect of the studied phenomenon, such as corporate positioning with regards to corporate social responsibility, and the quantitative methods explained the causalities and the corporate performance within the studied context. The concomitant use of qualitative and quantitative approaches serves for the overall strength of the study to be greater than if the approaches were applied on a stand-alone basis (Creswell, 2009). The following subsection presents an overview of underlying theories, data, and method of data analysis in each essay.

3.2. Theories, methods and data

As Schmenner and Swink (1998) define, “*Theories are usually introduced when previous study of a class of phenomena has revealed a system of uniformities that can be expressed in the form of empirical laws. Theories then seek to explain those regularities and, generally, to afford a deeper and more accurate understanding of the phenomenon in question*” (p. 99). This section proceeds with an overview of theories, methods and data for each essay.

3.2.1 Essay I

The research framework of Essay I rests on the resource-based view (RBV) of the firm that implies that the chosen strategic direction relies on the resources and capabilities in possession by the firm and aims at achieving a sustainable competitive advantage (Barney, 1991; Barney and Clark, 2007; Madhani, 2010). Thus, the RBV inspects the corporate resources and capabilities from the perspective of them being static (Barney and Clark, 2007; Madhani, 2010).

Those that are difficult to emulate, precisely, those that are valuable, rare, imperfectly imitable and non-substitutable, become strategic, since their acquisition implies long learning curve and hence, builds a competitive advantage of the firm (Barney and Clark, 2007; Madhani, 2010). Whether the resources belong to physical or human capital, the RBV examines them in a bundle as the manner in which they are combined constructs a competitive advantage (Barney, 1991, Barney and Clark, 2007; Madhani, 2010). Moreover, how the company is organized affects its ability to exploit the potential of these resources in building a competitive advantage (Barney and Clark, 2007). Essay I links capabilities and resources of LSPs to their performance. Thus, with hypotheses testing, the Essay reveals the key resources and capabilities that define a potential of an LSP to sustain in the market.

The survey questionnaire embraced logistics service providers (LSPs) in Panama, Puerto Rico, Finland and Russia. The collected data were pooled, and the sample developed in a manner that ensures the results to be pertinent for all the national operating environments. The survey included small (1-50 employees), medium (51-200 employees) and large companies (over 200 employees). Data from Russia comprised 39 usable responses, or 24.8% of the sample. The survey questionnaire was sent to 512 LSPs in Russia and thus returned with the response rate of 8%. Among the respondents were freight forwarders, 3PLs, transportation, warehousing, or distribution companies and custom brokers that have personnel, facilities and equipment in the country. Yet, the survey excluded the Russian railway monopoly for its unique position in the country that would make it an outlier in the survey context.

With structural equation modelling (SEM), the essay tested the following hypotheses:

- IT capabilities mediates the effect of long-term relationship on operational performance (H1);
- IT capabilities mediates the effect of technology & product uncertainty on operational performance (H2);
- IT capabilities mediates the effect of long-term relationships on financial performance (H3);
- IT capabilities mediates the effect of technology and product uncertainty on financial performance (H4)

SEM applied in this study is a synthesis of factor analysis and simultaneous equations modelling, thus being *“a class of methodologies that seeks to represent hypotheses about summary statistics derived from empirical measurements in terms of a smaller number of “structural” parameters defined by a hypothesized underlying model”* (Kaplan, 2008, p.1). Our application of the method is similar to for example, Wallenburg and Weber (2005) who demonstrate the use of SEM in explaining the effect of logistics service levels versus logistics costs on the overall performance of the firm with a sample of 245 German companies.

3.2.2 Essay II

The research framework of Essay II adopts the stakeholder theory lens, which lays eyes on business as a set of relationships between its primary – such as customers, employees, or suppliers – and secondary – such as government, competitors, or media – stakeholders, and the manner, in which these relationships affect value creation by the firm (Freeman et al., 2010). The stakeholder view of business implies providing maximum value to the stakeholders without compromising the interest of any of the stakeholder groups (Freeman et al., 2010). Hence,

the essential question under the stakeholder theory is what stakeholder clusters are of importance to the business and how the business ought to interact with them to satisfy all with the value created (Freeman et al., 2010; Zakhem et al., 2008). Thus, in Essay II, the stakeholder theory serves to examine the stakeholder groups, their prioritization by the company and their power in influencing CSR of the company.

The multiple case study involved Russian Railways and VR Group as key representatives of the railway industry in Russia and Finland, correspondingly. The data included publicly available corporate social responsibility (CSR) disclosure that encompassed annual CSR reports by Russian Railways and published-every-second-year Responsibility reports and a responsibility section of Annual Reports by VR Group. Their publication year ranged from 2013 to 2017 inclusive.

The collected data were subject to content analysis as a technique that aims at revealing the trends and patterns in documents and relies on coding and categorizing of data that make it rich (Stemler, 2001). The content analysis compares the two railways and resides on the research framework that roots to the established literature. In line, the constructed research framework becomes a backbone for further analysis of results. In established research content analysis was as well applied to comparing CSR disclosure between the countries by Bashtovaya (2014).

3.2.3 Essay III

The study relies on theory of performance frontiers proposed by Schmenner and Swink (1998). The theory builds on the law of trade-offs and law of cumulative capabilities. A performance frontier represents “*the maximum performance that can be achieved by a manufacturing unit given a set of operating choices*” (Schmenner and Swink, 1998, p. 108). Performance frontiers are categorized into an asset frontier, or plant design and investment, and an operating frontier. The operating frontier that denotes choices in plant operation can be changed. The authors differentiate between performance improvement and performance betterment. They define performance improvement as increased plant performance in one or more dimensions without a decline in any other dimension. Performance betterment, in the contrary, is defined as a move or change of operating frontier driven by altering manufacturing operating policies. Once such change in the operating frontier occurs, the performance improvement starts anew. Moreover, a particular set of operating policies and assets results in certain trade-offs among different dimensions of performance. The essay adopts the assumptions behind the theory to studying an LSP and performance of rail freight transportation.

The study draws its data from Russian Railways. Primary data on export of paper goods from North-West Russia in January-November 2015 were collected. The data contained information on dispatch (date, region, federal district, railroad and station of departure) and arrival (railroad, border crossing, and country of destination), along with the cargo volume and specific type. The study considered loading number of wagons carrying the paper cargo, with a total of 8872. Online calculators were used to obtain data on the railway tariffs, lead time and railroad distances along the routes. Further, the collected data were transformed into a network. The study builds a set of transshipment problems. Transshipment problem is a type of general transportation problem, where transshipment via intermediate cities is allowed (Dantzig, 2016).

3.3. Positioning of the study

The research approach, design, theories, methods and data discussed above position the study. Positioning of the study is summarised in Table 1.

Table 1. Summary of research methods used in the thesis

<i>Research design</i>	<i>Essay</i>	<i>Philosophical worldview</i>	<i>Theory</i>	<i>Research question</i>	<i>Method for data collection; data analysis</i>	<i>Data</i>
<i>Quantitative</i>	Essay I	Post-positivism	Resource-based view	What are the key characteristics of LSPs' operating environment in Russia?	Survey; Structural equation modelling	Questionnaire responses by LSPs in Panama, Puerto Rico, Finland and Russia, with Russian data accounting for 24.8% of the sample.
<i>Qualitative</i>	Essay II	Constructivism	Stakeholder theory	What is the current state of corporate social responsibility and its disclosure in the railway industry in Russia?	Multiple case study; Content analysis	CSR reports by Russian Railways; Responsibility reports and responsibility sections of Annual reports by VR Group published for 2013-2017.
<i>Quantitative</i>	Essay III	Post-positivism	Theory of Performance Frontiers	How optimal is cargo assignment in rail freight transportation across Russia in terms of economic, social and environmental sustainability dimensions? ?	Optimisation study; Linear programming	Data on the export trains/wagons that carried paper cargo from North-West Russia in 2015; electrification of the routes; carbon emissions by type of energy; revenue and lead times.

4. Results

The chapter presents the results that answer the research questions stated at the beginning of the dissertation.

4.1 Essay I. Key characteristics of operating environment of logistics service providers in Russia

Essay I describes a survey among logistics service providers (LSPs) that establishes the background for the operating environment of the LSPs. The survey was conducted in four countries, including Russia. Essay I draws attention to the operational and financial performance of the LSPs, considering the influence of such factors as long-term customer relationships, corporate IT capabilities and technological uncertainty of customers. The Essay embraces the economic dimension of sustainability.

The Essay concludes that being in a long-term relationship with the customer does not affect operational performance, yet leads to enhanced financial performance for LSPs. On the contrary, the customers' technology uncertainty significantly affects operational performance but not the financial performance of LSPs and hence, the companies facing the uncertainty are urged to develop effective internal operations to sustain. Finally, the Essay finds that IT capabilities mediate the relationship between LSPs' financial performance and their customers' technology uncertainty as well as the long-term relationships with customers. Yet, IT capabilities do not mediate operational performance.

Summing up the revealed relationships, being customer-oriented and aiming at developing long-term relationships with the customers drives financial performance of LSPs. Customer technology uncertainty impacts operational performance of LSPs, or in other words, affects the costs that the company incurs when serving the customer. Hence, considering that LSPs' IT capabilities represent a mediating factor having a positive effect on LSPs' financial performance, pursuing long-term relationships with the customer and learning their potential technology-driven disruptions in order to develop own IT capabilities to tackle them, drives strong performance for LSPs.

4.2 Essay II. Current state of CSR and its disclosure in the railway industry in Russia

Essay II builds an understanding of corporate social responsibility (CSR) and its disclosure (CSR D) in the railway industry in Russia in contrast to Finland. Finland is the closest to Russia CSR outperformer. The countries shared a history during the time when the construction of

the railways began. The Essay established that both railways rely on the same international legal framework GRI G4 as a core for designing and reporting their CSR. In addition to GRI G4, local standards complement the core legal framework in the Russian railway sector. These are the standards regulated by Social Charter of Russian Business and the Russian Union of industrialists and entrepreneurs.

In both countries, CSRD embraces reporting on the economic, social and environmental dimensions of sustainability. Yet, railways interpret the CSR themes differently. Russian Railways define the economic dimension as becoming competitive in the Russian and the global markets; the social dimension as RR as responsibility to personnel and society, including occupational health, responsible employment practices and competence development; and the environmental dimension as implementing green transportation, re-equipment of the railway infrastructure, modernization and acquisition of green rolling stock, environmentally conscious decision-making. However, suppliers are not screened for environmental criteria in Russian railways and as a result, the company monitors an extensive range of environmental indicators, including fuel, energy and water consumption, hazardous waste, soil destruction, carbon monoxide, solid substances, sulphur dioxide, nitrous oxide and hydrocarbon emissions from both stationary sources and traction. Despite the inclusion of the economic, social and environmental dimensions in CSR reporting, the company sets the highest priority for the economic targets, followed by social and environmental goals. In contrast, railways in Finland seek a balance between the economic, social and environmental performance. Moreover, the Finnish company draws attention to their suppliers' environmental sustainability and hence have to monitor less environmental indicators.

This study investigates the phenomenon under scrutiny through the lens of the stakeholder theory that views the customers as one of the key stakeholder groups. Yet, it is worth noting that the Russian Railways exclude the customer from their stakeholder map. Instead, the position of the key stakeholder is assumed by the state that owns the corporation. Similarly, to Russia, railways are owned by the state in Finland. However, both the customer and the state represent a key stakeholder group in Finland. The fact that the customer is not included in the stakeholder map changes the way the Russian Railways perceive CSR. The railway acquires a number of the state functions, such as developing regions of the country where the company represents a key employer; care for veterans, non-state pension benefits and insurance for employees; developing physical culture and sports; philanthropy; and youth policy. Following the state, the key stakeholders of Russian Railways embrace the controlling authorities responsible for railway traffic and safety, and NGOs (non-governmental organisations) oriented at protecting the environment, legitimate rights of citizens, and monitoring CSR compliance. Thus, the railways in Russia act as a supporting state mechanism in contrast to Finland, where the railway company operates as a corporate body oriented at satisfying the customer, despite being owned by the state.

Summing up, the role that a state-owned railway sets to their customer predetermines the course of corporate development and actions in terms of CSR and its disclosure. Being excluded from the stakeholder map, in Russia, the customers lose their voice. The government and the controlling authorities remain the key stakeholders. Such a positioning creates a bias, when the company behaves as a supportive state function rather than a corporate body. In other words, the CSR in Russia is fully guided by the state and its needs and thus, has to be studied through the lens of political science as well.

4.3 Essay III. Balancing between the economic and environmental dimensions in the rail freight transportation in Russia

Essay III focuses on multicriteria decision-making that implies a trade-off between the economic and the environmental dimensions of sustainability in a railway company. The Essay solves a set of transshipment problems that maximize revenue, minimize lead time and minimize carbon emissions from freight traction on the studied railway network. The results establish a 12% difference between the ideal value of the total revenue function and the as-is total revenue; a 3% difference between the utopia point for the total lead time and as-is total lead-time on the studied network; and only 1% difference between the value of minimized total carbon emissions and the exhaled as-is carbon emissions from freight traction on the network. Thus, the railway company outperforms on the environmental dimension over the economic dimension. In other words, despite Russian railways being one of the most extensive in operational length worldwide, they ensure about the minimal environmental externality to supply chains of their customers. Rather, getting a good return on the use of the infrastructure to serve the customers becomes an issue, as the railway gains a revenue that is only 2% above the nadir point (nadir point is the worst value of the function) in the case of the pulp and paper products. The as-is lead time being in between the utopia and nadir points signals that the railway takes into account the customer need for timely transportation over long distances, yet there is a room for improvement.

An outcome of the transshipment problem is an optimal shipment plan that illustrates cargo assignments across the arcs that generate the maximum revenue, the minimum lead-time, and the minimum emissions from freight traction. The arcs can be broken into three groups. In the first group, the arcs that share an optimal shipment plan between the objectives appear. At first sight, it seems that by achieving optimality in one of the dimensions, the railway consequently improves in the others. However, it points at restrictions imposed by an existing infrastructure, especially at the beginning of the route, when the cargo proceeds across the railroad of origin. Often, there are one or two exits from the railroad that correspond to a certain direction and thus from various origins the cargo proceeds to these exits. The second group consists of the arcs that share an optimal shipment plan between the two of the three objectives. In the third group, the arcs differ for optimal cargo assignment for all the three objectives. Thus, the longer routes that proceed via the territory with extensive railway infrastructure give more flexibility for optimizing shipments. The sensitivity reports introduce shadow price and reduced cost that show how a unit change in a parameter affects the final value of the function, given the corresponding lower and the upper limit. With this, a decision-maker can identify the arcs representing key loss generators; the arcs that are the most polluting; and the arcs that significantly increase the total lead time. Based on the information, a decision-maker might reconsider assignment of cargo to be forwarded across the arcs.

Multicriteria decision-making allows finding a trade-off between maximizing revenue, minimizing lead time and minimising emissions, considering the aspiration levels of a decision-maker. For proximity of the as-is value of total emissions to the utopia point, the emission minimization objective was taken out of multicriteria decision making. A new optimal shipment plan that balances the objectives was obtained. Changing the aspiration levels between the optimistic, conservative and pessimistic scenarios did not bring a different outcome for some of the arcs due to the infrastructure restrictions highlighted above. Minority of the arcs get an optimal shipment plan that differs between the objectives. These arcs are located closer to the Russian border.

Summing up, the scale and complexity of the railway infrastructure affect insignificantly the environmental sustainability of the railway as a mode of freight transportation. The Essay

reveals that, on the environmental dimension, the railway network emits carbon emissions from freight traction close to optimal minimum. The railway performance on economic dimension measured as total lead time is rather close to an optimal minimum, as well. However, the railway performance on economic dimension measured as total revenue is rather far from the optimal maximum, which reveals a room for improvement in getting solid financial return on utilization of the railway infrastructure. At the same time, the Essay reveals that an opportunity to optimize the shipment and balance the targets of different dimensions is limited due to the restrictions imposed by the existing infrastructure in Russia. In other words, the railway infrastructure and freight transportation process being fixed limits the opportunity to optimize performance of the rail freight operations.

4.4. Summary of results

Table 2 summarizes key results of the essays in response to the research questions.

Table 2. Key results of the dissertation

Essay	RQ	Key results
Essay I	What key relationships determine operational and financial performance of LSPs in selected countries, including Russia?	<ul style="list-style-type: none"> • Being in a long-term relationship with customer leads to better financial performance, but has no effect on operational performance • Customers' technology uncertainty significantly affects the LSPs operational performance, but has no effect on the financial performance • IT capabilities mediate LSPs' financial performance and their customers' • IT capabilities mediate LSPs' financial performance and long-term relationship with customers • IT capabilities do not mediate operational performance
Essay II	What is the current state of CSR and its disclosure in the railway industry in Russia?	<ul style="list-style-type: none"> • The international legal framework GRI G4 is a core reference for designing and reporting CSR in the railway sector in Russia. The local legal standards are taken into consideration as supportive. • Russia reports on the economic, social and environmental dimensions of sustainability, yet their interpretation remains unique, when compared to Finland, and hence, so is the disclosure. • Customers are excluded from the stakeholder map of the railway company in Russia • The railways take over part of the state functions, among which developing the regions where the company represent a key employer • CSR is rather a political than corporate phenomenon in the railway sector in Russia
Essay III	How optimal is cargo assignment in the rail freight transportation across Russia in terms of economic and environmental sustainability dimensions?	<ul style="list-style-type: none"> • The environmental externality caused by freight traction over the existing railway infrastructure is close to minimal • The economic gain from the freight traction is somewhat above the minimal and thus requires prioritization by the company • The existing railway infrastructure imposes restrictions on the extent to which a decision-maker can optimize shipments and balance the sustainability goal of different dimensions due to the infrastructure and the freight transportation process being fixed

Thus, the key results draw an interesting picture. Essay I brings evidence for importance of long-term relationships with the customer for better financial performance of LSPs. Yet Essay II revealed that the customer is out of consideration by the railway sector, and Essay III

uncovered that the railways struggle to achieve economic performance expressed as revenue in return on carrying their customers' cargo. Thus, altogether, the findings suggest that by placing the customer into the stakeholder map and focusing on building long-term customer relationships, the railways can increase their potential to significantly improve on financial performance.

5. Discussion

As stated by Karlsson (2016), “*Key components are that the outcomes and outputs from research are new knowledge and/ or new applications*” (p.9). Hence, this chapter concludes the first part of the dissertation by elaborating on contribution to theory in section 5.1; discussing managerial implications in section 5.2; and highlighting limitations and future research in section 5.3.

5.1 Theoretical Contribution

Third-party logistics providers in Russia have gained a recent interest among researchers (Dybskaya and Vinogradov, 2018; Moser, 2014; Izmaylova et al., 2018; Noskov, 2020; Rusakova and Saychenko, 2020; Sosunova et al., 2019). Among English-language established scientific literature, studies of the railway sector in Russia are rare. Even more rare is the analysis of the railway transportation process through the lens of several dimensions of corporate sustainability at the same time. This dissertation closes this gap with comprehensive analysis of sustainability of the railway industry in Russia through the lens of the economic, social and environmental dimensions, embracing both the transportation process and its soft side, i.e the values and management practices for corporate sustainability. The section proceeds with elaborating on theoretical contribution by each individual essay and concludes with contribution of the study to the theories that it is grounded in.

When studying LSPs’ operating environment in Russia, most researchers focus on describing its current state or future development directions, and hardly on identifying factors driving operational or financial performance of LSPs in Russia. Essay I closes this gap by examining what role long-term customer relationships and customer-related business uncertainty play in LSPs’ performance. Three factors, which are focus on long-term relationship with the customers, the information technology capabilities and technology uncertainty of the customer, are tested for their influence on operational and financial performance of LSPs in Russia. The effect of customer relationship management practices on various dimensions of organisational performance has been extensively discussed in the literature (Ullah and Narain, 2020; Ullah et al., 2020; Lin et al., 2010; Chang, 2007; Valmohammadi, 2017; Soltani et al., 2018; Reinartz et al., 2004), yet not within the Russian context. Most researchers who study the Russian context neglect the causal relationships that rule the LSPs performance in Russia. When elaborating on current state of logistics market in Russia, researchers admit mostly obsolete infrastructure (Dybskaya and Vinogradov, 2018; Izmaylova et al., 2018), market fragmentation and imbalance, the sector being majorly represented by transportation companies (Dybskaya and Vinogradov, 2018); poor technology, low efficiency, and poor management (Izmaylova, 2018). Referring to the results of Essay I, these particular aspects of the current state of logistics market in Russia might be interconnected, e.g poor technology might be the root cause of low efficiency, whereas poor management, including poor customer relationship management, might lead to poor financial returns, which, in turn, hinders the potential to reinvest the profits into

growing a full-profile LSP. Among the directions for future development, regional expansion and implementing wider range of services to their clients are noted (Dybskaya and Vinogradov, 2018). At the same time, increasing the level of technology sophistication supporting the logistics processes by automation and informatization of the logistics operations is highly desirable (Izmaylova, 2018). Yet, although the established research prescribes these specific recommendations, none backs them up with prior examination of factors determining success of the LSPs in the market, when competing between each other. Understanding the causal relationships ruling the operating environment is crucial as neither regional expansion, nor introduction of new services to clients, would bring prosperity to an LSP on their own. Closing the gap, Essay I explores these causal relationships.

Essay I indicates that the long-term relationships with the customer and the LSPs' operational performance are not significantly related, however, the long-term relationships with the customer and the LSPs financial performance are, on the contrary, positively related. Based on a sample of Indian companies, Ullah and Narain (2020) support that there is, indeed, a positive association between the effort invested into customer relationship management and the company's financial performance, as indicated in Essay I. Yet, contrasting results were obtained by Valmohammadi (2017) who found that customer relationship management practices have weak effect on organisational performance within Iranian context. This is an interesting conclusion that contradicts the results of Essay I, on one hand, and points at the importance of the studied geographical context, on the other hand, or, alternatively, at the need to break down organisational performance into narrower categories to enhance results. Soltani et al. (2018) find that success of customer relationship management practices is highly dependent on the use of technology. This adds to the results under Essay I by highlighting the fact that IT capabilities not only mediate the link between long-term customer relationships and financial performance, but also facilitate maintaining customer relationship management practices as such. In line with Essay I, Ullah et al. (2020) confirm the moderating effect the technological turbulence has on the relationship between customer relationship management and organisational performance. Finally, Essay I shows that the operational performance is positively related to the LSP's customer's technology uncertainty and that, consequently, the LSPs facing the uncertainty have to develop effective internal operations to sustain, yet, surprisingly, no mediation by IT capabilities has been identified. The latter contrasts to Ganbold et al. (2020) who conclude that IT capability has a positive effect on supply chain integration, which in turn, especially the customer integration, has a significant positive effect on operational performance. This signals that either Essay I should have considered several potential indirect associations, or supply chain integration is not so crucial in case of an LSP. Reviewing the existing body of literature that adapts resource-based view to examine the link between IT resources and capabilities and organisational performance, Liang et al. (2010) conclude that IT resources may affect efficiency of business, yet do not directly affect its financial performance, which is the other way around comparing to the results of Essay I. Thus, again, both the geographical context and the industry together may set a drastic difference on what factors would drive organisational performance. This way Essay I builds in the missing link into the body of literature aimed at understanding LSPs operating environment in Russia. Thus, within the RBV context, the Essay emphasizes how LSPs interaction capabilities that embrace managing long-term relationships with customers and their technology uncertainty influence the LSPs performance.

Despite the role of Russia in the global economy, its CSR perception and practice has not been examined extensively (Fifka and Pobizhan, 2014; Bashtovaya, 2014). By studying fifty largest companies in Russia, Fifka and Pobizhan (2014) highlight that CSR awareness in these companies is influenced by the influx of Western business concepts, yet the actual CSR interpretation and practices result from the national institutional environment. However, their study covers primary industries, manufacturing, financial services, or retail, but neither LSPs, nor

the railway industry. *Bashtovaya (2014)* compares CSR disclosure between Russia and USA, focusing on the energy sector and reveals that Russian companies tend to extensively report on social dimension of CSR, as well as CSR issues related to employees or consumers. *Shvarts et al. (2016)* focus on environmental responsibility of oil and gas companies in Russia and applying the rating method, they conclude that large publicly traded companies focusing on gas enjoy top ratings in contrast to smaller privately held oil companies. Thus, Essay II contributes to established research by analysing CSR and its disclosure in one more industry of critical importance for Russian economy, which is the railway industry. The essay contributes to the established body of literature on CSR in Russia by revealing that in a state-owned company of critical importance, once the customer is excluded from the stakeholder map, the political role of the company in the society grows stronger, e.g. Russian Railways take a lead in regional development in the areas, where the company represents major employer. To a certain extent such a company plays a role of the right hand of the government and hence, the interpretation of CSR for such a company is driven solely by the state interests. In other words, the end customer has no power in dealing with a state-owned giant in Russia.

Essay II reveals that although in reporting CSR Russian Railways rely on the international legal framework GRI G4, their interpretation of CSR remains unique. *Fifka and Pobizhan (2014)* explore to what extent the national political and socio-economic versus international institutions determine CSR in Russia and support this conclusion by identifying that although CSR awareness is being brought to Russia from the West, how Russian companies interpret and exercise CSR is largely driven by the country's institutional environment. As revealed in Essay II, local legal standards, indeed, become a supportive legal framework when designing CSR, although the international legal standard GRI G4 is disclosed as being at the core. Yet, referring to the observation by *Fifka and Pobizhan (2014)* it might appear that the international standards provide the structure for CSR design and reporting in Russia, yet the actual interpretation of what CSR develops from the local regulations. In addition to that, *Kuznetsov and Kuznetsova (2012)* find the discrepancy between the way the Russian and Western managers understand CSR due to a number of social, economic and political factors, which is in line with the results of Essay II. To explain that, *Crotty (2016)* add that it is the historical background of the Soviet Union and political changes that have the strongest influence on interpretation of CSR. That supports the conclusion of Essay II stating that CSR in Russia has to be studied through the lens of political science. Although in the context of Essay II this conclusion is largely driven by observing that the customer is excluded from the stakeholder map and thus, has no voice in directing CSR activities of the railway company, referring to *Crotty (2016)*, the observed exclusion of customer from the stakeholder map may also be driven by the Russian historical background. Alike Essay II, *Glebova et al. (2013)* also reveal that Russian companies predominantly address the Russian administrative authorities, investors, lenders or, sometimes, partners, yet hardly ever customers as their key stakeholders. Interestingly, *Glebova et al. (2013)* observe that Russian organisations tend to extensively report mainly on the areas of CSR where positive results were achieved, which often leads to exaggeration. This could not be tested under Essay II, but does set an interesting direction for future research. Similarly, *Efimova and Rozhnova (2021)* reveal shortcomings in coherency and quality on reporting on social aspect of CSR among leading Russian metallurgical companies, which, again, was beyond the scope of Essay II, yet sets quality assessment of CSR disclosure as a direction for future research. The unique observation under Essay II, which was not found in the established literature, is that Russian companies take over part of the state functions on their CSR agenda.

Studies focusing on operations management in the railway industry in Russia are extremely limited. Similar to the body of scientific literature on LSPs in Russia, the research on the railway industry mostly describes the current state of affairs or builds recommendations for the future. For example, *Anokhov and Bludov (2019)* highlight importance of operational

transparency in Russian railways, accentuating the “internal chaos” that originates from the system being extremely fixed and information flows being highly complex, resources being managed inefficiently and, as a result, response to the market needs being delayed. Anokhov and Bludov (2019) suggest increasing flexibility of the system as a solution. Vorobyov et al. (2018) introduce a mathematical model for optimizing costs of cargo transportation and facility maintenance on the network. Yet, the model aims at cost minimization solely and thus, ignores other dimensions of performance, which ensure the operations to be sustainable. Thus, Essay III expands optimisation of the rail cargo transportation to multi-criteria optimisation, including various facets of performance. Moreover, with a quantitative approach, Essay III proves that the railway system in Russia is extremely fixed, indeed, and due to this, an opportunity to optimize the shipments by balancing out sustainability dimensions is extremely limited, which supports the claim by Anokhov and Bludov (2019) that introducing flexibility is a must. In the context of this dissertation, it is a must in sustainability transition in the Russian railway industry.

Many of the literature sources that one can find on optimisation within the railway context involve optimisation of some operational or technical parameters, such as optimizing scheduling for inspecting the railway tracks (Osman et al., 2017), optimizing track gauge of the railway switches (Pålsson and Nielsen, 2012), optimisation aimed at minimizing energy use at railway stations (Xin et al., 2014), train scheduling (Shakibaei et al., 2021), track stiffness (Mixaylovich and Rahmatovich, 2021; Wehbi and Musgave, 2017), or wheel profile (Shevtsov et al., 2006). One can hardly find a study on optimisation that touches such “soft” side of the railway cargo operations as CSR. Panova et al. (2017) discuss the issue of sustainability in the context of Trans-Siberian railway, which is a different part of the railway network than the one studied in Essay III, and looking at the ecological, social and economic dimensions of sustainability. By analysing cargo volumes, logistics costs, delivery distances and air pollution, they conclude that the supply chains in Russia should favor use of the railway system. Similarly, Essay III concludes that despite the complexity of the railway system in Russia, its actual carbon emissions remain close to optimal minimum, which supports the recommendation for Russian supply chains to favor the use of the railway. However, Panova et al. (2017) neither discuss the economic gain of the railway company nor the fixed nature of the railway infrastructure, like we do in Essay III. Yet why? Does the established research neglect the issue of poor financial return on the use of the railway structure for the fact that the railways are state-owned in Russia, or is there any other reason why despite being seen a crucial part of organisational performance as such, financial performance in the railways industry lacks research interest? Why despite so many technical aspects were addressed for optimisation in the established literature, the way to introduce flexibility into a fixed infrastructure was not? These are the key questions that appear when comparing Essay III to existing studies. Although answering them is beyond the scope of this dissertation, the perceived complexity of the railway system and the railway management might be the barrier that keeps researchers looking at the tip of an iceberg, not digging deeper into its formation.

As Moser et al. (2014) accentuates, emerging and transition economies challenge established business theories. Figure 2 highlights contribution of this dissertation into the theories applied. The key resource of the railway holding in Russia is the railway infrastructure. The study expands the assumptions behind the theory of performance frontiers by elaborating that inputs of fixed nature tend to produce a fixed outcome, unless flexibility is introduced into the way the process is run, which points at importance of inclusion of behavioral aspect into the theory. Moreover, the fixed nature of the asset cuts out the potential for performance improvement, i.e for an increased performance of the shipment process in one or more dimensions without a sacrifice in any other dimension, and leaves the room only for performance betterment. The organisational capabilities under the resource-based view can be broken down to sub-

capabilities, which, independently of each other, might affect different aspect of corporate performance, despite belonging to the same group of capabilities. On top of that, the state and the controlling authorities become primary stakeholders for a state-owned company, thus replacing or even pushing the customer out of the stakeholder map, which, in turn, means that the values and management practices of such a company are driven solely by state, not the customer. Moreover, with the current scale and power of the company, there is no need to think of and aim for a sustained competitive advantage, and thus the resource-based view that grounded Essay I does not apply in the context of the railway industry in Russia.

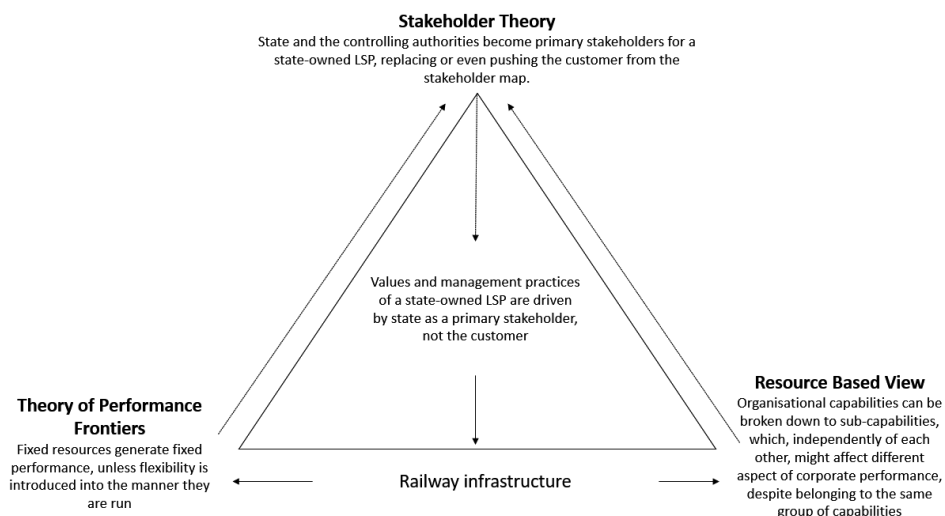


Figure 4. Contribution to the theories from analysing the railway industry in Russia

5.2. Managerial and policy implications

Enhancing manageability and efficiency of business operations is crucial for the railways in Russia (Vorobyov et al., 2018). As Panova et al. (2017) accentuate, solving the issue of sustainability is of high importance as well. This dissertation offers the following managerial implications that embrace LSPs, in general, and the railway sector in Russia, in particular.

Essay I highlights importance of organisational interaction capabilities, namely, managing technology uncertainty and maintaining long-term relationships with customer for organisational performance. Referring to the results of Essay I, companies in the transport logistics sector should invest into their IT systems and IT capabilities to ensure smooth operational and financial performance. It is worth mentioning that investing into integrating the information technologies between themselves is a critical element of running the operations smoothly, as well. The world has entered the era of digitalization and keeping up with the times is integral to sustaining a competitive advantage on the market. Reliable IT systems and IT expertise of employees in applying up-to-date information technologies form a backbone of smooth data exchange between the focal company and its customers or partners. Elimination of potential errors with proper integration of the systems applied is crucial for avoiding the domino effect of the process disruptions further in the supply chain. Moreover, error correction requires extra recourses for fixing it and thus, the costs run higher. Hence, ensuring proper integration of IT systems and capabilities is crucial both within the company and between the organisation and its partners, or customers. This ensures timeliness of response to the need, which is one of the key performance indicators for LSPs. Exemplifying it with Russian railway industry, a delayed response to the customer need in the sector was noted by Anokhov and Bludov (2019), along with poor technology level highlighted by Izmaylova (2018), which, in the light of the conclusions from Essay I, indicates what should come first. Moreover, development of information technologies becomes the base of risk management for Russian Railways (Kurenkov, 2021). While customer related technology uncertainty affects operational performance of an LSP, building and maintaining long-term relationships with customers is crucial for LSPs' financial performance. Not only an LSP has to know their key customers well, but also the customers need to know the LSP well, which points at the importance of establishing a long-term relationship of trust that goes beyond delivering secure freight transportation. Monitoring the market of key customers, discussing recent changes that affect the customer needs and being flexible to timely respond to the change contributes to establishing long-term customer relationship. The customer will most likely choose an LSP that knows their business specifics and is capable of responding to their current needs on top of a proved record of secure cargo deliveries. In the context of increasingly competitive environment, satisfying and keeping existing customers has proved to be a more successful strategy than targeting a small share of new ones (Cichosz, 2017). Referring to the results of Essay II, corporate social responsibility seem to require political attention in Russia. Once the customer is excluded from the stakeholder map of a state-owned company, managing sustainability transition becomes a political matter. The state-owned companies operating mainly nationally and enjoying a privileged monopoly position address the state as a primary stakeholder and hence, prioritize the state interests, which makes them overtake a number of state functions, like e.g regional development. The situation differs for international private companies, which are, due to scale of their business, influenced by influx of Western corporate social responsibility practices. Hence, the Russian state should limit their dominance. The state dominance should be narrowed down to e.g regulating transportation of cargoes of critical national importance like military shipments. Or, the railway infrastructure should remain in state ownership, yet be operated or served by a number of privately held railway companies that would compete. It would ensure inclusion of the customer into the stakeholder map and thus push corporate social responsibility in the railway

industry through the customer expectation for operating their supply chain in accordance with Western corporate social responsibility practices.

Finally, Essay III demonstrates that the system is too fixed to balance out the performance on economic and environmental dimensions and hence, introducing flexibility into running existing fixed transport infrastructure is required to ensure sustainable performance and an opportunity to reach up for an optimum. By being fixed, transport infrastructure as such offers extremely limited opportunity for optimizing performance. Although in the context of Russia the results prove that the rail traction produces carbon footprint close to minimum, the economic return on it remains close to minimum, as well, which means that the process is environmentally friendly, yet not sustainable. Given how the current rail freight transportation is organized, with the railroads switching the responsibility for cargo traction across the territory they are in charge of via one or two connecting stations, there calls a need for either increasing the number of connecting freight stations, or for introducing intermodality by examining if the road transportation is feasible to serve as an effective connection between different parts of the railway system.

Summing up, the issue of sustainability in Russian railways is driven not by being environmentally unfriendly, but rather, by producing poor financial outcome from the use of infrastructure. The way to solve the issue is to invest into state-of-the-art IT infrastructure and IT capabilities, bearing in mind how crucial their alignment is within and between the companies, in line with rethinking the fixed organisational structure that limits the potential to improve performance. Moreover, the state is recommended to revise the overregulation of the railway industry to let it have some freedom to operate in accordance with the principles of the market economy. Finally, introducing flexibility into the railway system, which has a fixed infrastructure, is the second crucial element to sustainability. Flexibility is recommended to achieve with either the increasing number of connecting freight stations between the railroads or by introducing intermodality into the cargo transportation process as it leads to better maneuverability in reaching optimal performance that would balance out the sustainability dimensions.

5.3 Limitations and future research

Limitations are integral to any study and thus build a platform for future research directions. Data, methods, or theories being used all might impose limitations that are important to consider to build a realistic understanding of the study results and the ways to enhance them through future research. This dissertation conducted an empirical research based on corporate data of different types. When gathering data with a survey (Essay I) among companies, e.g LSPs, researchers should consider that the collected data might be biased as the managers may be subject to social desirability bias. To avoid that, the questionnaire was anonymous and run through an online platform. To mitigate the potential bias even better in future studies, researchers could restate the survey questions into indirect to avoid direct pointers at the company or the respondent. When interpreting the results of essay II, which was based on publicly available corporate reporting, one should bear in mind that the disclosure might be biased with the corporate interests or corporate vision for establishing public relations. To mitigate against such biases, it was ensured that the collected CSR reporting relies on an established legal framework, either international or national. To avoid this potential bias further, researchers could expand the content analysis to also include sources, independent of the company, e.g news archives prepared and published by a third party. When extracting data from information systems (such as in Essay III), one avoids the issue of subjectivity, yet faces the missing values or errors to be corrected based on chosen assumptions. The data for Essay III had no missing values as the used data base was compiled by the railway dispatchers in parallel with the train

proceeding along the route. If technical equipment of the freight stations allows, researchers could also rely on data records by the station equipment in the future.

Essay I tested the hypotheses with a pool of data that included data collected from four countries, one of which was Russia and thus, the results were extrapolated on the LSPs operating environment in Russia. However, gathering more extensive data on Russia in the future and testing the hypotheses solely with Russian data would generate results describing the Russian LSPs operating environment with higher precision. Essay II relied on publicly available CSR disclosure, which offers overall view of corporate social responsibility of the whole railway company, yet not the units which represent railroads responsible for freight traction over each particular area within Russia. Thus, unevenness of corporate social responsibility within the railway holding remained out of light. Thus, conducting a survey on internal corporate social responsibility and its disclosure between the units within the railway giant in Russia becomes an interesting direction for future research. Essay III collected data on dispatches from only two railroads of North-West Russia that carried a particular type of cargo, specifically for export. Yet, each freight train might carry various cargoes. Moreover, export is a fraction of rail freight transportation, which also includes import, overland and transit freight traction. Essay III applied optimisation, namely, built a transshipment model. Thus, the model is a simplification of reality aimed to illustrate an approach to analyzing sustainability, rather than developing a production solution, and hence expanding the model would be an interesting direction for future research, also by including social dimension of sustainability, which was not considered here.

The dissertation builds on a research framework derived from three theories as pillars, which are resource-based view of the firm, stakeholder theory and theory of performance frontiers. Each explains superior performance of the firm at a different angle. Being closely related to strategic management, resource-based view and the stakeholder theory complement each other, as in order to remain competitive, an organisation has to effectively manage both their resources and the stakeholder relationships that, in turn, determine what resources the organisation obtains (Freeman, 2010). When addressing application of these theories to sustainability, Lozano et al. (2015) highlights that each theory on its own has limitations in addressing all the sustainability dimensions, yet, at the same time, each has a particular perspective or principles that complement each other. The theory of performance frontiers views resources as inputs that produce certain outcome, leaving the behavioral aspect out of consideration. Yet, each of the angles is important in building a comprehensive picture of sustainability performance and thus, developing a hybrid theory out of the three provides an avenue for future research. Essay II points out the importance of combining theories of different disciplines, namely, of operations management and political science, in building a comprehensive understanding of corporate sustainability. In a similar vein, combined use of theories within the domain of operations management, ensures more comprehensive understanding of the phenomenon, thus suggesting a need of developing a single theoretical framework that would embrace the critical facets of the key ones.

Finally, this dissertation analysed the sustainability and transition towards it from the perspective of use of resources in possession and the role of the state in the transition. Although it is the government that creates the vision, it is the people who either follow or oppose the vision. This dissertation did not analyse the behavioral aspect of transition towards sustainability. In the context of this dissertation it would be a survey among employees of the railway industry aimed at assessing to what extent they agree to change their behavior and contribute to a more sustainable future of their country or if they believe in the idea of sustainability transition at all. However, it deserves attention on a broader level, as a cultural phenomenon.

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