THESIS ON ECONOMICS AND BUSINESS ADMINISTRATION H53

Regional Airports as a Driving Force for Economic and Entrepreneurial Growth Through Air Cargo Value Chains

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Declaration:

Hereby I declare that this doctoral thesis, my original investigation and achievement, submitted for the doctoral degree at Tallinn University of Technology has not been submitted for any academic degree.

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MAJANDUS H53

Regionaalsed lennujaamad majanduse ja ettevõtluse kasvutegurina toetudes õhukargo väärtusahelatele

ANATOLI BEIFERT

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List of publications

The structure of this thesis is based on the following four scientific articles. The author of this thesis contributed in three articles as the single author and in the fourth article as the co-author.

I. Beifert, A. (2016). Regional airports' potential as a driving force for economic and entrepreneurship development – case study from the Baltic Sea Region (ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES, volume 3(3), 228-243.

II. Beifert, A. (2015). Business Development Models For Regional Airports - Case Studies From The Baltic Sea Region. Journal of Security and Sustainability Issues, 5, 199−212.

III. Beifert, A. (2016). Role of Air Cargo and Road Feeder Services for Regional Airports – Case Studies from the Baltic Sea Region (Transport and Telecommunication Journal, issue 2 volume 17, 87-99.

IV. Beifert, A.; Maknyte, L.; Prause, G. (2013). Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air cargo. Journal of Security and Sustainability Issues, 3(2), 41−52.

The author's contribution to the publications

In the following the author's contribution to these academic papers is presented.
I. Regional airports' potential as a driving force for economic and entrepreneurship development – case study from the Baltic Sea Region.
The author of this thesis was single author of this academic paper. The author conducted the qualitative assessment of regional airports' potential and impact in the context of the regional development concepts and theories. As a result the author developed the integrative evaluation concept grounded primarily on evidence-based approach and qualitative data from EU funded projects "Baltic.AirCargo.Net" and "Baltic Bird".

II. Business Development Models For Regional Airports - Case Studies From The Baltic Sea Region.
The author of this thesis was single author of this academic paper. Based mainly on the theoretical background of Innovation Business Canvas model and empirical data from the EU funded project "Baltic.AirCargo.Net, the author developed a sustainable business development model for the regional airports, including success factors and strategic allocation of the airports' resources.

III. Role of Air Cargo and Road Feeder Services for Regional Airports – Case Studies from the Baltic Sea Region.
The author of this thesis was the single author of this academic paper. Having investigated the positioning and the role of the regional airports in the current hub-and-spoke network, the author developed the assessment matrix aiming at potential evaluation of the air cargo sector and especially air trucking services

for the development of regional airports. The evaluation was grounded on evidence-based approach and qualitative data from EU funded project "Baltic.AirCargo.Net".

IV. Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air Cargo.
The author of this thesis was the leading author of this jointly published paper. The author was assisted by Ms Maknyte, who fulfilled the literature review and was the main contributor to the conceptual model development based on empirical evidence and case studies of regional SMEs operating in the air cargo transport and logistics service field. The paper was based on empirical evidence and case studies from EU funded projects "Baltic.AirCargo.Net", "East West Transport Corridor–II", "Baltic Bird"; the conceptual model was designed with propositions for possible tactical and strategic approaches of SMEs and entrepreneurs involvement into air cargo value chain.

Other publications related to this doctoral dissertation

1. Beifert, A.; Gerlitz, L.; Prause, G. (2015). Sustainable Business Development Models for Regional Airports. In: W. Kersten, T. Blecker, C. Ringle. (Ed.). Innovations and Strategies for Logistics and Supply Chains (256−284). Berlin: epubli GmbH (Proceedings of the Hamburg International Conference of Logistics)
2. Beifert, A. (2015). Air cargo development in the regional airports of the Baltic Sea Region through road feeder services. Transport and Telecommunication, 16 (2), 107−116
3. Beifert, A.; Maknyte, L.; Prause, G. (2013). SMEs Behaviour in the Air Cargo Supply Chain: Engagement, Performance and Strategy. A Regional Approach on SMEs Practices and Future Directions in Mecklenburg-Vorpommern. Social Sustainability and Economic Security: The Agenda for Entrepreneurship in the 21st Century, 12: Proceedings of the International Entrepreneurship Forum. 13.01−13.20.
4. Beifert, A., Prause, G. (2011). Logistic innovation networks in the Southern Baltic Sea Region. Prause, G. Baltic Business and Socio-Economic Development 2009 (3−17). Berlin: Berliner Wissenschafts-Verlag (Regional Business and Socio-Economic Development).
5. Beifert, A; Prause, G. (2010). Logistics in the Southern Baltic Sea Region. In: Cleve, J. (Ed.). Proceedings of WiWiTa - 2010 Conference (pp. 322−327). Wismar: Wismar University.

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Abbreviations

ACC3	Air Cargo or Mail Carrier operating into the Union from a Third Country Airport'
approx.	Approximately
AWB	Air Waybill
BACN	Baltic.AirCargo.Net – research project
BB	Baltic Bird - research project
BSR	Baltic Sea Region
BSR-TC	Baltic Sea Region Transport Cluster – research project
CRQ	central research question
cf.	compare (lat. conferre)
DG MOVE	Directorate General for Mobility and Transport (DG MOVE),
EC	European Commission
e.g.	for example (lat. exemplī grātiā)
et al.	and others (lat. et alii)
etc.	and other things (lat. et cētera)
ERDF	European Regional Development Funds
EU	European Union
EWTC-II	East West Transport Corridor II – research project
FDI	Foreign Direct Investment
FEZ	Free economic zone
i.a.	among others (lat. inter alia)
ICT	Information and Communication Technologies
i.e.	it is or this means (lat. id est)
kg	Kilogram
km	Kilometre
lat.	Latin
LCC	Low Cost Carrier(s)
LE	Large enterprises
ROIC	Return on Invested Capital
RBV	Resource Based View
RFS	Road Feeder Services
RQ	Research question
TCE	Transaction Costs Economics
TEN-T	Trans-European Transport Network
SCM	Supply Chain Management
SME	Small and medium-sized enterprises

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INTRODUCTION

The air transport sector is considered as one of the main driving forces for the socio-economic development worldwide (cf. Goetz, 1992; Debbage and Delk, 2001; IATA, 2015). The European aviation industry, with the network of more than 440 airports, contributes to ca. 40% of European exports and imports value, transports over 822 million passengers annually and is directly or indirectly responsible for the employment over a million people (cf. Crabtree et. al., 2015; EC, 2015a). The airports in Europe might be generally split into two categories: 1) hub airports, which provide a full range of services, including business, leisure, domestic, European or inter-continental flights; consolidate passenger and air cargo traffic from regional airports; 2) regional airports that connect remote regions to the centres of socio-economic activity, feed hub airports as well as posses direct flights to other regional airports (Horst, 2006).

Although regional airports secure regional accessibility and contribute to socio-economic development of peripheral and remote regions, the number of loss making regional airports in Europe is constantly growing; the majority of the European regional airports depend on public subsidies and aids (cf. Breidenbach, 2015; Breidenbach, 2015). In this context, on the one hand the EU Commission has stated clearly that the public support to regional airports will be considerably reduced or even completely cut, since the constant expanding of the financial aid to the airports cannot be considered as a sustainable or an appropriate solution (cf. EC, 2014). On the other hand a number of experts argue that it is rather a false approach to focus on the airports' monetary losses only, since a wider positive contribution of the regional airports for the economic and entrepreneurship development, including catalytic effects in service, entrepreneurial and innovation sector must be considered (cf. Brueckner, 2003; Sheard, 2014). Therefore, one of the main challenges in this context is to stimulate the regional airports to operate in more cost efficient and flexible way and to demonstrate possible alternative development scenarios and relevant business models (cf. Margalhaes et al., 2013; Crabtree et al., 2015).

A number of dedicated research studies have been investigating the airports in the context of regional development and air transport services' impact on the regional accessibility (e.g. Rietveld and Bruinsma, 1998; Niemeier, 2001; Braun et al., 2010). Other group of researchers analysed the effects of airports on the structure of the regional employment, regional labour market and regional economic growth, underlining the economic effects and benefits from airports' operations (e.g. Baum et al., 2005; Boon et al., 2008; etc.).

However, it might be stated that all these studies have been focusing mostly on central airports or airport-hubs in metropolitan areas, whereby the specific perspective of regional airports and remote regions has been studied less thoroughly (cf. Mukkala and Tervo, 2012). Halpern and Bråthen (2011) also noted that catalytic impact of regional airports on regional development calls for

deeper and wider research. A number of other researchers stated that a bigger attention should be paid to regional airports in the future (cf. Kasarda and Green, 2005; Button et al. 2010; etc.). Furthermore, in the current research literature a limited attention has paid to the role of SMEs in the air cargo service sector (cf. Bernal et al., 2002; Thakkar et al., 2009). In this context, it is also of a high importance to reconsider the role of SMEs in airports' operational environment and especially in the air cargo value creation and supply chain (cf. Gunesekaran and Ngai, 2003).

This wider aim of this research study is to enhance capacity performance of regional airports through air cargo business model and increased air trucking value chain awareness.

In response to the current demand for reconsidering the role and development perspectives of regional airports and the identified objectives, the author has formulated the following central research question (CRQ):

- How the performance of regional airports can be improved by air cargo business model?

In the framework of the given research study the CRQ has been broken down into the following specific research questions (RQ):

- RQ 1: What is the possible conceptual evaluation pattern that may better recognise and enhance regional airports' impact on economic and entrepreneurship development in their regions?
- RQ 2: What are the relevant evaluation criteria that might be appropriate to enhance sustainable business models for the regional airports?
- RQ 3: Can air cargo be an appropriate business model for regional airports; and if yes, could the air trucking services be the first step for regional airports to enter the air cargo market?
- RQ 4: What are the appropriate concepts of efficient integration of transport oriented SMEs and entrepreneurs in the air cargo value chain?

The developed evaluation concepts and models in the framework of this study have been grounded on the empirical data, expert interviews, evidence-based, qualitative and quantitative data mainly collected in the framework of the research projects, co-funded by the INTERREG IVB, i.e. Baltic Sea Region Programme and ERDF Funds:

- "Baltic.AirCargo.Net" (BACN), 2011 – 2013;
- "Baltic Bird" (BB), 2012 – 2014;
- "Baltic Sea Region Transport Cluster" (BSR-TC), 2013 – 2014;
- "East West Transport Corridor-II" (EWTC-II), 2009 – 2012;

In the framework of the mentioned research projects a number of regional airports in the Baltic Sea Region (BSR) from Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden and also from Republic of Belarus have been

evaluated. Selected regional airports acted as test and validation pilot-case airports for the developed concepts and development models.

The above identified CRQ and specific RQs have been consequently addressed and treated in the framework of the following four published articles:

- Article I – the first scientific article (i.e. "Regional airports' potential as a driving force for economic and entrepreneurship development – case study from the Baltic Sea Region") is addressing the first research question through qualitative assessment of regional airports' potential and impact in the context of the regional development concepts and theories. As a result the author developed the integrative evaluation concept grounded on evidence-based approach and primary data from EU funded projects: "Baltic.AirCargo.Net", Baltic Bird and others.
- Article II - i.e. "Business Development Models For Regional Airports - Case Studies From The Baltic Sea Region", targets the second research question, whereas based mainly on theoretical concepts of Innovation Business Canvas model and Resource Based View, the author develops theoretical evaluation concept aiming at development of sustainable business models for regional airports, including success factors and strategic allocation of the airports' resources.
- Article III - the third article (i.e. "Role of Air Cargo and Road Feeder Services for Regional Airports – Case Studies from the Baltic Sea Region") addresses the third research question though investigating positioning of regional airports in the current aviation network, whereas the author developed the assessment matrix aiming at potential evaluation of the air cargo sector and especially air trucking services for the development of regional airports. The implications of Road Feeder Services concept has been formulated as an optional freight value proposition for the development of the regional airports and their possible participation in the air cargo market as a supplement instrument to generate additional revenue, thus making the airports more profitable and attractive.
- Article IV – the fourth research question is treated in the framework of the fourth scientific article (i.e. "Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air Cargo"), whereas the author proposed conceptual model for integration opportunities of transport related SMEs and entrepreneurs into the air cargo transport and logistics service field. The implications derived from the observed SMEs behaviour and performance in the air cargo supply chain and networks are made, including possible SMEs future directions and research contributions in this area.

The **theoretical contribution** of the following thesis lies in the development of new theoretical models and conceptual approaches in terms of (1) regional airports' potential impact model for economic and entrepreneurial development; (2) business models for regional airports, including assessment criteria and

sustainability enhancers; (3) air cargo business appropriateness model for regional airports, (4) conceptual proposals for integration of SMEs in the air cargo value chains.

The **practical contribution** of this thesis lies in practical implementation and testing of the developed assessment concepts and evaluation models on selected regional airports in the framework of BACN and BB projects, herewith contributing to practical enhancement of regional airports' potential as well as reconsidering of their strategies and roles in the overall aviation network. The developed models and conceptual approaches have been applied and tested by selected regional airports in the BSR as well as communicated and validated on the national and EU level.

The review article is structured as follows: the first chapter reviews the theoretical framework of the thesis, whereas the author provides a systematic overview of theories and concepts that relate to: (1) relevance and interdependencies of the regional development and transport sector as well as an airports' impact on regional development; (2) sustainable business development models, incl. Innovation Business Canvas model and Resource Based View; (3) positioning of regional airports in the air transport network theory, the air cargo business model relevance for regional airports; (4) supply chain management theories and the role of SMEs in the value chain. The second chapter identifies the research approaches and methodology of the thesis, mainly based on action research, evidence-based, qualitative and quantitative data analyses as well as author's relevant applied research projects' participation. The following chapters present the main results and findings of the developed models and the discussion of the relevant objects of the future research study. Finally, in the "conclusions" chapter, the main results and implications are summarised.

1 THEORETICAL FRAMEWORK

1.1 Implications of air transport on regional development

Close relationship between location theories, regional development concepts and transportation may be traced back to Weber (1929) and Hoover (1937), where they mainly focused on optimisation of transportation costs and development of regional cluster theories through identifying benefits from local agglomeration such as large-scale economies, localisation economies and urbanisation economies. Greenhut (1956) and Isard (1956) demonstrated competitive advantages of business location near primary input sources.

Ndoh and Caves (1995) outlined direct impact of air transport supply on regional development, whereas attractive accessibility may stimulate a firm's economic growth. Due to importance of air connectivity for remote territories, also regional airports were identified as important factors for regional growth (Percoco, 2010). Bogai and Wesling (2010), Baum et al. (2005), Hujer et al. (2008), Brueckner (2003) also stated considerable effects of airports on regional labour market and regional economic growth. Direct interdependences between airports and regional development have been also studies by a number of researchers (e.g. Graham, 1995; Rietveld and Bruinsma, 1998; Shin and Timberlake, 2000; Horst, 2006; Hakfoort et al., 2001; Niemeier, 2001; Cherry, 2014; Boon et al., 2008; Hart and Mccann, 2000). The discussion of causality and interdependences of an airport's and regional development growth remains still open, since the supply of transport services alone will not automatically lead to economic growth and it can be demand side in form of regional growth that may lead to increasing demand for transportation services (Button et al., 2010; Mukkala and Tervo, 2013; Green, 2007; Halpern and Bråthen, 2011; Rodrigue and Notteboom, 2013).

Malina (2007 and 2008) and Baum (2004) grouped airports' impact on regional development in: (1) direct impact that relates to airports' operation; (2) indirect effects that arise from value chain of suppliers and services; (3) induced effects that are caused by consumption demand of direct and indirect airport employees; and (4) purchasing power effects caused by the passenger flows. A number of researchers investigated also Wider Economic Benefits known also as catalytic impacts, which describe how an airport facilitates businesses of other sectors (Robertson, 1995; Hakfoort, 2001; Cezanne and Mayer, 2003; Cooper and Smith, 2005; Gloersen, 2005) Due to its complex character and difficulties to differentiate catalytic impacts from other factors, the measurement of catalytic effects is seen as problematic (Bandstein et al., 2009). Halpern and Brathen (2011) differentiate two main types of catalytic impact factors: (1) regional economic competitiveness impact, resulting from airports' export activities, business operations and productivity; (2) regional accessibility and social development impact, arising from an airports' influence on regional

accessibility. Airports' catalytic impacts on a region may be also grouped into: (1) consumer surplus; (2) environmental social effects; and (3) economic spin-offs that may stimulate inbound investments and improve productivity; (4) intangible economic catalytic effects such as network capacity, skills and competences, structural and image effect (cf. Braun et al., 2010; Wittmer et al., 2009). Furthermore, proximity and connectivity (here: of airports) to TEN-T transport corridors (e.g. EWTC) have been underlined as considerable impact factor contributing to sustainable entrepreneurship und economic growth (Prause and Hunke, 2014).

Since an airport itself does not execute air transport services, but provides a complex bundle of hard (e.g. runways, terminals, warehouses, catering, etc.) and soft (e.g. security regulation procedures, air cargo screening, sky-guiding, etc.) infrastructure, an airport might be also seen as a logistics cluster building entity (Juchelka and Brenienek, 2016, Marshall, 1890; Porter, 2000; Elsner et al., 2005; Rivera and Sheffi, 2012). The interconnected companies within an airport cluster may profit from provision of the systematic services and benefits from other markets, thus enhancing core regional and firms' competences though acquiring sustainable competitive advantages (cf. Wang, 2015).

As regional airports are seen as an essential subject of regional activities and policies, the airports' operational success is one of the most important influencing factors on regional development (cf. Feldhoff, 2012). The regional airports need to optimise their performance strategy internally (organisation-based) and externally (market-driven) as well as enhance their diversification and differentiation potential in order to increase their impact on the regional development. Inefficient utilisation of available resources in airport's operational environment is seen as prior bottlenecks for regional economic prosperity (EC, 2014). The entrepreneurship resource-based theory argues that access to resources is an essential factor for the entrepreneurship growth (Alvarez and Busenitz, 2001). This theory underlines also the important role of social, human and financial, resources; stating that the access to resources stimulates the entrepreneurial ability to utilise discovered opportunities more efficiently (Davidson and Honing, 2003). Financial, social and human capital represents three classes of theories under the resource-based entrepreneurship theories. However, some regional airports often underestimate their strategic value. But if those innovative concepts (e.g. Logistics Bonded Park or Airport Industrial Zone) are already utilised or offered by the nearest regional competitors, it might be often inefficient just to reduplicate them (Downes and Nunes, 2013).

1.2 Implications of business development concepts

A business model may be seen as a "realised strategy" (cf. Casadesus-Masanell and Ricart, 2009 and 2011), which includes rules, tangible and intangible resources and overall management structures. Evidence cases and practical experiences demonstrate that airports' success lies mostly beyond simple

reflection of the needs of customers and delivering sufficient return to investors or other stakeholders. The strategic and operational success derives rather from three key elements, i.e. diversity, differentiation and innovation (Feldman, 2009; Prahalad and Hamel, 1990). In this context, the concepts of Resource Based View (RBV) (Wernerfelt, 1984; Barney, 1991; Grant, 1991), competitive advantage including innovation management process (Tidd and Bessant, 2013) are of a special importance. Wernerfelt (1984) suggests that the strategy of a company shall be considered rather in terms of positioning the firm's resources and not products or services on the market(s), i.e. a firm must focus rather on identifying of relevant resources, which influence and secure a firm's competitive advantage and sustainability. According tot the RBV concept, resources are all tangible and intangible assets, capabilities, organisational processes, attributes, information and knowledge that allow a company to recognise and implement strategies that lead to organisational efficiency (Barney, 1991; Crook *et al*., 2008, Peteraf, 2003). RBV investigates competitive environment through "inside-out", i.e. internal factors environment (Prahalad and Hamel, 1990; Porter, 1996; Hoopes *et al*., 2003).

In the modern economy, the decision of internal production or outsourcing is vital for a firm's competitiveness and sustainability (Walker and Weber, 1984; Quelin and Motlow, 1998; Bidwell, 2009). Two research streams, i.e. Transaction Cost Economics (TCE) theory and Resource Based View (RBV) have been developed to address this issue. TCE approach investigates transaction costs that incur while firms contemplate outsourcing (e.g. price search, contracting, etc.). To the main characteristics of transaction costs belong uncertainty, frequency of trading, and asset specificity (Williamson; 1999) The transaction costs analysis shall help to decide whether these transactions should occur internally (within a firm) or externally, i.e. outsourcing (Coase, 1937). However, outsourcing implications according to TCE approach is not always confirmed, e.g. due to insufficiencies while identifying firms' boundaries (Williamson; 1999; Poppo and Zenger, 1998). Since the RBV approach recognises the relevance of market issues according to TCE and identifies the possibility that resource mobility is affected by the ability of suppliers to recognise the strategic value of a resource (Barney, 1986), in order to solve this limitation, a common consideration of both theories, i.e. RBV and TCE has been suggested (Holcomb and Hitt, 2007; Neves et. al, 2014).

Feldman (2009) underlined the importance of differentiation approach that suggests creating demand by offering such services that customers have not known before, e.g. improved value creation and value proposition would make an important competitive advantage for regional airports. Value creation and value proposition can be enhanced by marketing and branding activities as well as additional products and services proposition (Kai, 1993). Airports' core competences can be seen as a cluster of intangible resources, whereas a competitive advantage may be achieved e.g. through providing access to other

markets (Thakkar, 2008 and 2009). According to Porter, competitive advantage derives from an organisation's activities in the external environment, i.e. how those activities fit strategically into the external environment or the market and create value (Porter, 1985; 1991). Thus, a competitive advantage may be gained through fitting products, technology or marketing approach to external market conditions (Porter, 1996). Porter (1991) argues that a cluster is rather a system of interdependent industries and business entities that cooperate and complement each other in a given economic landscape. A functioning cluster positively contributes to improving productivity and efficiency; it stimulates a cluster-internal competition and innovations and provides a favourable framework for entrepreneurial activities. These positive effects are also achieved through efficient knowledge sharing and knowledge transfer within the cluster, multiplied by a learning process that does not require cost intensive investments; and where the cluster's players may utilise the cluster business canals to other economic spaces.

A number of companies and new start-ups have benefited from current socio-economic developments and changing business environment and new technologies on the one hand, but on the other hand for many companies these changes have brought significant disadvantages by turning running business to unattractive or even unprofitable. The driving forces that stay behind these developments might be (1) changes in the competitors' behaviour, (2) in technological developments, (3) in consumer behaviour and in the institutional context (Kuratko et al., 2011). A rush growth of information flows and development of Internet services (e.g. online-booking services) have changed the market significantly. Relatively new companies and start-ups have managed to displace well-established business partially or even completely. Following Sheffi's (2013) concept of "logistics intensive clusters", as it has been already mentioned before, an airport together with its surrounding business network can be considered as a logistics cluster in a comparable way with seaport clusters (DeLangen, 2004). Thus, regional airports should focus also on efficient interconnections with all its relevant industries, operating institutions and organisations, herewith improving competitiveness and sustainability. For a regional airport e.g. prioritising of air cargo business cluster approach may also mean building up logistical service centres that may create a network of regional logistic service providers. In this context, a proximity and connectivity to TEN-T Transport Corridors might be seen as a considerable competitive advantage and efficiently utilised by regional airports (cf. Prause, 2014). That may improve tangible and intangible resources not only of airport, but also of all involved cluster participants, herewith also helping to identify airport's distinctive capabilities.

The importance of business model prototyping including identification of strategic supply and demand drivers, macroeconomic environment, megatrends, the level of innovation, business sophistication, technological readiness, growing

importance of emerging markets etc. has been identified in a number of scientific publications and research papers (cf. Scholtissek, 2008; Eckert, 2014). Business innovation implies also a process by which necessary activities such as problem resolving, idea generation; development, manufacturing and marketing are efficiently managed, commercially and practically exploited to the market (Trott, 2012). Innovation is also seen as a process of turning opportunity into ideas, practical application in the reality (Tidd and Bessant, 2013) and bringing value through its availability (Gault, 2012; Stock and Lambert, 2001). Business innovation model prototyping for regional airports may require specific capabilities, knowledge (e.g. knowledge of other markets), skills, facilities, financial resources and infrastructure. According to "pull and push" theory, innovations appear as a result of technology push or can be pulled by the market (Christensen, 1997).

Regional airports shall learn to identify new market opportunities on early stage and deploy them appropriately (cf. Downes and Nunes, 2013). Tidd and Bessant (2013) recommend step-by-step innovation process that includes: (1) search for new ideas and opportunities; (2) selection of ideas; (3) implementation of ideas and capturing ideas and (4) commercially benefiting form their exploitation. Osterwalder and Pigneur (2010) identify five components that make up a "Business Canvas" model, which includes nine elements: customer segments, value propositions, channels, customer relationships, revenue sources, key resources, key activities, key partnerships and cost structure.

1.3 Implications of hub-and-spoke network and air cargo concepts

Enforcement of the "Airline Deregulation Act" in the USA in 1978 promoted considerable deployment of hub-and-spoke network structures for airports and airlines operations worldwide, and contributed to the overall costs' reduction both for passenger and air cargo traffic (White, 1979; Dennis, 1994; US Congress, 1978; Wei, 2006). This liberalisation simplified new airlines to enter the aviation industry and choose the routes and the flight fares on their own (White, 1979). This considerably increased also the competitive environment and rush development of the aviation industry worldwide (Bauer, 1987). According to the hub-and-spoke network model the flight routes consist of the central point(s) named as "hub", which serves several ends ("spoke"). Hub functions as a consolidation point of passengers and airfreight that move from the various spokes and provide connecting flight to other destinations that might be other national or international hubs or spokes (Dennis, 1994). The network airlines operate normally inter-hub flights with a high range and capacity aircrafts. Smaller range-capacity aircrafts are deployed to serve hub-and-spoke connections (Bailey, 1985; Sugiyatoa et al., 2015). Normally hub selection is based on high market demand for a pair of "origin-destination" in favour of flight-operations and some airport-hubs build partnerships or establish a subsidiary-network with regional airline operator(s) to remote area (Rietveld et al., 2001). In this context, regional airports fulfil the role of "spokes", i.e.

feeding the hubs with passenger and air cargo traffic. Morrison and Winston (1986) investigated the advantages from hub-and-spoke pattern, stating that passengers benefit through availability of more frequent flights with lower fares, shorter travel times and improved accessibility to remote regions. The airline deregulation in Europe also acted as the main driving force for airports' and airlines competition growth, decreasing fares (Reis and Macário, 2009; Barett, 2000). The growth of hub-and-spoke network model enabled large and medium size airports to become the central hubs in their respective regions, herewith increasing competitiveness pressure on regional airports (Bootsma, 1997; Reynolds-Feighan, et al., 2006; Matsumoto et al., 2008; Wu, 2011). However, the constantly growing volume traffic via central hubs has resulted in some cases in congestions at hub airports. This phenomenon has created new opportunities for new airlines to provide point-to-point transport services. This business model also known "low cost carrier" model (LCC) enabled short-haul flights growth, where low-fare are charged and connecting flights to regional airports are offered that are closed to urban areas. Thus, LCC sustainable growth has been stimulating development of the regional airports considerably (Sugiyanto et al., 2015). The European Commission has also clearly acknowledged important role of regional airports in the regional accessibility as well as their potential to reduce congestion peaks in the central European airport-hubs, by developing efficient air transport network and improving regional accessibility (cf. Urbatzka and Wilken, 2004; EC, 2014 and 2015).

Compared to air cargo, the passenger market in aviation business is seen as balanced and predictable (O'Conner and William, 2001). Airfreight business represents normally a supplementary part in supply and value chain, and depends on many factors, including logistics and ICT infrastructure, commercial and security policy regulations, competitiveness structures, etc. (cf. Doganis, 2001). Kasarda and Green (2005) stated that air cargo contributes considerably to improved connectivity to remote markets and global supply chains. Thus, air cargo services possess a special role in modern supply chains, carrying the most valuable, time sensitive and most urgent shipments. Therefore the air cargo potential relates mostly to valuable, time-definite, time sensitive products and provision of efficient transport solutions in terms of a time-cost, security and reliability ratio (cf. Ihde, 2001). Strict requirements in terms of security, time constrains and quality to logistics services stimulated development of new concepts aiming at improving technical integration and networking of the global economy. New goods have become eligible for air transport, new stakeholders have been entering the market as well as new concepts and interactions have been developed (Hesse and Rodrigue, 2004; Reis and Macario, 2009). Hübl (2001) proved that industrial areas close to airports are generally more attractive for manufacturing companies and their supply chain activities. Air cargo may positively contribute to revenue situation and can be a supplementary factor for an airport's profitability as well as strengthen an airport's position in the catchment area (Terhorst, 1992; Kasarda and Green, 2005; Horst, 2006; Zondag,

2006; Boeing, 2015). The air cargo part in average may represents 15-30% of airlines' total turnover (cf. Reis and Macário, 2009; Boeing, 2015). In order to keep the air cargo operations more profitable airports utilise their transfer freight capacities to obtain a sufficient load factor that refers especially to bigger airport-hubs with regular and sustainable transfers, e.g. between two long-haul flights that normally have a higher part of transfer air cargo traffic (Boonekamp, 2015).

The forwarders normally establish their own cargo hubs at major airports, which may lead to an integration of forwarders' networks to / from hub airport(s) and reduce the importance of the hauliers, because of an exclusion of these destinations from forwarders' networks (Freye and Steiger, 2004). Thus, the participation in the air cargo market for regional airports normally represents a bigger challenge, since it is rather unrealistic that airlines would offer inter-continental air transport services via "spokes", i.e. regional airports. However, certain regional airports that focus on airfreight, may handle large amounts of cargo through so-called dedicated freighters and it might be the niche market for regional airports in this sector (cf. Boonekamp, 2015). Other studies confirmed this stating that inter-continental airlines e.g. with one spoke airport might operate at regional airports under precondition that this service must be dedicated or pure freighter traffic (Schöfer and Seeck, 2005; Horst, 2006).

A constantly increasing part of air cargo traffic is also transported by road and this growing trend worldwide is named as "air trucking" or "road feeder services" (RFS) model (Reise, 2009; Boonekamp, 2015). RFS has become an important link in the logistics chains since this mode has been officially regulated by IATA resolution 507b (IATA, 2008). In some cases the RFS account up to 30–45% of the total amount (in tons) of air cargo transhipped at the large European hubs; at some regional airports this percentage is even higher (cf. Bottler, 2006; Derigs et. al., 2013). Due to efficient road-network infrastructure and the fact that majority of the pick up and delivery locations in Europe are rather at short or middle range distances, the deployment of RFS concept is often the fastest, reliable and most cost efficient mode of transportation of the air cargo. Thus, air cargo fulfilled by trucks provide many advantages, such as higher accessibility, availability and simplicity in regard to executive units (trucks vs. aircrafts), certain flexibility in regard to an official time-schedule applied for the real air crafts e.g. in form of the given time slots and route.

Technically, the concept of RFS can be defined as a normal truck operating between two airports (i.e. leaving from and arriving at airport customs/security zone) on Air Waybill (AWB) or an air consignment note, which refers to a receipt issued by an airline. An air-truck might have several route or flight numbers, if it carries cargo from more than one airline. Basically, from documentation and security requirements point of view air trucking is handled

exactly in the same way like real aircrafts, i.e. air-trucks possess exactly the same insurance and security regulations, fulfilling all customs and security regulations set by the relevant authorities as if the goods were really flying by air (Grandjot, et al. 2007; Heinitz, et al. 2013). Air-trucks cannot carry normal cargo and it is also not possible to combine the load of normal transport cargo with the declared air cargo in one "air" truck. RFS exactly as real aircrafts have a fixed time schedule and operate under a real flight number, which is defined by origin and destination. In comparison to traditional trucking services, the "flying trucks" dare not wait e.g. till the load capacity of a given truck is used to full extend, but it must leave the point of departure (e.g. Airport A) to a designated destination (e.g. Airport B) at exact time regardless of its current load capacity. Since air trucking services belong to the main executive leg, RFS are provided and operated by traditional airlines, i.e. it is not an airport, but an airline that deploys air-trucking company. In other words air trucking is employed by an airline and forwarding or normal trucking company fulfils the transport. For some airlines, air trucking represents an opportunity to charge of the entire supply chain, e.g. vertical enlargement of the airlines spectrum and most integrators possess their own supply chain for the front-end logistics, i.e. offering reliable service for time-sensitive goods (Schüller, 2003; Turney, 2003).

The considerable increase of RFS role over the past decade in Europe has contributed to a strong decline of traditional intra-European airfreight traffic. The main value for air cargo trucking trend are efficient costs' utilisation and available space optimisation compared to real aircrafts, particularly those of medium to short haul distances (Heinitz et al., 2013). RFS have been obtaining more importance as a feeder network for the central airport-hubs, whereby the long haul network is fed through a short-haul network, here: RFS are mainly applied to acquire freight volumes from "spokes" (here: regional airports) to fill up long-haul flights. A competitive advantage and special value of air trucking services lies also in the relatively simple infrastructure requirements, e.g. deployment of the air trucking "fleet" does not require intensive financial resources compared to the real aircrafts. Thus, the sustainable demand for transport of the time-critical goods may provide good opportunities to regional airports as well as to local trucking freight forwarders to benefit from the air cargo market. Since regular amount of goods in regional airports may not reach the quantity threshold that might justify costs of aircraft(s) deployment, the value of air-trucking leis not only in downsized, cost-effective and frequent services, but also in improved accessibility to regional markets with adequate feeder capacities.

1.4 Supply Chain Management implications for SMEs

SMEs performance and operational configurations in supply chain management (SCM) deal manly with wider understanding of supply chains, i.e. strategic alignment of supply chains, coordination of players in supply chains, configurations of logistics networks, infrastructure design, market servicing etc.

(Creazza et al., 2010). Cooper et al. (1997) argues that all these perspectives and processes are encapsulated by SCM concept that incorporates supply chain participants linked to processes, how these processes are interlinked, managed and integrated. While supply chains participants constitute a network, the business processes are the activities that generate specific output of value. Thus, management of the supply chains implies coordination of resources and variables by which the business processes are efficiently communicated, integrated and managed across supply chains. Identification of supply chain members may be linked to type and level of integration of those processes (Lambert et. al, 1998). Taking into account the present research scope, it interferes with phenomena ascribed to all the three research lines, as the research addresses issues concerning SMEs strategic behaviour, involving SMEs' collaboration within supply chains or relate to logistics networks through focusing on the service oriented SMEs within the air cargo supply chain (Creazza et al., 2010). The conceptual foundation of the research derives from the concepts and approaches demonstrating SMEs strategic thinking, flexibility in planning and acting, organisational behaviour (integration and networking) and performance in the air cargo supply chain. In this context, processes and activities may be also seen from the entrepreneurial and management perspective. Therefore, SCM within the context of SMEs refers to set of business activities, from purchase over processing to delivery (Lambert et. al, 1998, Thakkar et al., 2008a).

In order to secure regular orders from large enterprises (LE), SMEs are expected to increase value of end service products through offering special and differentiated features (Thakkar et al., 2008a) or enhance qualitative differentiation and innovation level (O'Gorman, 2001). Supply of qualitative and differentiated services assumes efficient utilisation of tangible and intangible resources, organisational capabilities, technological peculiarities, infrastructural facilities, information as well as SCM experience and knowledge (Kraus et al., 2006). SMEs have to possess specific organisational, tactical, operational and strategic margin to be able to compete efficiently in supply chains and transport networks. Therefore, compared to well-established LEs that operate in the air cargo supply chains, SMEs shall enhance their service-oriented activities, technological readiness and the marketing strategy as well as differentiation and diversification level (Wernerfelt, 1984; Barney, 1991; Peteraf 1993, Prahalad and Hamel, 1990; Boxall, 1996). As a result, SMEs may be both proactive and reactive in terms of their performance and strategy. The resources should be valuable, unique, imperfectly imitable and non-substitutable (Barney, 1991; Boxall, 1996). Therefore, a more novel way of new approaches towards different operational cultures of SMEs and LEs, trust building and communication skills advancing are needed (cf. Kraus et al., 2006; Dainty et al., 2001; Machpherson, 2001). Due to highly competitive business environment in the air cargo supply chain, already involved SMEs may be easily replaced by the competitors (cf. Vaaland and Heide, 2007). SCM enables to combine external and internal

processes and activities of SMEs, advancing organisational performance tactically, operationally, and strategically. E.g. better integration can be achieved though internal process optimisation, partnering, trust building etc. SMEs need to decide *where* and *how* to compete and clarify their strategic position, e.g. compete in terms of low costs operations or value added operations (O'Gordman, 2001; Hong and Jeong, 2006).

In this context clustering approach that enables both competition and cooperation might be very important for SMEs seeking for competitive advantage, innovation and knowledge transfer (Porter, 1990 and 2000). Networking within a logistics cluster may allow SMEs to overcome size and resource constraints and reduce costs (Thakkar et al., 2009). SMEs are able to provide their customers with greater value compared to SMEs that work individually or isolated. Through interconnected activities and networking SMEs gain competitive advantage and improve internationalisation capacity (Bernal et al., 2002). SMEs business performance and competitive advantages can be sustained in the SMC context through economic, environmental and social dimensions of sustainability (Cliberti et al., 2008) Within SCM sustainability issues refer mainly product-based green supply, costs reducing (Seuring and Müller, 2008) as well as labour and environmental standards. Thus, SMEs have to comply with those standards and rely on their innovative and flexible character (Jorgensen and Knudsen, 2006). Considering the given research context, SMEs behaviour in the air cargo supply chain may be also characterised as influenced by "modern" sustainable issues, since the products delivery by air may be hardly "greener" as compared with other modes of transportation (rail, sea, road), however more reliable, secure and time-sensitive. Furthermore, air-trucking business model might be seen as an appropriate entering strategy aiming at integration of SMEs into air cargo supply chain.

2 METHODOLOGY

In the framework of this study, the theory based and practice related research activities have been applied built upon sound methodological research design, qualitative and quantitative data collection and analysis. The following section describes research design, structural approach and utilised data.

2.1 Research design

In order to achieve the wider aim, i.e. *enhancing capacity performance of regional airports through air cargo business model and increased air trucking value chain awareness*, the action research method has been applied. The action research addresses both science field(s) and practical problem intervention simultaneously, e.g. compared to traditional research, action research assumes a strong focus on practice as well as a close collaboration and direct involvement of relevant stakeholders in the research process, which aims among other things at practice related concept development, ensuring applicability and sustainability of the research results (cf. Zhang et. al., 2014). The action research method includes participatory research, action learning, collaborative research, emancipatory research and contextual action research (cf. Zhang et. al., 2014; Sagor, 2000; O'Brien, 2001; Reason and Bradbury, 2006).

The following steps have been undertaken in order to achieve the set aim of the research:

Figure 1. Action research approach based on Sagor (author's own compilation)

A number of collected evidences (BACN, BB, EWTC-II, BSR-TC) showcased that in spite of sustainable growth of air cargo value chain e.g. though RFS concept in Europe, the regional airports in the BSR are still lacking behind the possibilities and apart of some best-cases "exceptions", the air-trucking concept is not being utilised by regional airports at all. It has been further noted by the involved project experts that the existing concepts especially for regional airports are rather too wide and general; there is a lack of tools, evaluation models and assessment criteria for the regional airports that aim at investigating of their potential, perspectives and enhancing factors. In this context the relevant research problem has been identified and formulated, i.e.:

> In spite of promising business opportunities and current growing air cargo volumes that are being transported via RFS in Europe, regional airports' and logistics related SMEs' participation in the air cargo sector is very limited and insufficient in the BSR.

Considering the previous scientific works underlining the strong interdependencies between airports' (here: regional airports) development and regional economic growth (cf. Graham, 1995; Rietveld and Bruinsma, 1998; Shin and Timberlake, 2000; Horst, 2006; Hakfoort et al., 2001; Niemeier, 2001; Cherry, 2014), the author investigates perspectives and potential of the regional airports' as possible enhancing force for economic and entrepreneurial growth in their regions with a special attention paid to the air cargo value chain. The above identified problem as well as a general assumption (as communicated by relevant stakeholders) that efficient implementation of RFS or air-trucking model may improve regional airports operational capacity and herewith contribute to economic and entrepreneurship growth, has motivated the author to formulate specific objectives of the research: 1) creation of conceptual model for regional airport's strategic positioning in the regional economic environment; 2) development of sustainable business model approach with a special focus laid on regional airports; 3) development of air cargo model for regional airports, including potential assessment of regional airports for the air cargo and air trucking services; 4) strategy propositions for efficient integration of SMEs into air cargo supply chain.

The author started the applied or action research with the analysis of SMEs' involvement in the air cargo supply chain (investigated in the framework of the ARTICLE IV, i.e. "Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air Caro") and proceeded to development of broader evaluation and assessment concepts that aim at sustainable business models and enhancing potential of regional airports in the context of the air cargo value chain. The author started with the literature research review related to Supply Chain Management and value creation theories in the context of SMEs and their possible integration in the air cargo supply chains (RQ4). Parallel to this, the systematic concept review of hub-and-spoke network theories and air cargo concepts has been executed, resulting in positioning of regional airports in the hub-and-spoke network concept as well as identification of the air cargo relevance for regional airports with a special focus laid on the concept of Road Feeder Services or "air trucking". The results from RQ4 and RQ3 (i.e. air cargo and RFS relevance for regional airports) built the ground base to formulation of sustainable business model concepts in the framework of the RQ2. Finally, formulation of evaluation concept took place that mainly aims at providing regional airports and authorities of complex measurement and assessment concept for airports' potential enhancement and sustainable development.

The structural approach of this thesis is as follows:

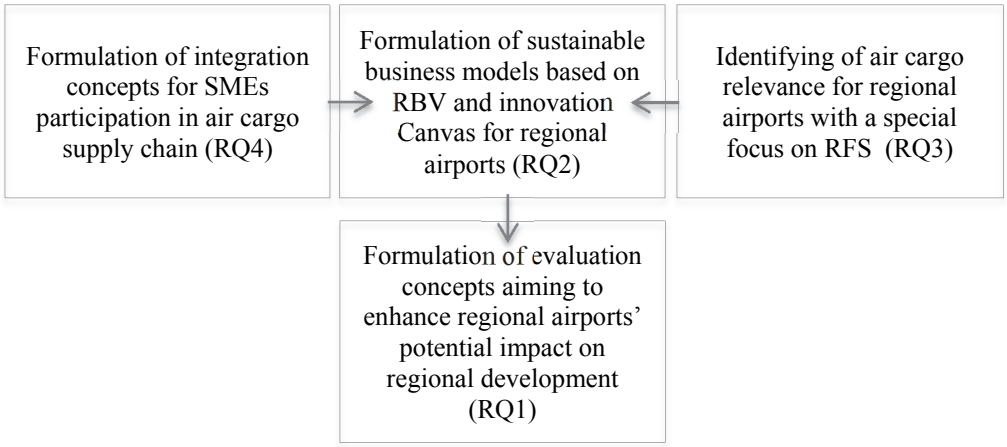

Figure 2. Research structure (author's own compilation)

The confronted and tested RQ4 and RQ3 have been confirmed and validated in the framework of the evidence-based action research, qualitative and quantitative data analysis during pilot cases implementation in BACN, BB project; it provided conceptual and theoretical basis as well as further motivation to proceed with the RQ2. In the framework of the RQ2, a systematic literature review related to sustainable business models, including RBV and Innovation Canvas Model along with the reviewing of the practical experiences that demonstrated airports' success factors, has been executed. The compilation results of the examined theoretical framework of the sustainable business models contribute to the development of the conceptual evaluation matrix aiming to analyse and reconsider the sustainable development models for regional airports.

The overall gained theoretical and conceptual results from the previous RQs built a solid base for the theoretical investigation of RQ1, followed by development and testing of the regional airports' potential enhancers, aiming at improving their impact on economic and entrepreneurship growth in the given regions.

The research activities applied in the framework of this study include: 1) systematic literature review, analysis and study of relevant theories and concepts, relevant policy regulations and guidelines; 2) project review activities, including secondary studies and secondary data analysis; 3) direct participation in relevant research projects, including primary data (qualitative and quantitative data) collection; 4) scientific validation and verification of the developed concepts and the results; 5) practical testing and validation of the developed concepts and the results (cf. Annex V)

2.2 Concepts and models

Applied evaluation concepts and assessment tools have been elaborated according to action research principles, i.e. based on identified theories the development of the assessment concepts took place in a close cooperation with relevant stakeholders, thus securing applicability and sustainability of the research results.

In the framework of this thesis in order to address the research questions, the following assessment and evaluation concepts have been developed:

- Addressing RQ1: Conceptual model for regional airport's strategic positioning in the regional economic environment, including evaluation concept for regional airports' impact assessment (Article I, Annex I);
- Addressing RQ2: Evaluation concept for sustainable business models (Article II, Annex II);
- Addressing RQ3: Air cargo model for regional airports, including potential assessment of regional airports for the air cargo and air trucking services (Article III, Annex III).

2.3 Data

2.3.1 Data form

The main findings and assessment results presented here are based mainly on secondary and primary data (including qualitative expert interviews and surveys) that have been originally collected and produced in the framework of the following EU funded research projects:

- Baltic.AirCargo.Net – Improvement of the air cargo transport sector by service oriented ICT-methods and processing logistic network (BACN);
- Baltic Bird – Improved accessibility of the Baltic Sea Region by air transport (BB);
- Baltic Sea Region Transport Cluster – for sustainable, multimodal and green transport corridors (BSR-TC);
- East West Transport Corridor II – a green corridor concept within the Northern Transport Axis approach (EWTC-II).

The above-mentioned research projects were implemented and co-financed by the EU Programme "INTERREG IVB, Baltic Sea Region", ERDF Funds. BACN and BB projects aimed mainly at improving operational environment of regional airports in the Baltic Sea region (BSR), whereas BACN focused on air cargo and BB on passenger traffic. BSR TC and EWTC-II deal mainly with the conceptual optimisation of transport corridors and overall logistics in the BSR. Therefore, the applied data from BACN and BB projects referred specifically to air transport, air cargo supply value chains and regional airports issues and the data from EWTC-II and BSR-TC referred to the concepts of the sustainable, efficient and multimodal transport corridors and logistics. The empirical data was collected during projects lifetime, i.e. 2011–2014.

The primary empirical data sources were gained in form of evidence-based observations (here: case studies), empirical data from quantitative surveys and qualitative expert interviews with the involved project experts, researchers and relevant stakeholders, observations gathered from respective project activities such as workshops, conferences, round table discussions with relevant stakeholders (here: airports' management, relevant policy makers, business representatives, academics and airports experts), projects' (here: project tasks') force meetings as well as meetings protocols and projects' documentation. In terms of the presented investigated case studies, in total 67 qualitative interviews and more than 200 quantitative questionnaires were conducted and evaluated.

2.3.2 Target group of the data source

According to the action research prerequisites, the main relevant stakeholders and organisations have been intensively involved during the whole research process, i.e. problem definition, theory identification, data collection and data analysis as well as results (here: concepts) testing, validation and pilot implementation. Following target groups and relevant stakeholders participated in the surveys and expert interviews a) representatives from Transport Ministries and Airport Management; b) representatives from Transport and Logistics companies from participating regions; c) representatives from the academic side, c) expert from aviation sector, air cargo security and air cargo freight sector. The gained data and concepts have been presented and validated to/by the EU Directorate General for Mobility and Transport (DG MOVE), relevant policy makers on national and regional level, airports' management authorities and relevant logistics services providers.

2.3.3 Case studies

A case study approach of the selected regional airports has been selected here for test, validation and "pilot" implementation purposes. A case study approach shall generally draw considerable attention on contemporary study issues by addressing strategic question "know-why?" (Yin, 2009). Although the applied qualitative methods here may make it difficult to validate the presented events, it enables to highlight the particularity and complexity of the single case evidences (Stake, 1995). In the framework of the BACN project, in total nine regional airports from eight BSR countries have been analysed and evaluated. However, the elaborated and developed evaluation concepts have been tested mainly on the premises of the pre-selected three regional airports, i.e. Airport Parchim (Germany) and Tampere Airport (Finland) and Grodno Airport (Belarus).

Addressing RQ1: the case study of Parchim Airport has been selected as a demonstration case using an evidence-based method in order to assess the airports' potential as a driver for economic and entrepreneurship development in Mecklenburg-Vorpommern region (Germany). The motivation of selection of Parchim Airport as demonstration evaluation and validation case were current (time frame: 2011–2014), long-termed strategic airport's development plans that might have a considerable impact on the economic and entrepreneurship development in the Mecklenburg-Vorpommern region (Germany) on the one hand and rather distant

cooperation level between Parchim Airport's management and relevant public authorities and other stakeholders in terms of the regional development planning on the other.

Addressing RQ2: Grodno Airport (Belarus) has been selected here as a main demonstration case for this study. Some selected findings from Kalmar Airport (Sweden) are used as a supplementing case in order to outline the role of the efficient cooperation between an airport and relevant regional stakeholders, including private public partnership, regional responsibility of an airport and airport's responsibility of regional public authorities. These two cases address also the RQ1, i.e. regional development aspect and cooperation structures. The motivation of showcasing the following two airports here is consideration of two opposite cases: in the first case (Grodno Airport) we deal with total dependency of the airport from state regulations and public subsidies, lack of efficient cooperation structures and deficit of regional development considerations on the on hand. On the other hand, the supplementing case of Kalmar Airport provides a best case study on cooperation structures and the role of the airport in the regional development.

Addressing RQ3: In order to assess and validate airports' appropriateness for the air cargo business model as well as potential of air trucking services for the air cargo business, an evidence-based approach in form of case studies of two regional airports from BSR are applied, i.e. Tampere Airport and Parchim Airport. The motivation of the selection of Tampere Airport was the on-going preparations procedures (time frame: 2012–2014) with the airports stakeholders to implement the concept of RFS in a testing mode. The motivation of the selection of Parchim Airport was the fact, that current (time frame: 2013–2014) operational strategy of the airport focused mainly on the air cargo business development.

Addressing RQ4: In order to provide the comprehensive view on development of SMEs, this research study follows overall collective case studies observations encompassing a number of single cases, i.e. SMEs operating in the air cargo supply chain in the case region of Mecklenburg-Vorpommern (federal state level). Herein, single case studies frame a collective or a multiple-case study. The qualitative case study approach is exploratory and explanatory (Yin, 2009), as the research sets out to scrutinise development patterns of SMEs in the air cargo supply chain and to test how SMEs may pursue a sustainable way in collaborating, operating and benefiting in the air cargo supply chain and by means of SCM. The observed and evaluated outcomes and outputs from the SMEs practices serve then for outlining propositions. The propositions have been tested, validated and implemented in the framework of the BACN project.

2.4 Limitations

Due to high complexity and inhomogeneous nature of regional economies and peculiarity of business variables of the study objects (i.e. regional airports, logistics service providers, airlines, relevant SMEs, etc.), the general limitation of this thesis lies in the nature of the data the evaluation and assessment concepts have been built on.

Further limitation of this thesis lies in the applied "weighting scale" that aims at weight or importance distribution between given selected assessment criteria in the presented evaluation models. The applied weighting scale of the assessment indicators (e.g. between demand side enhancers for the airport's growth and airport's enhancers for regional development in the evaluation model of airports' potential impact on regional growth or the weight distribution between air cargo demand and supply sides in the evaluation models assessment on the appropriateness of the air cargo business model for the given airport, etc.) has been based on the overall compilation of the experts' evaluations and the results of the experts' interviews fulfilled in the framework of the BACN and other projects.

Although, the distribution of the importance or "weight" between the assessment criteria in the presented assessment models may represent a subject of future disputes and discussions and although the applied weighting scale might be very subjective, the experts of the BACN and other projects underlined and stressed that the weighting scale needs to be integrated in this or another form in the evaluation process, since the assessment criteria are not equal among themselves. It has been further noted by project experts that the applied weighting scale is not a "universal" for every regional airport, but on the contrary the evaluation approach and the correspondingly applied weighting scale must be very carefully and individually adjusted to every airport, respecting the regional variables, peculiarities, economic perspectives and the interests of the involved regional stakeholders.

Although a general grade of transferability and scalability of the developed concepts might be assumed, due to high complexity of the input data and variables, individual and unique approach to every other object of further study(ies) is a necessary requirement for future research.

3 RESULTS

The given chapter describes the main results of the research study, which are structured in accordance with the identified research questions.

3.1 Increased airports' impact capacity

Based on a number of studies and empirical evidences that relate to logistics' clusters (e.g. Porter, 1985 and 1991; Rivera and Sheffi, 2012; Wang, 2015; Juchelka and Brenienek, 2016), airport's operational environment and their impact on the regional development (e.g. Malina et al., 2007; Braun et al., 2010; Halpern and Brathen, 2011; Mukkala and Tervo, 2012), the author of this thesis developed a conceptual model for regional airport's strategic positioning in the regional economic environment, with a special attention paid to the impact enhancers and catalytic effects. The developed model has been mainly based on theoretical concepts of direct, indirect and induced effects of airports on regional economic development (Malina et. al., 2008; Baum et al., 2004), catalytic impact factors (Bandstein et al., 2009; Halpern and Brathen, 2011), airports' clustering effects (Rivera and Sheffi, 2012; Wang, 2015), airports' internal success factors, i.e. RBV of Prahalad and Hamel (1990) as well as innovation and entrepreneurship growth approach of Osterwalder and Pigneur (2010).

In spite of considerable number of relevant concepts and studies, it has been so far unclear what are the possible conceptual approaches that might be applied to optimise and / or enhance regional airports' impact potential on economic growth and entrepreneurship development in their regions, the author developed airports' positioning model, while differentiating two main groups of the impact enhancers: (1) demand side enhancers, i.e. regional development perspective, where the regional economic growth boosts the demand for the air transportation services and stimulate airport's performance; and (2) supply side enhancers, i.e. regional airport's perspective, where regional airport acts as a subject of regional development, e.g. airport's activities stimulate regional economic and entrepreneurship growth.

The developed conceptual model in terms of airports' positioning in the regional development context has been applied and validated by a number of regional airports in the BSR. Selected airports acting as the gravity force for logistics cluster-building activities in their regions have been analysed and evaluated, their strategic positioning in the regional development context has been improved (cf. Annex I). The target groups of the given result are regional airports and regional authorities, i.e. strategic positioning platform provided to them allows identifying future vector development and improvement measures, both for the airport and the region. Based on this assessment, evaluation and modelling results, the representatives from airports' management and regional authorities were able to optimise and coordinate common strategic development

plans. The specific findings indicated that it is not only the lack of tangible assets (e.g. absence of adequate airport's infrastructure, deficit of airport's extension capacities for industrial bonded parks, warehouses, runways, etc.), but rather intangible resources (e.g. customer experience creation, value chain, innovative solutions and services, level of competing sophistication) that may improve an airports' impact on regional development considerably. The gained results indicated also that a special focus shall be laid on enhancing of airport's clustering activities, e.g. though creating efficient network of regional and inter-regional logistic service providers, improved communication between private and public stakeholders via coordinating airport's own service structure with relevant regional political and business stakeholders. The results demonstrated also that regional airports should better recognise their important role for economic and entrepreneurship growth in their regions as well as accept their own dependence on regional prosperity; the airports shall not be viewed as a transport infrastructure only that is needed for air transport services, but rather as an essential subject and object of regional development activities and regional planning policies, where airports' development belong to important influencing factors on economic and entrepreneurship growth in the regions.

Addressing RQ1, the wider result of this study is the increased regional airports' organisational potential through airports' capacity building model in the context of regional development, which aims at airport's strategic positioning, determining of future development plans and improving impact factors both from the demand side and supply side perspectives.

3.2 Increased sustainability of regional airports

Based on theoretical concepts that relate to innovation business models and methods how sustainable business models might be created within a company (cf. Prahalad and Hamel, 1990; Osterwalder and Pigneur, 2010; Kuratko *et al.*, 2011; Engelen, 2015), the author developed a business model approach with a special focus laid on regional airports and their nearest operational environment. Considering relevant theoretical concepts (cf. 1.2 Implications of business development concepts), a regional airport has been taken as the main object of this study. The author views regional airports as complex, open and multi-layer business systems that might be assessed by applying different factors, found in the strategic management and business-modelling literature discussed above, e.g. tangible and intangible resources, value propositions, internal and external structures, innovation level, etc. Since the majority of the considered concepts share approximately common approaches, i.e. in terms of required measures' identification and understanding, resources, capabilities and other tangible and intangible assets, mainly based on RBV by Prahalad and Hamel (1990) and Innovation Business Canvas of Osterwalder (2010), the author has proposed sustainable business development model that might be applied specifically for regional airports. In the framework of this model, criteria elements that might be appropriate for the evaluation and for the further development of the sustainable

business model by a regional airport have been identified; including diversification, differentiation and innovation level groups.

The availability of the needed tangible (e.g. required infrastructure, incl. runway, parking slots, security and screening equipment) and intangible resources (e.g. internal competences and skills) is considered as important preconditions for the airport's operations. However, the results of this thesis showed that those resources alone as well as their adequate assessment would never guarantee the sustainable and successful business growth. Nowadays, the airports shall identify and activate their distinctive tangible or intangible resources that shall further lead to provision of unique or innovative services, positively contribute to clustering activity and improve operational effectiveness and quality business environment on internal and external dimensions.

The created airports' business development model has been applied and validated by a number of regional airports in the BSR in the framework of BACN and BB research projects (cf. Annex II). The main target group of the given model are airports' management, relevant stakeholders (e.g. public authorities) as well as companies in the airports' nearest operational environment. The findings of this study showed that an average level of differentiation, diversification and innovation is rather low. A majority of evaluated regional airports focus rather on passenger traffic, whereas air cargo related business opportunities are underestimated. By applying the developed model in the selected airports among other things it has been observed that despite relatively low air cargo volumes in the regional airports, the air cargo business model might be a considerable contributor to sustainable airport's growth and also to development possibilities towards airport's cluster activities.

The created business model can lead to sustainable development and also the relevant business clusters. The results have also shown the lack and deficit of innovation level and lack of innovation related cooperation activities on horizontal and vertical level. Development and implementation of the current business plans take place mostly isolated, i.e. experience, knowledge and innovation sharing level on horizontal and vertical level have been hardly noticed.

Addressing RQ2, the wider result is the increased airports' potential in terms of business sustainability through providing to regional airports and relevant stakeholders (e.g. public authorities) the scientific ground for the future planning and optimisation measures, mapping relevant characteristics and regional economic realities.

3.3 Increased airports' capacity for the air cargo business

Based on the air cargo concepts and theories (cf. 1.3 Implications of hub-and-spoke network and air cargo concepts), on air cargo business relevance model of Reis and Macário (2009) and on the qualitative analysis of competitive rivalry in the air cargo industry suggested by Zondag and Willem-Jan (2006), the author of this thesis proposed air cargo business development model for regional airports, including potential assessment of regional airports for the air cargo and air trucking services.

An air cargo service supply chain involves a complex decision-making processes, whereby among forwarding, integration and coordination, outsourcing plays a central role (Feng et. al., 2015). As it has been stated above (cf. 1.2 Implications of business development concepts) due to certain insufficiencies of TCE, a consolidated consideration of RBV and TCE theories may be suggested when it comes to "make-or-buy" decisions in air cargo sector (here: outsourcing services e.g. in form of RFS). According to RBV approach: regional airports may use external forms of governance (outsourcing) when the resources required do not belong to firm's core competencies and capacities (cf. Prahalad and Hamel, 1990); and according to TCE approach: a firm would use outsourcing when the transaction is rather a subject of external investments involvement and takes place on a regular basis (cf. Williamson, 1999). The air cargo has been recognised as a business model with relatively high uncertainty level and a high volatility (cf. Reis and Macário, 2009; Heinitz et. al., 2013).

In terms of air cargo business relevance, the approach based on Reis and Macário (2009) model has been applied, that identified following air cargo business involvement strategies: (1) no air cargo business activity; (2) air cargo outsource strategy; (3) dedicated air cargo unit business; (4) extension or subsidiary strategy. The specific contribution into theory lies in the extension of this model though putting the suggested strategies into dependence from the demand and supply side enhancers criteria (suggested by the author), which have to be further evaluated according to a relative weighting scale (proposed weighting scale has been identified in the framework of the action research activities by the experts of the BACN project). The "weight" distribution between the assessment criteria in the presented assessment models and evaluation concepts may represent an object of future discussions. Furthermore, the experts of the BACN projects pointed out that although this weighting scale might be very subjective, however it needs to be integrated in the evaluation process in this or another form, since the assessment criteria are always region bounded and unique, i.e. the weighting scale applied in this thesis is not a "universal" or suitable for every regional airport and region. Thus, the evaluation approach and correspondingly applied weighting scale must be individual, respecting regional peculiarities, relevant economic variables.

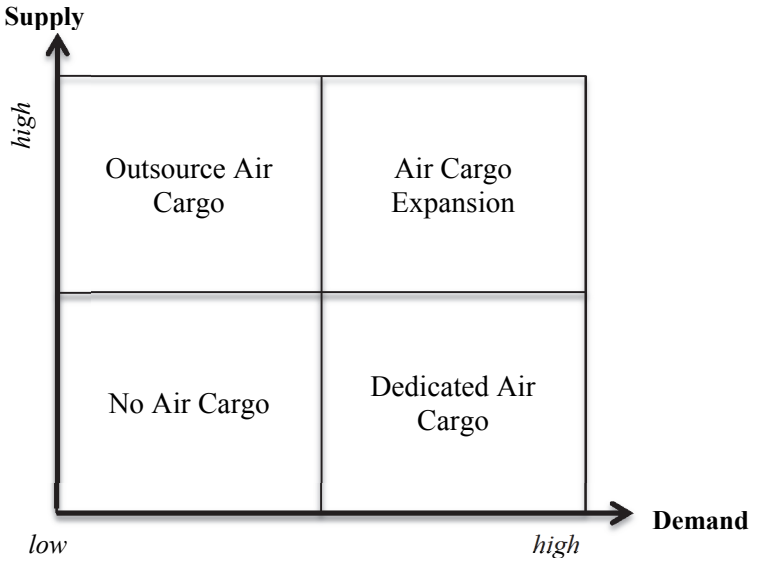

Figure 3. Air cargo involvement model (author's own compilation)

Thus, according to TCE and RBV approaches, due to risk uncertainty and complexity, resource homogeneity and resource mobility, transaction costs of air cargo operations may be perceived as relatively high, which may suggest the deployment of air trucking or RFS as the first optimal model to enter the air cargo market both for regional airports as well as for logistics service providers (SMEs) deployed by airlines to execute the feeding of the central air-hub via air trucking services, thus "outsource air cargo model". Since the costs of the air-truck operations are considerably lower compared to the costs of the aircrafts carriers on mid-term and short-term distances, the RFS concept is widely used by airlines in Intra-European air cargo sector and since the regional airports normally are not able to provide sufficient volume of cargo for an aircraft carrier to operate on regular basis, the role of the "air-trucking" outsourcing system would considerably grow especially for regional airports. The results of the applied model provided the ground for the future strategic development to regional airports, confirming or rejecting air cargo business model. In case of the tested airports, i.e. Tampere and Parchim Airport (cf. Annex III) showing the relatively high supply side and rather moderate demand, tend to the outsource air cargo model.

The wider findings of the research showed also that due to the highly competitive air cargo market environment, it is very difficult for regional airports to be competitive and profitable in the air cargo business segment. Traditional business model with airport-to-airport air cargo transport services is not suitable for all regional airports. However, since regional and small airports act mainly as "spokes" and feeders for the main airport-hubs, the results of this study proved that the efficient deployment of the air cargo might represent a supplementary and beneficiary business model for regional airports. Due to the fact that belly cargo concept is based on the intercontinental passenger flights; the belly cargo approach would be rather inappropriate for the

regional airports. The freighter concept is technically possible; however its implementation would require sustainable and regular air cargo volume. The results of the study confirmed that the air-trucking concept might be the realistic concept for remote and / or regional airports contemplating to access to the air cargo market.

Addressing RQ3, the wider result of this thesis is the enhanced regional airports' capacity through planning and optimisation model, which aims at sustainable air cargo development in an optimal way, through complex mapping of relevant characteristics, economic realities of the demand and supply sides in airfreight services, and providing airport's management optimal strategies and actions they should take in order to meet the challenges of the future air cargo market.

3.4 Value creation through "Air-Trucking" services

Study results showed that majority of regional airports in the BSR are missing appropriate resources and competences; the limited level of information and knowledge sharing weakens the market position and organisational performance of the regional airports (cf. Bernal et al., 2002). Nonetheless, as empirical data demonstrate, a geographical proximity and limited resources, such as growing air cargo handling volumes in central hubs, e.g. increased demand in air cargo forwarding, provide feasible opportunities also for regional airports and logistics related SMEs. A more isolated position of the regional airports has affected their external relationships within the air cargo supply chain, the airports are not likely to benefit to a full extent of being integrated in the global air cargo supply chain due to the limited resources and rather high transaction costs, e.g. in particular case of Parchim Airport the air cargo related services cannot be performed due to the shortcomings of the airport and the regional air cargo service providers to follow and adopt to the requirements and regulatory constraints applied in the air cargo forwarding and handling industry, e.g. reengineering or acquisition of tangible resources such as facilities (runway, apron, airport tower and business settlement area). With resources built up, the airport might be able to handle large international carriers and achieve international standards, and therefore gain a competitive advantage over other regional air cargo forwarders and service providers. Positively influenced is also the competitiveness through intangible resources or invisible assets, such as appropriate knowledge, experiences and management skills, e.g. good knowledge of customers can accelerate air cargo handling activities, allowing the airport to carry out activities differently from the competitors.

It was also noticed that the overall positioning advantages for regional airports are likely to emerge from their networking with the globally operating airports and air cargo central hubs. Bearing in mind geographical proximity with the existing air cargo handling clusters, the regional airports might be able to deliver qualitative and differentiated services through deploying geographical location as a resource for air cargo handling, e.g. operation servicing at night, which is

possible due to either rural character of the region and lower population density and no night noise restrictions.

It has been further observed that the regional airports and SMEs in the BSR face organisational, management and institutional constraints, e.g. regional capabilities are jeopardised by lack of adequate knowledge, information and experiences in international business development, market settings in target countries, lack of skilled human resources processing international trade agreements etc. This embraces corporate or organisational resources that are a prerequisite for building up core competences, as to Prahalad and Hamel (1990). Furthermore, observed shortcomings in knowledge gathered through education, identify a need for specific training programmes for SMEs providing both specialised knowledge and soft skills such as interpersonal skills, customer care, communication skills and collective learning (cf. Dainty et al., 2001). The lack of international competences and international orientation has been identified as a key weakness of SMEs as logistics service providers. The results showed that the logistics related SMEs in the BSR can be seen as a reactive ones, since they seem to be driven mainly by external factors. This is a more passive view in contrast to businesses, which demonstrate higher deployment of intangible organisational competences such as knowledge and information share as well as trust.

Referring to the past and current SMEs practices and their endeavours to engage into air cargo supply chain and the air cargo network, a set of implications can be drawn to facilitate future-oriented directions of SMEs. On the one hand, SMEs need to clarify their strategic position in the supply chain and strategic focus. On the other hand, there is a deficit in internal capabilities, trust, management skills, team building, understanding of business, etc. (cf. Dainty et al., 2001). Therefore, the combination of both perspectives is needed. SMEs have to make strategic choices (cf. O'Gorman, 2001) and to clarify their strategic focus and supply chain relationship position. Based on the empirical results, SMEs need to redirect their strategic choices to the following external and internal contexts. Thus, the above-presented research may suggest the following propositions.

Proposition 1: SMEs' improved strategic positioning in the air cargo supply chain and their growth through collaboration with established air cargo forwarders and global airfreight networks. The study results indicated that SMEs involved into the air cargo forwarding or handling services have to intensify collaboration with large and globally operating enterprises in the air cargo industry and air cargo supply chains. This might improve SMEs' relationship positioning in the air cargo supply chain, since large airfreight forwarders as the first-tier logistics providers mainly focus on delivering multiple performance based on their competences, resources and a trusted network of relevant counter-partners. In this context, SMEs may focus on the specific competences and offer

differentiated services, thus meeting qualitative requirements of their customers in the air cargo industry. Through specific and differentiated services SMEs and regional airports are capable to gain a strategic position on the niche air cargo market, which is not fully penetrated by large air cargo forwarders and handling enterprises.

According the findings from BACN and BB project, one of the most promising opportunities in terms of air transportation services that might be suitable for SMEs or entrepreneurship is the "air trucking" concept, which would enable providing differentiated and specialised qualitative services. In fact, the pure airfreight-forwarding sector implies very high investments e.g. purchasing, leasing, maintaining, etc. of the aircrafts. Thus, it is not the challenge for big investments in the "hard-ware" infrastructure, i.e. buying aircrafts, but rather conceptual and "soft" strategies and intangible resources that must be reconsidered and adjusted. By providing RFS, SMEs would obtain essential advantages in the air cargo supply chain. Technical realisation of air trucking concept does not require intensive capital investments that might be a financial constraint in case of providing air cargo services by air-carriers.

By offering RFS to their customers from the air cargo hubs, SMEs would be better engaged into the air cargo market and air cargo supplier network. Low technical capabilities of suppliers and limited physical resources (facilities, physical capital etc.) are likely to keep large air cargo forwarders and carriers from using in their supply networks and as part of their supply chains (cf. Thomas and Barton, 2007). Integration of SMEs into RFS concept would maintain their flexibility both in terms of costs and investments. Since SMEs that provide air-trucking services would not be subject of high investments, as opposed to investments related. In this case SMEs would also be less exposed to risk associated with flying trucks operation costs. SMEs could offer distinctive service components to their larger partners due to meeting the order qualifier requirements of qualitative and time-sensitive delivery, as posed by large collaboration partners (Hong and Jeong, 2006). Following Levy et al. (2001), by providing RFS, SMEs would strategically focus on operating at competitive rates, as they do not usually have substantial financial resources to handle air cargo through carriers, and meet changing customer requirements, i.e. reduced demand on air cargo forwarding or handling. Overall, it is very essential for SMEs to bear on this business opportunity, especially as customers, in this particular case large air cargo forwarding companies, are not keen to engage into relationships with suppliers if they are inflexible and lack technical capabilities. In such cases, large customers are more likely to outsource their air cargo forwarding activities to such suppliers, which meet their requirements, even despite the fact that these may be located in more remote regions. Through RFS, SMEs would become capable of obtaining higher position in the air cargo supply chain as a result of the distinctive values they may provide to their customers,

such as flexibility, time and costs savings for outsourced activities by large air cargo forwarders.

Proposition 2: Increased capacity of logistics related SMEs though integration in the air cargo supply chain and interlinking with regional, national or international networks. Networks imply interdependent relationships, which can positively or negatively affect interactions of SMEs within the networks. Collaborative relationships within networks are of paramount importance for competitiveness and competitive advantage. As elaborated by Bernal et al. (2002), collaboration within the network may enhance capabilities of SMEs, since these obtain access to resources and capabilities of other SMEs or organisations involved in those networks. Relationships within networks enable the firms to gain collaborative advantages (cf. Kanter, 1994). Cooperation activities of the SMEs are likely to be conducive to access to new resources, enhance financial and organisational flexibility and contribute to inter- and intra-organisational learning and fostering absorptive capacity (cf. Cohen and Levinthal, 1990). As the results from BACN and BB project showed, the role of networks is very important especially for SMEs, since involved businesses are capable to develop new business opportunities and gain access to stronger support structures (cf. Bernal et al., 2002). Networking facilitates sharing of information and knowledge among partners who are geographically dispersed, as cooperation is not a question of resources, but rather of establishing demand for services, facilitating information sharing and knowledge transfer (cf. Gunasekaran and Ngai, 2003). In this context regional SMEs should focus on additional services providing added value for their customers. Inter-organisational relationships can be built up and maintained through a network, which may provide business opportunities for both regional airports and SMEs, focusing on effective and efficient utilisation of the air trucking concept, which might be facilitated by inter-regional transferability, i.e. promoting and sharing this concept to other regions, logistics initiatives, business development and business support networks. SMEs and regional airports should promote the value of differentiated qualitative value through road feeder services and the promising economic, organisational and strategic benefits thereof. SMEs and regional airports can develop through streamlining their internal resources deployment, engaging into knowledge transfer and gaining core air cargo forwarding services-related capabilities and competences. Furthermore, due to their operational flexibility, SMEs might be efficiently integrated into air cargo supply chain in the global context of TEN-T Core Network Corridors. As it has been also stated in several studies, logistics related SMEs and entrepreneurs as indispensible part of logistics related networking cluster structures might also benefit significantly from efficient utilisation and integration in the concept of Green Transport Corridors (Prause and Hunke, 2014).

Proposition 3: SMEs' improved competitive positions in the air cargo supply chain and network via building up (internal) organisational capabilities and core

competences through learning, training and business networking activities. As study results indicated, logistics related SMEs in the BSR face challenges also on the organisational behaviour level, i.e. in management. In order to overcome the challenges, SMEs need to improve current management structures and skills. Innovation and learning processes are of a vital importance not only to enhance organisational performance, but also for accumulation of economic benefits. Absorbing new information and knowledge and internalising it, SMEs would be more efficient to gain wider commercial benefits (cf. Cohen and Levinthal, 1990). Information and human resources management structures are subject to changes (Halley and Guilhon, 1997). SMEs have to build up key capabilities or core competences, as underpinned by Prahalad and Hamel, 1990). Having streamlined internal capabilities (management skills on business and logistics processes, language skills etc.), SMEs are capable to obtain a differentiated position in an operating environment. According to Fillis (2001), in terms of intangible assets like skills, creativity, trust level etc., SMEs compete unequally. The study result indicated therefore that SMEs have to improve internal capacity building through individual and organisational learning on a sustainable and regular basis. Addressing RQ4, the main result of this study is enhanced capacity of logistic related SMEs and entrepreneurs that are contemplating air cargo trucking services.

3.5 Results validation

The developed models and conceptual approaches have been applied in the framework of the Intergovernmental Framework for European Cooperation in Science and Technology by State Secretariat for Education, Research and Innovation, Switzerland, Swiss National Cooperation in Research with Europe Programme, Programme Action – Air Transport and Regional Development (Programme reference: COST Action TU1408), January – February 2016. The developed concepts and models were also communicated and validated on the EU level in the framework of the BSR-TC (2013-2014), e.g.:

- Cluster Policy Conference: “Greening Transport – Blueprints from the Baltic Sea Region”, high-level meeting with representatives from the European Commission (DG MOVE and DG REGIO) and from the European Parliament aiming at increasing mutual benefit of transport and regional policies (Brussels, 2013);
- TEN-T DAYS 2013 in Tallinn, organised by EU Directorate-General for Mobility and Transport (DG MOVE), Trans-European Transport Network Executive Agency, etc.; a high level meeting aiming at improving TEN-T Network Corridors’ performance (Tallinn, 2013).

4 DISCUSSION

According to the guidelines of the European infrastructure development plan for 2014–2020, the airport connectivity (especially in some remote regions) will be improved aiming at territorial synergy and enhanced networking capacity as well as better integration of regional airports in socio-economic regional environment. All these shall motivate airport's growth, increasing complementarities, improving value proposition, diversification and specialisation. In the innovation-driven economies regional accessibility is very important both for people (both: tourists and businessmen) and companies. The efficient operation of regional airports contribute considerably to regional accessibility and herewith economic and entrepreneurship growth in a region.

The above-presented results demonstrated that the regional airports should better recognise their important role for the economic and entrepreneurship growth in their regions, accept their own dependence on regional prosperity, as well as improve their operational activities through better coordination and cooperation with relevant stakeholders in a given region. The majority of regional and small airports in the Baltic Sea Region are not reaching the break-even point and mostly rely to a large degree on different forms of public subsidies and aids. However, according to the new master plans of the EU, the subsidies to the airports, if not justifiable and sustainable, will be limited or cut in the short and mid-term perspective. Therefore, regional and small airports have to find sustainable business models to sustain cost efficiency and profitability of operations. Regional airports may serve as best case example of "regional responsibility" enhancing positive and fruitful cooperation with public authorities (here: not only financial subsidies, but also support in form of the active involving of the airport in the strategic regional development plans and actions).

According to findings of the BACN project, a high number of regional airports focus mainly on passenger traffic, whereas the benefits of the airfreight market and air cargo related business opportunities are underestimated or even completely ignored. The considered cases pointed out how air cargo business model can contribute to high revenue yield parts and open up international development possibilities towards airport clusters despite the fact that air cargo volumes may be very small, especially at the initial stage. The related business models can lead to sustainable development concepts for the regional airports and the surrounding business clusters.

The research results have also shown the lack and deficit of cooperation between the regional airports. Development and implementation process of the business plans and models takes place mostly isolated, i.e. experience, knowledge or even plans sharing between the airports could be hardly noticed. Therefore, it may be recommended to the airports' management to pay attention

to the horizontal cooperation and improving the networking structures, learning from each other experiences and best practices. The availability of the needed tangible (e.g. required infrastructure, incl. runway, parking slots, security and screening equipment) and intangible resources (e.g. internal competences and skills) is considered as important preconditions for the airport's operations. However, those resources alone as well as their adequate assessment would never guarantee the sustainable and successful business growth. Nowadays, the airports shall identify and activate their distinctive tangible or intangible resources that shall further lead to provision of unique or innovative services, positively contribute to clustering activity and improve operational effectiveness and quality business environment on internal and external dimensions.

The opportunities offered by the concept of Road Feeder Services or "air trucking" may strengthen the economic viability of the airports and the regions. The air cargo business may offer to the regional airports a supplementary opportunity to the passenger traffic, thus making an airport more profitable and attractive for regional business structures. Although the regional and small airports mainly act as "spokes" and feeders for the main airport-hubs, the efficient deployment of appropriate strategies, integration in the air cargo supply chain) may bring many advantages not only to the main stakeholders like airports and airlines themselves, but also to the regional community in terms of economic and social benefits, as well as improved accessibility. Belly cargo concept would almost be impossible to implement by regional airports since it is based on the intercontinental passenger flights. The freighter concept would be basically possible; however its implementation would require sustainable air cargo volume. RFS-concept might be at this time the only one realistic concept for remote and / or regional airports when they are trying to access to the air cargo market.

Examined and relevant SMEs reveal shortcomings and challenges in both external and internal contexts (Halley and Guilhon, 1997). Sustainable management successes underlie an implementation of a holistic and dynamic model (Chetty and Cambell-Hunt, 2003). By building upon practices and lessons from the regional small and medium-sized businesses it is apparent that SMEs have come to be isolated and usually act individually beyond the boundaries of the specific air cargo logistics and transport-related networks. SMEs face problems in obtaining capital, resources, skills and novel knowledge and information. As a response to the regional analysis and scrutiny of SMEs practices on the air cargo market the present research calls for a holistic and interactive model for SMEs, which shall optimise SMEs capacities and resources to the changing external and internal air cargo supply chain system. Empirical evidence demonstrates that SMEs lack strategic plans and are characterised rather by short-term advantages (Gunasekaran and Ngai, 2003).

This study results showed that SMEs should combine their technological, organisational and financial resources and deploy them respectively. SMEs should also place their strategic focus on new technologies for air cargo transportation. SMEs should adapt to the external environment instead of relying on inefficient financial and physical capital resources (airport facilities etc.), which then lead to scarce orders or low demand from large contractors. SMEs have to consider proactive and reactive vision, which shall enable better positioning in the air cargo supply chain and sustainable management. Being reactive, SMEs can adapt to air cargo market changes or customers requirements. Air-trucking concept could be easier adapted by SMEs to the demands of large air cargo forwarders. Acting with a proactive vision, SMEs shall take advantages from differentiation and diversification.

Future course of the research

In the context of growing social and political responsibility in terms of environmental issues, the impact analysis of an airport's operation on environment might be also discussed. There are already a number of EU funded project that have started to examine airports as so-called "environmental sensors". The EU policies and initiatives aiming at promoting efficient and safe transport corridors (cf. EC, 2015a and 2015b) as well as the concept of "Green Transport Corridors" (cf. Hunke and Prause; 2013; Prause, 2014; Hunke, 2015; EWTC-II, BSR-TC) require a more detailed analysis of the proposed business development concepts (e.g. air cargo trucking services) in terms of correlation and efficiency optimisation, harmonisation criteria of more environmentally friendly technical standards, etc. The possible implications of an airport in this direction might be mitigation of environmental impacts and risks, implementation of strategic plans to minimise noise and air pollution effects on the environment. At the moment some relevant regulations and standards imposed by the EU and national current legislations shall motivate airports to pay more attention, in other words to invest in innovative and "green" technologies, e.g. technologies for the production of renewable energy on an airport's territory, producing so-called ecological corridors that reconnect parts of the territory through environmental linear infrastructure, etc. This entire legislative framework, acting as demand-side enhancer shall stimulate new entrepreneurship and innovation business activities within the nearest airports' operational environment.

Since the concepts and models proposed in the framework of this study possess rather a strategic character, the future research attention may be paid to a more specific analysis aiming at identification of optimisation parameters for airports' operational and tactical improvements, including concrete criteria and action scenarios for the deployment of the air cargo trucking services.

Furthermore, due to the indispensible role nowadays of the information and telecommunication technologies (ICT) for the sustainable business development and for the capacity building in transport and logistics markets (cf. Kabashkin and Kundler, 2013; Prause and Hunke, 2014; Bazaras et al., 2016), a specific attention shall be paid to the ICT role in the airports' sustainable development and in the air cargo value chain implementation in particular.

CONCLUSIONS

Although the role of the European airports for socio-economic development can be hardly overestimated today, the number of loss making small and regional airports in Europe is growing. European aviation business is in a reconstructing process due to strong competition and changing frame conditions. The regional airports in the Baltic Sea Region face structural and economic challenges.

Since the causality discussion about interdependent relationship between airports and regional economic growth still remains open, the author argues that the approach in evaluating of an airport's potential influence on economic and entrepreneurial activities in a region shall be balanced. The regional airports shall not be viewed as a transport infrastructure only that provides air transport services, but rather as an essential subject and an object of regional development activities and regional planning policies. Airport's operational success might be important influencing factors on regional economic and entrepreneurship growth.

Theoretical contribution
Based on the well acknowledged theories and basic approaches that relate to company's impact assessment on regional development, sustainable and innovation business models, air cargo and RFS, supply chain and value chain concepts as utilised the in the framework of this research the author created strategic development models specifically focused on regional airports.

The theoretical contribution and scientific novelty of this study, lie mainly in the developed, tested and validated conceptual approaches and business development model proposal for regional airports in terms of (1) recognition and strategic positioning of regional airports' impact enhancers on economic and entrepreneurial development in their regions; (2) business models optimisation for regional airports, based on assessment criteria and sustainability enhancers; and (3) evaluation model of air cargo appropriateness for regional airports.

The author of this thesis developed a conceptual model that addresses the specific research gap targeting regional airport's strategic positioning in the regional economic environment. The developed model has been mainly based on the theoretical concepts that focus on direct, indirect and induced effects of airports on regional economic development and catalytic impact factors' approaches of, airports' clustering effects. The scientific novelty here lies mainly in the development of the integrated conceptual approaches that specifically concern regional airports and aim at enhancing regional airports' impact potential on economic growth and entrepreneurship development in their regions.

Thus, in response to the first research question of this study (i.e. *what is the possible conceptual evaluation pattern that may better recognize and enhance regional airports' impact on economic and entrepreneurship development in their regions?*), the author developed strategic airports' positioning model, considering two groups of the impact enhancers: (1) regional development perspective, i.e. demand side – whereby regional economic growth stimulates the airport's performance; and (2) regional airport's perspective, i.e. supply side – whereby airports' activities stimulate economic growth in their regions. This consolidated evaluation approach of regional airports, confirmed among other things that mostly it is not the deficit of airports' tangible assets, but rather intangible resources in form innovative concepts and services, level of competing sophistication, differentiation and diversification that may improve airports' impact on regional economic growth.

In the framework of the second research question (i.e. *what are the relevant evaluation criteria that might be appropriate to enhance sustainable business models for the regional airports?*), based on theoretical concepts that related to innovation and sustainable business models, the author designed a business model approach with a special focus laid on regional airports and airports' nearest operational environment. In this context, the regional airports were viewed as complex, open and multi-layer business systems, assessed by applying such indicators as tangible and intangible resources, value propositions, innovation level, etc. Since the majority of the considered concepts share common approaches in terms of measures' identification of required resources, capabilities and other tangible and intangible assets, e.g. Resource Based View and Innovation Business Canvas Model, the author has proposed sustainable business development model that might be applied specifically for regional airports. In the framework of this model, performance criteria elements have been identified that might be appropriate for the evaluation and for the further development of the sustainable business model, including diversification, differentiation and innovation level groups.

Addressing the third research question (i.e. *can air cargo be an appropriate business model for regional airports; and if yes, could the air trucking services might the first step for regional airports to enter the air cargo market?*) as well as the research gap in terms of the air cargo business involvement of the regional airports, the author of this thesis developed and proposed the air cargo business development model for regional airports, including potential assessment of regional airports for the air cargo and air trucking services. In terms of the air cargo business relevance for regional airports, the author extended the model of Reis and Macário (2009), whereas the author's specific contribution lies in the extension of this model though putting the suggested strategies into dependence from the demand and supply side enhancers criteria, which have to be further evaluated according to a relative weighting scale.

In the framework of the fourth research question, (i.e. *what are the appropriate concepts of efficient integration of transport oriented SMEs and entrepreneurs in the air cargo value chain?*), the author suggested the business concepts that aim at integration of logistics related SMEs into the air cargo value chain. The broader and general conceptual models in terms of supply chain management and logistics proposed by relevant researchers have been specifically adopted and modified according to the needs and realities of the regional airports and logistics related SMEs. Although the air-trucking volume has been sustainably and considerably growing during last decade, the number of trucking companies that provide the "air-trucking" service to the airlines is still rather limited in the BSR. This is due to relative high security and operational standards (e.g. timely operation with scheduled departure and arrival concept to connect to their scheduled flights, etc.). Thus, the main result and theory contribution lies in the strategy propositions for efficient integration of SMEs into air cargo supply chain, whereby the SMEs' performance has been grouped into three external or internal contextual dimensions: (1) air cargo forwarding sector and position in the air cargo supply chain (external environment), (2) external relationship patterns of SMEs within the air cargo supply chain and (3) SMEs structures, management and competences.

Practical contribution and implications

The wider practical contribution of this thesis lies in the empirical validation and practical verification of the applied concepts and models on selected regional airports in the framework of the action research, herewith contributing to practical enhancement of regional airports' potential as well as reconsidering of their strategies and roles in the overall aviation network.

The developed conceptual models and approaches have been applied and validated by a number of regional airports in the BSR. Selected airports acting as pilot cases have been analysed and evaluated, their strategic positioning in the regional development context has been improved. Based on the assessment, evaluation and modelling results the representatives from airports' management and regional authorities were able to optimise and coordinate common strategic development plans. The gained results indicated that more attention shall be paid to airports' clustering activities though creating efficient network of regional and inter-regional logistic service providers, improved communication between private and public stakeholders via coordinating airport's own service structure with relevant regional political and business stakeholders.

The results demonstrated also that regional airports should better recognise their important role for economic and entrepreneurship growth in their regions as well as accept their own dependence on regional prosperity. The wider result of this study in this context lies in the increased regional airports' organisational potential through airports' capacity building model in the context of regional development, which aims at airport's strategic positioning, determining of future

development plans and improving impact factors both from the demand side and supply side perspectives. A special attention shall be paid to enhancing of airports' clustering activities, e.g. though structuring and combining regional logistics services, creating efficient network of regional and inter-regional logistic service providers, coordinating airport's own service structure with relevant regional political and business stakeholders.

Further practical contribution of this thesis is the enhanced regional airports' capacity through planning and optimisation model, which aims at sustainable air cargo development in an optimal way, through complex mapping of relevant characteristics, economic realities of the demand and supply sides in airfreight services, and providing airport's management with optimal strategies and actions they should take in order to meet the challenges of the future air cargo market. The research results practically validated the assumption that the air-trucking concept might be the first realistic step for remote and regional airports that are contemplating to access to the air cargo market. The study results showcased that the regional airports shall identify and accept the usability of the air-trucking concept much stronger than they do it today. Due to the fact that, air-trucking services are normally of inter-regional or international character, the wider practical result of this study is the enhanced potential for international business operations of logistics related SMEs though integration them into air cargo supply chain and relevant business actions, i.e. improved business internationalisation potential of logistic related SMEs in the Baltic Sea region.

Beyond this, the developed concepts and models have been communicated and validated on the EU level, whereby it has been pointed out that relevant EU and national transport strategies clearly underestimate the potential and growing role of the air trucking services. The author believes that it is of a vital importance to raise business and political awareness of the air trucking concept and its role in the international logistics network, for it shall be more efficiently adapted to the EU and the Baltic Sea Region transport policies as well as to regional development strategies.

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ABSTRACT

Large metropolitan areas benefit considerably from agglomeration effects of global economies and liberalization of markets. Accessibility belongs nowadays to major factors of socio-economic attractiveness of a territory. The aviation industry in general, and airports' activities in particular, contribute considerably to the improvement of regional accessibility. The current European cohesion framework policy demands also for the improvement of the accessibility conditions of the remote and peripheral regions. In this context, European regional airports are responsible not only for air transportation services, but also for general regional development, socio-economic growth. Thus, the airports shall not be seen as a transport infrastructure that provides air transport services, but rather as an essential subject and an object of regional development activities and regional planning policies, whereby an airport's operational success might be one of the most important influencing factors on regional economic, innovation and entrepreneurship growth. However, due to strong competition and reconstructing process on the European aviation market in terms of public subsidies and regulations, the regional airports in Europe and in the Baltic Sea region in particularly face structural and economic challenges. European Commission has sent also a clear message that expanding financial aid to airports could not be a sustainable solution in the future. Increased competitive environment between the airports in Europe, liberalisation and deregulation process in aviation industry, the end of protectionism era is putting even bigger pressure on regional airports to increase their performance levels. However, it is not only the monetary losses caused by regional airports, but also the importance for economic and entrepreneurship development as well as positive catalytic effects of the regional airports especially in service, entrepreneurial and innovation sector must be considered. Thus, the main objective of these structural changes must be not "recycling" of the regional airports, but stimulation and motivation to improved cost efficient and sustainable operational activities. The regional airports should better recognize their important role for the economic and entrepreneurship growth in their regions as well as accept their own dependence on regional prosperity, as well as improve their operational activities through better coordination with relevant stakeholders of their region.

Traditionally, airports aim at passenger traffic and therefore possible benefits of the air cargo market are underestimated or even completely ignored. Most regional airports in the Baltic Sea region act totally isolated and do not have a clear picture of the current situation on the international air cargo market today, its future perspectives and sustainable development plans remain basically hidden. While trying to meet the market demand, the regional airports sometimes make huge, but unfortunately unjustified investments, e.g. improving airport's infrastructure, runways, etc. However, airports' infrastructural investments alone do not fulfil expected "remedy" role for the airports' sustainability, since it is not the absence of airport's infrastructure or an airport's extension capacities (e.g. for industrial bonded parks, warehouses, etc.) that

make an airports' impact on regional development insignificant, but rather soft factors (e.g. level of customer experience creation, level of value chain of suppliers of goods and services related to the airport and airport's region or level of competing sophistication, operational effectiveness and quality of micro-economic business environment) that should be improved. A special attention shall be paid to enhancing of clustering activities, e.g. though structuring and combining regional logistics services, creating efficient network of regional and inter-regional logistic service providers, coordinating airport's own service structure with relevant regional political and business stakeholders. The optional value creation in form of their possible participation in the air cargo market as a supplement instrument might stimulate additional revenue including so-called "air trucking" services.

The issues of SMEs' behaviour in the air cargo sector, bearing opportunities to strengthen their contribution to the regional development as well as boosting entrepreneurship in the air freight sector - have been tackled in the project "Baltic.AirCargo.Net – Improvement of the air cargo transport sector by service oriented ICT-methods and processing logistic network" that is being implemented in the framework of the EU Programme "Baltic Sea Region Programme". The focus on SMEs here implies that SMEs' role and impacts on supply chains and logistics networks have been prioritised on regional and European economic development agendas. This work investigates also SMEs' behaviour in the air cargo transport and logistics sector and showcases how SMEs may benefit by learning from airfreight forwarders and air cargo related transport and logistics service providers how to perform, collaborate, network, design and implement strategic decisions. This work calls for an integrated framework, which finds its conceptual roots in domains of supply chain, strategic and small business management, enterprise development, supply networks and supply chain management, enterprise culture and behaviour. Based on the existing thematic concepts, adapted to the environment of SMEs in the regional context, the paper streamlines the pathway of exploring SMEs behaviour in the air cargo supply chains and supply networks.

This doctoral thesis, research approach and the main structure are based on the author's publications produced in the period from 2013 and 2016. The overall objective of the study is to explore the potential of regional airports as economic and entrepreneurship driving forces for their regions with a special focus on air cargo value chain. Following the path of the deductive research methodology, the author identified four main research questions: (1) What is the possible conceptual evaluation pattern that may better recognize and enhance regional airports' impact on economic and entrepreneurship development in their regions? (2) What are the relevant evaluation criteria that might be appropriate to enhance sustainable business models for the regional airports? (3) Can air cargo be an appropriate business model for regional airports; and if yes, could the air trucking services might the first step for regional airports to enter the air

cargo market? (4) What are the appropriate concepts of efficient integration of transport oriented SMEs and entrepreneurs in the air cargo value chain?

The above identified research questions are consequently addressed and treated in the framework of the four published articles:
Article I – the first scientific article (i.e. "Regional airports' potential as a driving force for economic and entrepreneurship development – case study from the Baltic Sea Region.") is addressed the first research question through qualitative assessment of regional airports' potential and impact in the context of the regional development concepts and theories. As a result the author developed the integrative evaluation concept grounded on evidence-based approach and qualitative data from EU funded project "Baltic.AirCargo.Net".
Article II - i.e. "Business Development Models For Regional Airports - Case Studies From The Baltic Sea Region", tackles the second research question, whereas based mainly on theoretical concepts of Innovation Business Canvas model and Resource Based View, the author develops theoretical evaluation concept aiming at development of sustainable business models for regional airports, including success factors and strategic allocation of the airports' resources.

Article III - the third article (i.e. "Role of Air Cargo and Road Feeder Services for Regional Airports – Case Studies from the Baltic Sea Region.") addresses the third research question though investigating positioning of regional airports in the current aviation network, whereas the author developed the assessment matrix aiming at potential evaluation of the air cargo sector and especially air trucking services for the development of regional airports. The implications of Road Feeder Services concept has been formulated as an optional freight value proposition for the development of the regional airports and their possible participation in the air cargo market as a supplement instrument to generate additional revenue, thus making the airports more profitable and attractive.
Article IV – the fourth research question is treated in the framework of the fourth scientific article (i.e. "Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air Cargo"), whereas the author develops conceptual model for integration opportunities of transport related SMEs and entrepreneurs into the air cargo transport and logistics service field. The implications derived from the observed SMEs behaviour and performance in the air cargo supply chain and networks are made, including possible SMEs future directions and research contributions in this area.

Based on the well-acknowledged relevant theories and approaches, the author developed evaluation concepts, which have been grounded on empirical data, expert interviews, evidence-based and qualitative data from the research project: "Baltic.AirCargo.Net, "Baltic Bird", co-funded by the INTERREG IVB – Baltic Sea Region Programme (BACN, 2014). In the framework of the BACN project a number of regional airports in the Baltic Sea Region (BSR) from Estonia,

Finland, Germany, Latvia, Lithuania, Poland, Sweden and also from Republic of Belarus have been evaluated and analysed. Some of the regional airports from these countries acted as so-called testing airports for the developed concepts and theories. The author of this thesis contributed to the theory part by development of new theoretical and conceptual approaches of evaluation and assessment in terms of (1) regional airports' potential and impact enhancers on economic and entrepreneurial development in their regions; (2) assessment criteria and sustainability enhancers of business models for regional airports; (3) evaluation model of air cargo appropriateness for regional airports, (4) integration theories of SMEs in the air cargo value chains. The practical contribution of this thesis lies in practical implementation through testing of the developed assessment concepts and strategic development models on selected regional airports in the framework of the "Baltic.AirCargo.Net" and "Baltic Bird" projects, herewith contributing to practical enhancement of regional airports' potential as well as reconsidering of their strategies and roles in the overall aviation network.

Keywords: regional airports, air cargo value chain, Road Feeder Services, air trucking

KOKKUVÕTE

Suured linnapiirkonnad võidavad globaalsete majanduste aglomeratsioonist ja turgude liberaliseerumisest. Juurdepääsetavus on kaasajal üks peamisi piirkonna sotsiaalmajanduslikku külgetõmmet tagavaid tegureid. Regionaalset ligipääsetavust aitavad oluliselt parandada lennundus ja eriti lennuväljade tegevus. Euroopa praegune ühtekuuluvuspoliitika raamistik näeb ette ka kaugete ja perifeersete regioonide juurdepääsetavuse parandamist. Selles kontekstis ei ole Euroopa regionaalsed lennujaamad vastutavad mitte ainult lennutranspordi teenuste eest, vaid ka üldise regionaalarengu ja sotsiaalmajandusliku kasvu eest. Seega ei vaadelda lennujaamu mitte osana transporditaristust, mis osutab õhukargo transporditeenuseid, vaid pigem kui regionaalse arendustegevuse ja regionaalpoliitika olulisi subjekte ja objekte, mille puhul lennujaama tegevuse edukus võib olla regionaalse majanduse, innovatsiooni ja ettevõtluse kasvu peamisi mõjutajaid. Samas seisavad Euroopa ja eriti Balti mere regiooni regionaalsete lennujaamade ees strukturaalsed ja majanduslikud väljakutsed, seda Euroopa lennundusturul valitseva suure konkurentsi ja käimasoleva riigiabi ja teiste regulatsioonide ümberstruktureerimisprotsessi tõttu. Euroopa Komisjon on ka selgelt väljendanud, et rahalise toetuse suurendamine lennujaamadele ei ole tuleviku mõttes jätkusuutlik. Suurenenud konkurents Euroopa lennujaamade vahel, lennundustööstuses käimasolev liberaliseerimine ja reguleerimise vähendamine ning protektsionismiajastu lõpp asetab regionaalsed lennujaamad veel suurema surve alla parandamaks oma tegevusnäitajaid. Samas ei puuduta see ainult regionaalsete lennujaamade tekitatud rahalist kahju, vaid ka majanduse ja ettevõtluse arengut ja regionaalsete lennujaamade positiivset võimendavat mõju eriti teenustele, ettevõtluse ja innovatsiooni sektorile. Seega ei saa nende struktuurimuutuste peamine eesmärk olla regionaalsete lennujaamade "ümbertöötlemine", vaid stimuleerimine ja motiveerimine saavutamaks kuluefektiivsemat ja jätkusuutlikumat tegevust. Regionaalsed lennujaamad peaksid tugevdama oma rolli majanduse ja ettevõtluse kasvu tagamisel regioonides ning samas ka oma sõltuvust regionaalsest jõukusest ning parandama igapäevatööd läbi parema koordineerimise regiooni oluliste sidusgruppidega.

Traditsiooniliselt keskenduvad lennujaamad reisijate veole, mistõttu on õhukargo transporditurru võimalik kasumlikkus alahinnatud või isegi täielikult ignoreeritud. Enamik Balti mere regiooni regionaalseid lennujaamu tegutsevad täielikult isoleeritult ega oma selget ülevaadet rahvusvahelisest õhukargo transporditurru hetkeseisust, selle tuleviku perspektiividest ja neil puuduvad jätkusuutlikud arenguplaanid. Püüdes vastata turu nõudlusele teevad regionaalsed lennujaamad vahel suuri, aga kahjuks põhjendamatuid investeeringuid, nt parandades lennujaama infrastruktuuri, lennuradu, jne. Kahjuks ei ole investeeringud ainult lennujaamade infrastruktuuri lahenduseks jätkusuutlikkuse probleemi lahendamisel, sest lennujaama mõju regionaalarengule ei kajastu mitte lennujaamade infrastruktuuri või laienemisvõimaluste puudumises

(nt seotud tööstusparkide, angaaride osas, jne), vaid parandada tuleks pigem pehmeid faktoreid (nt klientidele kogemuste pakkumise tase, kaupade ja teenuste tarnijate väärtusahela tase, mis on seotud lennujaama ja lennujaama regiooniga või võistleva keerukuse tase, tegevuse efektiivsus ja mikro-majandusliku ettevõtluskliima kvaliteet). Erilise tähelepanu all on klastrite loomist edendavad tegevused, nt regionaalsete logistikateenuste struktureerimine ja ühendamine, regionaalsete ja regioonide vaheliste logistikateenuste pakkujate efektiivse võrgustiku loomine, lennujaama enda teenuste struktuuri koordineerimine oluliste regionaalsete poliitiliste ja ärivaldkonna sidusgruppidega. Valikuline väärtuse loomine nende võimaliku osalemise kaudu õhukargo transporditurul võib tuua kaasa lisatulu, kaasa arvatud nn. "õhuvedude" teenused.

VKEde (väikese ja keskmise suurusega ettevõtete) tegevust õhukargo transpordisektoris, k.a nende võimalusi oma panuse suurendamiseks regionaalarengus ja ettevõtluse kasvus õhukargo sektoris, käsitles projekt "Baltic.AirCargo.Net – „Õhukargo transpordisektori arendamine teenustele orienteeritud IKT meetodite ja logistilise võrgustiku kaudu", mis viidi ellu ELi programmi "Balti mere programm" raames. Keskendumine VKEdele tähendab siin, et regionaalse ja Euroopa tasandi majandusarengut puudutavates dokumentides on peetud VKEde rolli ja mõju tarneahelates ja logistilistes võrgustikes oluliseks. Uuritakse ka VKEde käitumist õhukargo transpordi- ja logistikasektoris ja tuuakse näiteid, kuidas VKEd saavad kasu õppides õhulasti käitlejatelt ja õhukargoga seotud transpordi- ja logistikateenuste pakkujatelt ning seda, kuidas strateegilisi otsuseid ellu viia, selleks koostööd teha ja võrgustikku luua, otsuseid disainida ja ellu viia. See nõuab integreeritud raamistikku, mis hõlmab kontseptuaalselt tarneahelat, strateegilist ja väikeettevõtete juhtimist, ettevõtete arengut, tarnevõrgustike ja tarneahelate juhtimist, ettevõtte kultuuri ja tegevust. Toetudes nimetatud mõistetele ja kohandades neid VKEde keskkonna jaoks regionaalses kontekstis, panustab uuring VKEde käitumise mõtestamisse õhukargo tarneahelates ja tarnevõrgustikes.

Käesolev doktoritöö, uuringu disain ja struktuur toetuvad autori publikatsioonidele, mis on valminud vahemikus 2013 kuni 2016. Uuringu eesmärk on välja selgitada regionaalsete lennujaamade potentsiaal majanduse ja ettevõtluse kasvutegurina regioonides keskendudes täpsemalt õhukargo väärtusahelale. Kasutades deduktiivset uurimismetodoloogiat, sõnastas autor neli uurimisküsimust: (1) Milline on võimalik kontseptuaalne hindamismuster, mis võtaks paremini arvesse ja edendaks regionaalsete lennujaamade mõju majanduse ja ettevõtluse arengule regioonides? (2) Millised on asjakohased hindamiskriteeriumid, mis aitaks kaasa jätkusuutlike ärimudelite tekkimisele regionaalsetes lennujaamades? (3) Kas õhukargo võib olla regionaalsete lennujaamade jaoks sobiv ärimudel; kui jah, siis kas õhuvedude teenused võiksid olla regionaalsete lennujaamade jaoks esimeseks sammuks õhukargo turule sisenemisel? (4) Millised on sobivad kontseptsioonid integreerimaks transpordisektoris tegutsevaid VKEsid ja ettevõtjaid efektiivselt õhukargo väärtusahelasse?

Eespool nimetatud uurimisküsimustele otsitakse vastuseid neljas avaldatud artiklis:
Artikkel I – esimene teadusartikkel (s.t. "Regional airports' potential as a driving force for economic and entrepreneurship development – case study from the Baltic Sea Region") puudutab esimest uurimisküsimust ja käsitleb regionaalsete lennujaamade potentsiaali ja mõju kvalitatiivset hindamist regionaalarengu mõistete ja teooriate kontekstis. Uuringu tulemusena töötas autor välja integreeritud hindamiskontseptsiooni, mis toetub tõenduspõhisele lähenemisele ja ELi poolt rahastatud projekti "Baltic.AirCargo.Net" kvalitatiivsetele andmetele.
Artikkel II - s.t. "Business Development Models For Regional Airports - Case Studies From The Baltic Sea Region", puudutab teist uurimisküsimust ning toetudes peamiselt sellistele teoreetilistele lähenemistele nagu ärimudeli lõuend ja ressursipõhine vaade, arendab autor välja teoreetilise hindamiskontseptsiooni, mille eesmärgiks on luua regionaalsete lennujaamade jätkusuutlikud ärimudelid, k.a edutegurid ja lennujaamade ressursside strateegiline jaotus.
Artikkel III – kolmas artikkel (s.t. "Role of Air Cargo and Road Feeder Services for Regional Airports – Case Studies from the Baltic Sea Region") puudutab kolmandat uurimisküsimust analüüsides regionaalsete lennujaamade asetust praeguses lennundusvõrgus, kusjuures autor töötas välja hindamismaatriksi, mille eesmärgiks on hinnata õhukargo sektori ja eriti õhuvedude teenuste rolli regionaalsete lennujaamade arengus. Lennukaupade veoteenuste (RFS) kontseptsiooni panus on sõnastatud kui valikuline veo väärtuspakkumine regionaalsete lennujaamade arendamiseks ja nende võimalikuks osalemiseks õhukargo turul täiendava instrumendina tekitamaks lisatulu, muutes seeläbi lennujaamad kasumlikumaks ja atraktiivsemaks.
Artikkel IV – neljandat uurimisküsimust käsitletakse neljanda teadusartikli raames (s.t. "Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air Cargo"), kusjuures autor on välja töötanud kontseptuaalse mudeli integreerimaks transpordiga seotud VKEde ja ettevõtete võimalused õhukargo transpordi- ja logistikateenuste valdkonnaga. Tuuakse välja järeldused, mis põhinevad VKEde käitumise ja tegevuse vaatlusel õhukargo tarneahelas ja võrgustikes, k.a VKEde võimalikud selle valdkonna tulevikusuunad ja teaduslik panus.

Toetudes aktsepteeritud teooriatele ja lähenemistele on autor välja töötanud hindamiskontseptsioonid, mis tuginevad empiirilistele andmetele, ekspertintervjuudele, tõenduspõhistele ja kvalitatiivsetele andmetele uurimisprojektidest: "Baltic.AirCargo.Net, "Baltic Bird", kaasfinantseeritud INTERREG IVB – Balti mere regiooni programmi poolt (BACN, 2014). BACN projekti raames on hinnatud ja analüüsitud mitmeid Balti mere regiooni regionaalseid lennujaamu Eestis, Soomes, Saksamaal, Lätis, Leedus, Poolas, Rootsis ja ka Valgevenes. Mõned nende maade regionaalsed lennujaamad olid projekti raames välja töötatud kontseptsioonide ja teooriate jaoks nn katselennujaamadeks. Doktoritöö autor panustas teooria osasse töötades välja uusi hindamise ja mõõtmise teoreetilisi ja kontseptuaalseid lähenemisi selles osas, mis puudutas (1)

regionaalsete lennujaamade potentsiaali ja mõju majanduse ja ettevõtluse arengule piirkondades; (2) regionaalsete lennujaamade ärimudelite hindamiskriteeriume ja jätkusuutlikkust tagavaid tegureid; (3) õhukargo sobivuse hindamismudelit regionaalsete lennujaamade jaoks, (4) VKEde integratsiooniteooriaid õhukargo väärtusahelatesse. Käesoleva doktoritöö praktiline panus on välja töötatud hindamiskontseptsioonide ja mõõtmismudelite praktilises rakendamises valitud lennujaamades "Baltic.AirCargo.Net" ja "Baltic Bird" projektide raames, panustades seeläbi regionaalsete lennujaamade potentsiaali tegelikku suurenemisse nagu ka nende strateegiate ja rollide ümbermõtestamisse üleüldises lennundusvõrgustikus.

Võtmesõnad: regionaalsed lennujaamad, õhukargo väärtusahel, lennukaupade vedu (RFS), õhuveod

Annex 1. PUBLICATION I

Article I

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REGIONAL AIRPORTS' POTENTIAL AS A DRIVING FORCE FOR ECONOMIC AND ENTREPRENEURSHIP DEVELOPMENT – CASE STUDY FROM BALTIC SEA REGION

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Abstract. Meanwhile it is generally acknowledged that accessibility belongs to major factors of economic attractiveness of metropolitan areas, other territories and peripheral regions. The aviation industry in general and airports' activities in particular contribute considerably to the improvement of regional accessibility. For some remote regions the airports are the only gateway to bigger hubs. However, due to the increasing competition in the aviation sector the airports and especially regional airports in Europe face structural and operational challenges nowadays. According to the report of the EU Commission: "The Future of the Transport Industry" the number of loss making small and regional airports in Europe is constantly growing. On the other hand the regional airports might crucial role in boosting economic development and entrepreneurship growth in regions. In this context, it is very urgent for regional airports themselves, as well as for regional policy makers, business and other relevant stakeholders to recognize the role of regional airports on the economic growth in their regions. As a response, this paper addresses to the evaluation and assessment of potential effects of regional airports on economic and entrepreneurship growth in their regions.

Keywords: regional airports, regional economic and entrepreneurship development

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1. Introduction

The transport sector, in direct and indirect meaning, is one of the main driving forces of European and global economies (EC, 2015a). The White Paper on Transport that is the main policy document on transport policy in the EU states: "Transport is fundamental to our economy and society. Mobility is vital for the internal market (…) enables economic growth and job creation". In the overall transport sector, the air transport is considered to

be one of the dominant modes for the passenger traffic over long and middle distances in Europe and worldwide. Air transport is plying also a vital role for the air cargo transport with a high value added or time sensitive goods (EC, 2014). European airports are responsible for employment over a million people, working directly or indirectly in aviation business, employed by airlines or by airports' operational environment, i.e. technical aircrafts' maintenance, logistics or catering services, retailing and or traffic control, etc. The aviation business in total contributes more than 140 billion euro to the European GDP (EC, 2015a, 2015b). Air transport is also considered as one of the main driving forces for the trade of innovative manufactures worldwide (IATA, 2015) and as an enhancer of the economic potential of a region (Goetz, 1992; Alkaabi & Debbage 2007; Debbage & Delk 2001). However, the number of loss making European airports (especially small and regional airports) is constantly growing (EC, 2014). In spite of growing losses, in order to secure accessibility to remote or peripheral regions, the regional or national public authorities keep on supporting the regional airports (Breidenbach, 2015). European regional policy makers have invested millions of euros in airports' infrastructure development, however today almost all regional airports depend on public subsidies. However, the new state aid rules for a competitive aviation industry, issued by EU Commission in February 2014, order the substantial cut of financial public subsidies of any art on the EU national or regional level for regional airports (EC, 2014). The main objective here is not to "recycle" the regional airports, but to stimulate them to operate on cost efficient, and profitable basis. On the other hand a number of experts argue that it is rather a false approach to focus on the monetary losses of the regional airports only, without recognising their importance for regional development and emphasize positive effects for the development of the regional industry (especially service and high-tech industry) benefit from airport's operation (cf. Sheard, 2014; Brueckner, 2003; Button & Taylor, 2000; Beifert, 2015, Rezk, et al. 2015). Bråthen (2003) merely economic point of view in terms of airports closure is not enough; he stressed the importance of regional development issues while conducting such an analysis. However, the provision and growth of transport services alone would not automatically lead to economic and regional development (Green 2007). In fact, it is economic and regional development that might lead to the growing demand for transportation services, and although the direct linkage between air transportation and economic growth does really exist, the causation is not completely clear (Button et al. 2010). Halpern & Bråthen (2011) pointed also that on the one hand the airports might act as primary facilitators for the economic and regional growth, providing accessibility and improving supply side components; on the other hand, it might be economic development (here: demand side) that determines demand and growth of transport services. Halpern & Bråthen further argue that the question if the demand or the supply in this context have the stronger effect.

In the framework of the EU funded project "Baltic.AirCargo.Net" (BACN, 2014) a number of regional airports in the Baltic Sea Region (BSR) have been analysed aiming, among other things, at assessing potential of regional airports and their role in the regional economic environment. The main findings of the BACN project demonstrated playing an essential role in improving regional accessibility and being an indispensible part of the European aviation system, especially regional airports face growing challenges; their relevance for regional development is being questioned now. This paper explores the potential of regional airports as economic and entrepreneurship driving forces for their regions. This paper is organised as follows: the theoretical framework showcases theoretical approaches to regional development, regional airports and their possible interdependencies. The following sections present, methodology, main findings of the case studies investigated in the framework of the BACN project and conceptual implications of regional airports that might improve their efficient participation in the regional economic growth, thus making the airports and their regions more profitable and attractive to invest in.

2. Theory and concepts

The roots of the location and regional theories related to transportation may be traced back to the works of Weber (1929), where he primarily focused on transportation costs, arguing that companies, while delivering raw materials and goods to the market, are trying to minimize the transportation costs (cf. Dawkins, 2003). The

works of Hoover (1937) discussing advantages from local agglomeration, such as large-scale economies, localization economies (i.e. businesses of the same industry collocate and cooperate in the same area) urbanization economies (i.e. colocation of companies from different industries), gave further impulses to the development of regional cluster theories (Porter, 1985). The works of Greenhut (1956) and Isard (1956) although focusing mainly on mathematical optimisation modelling of industry given the costs for transporting raw materials and final goods, argued that the business companies tend to locate near primary input sources, whereas the monetary weight of raw materials can be larger compared to the weight of the final goods.

The dedicated research studies focusing on the relation between air transport services and regional development may be traced to Ndoh and Caves (1995), investigating the influence of supply side of air transport on demand, arguing that the attractive accessibility may directly influence location decision-making and stimulate further economic activity. Percoco (2010) considers the role of infrastructure and especially of airports as one of the crucial factors of regional growth due to the increasing importance of air transport in connecting territories. The linkage between airports and regional development as well as the impact of accessibility on regional economic development by means of air transport has been also investigated in a number of other studies (Graham, 1995; Rietveld & Bruinsma, 1998; Shin and Timberlake, 2000; Horst, 2006; Hakfoort et al., 2001; Niemeier, 2001; Cherry, 2014). The scientific studies of Bogai and Wesling (2010), Baum et al. (2005), Hujer et al. (2008), Brueckner (2003) note the considerable effects of airports on regional employment structure, regional labour market and general regional economic growth. Boon et al. (2008), Hart and Mccann (2000) in their works also underline the economic effects and benefits from airports' operation on the regional development.

According to the supply-side theory, the availability of adequate transport infrastructure and provision of transport services will lead to economic development, and therefore the airports may be seen as catalysts for regional economic development, on the other hand according to demand-side theory, economic growth will increase the demand for the transportation services (cf. Rodrigue & Notteboom, 2013). While the relationship and interdependence between airports and regional economic development is considered to be very strong, the availability of supply side or providing air transportation would not automatically lead to regional economic development (Halpern & Bråthen, 2011). However, the causality discussion still remains open, i.e. is it an airport that stimulates the growth and economic development or it is economic development in a region that may boost the demand for air transportation services (Ndoh and Caves 1995; Green 2007; Button et al., 2010). Mukkala and Tervo (2013) also stressed the existing causality of airports to regional development in peripheral regions, pointing also out that in core regions this causality is less clear, however they clearly underlined that air transportation is a very significant factor for boosting economic development in remote regions.

Generally, the researcher in the framework analysis of the airports' impact on regional development differentiate between following impact factors: direct, indirect, induced, purchasing power effects of an airport's activities on the regional economic growth (cf. Malina et al., 2007 and 2008) and so-called catalytic impacts relating to the wider role of the airport on regional development (cf. York Aviation, 2004). According to Malina et al., (1) direct impact relates to the operation of the airport itself, direct economic activities of firms located in the airport' operational environment, employment and investments; (2) indirect effects arise from value chain of suppliers of goods and services related to the airport and airport's region; (3) induced effects are caused by the consumption demand of direct and indirect airport employees; and (4) purchasing power effects arise due to an inflow or outflow of demand for goods by the passenger flows. Baum et al. (2004) explained direct, indirect, and induced effects of air transport on a region in economic metric terms, such as employment or production value. Beyond this, the airports have a so-called (5) catalytic or multiplier impact by improving location attractiveness for businesses and tourism.

Although a number of studies focus on the first four types of airports' impact factors, since they are relatively easy to measure (cf. Hakfoort et al., 2001), Halpern & Brathen (2011) argue that catalytic impacts are the most

essential function of an airport and regional development (cf. York Aviation, 2004). The catalytic impact of airports and air transport sector on regional development has been studied by several researchers (Robertson, 1995; Cezanne & Mayer, 2003; Cooper and Smith, 2005; Gloersen, 2005; Bandstein et al., 2009). The previous studies basically note that due to the fact that it not easy to differentiate catalytic impacts of an airport from other factors and due to their complex character, the identification and measurement of catalytic effects is seen as rather problematic. Halpern & Brathen (2011) identify two main types of catalytic impact of airports on regional growth: (1) catalytic impacts that relate to regional economic competitiveness, resulting from airports' export activities, business operations and productivity; (2) catalytic impacts that relate to regional accessibility and social development, arising from airports' potential to improve regional accessibility. Braun et al. (2010) differentiate catalytic impacts of airports on a region between (1) consumer surplus; (2) environmental social effects; and (3) economic spin-offs, whereas positive economic spin-offs may stimulate inbound investments, inbound leisure or business tourism and improved productivity; negative spin-offs relate to outbound tourism, outbound investment. Wittmer et al. (2009) noted also the importance of intangible economic catalytic effects of regional airports on economic growth, such as network capacity, skills and competences, structural and image effect, etc. Although the intangible impacts cannot be clearly measured, they also have a strategic economic and social effect on the regional development (Wittmer et al., 2009).

Technically, it is not an airport, but rather airlines or logistic services providers that execute passenger or airfreight services. An airport provides the required hard (e.g. runways, terminals, warehouses, catering, etc.) and soft (e.g. security regulations, air cargo screening, sky-guiding, etc.) infrastructure. In this perspective an airport might be also seen as a logistics cluster (Juchelka & Brenienek, 2016). The concept of industrial clusters is well recognized in academic research (Marshall, 1890; Porter, 2000). "A Cluster is a proximate group of inter-connected companies and associated institutions in a particular field, linked by commonalities and complementarities." (Porter, 2000, p. 254). The definition of logistics clusters however, is still disputable due to differences of spatial and economic approaches (Elsner et al. 2005). The researches generally identify global, national or regional logistics clusters (Rivera & Sheffi 2012). Wang (2015) views logistics clusters as "geographically concentrated sets of logistics-related business activities, which have already become one of the most important regional development strategies." Along with the classical advantages of the logistics cluster such as: know-how and expertise sharing, service and costs benefits, etc., the logistics cluster participants might utilise or develop common approaches in terms of (a) provision of the systematic services and acquire adequate benefits from other (regional, inter-regional, international) markets; (b) benefiting from positive feedback circle through cluster cooperation; (c) enhancing core regional and firms' competences; (d) acquiring sustainable driving forces for companies' competitive advantages (cf. Wang, 2015).

Furthermore, regional airports shall not be seen as simple locations that provide air transport services, but rather as an essential subject of regional development activities and regional planning policies, whereas their operational success might be one of the most important influencing factors (cf. Feldhoff, 2012; Beifert, 2013 and 2015). A number of researches argued a firm's (here: an airport's) impact on the regional development lies also on the strategic and operational success that mainly derives from the following three elements: diversity, differentiation and innovation of airport business (Prahalad & Hamel, 1990). In this context, the following theoretical concepts pinpointing diversification, differentiation and innovation potential internally (i.e. regional airport) and externally (market) for regional airports: Resource-Based View (RBV) (Wernerfelt 1984; Barney, 1991), competitive advantage and cluster theory by Porter (2000) including innovation management process are of a special importance. The resource-based view approach examines the competitive environment from "inside-out" aspect, dealing with the internal environment of a company (Prahalad & Hamel, 1990). In order to increase an impact on the regional development, the regional airports need to optimise their performance strategy internally (organisation-based) and externally (market-driven), thus enhancing also their diversification and differentiation potential. As one of the bottlenecks for economic prosperity of an airport is often not accessibility, but rather the deficit of qualified manpower or resources in the airport's operational environment

(EC, 2014), the airports shall not be reliant on a single or traditional revenue source, but rather on wider airports' potential and performance depending on efficient utilisation of the available resources in form of human or financial capital, intangible valuable or unique assets (Barney, 1991). In the framework of the opportunity-based entrepreneurship theory Drucker (1985) argues that entrepreneurs do not cause change, but use the opportunities that changes bring: "the entrepreneur always searches for change, responds to it, and exploits it as an opportunity". Stevenson (1990) further extends Drucker's opportunity-based model by including so called resourcefulness that identifies generally that the hub of entrepreneurial management means the "pursuit of opportunity without regard to resources currently controlled" (Stevenson, 1990, p 2). The entrepreneurship resource-based theory states that access to resources is an essential factor for the entrepreneurship growth (Alvarez & Busenitz, 2001). This theory underlines the important role of social, human and financial, resources; arguing that the access to resources stimulates the entrepreneurial ability to utilise discovered opportunities more efficiently (Davidson & Honing, 2003). Financial, social and human capital represents three classes of theories under the resource – based entrepreneurship theories. However, some regional airports often view new market opportunities as not promising or underestimate their strategic value due to their disruptive innovations character in the aviation and airport business (Beifert, 2015). But if those innovative concepts (e.g. Logistics Bonded Park or Airport Industrial Zone) are already utilised or offered by the nearest regional competitors, it might be often inefficient just to reduplicate them (Downes & Nunes, 2013). Osterwalder & Pigneur (2010) developed a comprehensive business model that includes nine elements: customer segments, value propositions, channels, customer relationships, revenue sources, key resources, key activities, key partnerships and cost structure, that might be considered as a basement assessment tool for a successful business operation. In this context it might be recommended that regional airports shall learn to identify these market opportunities and deploy them considering innovation business models and better bargaining potential of entrepreneurs, e.g. by utilizing of so called "air trucking services" (Beifert, 2013).

3. Methodology

Although a number of scientific research studies and empirical evidences are available nowadays that relate to such subjects as: logistics' clusters (e.g., Rivera & Sheffi 2012; Wang, 2015; Juchelka & Brenienek, 2016), airport's operational environment and their impact on the regional development (e.g. Malina et al., 2007, Braun et al., 2010; Halpern & Brathen, 2011), however it might be stated that much less attention has been paid to regional airports so far and the earlier studies have been focusing mostly on airport-hubs or metropolitan areas, whereas the perspective of regional airports and their potential impact on their region in terms of economic and entrepreneurship development has been studied less thoroughly (Mukkala & Tervo, 2012). Halpern and Bråthen (2011) also noted that catalytic impact of regional airports on regional development calls for deeper and wider research. Based on the above-mentioned theoretical concepts and earlier empirical evidences and it might be assumed that regional airports might have a strong potential to enhance economic growth and entrepreneurship activities in their regions. In the framework of this study the following research questions are investigated:
Question 1: What are the possible conceptual approaches to optimise or to enhance regional airports' impact on economic growth and entrepreneurship development in their region?
Question 2: What is the appropriate approach to evaluate potential of regional airports to boost economic growth and entrepreneurship development in their regions?

With regard to the above-presented concepts, it is argued here that regional airports acting as a gravity force for logistics cluster-building in a region and multi-layer business systems may be analysed by applying various assessment criteria found in the theoretical framework discussed above. The following presented assessment matrix is based on theoretical concepts of direct, indirect or induced effects of airports on regional economic development (Malina et. al., 2008; Baum et al., 2004), catalytic impact (Bandstein et al., 2009; Halpern & Brathen, 2011), airports' clustering effect (Rivera & Sheffi, 2012; Wang, 2015), airports' internal success

factors, i.e. RBV of Prahalad & Hamel (1990) as well as innovation and entrepreneurship growth of Osterwalder & Pigneur (2010).

As it has been mentioned before, due to the fact that the causality discussion of the impact relationship between airports' operation and regional growth still remains open, the author identifies here two main groups of the growth enhancers: (1) perspective of regional development (here: demand-side), by which regional airports may be considered as an object of regional economic growth where economic development in a region will boost the demand for the air transportation services and stimulate an airport's growth; and (2) regional airport's perspective (here: supply-side), whereby regional airports act as a subject of regional development, e.g. airport's activities may stimulate economic and entrepreneurship growth in its region. As a response to the first research question, the following assessment matrix evaluating regional airport's potential to influence economic and entrepreneurship growth might be suggested (Table 1).

Table 1. Regional airports' impact assessment and sustainable business model development

Perspective	Assessment criteria indicator
Regional Development Perspective (demand-side enhancers for airport's growth, i.e. regional airport as an object of regional development)	Regional accessibility
	Regional economic competitiveness
	Regional business concentration
	Regional density of high-growth and innovative enterprises
	Regional level of entrepreneurial and innovation activities
	Regional density of population
	Regional labour market
	Regional prosperity and purchasing power
	Regional level of skills and competences
	Regional network capacity, governance and coordination level
	Linkages of airports with other public & private R&D
	Linkage of airports with innovation policies
	Regional marketing activities
	Regional awareness of airport's capacities and value proposition
Regional Airport's Perspective (supply-side enhancers for economic and entrepreneurship growth, i.e. regional airport as a subject of regional development)	Airport's infrastructure
	Airport's extension potential for future clustering activities
	Level of direct airports' employment
	Level of indirect employment
	Level of value proposition
	Level of clustering activities, e.g. creating network of logistic service provider, building up logistical service centres, etc.
	Level of customer experience creation (e.g. airport marketing, corporate identity and branding activities)
	Value chain of suppliers of goods and services related to the airport and airport's region
	Level of competing sophistication (operational effectiveness and quality of micro-economic business environment)
	Level of entrepreneurship environment in airport's premises

Source: Author (based on airports' impact factors of Malina; catalytic impacts of Halpern and Brathen; RBV by Prahalad and Hamel; Innovation Business Canvas of Osterwalder and airports' clustering effects of Wang)

The author of this paper argues that the above-presented assessment matrix for the regional airports' assessment based on the consolidated theoretical frameworks based on airports' impact factors of Malina; catalytic impacts

of Halpern and Brathen; RBV by Prahalad and Hamel; Innovation Business Canvas of Osterwalder and airports' clustering effects of Wang enables comprehensive assessment of regional airports' potential on the economic and entrepreneurship growth.

The following assessment results and main findings presented in this paper have been based on secondary and primary data, including qualitative expert interviews and surveys that have been collected and produced in the framework of the EU funded research project Baltic.AirCargo.Net (BACN, 2014), financed by the EU Programme "INTERREG IVB, Baltic Sea Region", ERDF Funds. The empirical data was collected from diverse sources of evidence during the project life 2011-2014, i.e. primary empirical data sources in form of quantitative and qualitative observations of the involved project experts, researchers and relevant stakeholders. The evaluations, project documentation and observations gathered from respective project activities such as workshops, conferences as well as from the field notes from project meetings. Following target groups and relevant stakeholders participated in the surveys and expert interviews a) representatives from Transport Ministries and Airport Management; b) representatives from Transport and Logistics companies from participating regions; c) representatives from the academic side, c) expert from aviation sector, air cargo security and air cargo freight sector. In terms of the presented investigated case studies, 67 qualitative interviews were conducted and evaluated. The above-presented assessment matrix for regional airports' potential on regional development (cf. Table 2) has been chosen as a basement to present compliant evaluation analysis of the selected airport.

In the framework of the BACN project, in total nine regional airports from eight BSR countries have been analysed and evaluated. Parchim Airport (Germany) has been selected here as a demonstration case using an evidence-based method in order to assess the airports' potential as a driver for economic and entrepreneurship development in Mecklenburg-Vorpommern region (Germany). A case study approach shall generally draw an essential attention on contemporary study issues by addressing strategic question "know-why?" (Yin, 2009). Although the applied qualitative methods here may make it difficult to validate the presented events, it will enable to highlight the particularity and complexity of the single case evidences (Stake, 1995).

4. Main findings and implications

Parchim Airport is located in the county Ludwigslust-Parchim (area: ca. 4.752 square kilometre; population density ca. 45 per one square kilometre) near regional town Parchim in the State of Mecklenburg-Vorpommern, Germany. There are two main cities in the catchment area of Parchim airport, i.e.: Schwerin – ca. 44 km or 40 minutes by road, which is the capital city of Mecklenburg-Vorpommern region with ca. 91 thousand people and; and Rostock - ca. 111 km or 1,5 hours by road. The geographical transport and time distance by road from Parchim to the nearest airport-hubs are: to Berlin Tegel: 172 km, ca. 2 hours; to Hamburg: 131 km, ca. 1,5 hours. The geographical transport and time distance from Parchim to other operating regional airport, i.e. Airport Rostock-Laage is ca. 70 km or ca. 1 hour by road. The airport has been used for more than 70 years exclusively for the military purposes. In 2007 the airport was sold to a private investor LinkGlobal International Logistics Group Ltd. – a Chinese company that is the current owner of the airport. The airport has a direct connection to the highway A24, linking Hamburg and Berlin and beyond to the German and European long-distance transport network. Rail connections are limited to regional traffic, since no direct access to long distance train lines in Parchim traffic exists. No regular flights are offered in Parchim Airport at the moment. The new owners have planned the internationalization business model for the Parchim airport. The objective was to extend the site to an air cargo hub for transportation between Europe, Africa and Asia. Three flights a week were planned with an option for extension up to 30 flights a day. Furthermore, a sufficient logistics infrastructure was intended. These investments should be made in cooperation with Goodman Group. In 2007 two airfreight connections have been established, one to Zhengzhou (CGO) in the province of Henan and another to Urumqi (URC), the capital of the

Xinjiang Uyghur Autonomous Region of China. The targeted frequency of service on these flight connections has not been achieved so far. In 2010 only 8000 tons of air cargo were handled, a volume that has to be considered as completely insufficient to guarantee a cost-effective operation. For this reason more and more capacity utilization problems arise due to the fact that only a low activity rate can be achieved for the personnel and also the technical equipment (aircraft tugs, fire-fighting vehicles, etc.) needed for airport operations as well as for the offered logistic services. The current as well as the to-be expected volumes in air cargo transport are insufficient to generate the necessary revenues for maintaining operations at the airport. Relevant revenues coming from other business areas cannot compensate operational costs of Parchim Airport at the moment

Regional Development Perspective Evaluation of Parchim Airport

In the framework of the regional development perspective or evaluation demand-side enhancers for the airport's growth evaluation, the following assessment scale of the given criteria was applied (very good developed / provided: 5; adequate developed / provided: 4; average developed / provided: 3; insufficient developed / provided: 2; very poor developed / provided: 1). In the framework of BACN project, external experts (i.e. representatives from regional relevant business and policy structures, entrepreneurs and academic field) participated in the analysis of the Parchim Airport. The assessment of Parchim Airport's growth potential from the point of view of demand side perspective has shown the following results. The applied weighting scale of the assessment criteria has been based on the overall compilation of the experts' evaluations and the results of the experts' interviews fulfilled in the framework of the BACN project. The experts of the BACN project also pointed out that although this weighting scale might be very subjective, however it needs to be integrated in this or another form in the evaluation process, since the assessment criteria are not equal.

Table 2. Assessment of the demand side enhancer for the airport's growth

Assessment criteria (demand-side enhancers for airport's growth)	Weight scale	Criteria mean score	Total mean value
Regional accessibility	10%	3	0,30
Regional economic competitiveness	10%	3	0,30
Regional business concentration	10%	2	0,20
Regional density of high-growth and innovative enterprises	10%	2	0,20
Regional level of entrepreneurial and innovation activities	10%	3	0,30
Regional density of population	10%	2	0,20
Regional labour market	5%	3	0,15
Regional prosperity and purchasing power	6%	4	0,24
Regional level of skills and competences	10%	4	0,40
Regional network capacity, governance and coordination level	5%	3	0,15
Linkages of airports with other public & private R&D	2%	2	0,04
Linkage of airports with regional innovation policies	2%	1	0,02
Regional marketing activities	5%	4	0,20
Regional awareness of airport's capacities and value proposition	5%	1	0,05
TOTAL	100%		**2,75**

None of the given criteria has been evaluated as "very good developed / provided". The overall mean value of the evaluation of the demand-side enhancers on the airports' operation is slightly below average value. Only three criteria (i.e. regional prosperity and purchasing power, regional level of skills and competences and regional marketing activities) were evaluated as "good developed or provided" in the region. Two criteria indicators have been evaluated as "adequate developed / provided", i.e. linkage of airports with regional innovation policies and regional awareness of airport's capacities and value proposition. Although the criteria: "network capacity, governance and coordination level" in general has been evaluated as "average", a number of

BACN experts saw here a big potential for improvements. In fact, the BACN experts mentioned that certain gaps in networking and communication from the side of the Chinese owner and relevant regional stakeholders such as public admiration of County of Ludwigslust-Parchim (co-owners of the Parchim Airport), German Customs Authorities, Ministry of Transport of Mecklenburg-Vorpommern do really exist.

Regional Airport's Perspective Evaluation

In the framework of the regional airports perspective or evaluation supply-side enhancers for the economic and entrepreneurship growth in the region, the same assessment scale of the given criteria were applied as by the demand-side enhancers (cf. Regional Development Perspective Evaluation of Parchim Airport). The assessment of Parchim Airport's potential impact on economic and entrepreneurial growth in the region, i.e. from the point of view of supply-side perspective has shown the following results.

Table 3. Assessment of the airport's impact on regional development

Assessment criteria (supply-side enhancers for regional development)	Weight scale	Criteria mean score	Total mean value
Airport's infrastructure, incl. tangible and intangible resources	10%	4	0,40
Airport's extension potential for future clustering activities	10%	4	0,40
Level of direct airports' employment	5%	1	0,05
Level of indirect employment	5%	1	0,05
Level of value proposition	15%	4	0,60
Level of clustering activities, e.g. creating network of logistic service provider, building up logistical service centres, etc.	15%	1	0,15
Level of customer experience creation (e.g. airport marketing, corporate identity and branding activities)	10%	2	0,20
Value chain of suppliers of goods and services related to the airport and airport's region	10%	2	0,20
Level of competing sophistication (operational effectiveness and quality of micro-economic business environment)	10%	2	0,20
Level of entrepreneurship environment in airport's premises	10%	2	0,20
TOTAL	1		**2,45**

None of the given criteria has been evaluated as "very good developed / provided". Three criteria indicators (i.e. airport's infrastructure, incl. tangible and intangible resources, airport's extension potential for future clustering activities and level of value proposition) have been evaluated as "adequate developed / provided". In fact, the airport's infrastructure belongs to one of the main tangible resources of Parchim airport: the new tower was built in May 2015, the length of the runway is 3000 meter, the airport has appropriate passengers and cargo terminals, including required security screening technologies. The following attributes have been mentioned by the experts as the airport's distinctive intangible resources:

- low costs operation airport;
- 24/7 operation, i.e. aircrafts are allowed to land and departure 24 hours daily and 7 days a week; no restriction to night flight operations;
- all types of aircrafts (incl. AN124 and A380) can be accommodated and handled at the airport, over-size cargo operations are possible;
- efficient customs services, that makes Parchim Airport's cargo terminal to dry a port.

So called "24/7" operation was mentioned as valuable or non-substitutable intangible resource of Parchim Airport. Comparing to other German airports, nowadays a number of official and civil discussion have been started to introduce a night ban for the state owned airports. Since Parchim Airport is in the private hands, the owners and the airport management claim that in the mid-tem and in the long-term perspective, the 24/7 operation will be still valid for Parchim Airport and might not be questioned. Although considering expanding of the passenger traffic, Parchim Airport is clearly positioning itself as an international gateway to China with a strong focus on the air cargo. According to the current development plan, the airport will be upgraded to ICAO 4F class airport. The experts evaluated the level of value proposition as "adequate" considering the air-cargo development model and cost-performance ratio.

It has to be mentioned that a number of various value added services does already exists or is being developed and implemented in Parchim Airport:

- Bond Logistics Park (partly realized)- a customs free zone, where cargo may be stored in the Customs Bond Warehouse, there is no time limitation and is treated as outside the boundary of EU or Germany, tax or duties will not be applied if cargo is purposed to be transit to other countries or Bond Zones, air cargo transit to other countries or Bond Zones via the Customs Bond Warehouse may be exempted for import procedures
- Customs Bonded Industrial Park (in planning) - the commodities could be assembled by various value added model under Customs bond. The commodities could be considered as "Assembled in Germany" or "Made in Germany" with value-added determination in the Bond Zone by EU regulations and policies. The goods from the EU countries' "preferential origins" can enjoy reduced or zero tariffs in some countries (mutual agreements
- Bond Trade & Procurement Centre (in planning) - the commodities can be exhibited for trading or auction purpose. Import procedures will be required and tax & duty will apply only when cargo need to enter into EU markets. Cargo transit to other countries or Bond Zones via the Customs Bond Warehouse in Parchim International Airport is exempted for import procedures

However, in spite of above mentioned plans and already realized activities, the level of clustering activities in Parchim Airport has been ranked as "poor". The experts underline the deficit of attracting factors for potential investors that might be connected also to a lack of targeted or direct communication as well as rather weak regional economic structure and the absence of the critical mass of local industries and companies. It has been further noticed to improve the level of operational effectiveness and quality of micro-economic business environment. In spite of the appropriate infrastructure, like runway and the newly built tower, the institutional and infrastructure framework in which the airport operates has been considered as "poor". Furthermore, it has been stated that the current competitive advantage of Parchim Airport is based nowadays mostly on low costs model than on unique/innovative products and services.

5. Discussion

Due to growing social and political responsibility in terms of environmental issues, such aspects or impact analysis of an airport's operation on environment might be also discussed. There are already a number of EU funded project that have started to examine airports as so-called environmental sensors. The possible implications of an airport in this direction might be mitigation of environmental impacts and risks, implementation of strategic plans to minimize noise and air pollution effects on the environment. At the moment some relevant regulations and standards imposed by EU and national current legislations shall motivate airports to pay more attention, in other words to invest in innovative and "green" technologies, e.g. technologies for the production of renewable energy on an airport's territory, producing so-called ecological corridors that reconnect

parts of the territory through environmental linear infrastructure, etc. This entire legislative framework, acting as demand-side enhancer may stimulate new entrepreneurship and innovation business activities within the nearest airports' operational environment.

Furthermore, in according to the guidelines of the European infrastructure development plan for 2014-2020, the airport connectivity (especially in some remote regions) will be improved aiming at improving territorial synergy or networking between nearby airports as well as better integration of smaller and regional airports in common the organizational logistical network though extensive airports' integration with local transport systems, e.g. railways and local buses. All these initiatives may also give an impulse for an airport's growth, thus increasing complementarities, improving value proposition, diversification and specialisation of airports.

The BACN experts underlined also the importance for every region to be accessible. In our innovation-driven economies regional accessibility is very important both for people (both: tourists and businessmen) and companies. The regional airports might positively contribute to improving their regional accessibility and herewith economic and entrepreneurship growth in a region. The BACN experts mentioned that it might be also achieved through improved horizontal or networking cooperation between regional airports in the Baltic Sea Region. The distribution of the "weight" between the assessment criteria in the presented assessment model may represent a subject of future disputes and discussions. The experts of the BACN underlined that although this weighting scale might be very subjective, however the it needs to be integrated in this or another form in the evaluation process, since the assessment criteria are not equal. It has been further noted by BACN experts that this weighting scale is not a "universal" for every regional airport, but on the contrary the evaluation approach and the correspondingly applied weighting scale must be very individual, respecting the regional peculiarities, economic perspectives and regional stakeholders' interests.

Specifically for Parchim airport it might be mentioned that one of the basic prerequisites for the successful realization of the current strategies is the assumption that innovative Chinese companies and entrepreneurs will start to settle in the airport area and build up a critical mass of interconnected companies, thus creating a cluster. However, the creation of such exterritorial low-wage areas will be hardly possible today to enforce on a political level, as by adopting such a procedure fundamental structures of the German labour and social law would be questioned. The second problem is the use of the established brand Made in Germany which image would be permanently damaged and will cause severe and long-lasting loss of image to the German industrial reputation going far beyond the Parchim location if the quality standards are not properly met. Whether and to what extend the presented concepts can be realized, remains open. A key issue is the question for which companies the Parchim International Airport can be an attractive alternative to other airport locations in the Northern and Central German region. The visions with respect to the possible development of the site that have been propagated for a number of years will be presented in the next paragraph.

LinkGlobal presents visions of the future of a Parchim Bond Business Park with the aim to find users for the airport and the local logistics facilities. Advantages of this location are the favourable geographic situation in Europe, the technical equipment for all aircraft types, the cost effective structures with an operating time of 24 hours as well as the status of a customs free zone. The Bond Logistics Park, the Bond Industrial Park and the Bond Trade & Procurement Center essentially constitute the fundaments of the Parchim Bond Business Park serving as its economic core. The Parchim Business Park will be complemented with an Asia Center as well as with a Business Cooperation Zone. With the help of these two the attractiveness of the Parchim location is to be increased.

Conclusions

Although the role of the European airports for socio-economic development can be hardly overestimated today, the number of loss making small and regional airports in Europe is growing. The regional airports face structural and economic challenges. Since the causality discussion about interdependent relationship between airports and regional economic growth still remains open, the author argues that the approach in evaluating of an airport's potential influence on economic and entrepreneurial activities in a region shall be balanced, i.e. assessment of both perspectives might be necessary. The regional airports shall not be viewed as a transport infrastructure that provides air transport services, but rather as an essential subject and an object of regional development activities and regional planning policies, whereby an airport's operational success might be one of the most important influencing factors on regional economic and entrepreneurship growth.

The main findings indicate that regional accessibility is very important nowadays, whereas normally it is not the absence or inadequate airport's infrastructure or an airport's extension capacities (e.g. for industrial bonded parks, warehouses, etc.) that make an airports' impact on regional development insignificant, but rather soft factors that might be improved, such as level of level of customer experience creation, level of value chain of suppliers of goods and services related to the airport and airport's region or level of competing sophistication (operational effectiveness and quality of micro-economic business environment. A special attention shall be paid to enhancing of clustering activities, e.g. though structuring and combining regional logistics services, creating efficient network of regional and inter-regional logistic service providers, coordinating airport's own service structure with relevant regional political and business stakeholders, etc.

The above-presented results demonstrated that the regional airports should better recognize their important role for the economic and entrepreneurship growth in their regions as well as accept their own dependence on regional prosperity, as well as improve their operational activities through better coordination with relevant stakeholders of their region.

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BUSINESS DEVELOPMENT MODELS FOR REGIONAL AIRPORTS – CASE STUDIES FROM THE BALTIC SEA REGION

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Abstract. According to the EU Competition Policy Brief on the new state aid rules for a competitive aviation industry issued in February 2014, the regulation for the financial public subsidies of any art on the EU national or regional level for regional airports will be a considerably striker. The strategic aims of these new regulations, among other things, are to motivate and encourage the Member States (here: regional airports) to implement more efficient market stimulation measures, make airports work on cost efficient and profitable basis and establish transition periods for regional airports. In practice it means that public subsidies may be granted only to those regional airports that proved to have a sustainable and realistic business model that shall clearly demonstrate the durable financial stability. The authors took part in two air transportation initiatives in the Baltic Sea Region (BSR) and were lead partner in the EU Project Baltic.AirCargo.Net, which deployed a number of empirical measures in selected regional airports in the BSR. This paper presents success factors of sustainable business development models for the regional airports in the BSR based on cases studied during the project lifetime

Keywords: business development models, regional airports, sustainability

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1. Introduction and problem definition

The EU White Paper on Transport Policy states: "Transport is fundamental to our economy and society. Mobility is vital for the internal market (…) enables economic growth and job creation". According to the report of European Court of Auditors in 2014, the air transport is considered to be one of the dominant modes for the passenger traffic over long and middle distances in Europe and worldwide. Air transport is playing also a vital role for the cargo with a high value added or time sensitive goods. European airports are responsible for employment over a million people, working directly or indirectly in aviation business: e.g. airlines, technical aircrafts' maintenance, logistics or catering services, retailing or traffic control or sky-guiding. The aviation business in total contributes more than 140 billion euro to the European GDP. However, in spite of the importance, growth and opportunities of the air transport industry, the European Court of Auditors registered in 2014 ca. 48 % of European airports as loss making. Aiming at provision of accessibility or public socio-economic obligations, in spite of the current losses, the regional or national public authorities keep on supporting the airports. There are over 500 commercial airports in Europe that might be split into two categories (Horst 2006): 1) Hub airports, which provide a full range of services, including business or leisure, domestic, European or inter-continental flights. The hub airports consolidate also air traffic from smaller and regional airports; 2) Regional airports connecting remote regions to the centres of economic activity, feeding hub airports but also having direct flights to other regional airports. As it further stated in the Competition Policy Brief on the new state aid rules for a competitive aviation industry by the Competition Directorate–General of the European Commission in February 2014, it would be complicated for unprofitable airports, to get subsidies from the EU, national or regional public funds. In spite of the important social and economic role and positive impact of small airports on the regional development, the operating aid to the airports has to be cut out over a maximum of 10 years. The majority of small and regional airports appeared to experience problems to cover at least their running operative costs. As it was further stated, the airport management is using the public funds mostly for hardware infrastructural investments, to cover operating losses or to attract price-sensitive airlines. On the other hand, comparing to the airlines, the airports possess a competitive advantage in form of diversity of business and service models in the nearest operational environment. Current IATA studies reveal that the Return on Invested Capital (ROIC) for the players along the aviation value chain vary a lot, whereas the airlines noted the least ROIC index, i.e. practically every service, supply or distribution sector earned a higher return on capital than airlines. But same study also pointed out that ROIC of airlines suffer under a higher volatility and airports due to diversification options of airports related to a wider range of business models compared to airlines which are mainly active only in one business sector like pure passenger traffic. Thus, the airports due to business diversity possess a competitive advantage and the opportunity to develop in more sustainable, stable and profitable way.

The paper is organised as follows: the theoretical framework showcases key theoretical approaches and theory gap, the following section presents the methodology and results of the case studies analysed, the succeeding section formulates key implications for sustainable airport development and business sophistication. The paper ends with key concluding remarks showcasing tenets for regional airports business development across the Baltic Sea.

2. Theoretical framework and research questions

The airport business experience a severe transformation, moving from the business based on growing traffic volumes, market share and political support. Stiffer competition and increasing role of networks and strategic positioning made it for the airports and especially for regional airports difficult to sustain their competitive position on the market. To overcome the retrenching performance, airports are subject to development of new strategies and business models adopted to new value propositions on the local, regional and global markets.

Casadesus-Masanell and Ricart (2009 and 2011) differentiate strategy and business model, by viewing a business model as so called "realized strategy". The strategy is seen by Casadesus-Masanell and Ricart as the specific plan, which aims to achieve specific business objectives (e.g. market expansion or improving of competitive advantage). The action framework including rules, resources, management structures, etc. represents

so called the "raw material" to form a business model. The development, further development and the definition of the business model are considered part of the strategic process of a company. According to Casadesus-Masanell and Ricart The strategy is concerned "know-what", i.e. WHAT a company wants to be in the future and the business model describes the elements and logic, which are necessary for tactical implementation of already designed strategic objectives, i.e. business model is concerned with the "know-how". Other authors have tried to differentiate "strategy" and "business model" from each other, without bringing this separation in a particular hierarchical structure. For instance Magretta outlines that a business model describes various elements that must work together to make a company successful, while the strategy describes its difference in regard to the competition: "A competitive strategy explains how you want to do better than your rivals. And doing better by definition, means being different." (Magretta 2002, p. 6). Magretta defines the term "business model" as a story that tells of how an organization works. The aim is a strategic business model to provide answers to three questions: „Who is the customer?, What does the customer value?, What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?“ (Magretta 2002, p. 3). The further development or redesigning of a business model is in this view then nothing more else than writing a new story, whereas the “new” is often a variation of “already known”. By "writing the new story" a clear reference to the added value relationships must be made and it cannot be written without reference to the current situation. Furthermore, there are two essential parts in the business model innovation according to Magretta: (1) one part has to deal with the activities, dedicated to product development (e.g. development, purchasing, production); (2) in the second part the attention is paid to all the activities that are related to the sale of the product (e.g. attracting additional activity or business to the airport, pursue new air service opportunities, etc.).

Reviewing of the practical experiences demonstrate that airports’ success lies mostly beyond simple reflection of the needs of customers and delivering a sufficient return to investors or other stakeholders. Rather, strategic and operational success is likely to derive from three key tenets represented in different strategic management and business research streams, namely: diversity, differentiation and innovation of airport business (Feldman 2009, p. 1; Prahalad and Hamel 1990, pp. 5-7). For this, the theoretical framework of the current research needed to recall theoretical approaches pinpointing diversification, differentiation and innovation potential internally (i.e. regional airport) and externally (market) for regional airports: Resource-Based View (RBV) (Wernerfelt 1984; Barney, 1991; Grant 1991), competitive advantage and cluster theory by Porter (1991; 2000) including innovation management process (Tidd and Bessant 2013). In order to develop capabilities for diversification and differentiation, regional airports need to change their performance strategy internally (organisation-based) and externally (market-driven). Regional airports need to shift from being reliant on a single revenue source. For doing this, organisational success and performance is likely to depend on strategic utilisation of resources, such as human, physical capital, intangible assets that are valuable, rare, imperfectly imitable and non-substitutable (Barney 1991, pp. 105-106; Boxall 1996, p. 65). Following Wernerfelt, a resource can be anything that can contribute to a strength or weakness of a given organisation (Wernerfelt 1984, p. 172). Strictly speaking, in the RBV resources are all tangible and intangible assets, capabilities, organisational processes, attributes, information and knowledge, which allow an enterprise to recognise and implement strategies that lead to organisational efficiency and efficacy (Barney 1991, p. 101; Crook *et al*. 2008, p. 1150-1152). More specifically, a resource is a tangible or intangible asset and input to production that an organisation owns, controls or has access to (Helfat and Peteraf 2003, p. 999). The resource-based view model investigates the competitive environment from so called “inside-out” approach, dealing with the internal environment of a company (Prahalad and Hamel 1990, p. 4).

According to the RBV, it is internal resources or capabilities that determine a future development or a strategic decision-making process and strengthen organisation’s competitive advantage (Prahalad and Hamel 1990, p. 4; Porter 1996, p. 70; Hoopes *et al*., 2003, p. 890). The core task of the management is to develop the demand and offer such products or services that potential customers surely need, but have not yet known or imagined them before. This brings to the second crucial element in the airport strategic plans – differentiation. Since today we face an increasing customer centricity, attempts to propose a unique, rare and valuable product or service to our customers, value proposition makes an important competitive advantage for regional airports. Echoing Feldman,

airports now must to propose value that goes far beyond simply impressive architecture. Rather, at the core is customer experience associated with the airport, its products, services and assets, thus transforming airports into customer destination (Feldman 2009, 4). In this regard, airports need to develop or recall such resources and capabilities that make them valuable among customers. Indeed, this can be facilitated by efficient marketing and branding activities of regional airports as well as additional products and services proposed to its customers, e.g. organisation's image or brand that can be hardly replicated; tacitness in relationships between the market players or market structure limiting new entry (Kai 1993). Prahalad and Hamel recommend operating across organisational limits and benefit from the core competences of an organisation. Thus an organisation's core competences may be seen as a cluster of intangible resources that make it possible to achieve competitive advantage through: providing an access to a variety of markets; contributing to the perceived customer benefits of the end product and making imitation or replication process for the competitors as very difficult, thus sustaining of competitive advantage (Thakkar 2008 and 2009). Linking up with resources and capabilities within organisations, a cluster of internal resources and capabilities residing in an organisation must be linked to the external environment. Following Porter, competitive advantage derives from an organisation's activities in the external environment or on the market, namely, how those activities fit strategically into the external environment or the market and, therefore, create economic and customer value (Porter 1985, p. 35; 1991, p. 103). As a result, an enterprise gains a competitive advantage through fitting, for instance, its products, technology or marketing approach to the external setting (Porter 1996, p. 70). Moreover, sustained performance is a result of relevant competitive advantages gained due to industry structure and appropriate positioning of an enterprise in an appropriate industry setting (Porter 1991, pp. 99-100), i.e. cluster as "a proximate group of inter-connected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of a cluster relates to the distance over which informational, transactional, incentive, and other efficiencies occur" (Porter 2000, p. 16). Porter argues that a cluster is not just a bundle of single industries, but rather a system of interdependent industries and business entities that cooperate and complement each other in a given economic landscape. They might include suppliers of specialised resources and services as well as providers of specialised infrastructure. The identified requirements to „create" a cluster are critical mass of companies in spatial proximity; companies, who's businesses are in the same business area; similar or supplementary business activities and common connections to branches (ibid., p. 16f). A functioning cluster positively contributes to improving productivity and efficiency of the inter-related businesses, it stimulates a cluster-internal competition and innovations and finally a cluster provides a favourable framework for the new start-ups and entrepreneurial activities within the cluster. These positive effects are also achieved through efficient knowledge sharing and knowledge transfer within the cluster, multiplied by a learning process that does not require cost intensive investments; and where the cluster's players may utilise the cluster business canals to other economic spaces.

The current technological and socio-economic developments have led to significant changes in many business sectors. Many enterprises and new start-up have benefited from these changing business environment (Engelen 2015, p. 2). On the other hand for many companies these changes have brought significant disadvantages by turning existing and running business to unattractive or even unprofitable at all. Which driving forces stay behind these developments? Kuratko *et al.* (2011) distinguishes between the changes in the competitors' behaviour, in technological developments, in consumer behaviour and in the institutional context. Engelen pointed out that during recent decade, many competitive environments have changed dramatically, e.g. due to technology and Internet-oriented industries the complete or partial substitution on the certain business areas took place. (Engelen 2015, p 15). In fact, if we take a look at the aviation industry only, especially at the business area of integrators and intermediates companies like travel agencies or transport broker companies, it may be stated that the relevant liberalization of the information flows and Internet services for booking have changed the game rules in this area of business significantly. It may be hardly overseen that in particular newly formed start-up companies by implementing innovation business models and taking advantages of these new opportunities have managed to displace already established business partially or even wipe them completely out of the market. Most of the studied clusters in academic literature are related to ICT, life science, automotive industry and other industrial clusters, but there exists nearly nothing about logistics clusters until Yossi Sheffi (2012) published his

book. In his understanding "logistics intensive clusters" are agglomerations of several types of firms and operations providing logistics services and logistics operations of industrial firms and operations of companies for whom logistics is a large part of their business. Such logistics clusters also include firms that provide services to logistics companies like maintenance operations, software providers, specialised law firms or international financial services providers (Sheffi 2013). Thus, an airport together with its surrounding business network can be considered as a logistics cluster in a comparable way, like it is well known for seaport clusters (DeLangen 2004). By doing so it means that an airport shall focus on strengthening efficient interconnections with all its relevant industries, operating institutions and organisations, therefore improving competitiveness and its own sustainability. For a regional airport e.g. prioritising the air cargo business cluster approach may mean building up logistical service centres that would create a network of regional logistic service providers, thus the single services might be enlarged, structured and improved. That may lead to improved tangible and intangible resources of the involved cluster participants and help to identify distinctive capabilities of an airport. If one may assume an airport not as a single branch or an entity, but rather as a cluster, it may mean that an airport shall focus on strengthening efficient interconnections with all its relevant industries, operating institutions and organisations, therefore improving competitiveness and its own sustainability. For a regional airport e.g. prioritising the air cargo business cluster approach may mean building up logistical service centres that would create a network of regional logistic service providers, thus the single services might be enlarged, structured and improved. That may lead to improved tangible and intangible resources of the involved cluster participants and help to identify distinctive capabilities of an airport.

Coming to the third tenet – innovation, it is needed in order to stay ahead and develop future trends. As today's markets and customer needs evolve, inflexibility in terms of operations, strategy, etc. can be crucial for airport's failure. The importance nowadays about business model prototyping including identification of strategic supply and demand drivers, macroeconomic environment, megatrends, the level of innovation, business sophistication, technological readiness, financial market development, labour market efficiency, hard/soft infrastructure, etc. has been outlined and mentioned in a range of scientific publications and research papers (Eckert 2014, pp. 7-9). Furthermore, the upcoming threat in form of so called "multipolar world", which describes the far-reaching changes in the relevant competitive fields as a result of the growing importance of emerging markets for economic development is about a global competition for labour, capital, commodities, new consumer markets and for innovations. (Scholtissek 2008, p, 27f). Thus, it may be stated that the most intensive competition has been already started for the global innovation leadership. Innovation introduces a new meaning and value for its consumers, i.e. a new or significantly improved good or service, process or new marketing method, new organisational methods in business practice, workplace organisation or external relations (OECD/ European Communities, 2005, p. 46). Innovation implies a process during which all the necessary activities such as problem resolving and/or idea generation; development; manufacturing and marketing of a new construct (would it be product, service, or process itself) are effectively and efficiently managed and commercially and practically exploited to the market (Trott 2012, p. 12-15). Innovation is to be viewed as a process of turning opportunity into new ideas, ensuring its practical application in the reality (Tidd and Bessant 2013, p. 18-22) and bringing value through its availability and access to it for its users via the market and/or other channels or distributed peer-to-peer and/or by the market (Gault 2012; Stock and Lambert 2001). Launch of innovations also require specific capabilities, knowledge, skills, facilities, resources, market knowledge, financial resources and certain level of infrastructure. It is, in other words, knowledge and entrepreneurial know-how that makes innovations successful on the market. Innovations are likely to come to the market as a result of technology push (e.g. Christensen 1997, p. 72f), can be pulled by the market after having analysed users needs and in order to satisfy users needs by firms to increase revenues and safe costs.

Furthermore, due to the disruptive innovations character in the aviation and airport business, some of new market opportunities are often seen by regional airports as not promising to invest in. However, if those opportunities start to grow, it is often too late; they might have been already occupied by other regional or national competitors (Downes and Nunes 2013). Therefore it may be recommended in this connection that regional airports must learn to identify these market opportunities and deploy them appropriately considering

innovation business models in time and according to entrepreneurial use. Similar to well proved step-by-step innovation process including search for new ideas / opportunities; selection of ideas; implementation of ideas and capturing ideas and commercially benefiting form their exploitation (Tidd and Bessant 2013, p. 47), Osterwalder and Pigneur (2010) identify five components that make up a business model, so-called "Business Canvas" (Table 1). Nevertheless, a comprehensive business model developed by them include nine elements: customer segments, value propositions, channels, customer relationships, revenue sources, key resources, key activities, key partnerships and cost structure. The business model of Osterwalder and Pigneur may be considered as an example of an operative business model approach, which serves to derive from the corporate strategy, the operative business model as an intermediate step to the organisational model.

Table 1. Innovation Business Canvas by Osterwalder and Pigneur (2010)

Nr	Components	Process
1	Mobilising	Create an understanding that a business model restructuring is necessary. At the same time, all elements of the business model (nine Business Canvas) are collated and discussed
2	Understanding	Find and analyse the various elements of the business model in the light of possible future changes (e.g. customer requirements, new technologies)
3	Designing	Transfer various findings in several business model prototypes including intensive testing and checking. This is followed by the selection of the future business model
4	Implementing	Implement the selected future business model
5	Performing	Perform the necessary measures to stabilise the new business model, i.e. all the steps known from the successful reorganisation and transformation programs may be necessary (e.g. management structures, management processes, management decision systems, etc.).

Source: Adopted from Osterwalder and Pigneur (2010)

3. Identification of the research gap and research questions

With the wide variety of definitions of terms related to innovation business models and a variety of approaches have appeared on how business models might be developed or redesigned within a company. It may be stated that those phase concepts are closely connected to the known phase concepts of strategic management, innovation management or even the transformation management. However, it might be stated that too less attention has been paid to the special needs and operational requirements of the regional airports. In the framework of the evaluation analysis and further development of the business models the general approaches are applied. In the framework of this study the following research questions are investigated:

1) What are the relevant criteria elements that might be appropriate for the evaluation of regional airports and for the further development of the sustainable business models?
2) Could any discrepancies (here: overestimation or underestimation of the performance criteria) in the evaluation process between internal and external stakeholders be noticed?
3) Does the intensity of an airport's cooperation with the regional/national public authorities or public private partnership have a positive and sustainable impact on the airport's performance?

With regard to all concepts integrated within this theoretical framework, it is argued here that regional airports as complex, open and multi-layer ecosystems can be analysed and assessed by applying different factors, which were found in the strategic management and business modelling literature discussed above, such as resources, value propositions, internal and external structures. It is evident that most of the theoretical approaches do share the same common process, e.g. steps of identification, understanding or resources, capabilities and other tangible and intangible assets within organisations and on the markets. For these reasons and as a response to the first research question, the following matrix (based on RBV by Prahalad and Hamel and Innovation Business Canvas of Osterwalder) for the assessment and supporting sustainable airport's development might be suggested (Table 2).

Table 2. Matrix for regional airports assessment and sustainable business model development

Criteria element of business modelling	Assessment criteria for business sophistication proposition
Diversification	Analysis of resources: tangible; intangible; organisation
	Analysis of resources: valuable, rare, imperfectly imitable and non-substitutable
	Analysis of capabilities: tangible; intangible; information-based organisational process and intermediate goods
Differentiation	Level of value proposition
	Level of customer experience creation (e.g. marketing, corporate identity and branding activities)
	Level of clustering activities:
	Level of competing sophistication (operational effectiveness and quality of micro-economic business environment (internal & external dimensions)
Business innovation level	Field of innovations: product, service, process, organisational (horizontal dimension) and their number incl. diffusion of those in the regional / national economy
	Innovation level in airports and their management (vertical dimension)
	Institutional and infrastructure framework in which airports operate
	Linkages of airports with other public vs. private R&D
	Linkage of airports with innovation policies
	Role of demand
	Governance level: multi-level; local; regional; national
	Level of technological specialisation (e.g. ICT)
	Level of coordination (e.g. networks), stakeholders, etc.

Source: Author (based on RBV by Prahalad and Hamel and Innovation Business Canvas of Osterwalder)

The author of this paper argue that the above-presented matrix for the regional airports' assessment based on the consolidated theoretical frameworks of RBV by Prahalad and Hamel; Innovation Business Canvas of Osterwalder and Pigneur and Competitive Advantage and Cluster Theory of Porter enable comprehensive evaluation of airports.

4. Methodology and research approach

An evidence-based approach has been applied here to assess airports' competitive environment as well as investigating of favourable preconditions for the successful SMEs operations in the airports. The case study approach has been applied here as a technique in exploring entrepreneur activities and performance in the airport's operational environment (Gunesekaran and Nagi, 2003; Bernal et al., 2002 etc.). According to Yin (2009), a case study research draws a special focus on contemporary phenomena by addressing questions "how?" and "why?". Although this qualitative method may leave a little room for researchers to control events (Yin, 2009, p. 2), it enables to catch the particularity and complexity of a single case evidences (Stake, 1995, p. xi). The degree of competition between airports or the competitive constraints have not been included in this study. Original primary and secondary data have been applied here. Expert interviews and empirical data were obtained in the frame of the project "Baltic.AirCargo.Net" (hereafter: BACN) financed by the EU Programme "INTERREG IVB, Baltic Sea Region", ERDF Funds. The empirical data was collected from diverse sources of evidence over the project life 2011-2014, i.e. primary empirical data sources in form of qualitative observations of researchers involved into the project activities, external experts' evaluations, project documentation and observations gathered from respective project activities such as workshops, conferences as well as from the field notes from project meetings.

Following target groups and relevant stakeholders participated in the surveys and expert interviews a) representatives from Transport Ministry and Airport Management; b) representatives from Transport and Logistics companies from participating regions; c) representatives from the academic side, c) expert from aviation sector, air cargo security and air cargo freight sector. In terms of the presented investigated case studies, 67 qualitative interviews were conducted and evaluated. The above-presented matrix for regional airports' business assessment and development (cf. Table 2) has been chosen as a basement to present compliant evaluation analysis of the selected airport.

Within the BACN project, nine regional airports from eight BSR countries have been analysed and evaluated. Grodno Airport (Belarus) has been selected here as a main demonstration case for this study. The selected findings from Kalmar Airport (Sweden) is used as supplementing case in order to outline the role of the efficient cooperation between an airport and relevant regional structures, including private public partnership, regional responsibility of an airport as well as the importance of the ICT competence and deployment. The motivation of showcasing the following two airports in this paper is the consideration of the two opposite cases: in the first case (Grodno Airport) the total dependency of the airport on public subsidies and state regulations, absence of any cooperation structures and any regional development considerations may be notified as critical feature. The supplementing case of Kalmar Airport provides a supplementing best case study on cooperation structures and the role of the airport in the regional development.

5. Case Study – Grodno Airport (Belarus)

Grodno Airport belongs to five regional airports in the Republic of Belarus that is situated near Grodno city in Western part of Belarus with approximately 325 thousand inhabitants. Grodno is located close to the borders of Poland and Lithuania: about 20 km and 30 km away respectively. Grodno is the capital of Grodno Region that may be considered as the airport's catchment area with a population of 1,1 Mio. Road is the most used transport mode for the passengers and the cargo transport in the region. One regular flight to Kaliningrad (Russia) 2 times per week is offered at the moment. The logistical and time distance from Grodno to: Minsk: 280 km, ca. 3,5 hours (via road); Vilnius: 167 km, ca. 2,5 hours (due to cross border procedure time costs of traveling to Vilnius may vary from 2,5 hours to 4 hours); Warsaw: 274 km, ca. 3,5 hours (due to cross border procedure time costs of traveling to Warsaw may vary from 3,5 hours to 5 hours). International Airports in Minsk, Vilnius and Warsaw are the main competitors for the Grodno Airport. Grodno Airport is a 100% state-owned airport operated by national Transport Ministry – BELAERONAVOGATSIA. The navigation services for the over-flights are the main revenue source of Grodno Airport at the moment.

Diversification analysis of Grodno Airport has shown a number of gaps in the evaluation between internal stakeholders and external experts. The interviewees have been asked to identify the distinctive resources, evaluate the named resources from 1 (bad) to 10 (excellent) and distribute the weighting scale (of total 100%) between the named resources. The internal stakeholders identified the following distinctive resources as the internal strengths and opportunities in the following priority order:

Table 3. Internal distinctive resources evaluation of Grodno Airport by internal stakeholders

No.	Internal Resources	Resources description	Mean Value	Mean weight scale
1	Intangible	Favourable geographical location	7,89	0,28
2	Tangible	Radar/Navigation and supporting hard ware infrastructure	7,78	0,28
3	Intangible	Competences of the personnel	7,56	0,24
4	Tangible	Runway	3,67	0,13
5	Intangible	Internal security regulation system	3,56	0,04
6	Intangible	Low costs for aviation fuel compared to EU countries	1,44	0,02

Source: based on own primary data, EU project BACN

Airports Management and the airport's stakeholders have identified also that information-based organisational process and the quality of the offered intermediate services can be considered as distinctive resources. External experts have identified the relative low costs of the aviation fuel as one of the main intangible distinctive resources of Grodno Airport for the potential refuelling of the air cargo over flights Eastbound (e.g. Europe-China) direction. In contradiction to the evaluation of the internal stakeholders, it shall be noted that the external experts pointed out that the runway is obviously too short for large cargo aircrafts. In the framework of the diversification analysis, the cross-referencing of the evaluations that were done by the airport's stakeholders and external experts has been carried out. The interviewees have been asked to evaluate the given criteria according to scale: poor (1), satisfactory (2), good (3) (Table 4).

Table 4. Differentiation evaluation of Grodno Airport by internal stakeholders and external experts

No.	Differentiation Assessment Criteria	Airport's stakeholders view	External experts' view
1	Level of value proposition	2	1
2	Level of customer experience creation (e.g. marketing, corporate identity and branding activities)	1	1
3	Level of clustering activities	2	1
4	Level of competing sophistication (operational effectiveness and quality of micro-economic business environment (internal & external dimensions)	2	1

Source: based on own primary data, EU project BACN

The cross-referencing of the results gained by internal and external experts in the framework of the differentiation assessment has demonstrated a tendency of overestimation of the assessment criteria by the internal stakeholders. The external experts identified specifically the following diversification criteria in Grodno Airport as poor:

a) Poor availability, quality and level of value added services, including deficit of specialized services and support;
b) Poor level of competing sophistication mainly due to national regulations imposed by National Air Line, i.e. Belavia;
c) Low level of logistics services;
d) Absence of cargo terminal;

The evaluation of the business innovation criteria done by internal stakeholders and external experts have shown the following results (Table 5):

Table 5. Business Innovation level evaluation of Grodno Airport by internal and external experts

No.	**Business Innovation Assessment Criteria**	**Airport's stakeholders view**	**External experts' view**
1	Level of ICT deployment and technological specialisation	2	1
2	Field of innovations: product, service, process, organisational (horizontal dimension) and their number incl. diffusion of those in the regional / national economy	2	1
3	Innovation level in airports and their management (vertical dimension)	3	1
4	Institutional and infrastructure framework in which airports operate	2	1
5	Linkages of airports with other public vs. private R&D	1	1
6	Linkage of airports with innovation policies	1	1
7	Role of demand	2	1
8	Governance /cooperation level: multi-level; local; regional; national	3	2
9	Level of coordination (e.g. networks), stakeholders, etc.	2	1

Source: based on own primary data, EU project BACN

External experts drew a special attention to the non-appropriate and poor deployment of the existing ICT infrastructure and ICT competence, incl. poor availability, quality and level of specific and targeted marketing activities, including poor web design presentation, low regional image in Grodno Airport. Furthermore, the Airport internal stakeholders identified linkages of the airport with other public / private R&D and linkage with innovation policies as poor, the other business innovation criteria have been evaluated as "satisfactory" or "good". The external experts evaluated the only criteria in Grodno Airport as "satisfactory", i.e. governance level. It was mainly explained by the fact that Grodno Airport has a sustainable financial support, investments and guidance in terms of innovative hardware and software infrastructure, the national Ministry of Transport of the Republic of Belarus provides a financial support to the airport. On the other hand, the experts pointed out that too close attention and monitoring from the Government side might be a hinder for the realization of innovative business models, since e.g. it is linked to a relative high bureaucracy level and every tactical and operation decision shall be communicated and approved with / by the responsible government body.

In response to the second research question, the collected empirical data in the given case study demonstrated that considerable deviations between internal and external stakeholders in the evaluations do really exist. Whereas, the general tendency may be noted that the airport's internal stakeholders (e.g. airport management team and representatives of the Transport Ministry, i.e. direct and indirect airport's stakeholders) tend to overestimate airport's own tangible and intangible criteria; parallel to this, an underestimation of risks or inadequate availability of the innovation or differentiation criteria has been noted. Although, the readiness to take appropriate risks is considered as indispensible prerequisite for the sustainable and well-established business attainment nowadays (Engelen 2015), the obvious risks underestimation may distort decision-making process for the business development plans of the given regional airport and imply severe and irreversible impact for the business sustainability with long-lasting negative consequences (cf. Machina and Viscusi 2014).

6. Supplementing Case – Kalmar Airport (Sweden)

The following supplementing case is based on the secondary data and on the expert interviews carried out with the representatives of the Kalmar Airport Management and the representatives from the relevant public authorities from the City of Kalmar and Kalmar Region.

Kalmar Öland Airport situated near Kalmar - a town with ca. 40 thousand inhabitants, located in South – East Sweden at the coastline of the Baltic Sea Region. The airport had been a military airport till 1983 when the city of Kalmar took over the airport's ownership. The airport's area and the corresponding infrastructure became the property of the city of Kalmar. The catchment area of Kalmar Öland Airport consists of about 300 thousand people. The geographical / transport and time distance by car from Kalmar to the nearest airport hubs are: Copenhagen: ca. 330 km, ca. 4 hours; Stockholm: ca. 415 km, ca. 4,5 hours. Due to relative long traveling distance (here: by car), in order support local business links to national and international partners, ca. 5 daily flights to the Swedish hub Stockholm – Arlanda are offered by SAS airlines. Beside that another 4 – 6 daily flights to the city airport Stockholm Bromma are offered as an important business destination by the local airline Kalmar Flyg. Five daily flights to in Berlin-Tegel have been offered by "Sparrow Aviation" (until 2014 "Sparrow Aviation" was named "Flyglinjen"). Thus, Kalmar Airport with a catchment area that almost 3 times less than Grodno region, offers 5 regular weekly flights to the national hub (Stockholm-Arlanda) and one regular 5 weekly flights to international airport hub (here: Berlin-Tegel).

The study done by WSP Group, Sweden form 2011 estimated the impact of Kalmar Öland Airport from the view of regional development. In his study the air links to Stockholm region were analysed. The study results revealed that:

- 3.500 people are moving daily between Kalmar and Stockholm each (all modes included);

- 700 – 1000 people are moving every day between Kalmar and Stockholm by plane, including transit passengers;
- Approximately 100 people travel Kalmar-Stockholm-Kalmar by plane every day;

The flights Kalmar-Stockholm are filled by ca. 60% with business and 40% with leisure travellers. The leisure travellers are very important to compensate the gap of business seats so that the passenger load factor may reach 70%. This remote situation in South Sweden is also one main reason because Kalmar Öland Airport is outperforming in passenger growth with a sustainable development tendency compared to other regional airports in Sweden. The next distinctive competitive advantage is related to the local business sector, which demonstrated better development after financial crisis than areas with prevailing of the big companies. The interviewees stated that with the local responsibility for the airport, the needs for local skills, knowledge and political culture increased that is connected to the fact that the airport decisions have to be taken locally. Kalmar needed almost 20-30 years for the building up efficient customer experience, creation of operational effectiveness and quality of micro-economic business environment and the local know-how. The transition period was supported by the financial and intellectual support to the airport by the national government. With the regional responsibility, the airport had entered into a competition with other transport modes (i.e. train, road and sea). Nevertheless, it had been noticed that Kalmar could be considered as a remote region and the other transport links had been underdeveloped. Thus, in order to sustain an efficient accessibility, the people of Kalmar, Kalmar industry and business need airport. Local businesses invested correspondingly and became shareholders in order to build the local airline Kalmar Flyg for possible new destinations. Beside that Kalmar Municipality created a foundation to support marketing and to establish new flight links from Kalmar. The capital for the foundation originated 50% from Kalmar municipality and the other 50% from local business sector. This is an important precondition, since the city of Kalmar is not allowed to sponsor flights on its own. These financial instrument make the pre-financing of new airline connections possible and realistic (e.g. as it was the case of initiation of the Kalmar-Berlin air connection in 2013), since new flights in general need a pre-financing of ca. 1,5 years before a destination becomes profitable.

The current business plan for the Kalmar Öland Airport focuses on 3 main targets:

- Increase of leisure flight passengers, especially for incoming flights;
- Increase of the attractiveness of the Kalmar region by offering charter flights and flights to Stockholm and Berlin;
- Improvement of the possibilities to do global business from and in Kalmar;

In response to the third research question, it may be stated that the above-presented supplementing case clearly demonstrates the positive impact of the intensive and efficient cooperation between airport and relevant public authorities. Having recognized the potential of the airport in the regional development activities, the public authorities of Kalmar Region have been not only providing financial support, but rigorously and consequently Kalmar Airport has been involved in the regional development actions both on strategic and operational level.

7. Business Models implications for Grodno Airport

The strategic development and planning of successful and efficient business models for Grodno is required today as never before. In the strategic and long-term perspective such topic as liberalization of the air market must be initiated, i.e. in the long-term perspective, liberalization of the aviation market must be initiated in the Republic of Belarus. However, the development and planning of sustainable business models for Grodno Airport nowadays are only possible, if the plans do not contradict to the development strategies and interests of the national Airline "Belavia". In the short-term and mid-term perspectives Grodno Airport may focus on:

a) Air Cargo Growth, including development and implementation of the Road Feeder Services (flying trucks) with the EU airports.
b) Fuelling and re-fuelling business opportunities.

Along with the availability of the internal resources one of the main reasons for recommending the Air Cargo Growth strategy are the legal frame-restrictions imposed by the National Airline, i.e. Belavia. In the short-term and mid-term run it might be realistic for Grodno Airport to start with the objectives that do not contradict with the current framework policy restrictions of Belavia that, among other things, makes it almost impossible in terms of inbound or outbound regulation of aviation traffic in Belarus for regional airports to cooperate with the non-national air lines, in spite of some potential requires from other airlines have been already received. The development and implementation of the Road Feeder Services (flying trucks) connected to ACC3 regulations, i.e. certificated air cargo destinations outside the EU via Grodno Airport with other EU airports might be the first realistic step to enter air cargo market. Here a close collaboration with relevant national authorities, regional logistics companies (business Lobby) and foreign airlines will be necessary. For the air cargo destinations outside the EU that do not have an ACC3 certification, Grodno Airport can be developed to a long haul air cargo base, due to its proximity to the EU transport corridors. The business model for Grodno Airport can be an air cargo link to non – ACC3 destinations, where incoming and outgoing cargo is forwarded by normal truck/rail e.g. via "Rail Baltica" and "East-West Transport Corridor" and Grodno over the Belarus border. This solution would offer an efficient air cargo link between the EU countries and long haul destinations without ACC3 certificate. However, it requires detailed action plan that shall make cross-border procedures between EU-States (here: Poland and Lithuania) and Belarus more time-efficient and reliable. Geographical location has been identified as one of the distinctive intangible resources of Grodno airport. The close location to Lithuanian and Polish border obviously provides huge opportunities for the regional transport industry. The high cross-border procedures (e.g. 3-4 hours, esp. for the road transport) provides a certain advantage for the development of the Road Feeder Services or "flying truck" connections between Grodno Airport and other European air hubs. A flying truck connection e.g. between Grodno Airport and Vilnius Airport assumes that the normal cargo is officially declared, transferred and handled to air cargo in Grodno Airport security zone. Further is handled to the registered flying truck operating company and is transferred by a schedule road-"flight" to Vilnius Airport. This concept assumes also that the registered "flying trucks" must have a special treatment (here: "no control regime") on the cross-border, since among other things, they the flying trucks operate de-jure as an air cargo plane with an Air Way Bill letter and all security procedures that are applied to the air cargo. That implies that no border control for the secured and transported goods on the registered "flying trucks" is needed. Furthermore, the flying trucks will benefit from a certain number of privileges comparing to normal trucks, e.g. they dare operate during the official holidays or weekends.

In the long-term perspective such topic as liberalisation of the air market must be initiated. If we the possibilities of attracting new aviation businesses to Grodno Airport are considered, then it is most likely that international direct air-connections (from/to Grodno Airport) must be initiated. This assumption requires, however the most important prerequisite, i.e. liberalization of the air market in the Republic of Belarus. The realization of the business model of Kalmar Airport (Sweden), i.e. regionalization with the future option for privatisation also indirectly requires the fulfilment of the same preconditions, i.e. liberalization of the air market framework regulations in Belarus. The requirement is mentioned here as "indirect", since even though the "technical" and / or "formal" fulfilment of the regionalization model might be possible and is not directly demanding the granting certain freedom of air to other national or international airlines in Grodno Airport, however the Kalmar Model makes only then sense, if the given freedom of air does already exist (e.g. 5th or 6th freedom of air as minimal prerequisites). Possible realization of the Costs Leadership might be implemented e.g. through formally existing branch of Belavia, i.e. Grodno Airline in form of establishing of the low cost carrier (LCC) strategy for Grodno Airline with the permission to serve domestic as well as international air routes.

Following the Kalmar Model the success example of "regional responsibility" and the identified third research question, during evaluation internal and external stakeholders indicated the governance/cooperation level (multi-level; local; regional; national) as "good" and "satisfactory". However, it may be stated that no adequate cooperation between Grodno Airport and relevant public authorities (on regional or national level) does really exist; we are dealing here rather with strictly regulated top-down management system, where Ministry of Transport as well as national Airline Belavia dictate and imposes regulations and development plans to the

airport. These circumstances can hardly be named as appropriate for the deployment of "regional responsibility" scenario and close cooperation between Grodno Airport and relevant public authorities in Grodno Region.

Grodno Airport might be privatised, whereas the City of Grodno may be the co-owner. The board of Grodno Airport might involve experts from City of Grodno, Grodno Region and Free Economic Zone (FEZ) "Grodnoinvest" due to regional development character and the direct link between FDI and air connectivity (Sellner and Naglb, 2010; Banno et al., 2011). Further board members might be selected from regional business association(s). For a certain transition period a board members from the national level may be involved. It might be recommended in cooperation with Regional Development Agency, (here: Grodnoinvest) to consider perspectives of creation and development of so-called "Free Customs Zone" or "Bonded Industrial Park" in the area of Grodno Airport. A more detailed and deeper analysis on this matter must be fulfilled. In case of privatisation, financial sustainability of Grodno Airport shall be secured already at the initial stage, e.g. new investments, demand for the financial resources for the establishment of the new air connections between Grodno and other destinations since break-even time for new air connections may vary up to 1.5 years. This measure could be realised together with liberation of the Belarus air market so that the regional airports will be able to decide about the serving airlines and destinations. Concerning the passenger flights it is recommendable to establish regular flights from Grodno to 2 important air hubs. One hub might be in CIS area, i.e. air links to Minsk or Moscow; and to an international hub in Europe (e.g. Berlin or Vienna). Both links are important to allow business trips to support the economic development and to offers the possibility of one-day business flights from Grodno to Europe and CIS countries.

Conclusions

European aviation business is in a reconstructing process due to strong competition and changing frame condition of the European Union. The majority of regional and small airports in the Baltic Sea Region are not reaching the break-even point and mostly rely to a large degree on different forms of public subsidies and aids. However, according to the new master plans of the EU, the subsidies to the airports, if not justifiable and sustainable, will be limited or cut in the short and mid-term perspective. Therefore, regional and small airports have to find sustainable business models to sustain cost efficiency and profitability of operations. The "regional responsibility" case practice of Kalmar Airport may serve as best example for positive and fruitful cooperation with public authorities (here: not only financial subsidies, but also support in form of the active involving of the airport in the strategic regional development plans and actions).

According to findings of the BACN project, a high number of regional airports focus mainly on passenger traffic, whereas the benefits of the airfreight market and air cargo related business opportunities are underestimated or even completely ignored. The considered cases pointed out how air cargo business can contribute to high revenue yield parts and open up international development possibilities towards airport clusters despite the fact that air cargo volumes may be small. The related business models can lead to sustainable development concepts for the regional airports and the surrounding business clusters. The research results have also shown the lack and deficit of cooperation between the regional airports. Although the airports have been developing and implementing their business development plans and models, however this process takes place mostly isolated, i.e. experience, knowledge or even plans sharing between the airports has been hardly noticed. Therefore, it may be recommended to the airports' management to pay attention to the horizontal cooperation, learning from each other experiences.

The availability of the needed tangible (e.g. required infrastructure, incl. runway, parking slots, security and screening equipment) and intangible resources (e.g. internal competences and skills) is considered as important preconditions for the airport's operations. However, those resources alone as well as their adequate assessment would never guarantee the sustainable and successful business growth. Nowadays, the airports shall identify and activate their distinctive tangible or intangible resources that shall further lead to provision of unique or

innovative services, positively contribute to clustering activity and improve operational effectiveness and quality business environment on internal and external dimensions.

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Annex 3. PUBLICATION III

Article III

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ROLE OF AIR CARGO AND ROAD FEEDER SERVICES FOR REGIONAL AIRPORTS – CASE STUDIES FROM THE BALTIC SEA REGION

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Although airports play an important role the global and European economies, according to the new guidelines of the EU Commission on the new state aid rules for a competitive aviation industry (EC, 2014), it will be more difficult for unprofitable airports, to get financial public subsidies in the future. The Commission noted that the majority of regional airports experience severe problems to cover their operative costs, resulting from among other things from overlapping of airports' catchment areas. The main objective of the above mentioned measures is not to close the regional airports, but to motivate them to operate on cost efficient, profitable and more flexible basis, stating however that and that the most inefficient airports will be still closed. In order face upcoming challenges, the regional airports shall reconsider their future development plans. Traditionally, the airports including small and regional airports focus on the passenger traffic and thus, the possible benefits and opportunities of the air cargo market are totally underestimated or even completely ignored. Most regional airports in the Baltic Sea region act totally isolated and do not have a clear picture of the current situation on the international air cargo market today, its future perspectives and sustainable development plans remain basically hidden. There are some examples when trying to meet the market demand, the regional airports have made huge, but unfortunately unjustified investments, e.g. improving airport infrastructure, runways, etc. However, the airports' infrastructural investments alone cannot fulfil the expected "remedy" role for the airports' sustainability. This paper aims at investigating the positioning and the role of the regional airports in the current hub-and-spoke network, focusing on the relevance and potential of the air cargo sector for the regional airports development. The optional freight value proposition for the development of the regional airports and their possible participation in the air cargo market as a supplement instrument to generate additional revenue also by means of so-called "air trucking" services will be presented and discussed.

Keywords: regional airports, air cargo, air trucking, road feeder services

1. Introduction

Aviation plays an essential role in the European socio-economic development. With a network of more than 440 airports, and more than 60 air navigation service providers, the European aviation industry carries about 40% of Europe's exports and imports value, and transports over 822 million passengers annually to and from Europe (Crabtree et al., 2015). European airports employ directly or indirectly over a million people. As it stated in the EU Competition Policy Brief, European airports improve access to remote regions facilitating market access for regional businesses. For some remote regions the air accessibility is only possible is of a special importance (Horst, 2006). On the other hand the European Court of Auditors registered that ca. 48 % of European airports as loss making in 2014. In spite of the current losses the regional or national public authorities keep on supporting the airports in order to provide accessibility and public socio-economic obligations (EU Commission, 2014). As it further mentioned in the Competition Policy Brief 2014 on the new state aid rules for a competitive aviation industry, the subsidies from the EU, national or regional public funds will be considerably cut unprofitable airports. Therefore, it might be stated that EU Commission has sent a clear message that expanding financial aid to airports could not be a sustainable solution in the future. Increased competitive environment between the airports in Europe (Fewings, 1999), liberalisation and deregulation process in aviation industry, the end of protectionism era is putting much pressure on airports to increase their performance levels (Reis & Macário, 2009). The reduction of the public support for European regional airports has also contributed to the increase of uncertainty for the airports and airports operators and shall motivate them for more flexible strategic planning, considering possible alternative development models (Crabtree et al., 2015). Traditional approach in strategic, operational and tactical planning nowadays cannot enhance airports' competitiveness in the

constantly changing market conditions (Neufville, 2008). Considering current financial difficulties of the European airports (especially of regional airports) and the relatively high costs in case of airport's infrastructure upgrade, the airports shall increase their ability to have the airports' hard infrastructure as convertible and mutable as possible in order to be able adapt to the current infrastructure without permanent change to current and future needs with minimal financial investments (Schuchi et al., 2012; Margalhaes et al., 2013). Margalhaes stated that flexible airports compared to „non-flexible" possess certain advantages to keep their performance results over the operational time period in more sustainable way. This approach shall be of a special importance to the airports and airports' operators, since even the minimal changes in the airport's infrastructure might require considerable financial, personal and time resources. Thus, the variety of options and alternatives of business and service models in the nearest operational environment shall offer airports considerable competitive advantage in comparison to airlines (Beifert, 2015). The study of the air cargo market of Boeing: "World Air Cargo Forecast 2014-2015" reveals that in average air cargo business represents 15% of companies' total turnover, whereas the passenger business may be characterized by relatively low margins (up to 7%). Boeing stated that international airfreight would drive global air cargo growth up to 2033 with an average annual overall air cargo traffic growth up to 4,7% over the next 20 years (Boeing, 2015). Thus, air cargo business can be an important source of revenues and be a driving force for a company's profitability. Following Kasarda and Green (2005) analysis, it might be further stated that airfreight regardless of location improves regional and national accessibility through efficient connectivity to distant markets and global supply chains in a speedy and reliable manner. Therefore, the regions with efficient air cargo connectivity will have competitive trade and production advantage (Kasarda & Green, 2005). On the other hand, it is to be noted that some authors noted that the real market power of an airport depends heavily on the market segment and the availability of the airports in the proximity. As airports' competition for air cargo is very challenging in Europe, where the airports might be only several hours away from each other by road, air cargo transport may be regarded as a "foot-loose" and a tough business (Starkie, 2002).

In the framework of the EU funded project "Baltic.AirCargo.Net" (BACN) a number of regional airports in the Baltic Sea Region have been analysed aiming at evaluating potential of the air cargo for airport development. The findings of the BACN project showed that the volume currently transported by air in the regional airports is very insignificant and almost entirely based on the occasional charter flights. However, the growth of the air cargo business for some regional acting as feeder-spokes in an airport network system is likely to be based not on pure or dedicated air freighters, but to a larger extend on truck- or road based air services - also called as "Road Feeder Services".

This paper is organised as follows: the theoretical framework showcases theoretical approaches to regional airports, airports' hub-and-spoke network, corresponding network positioning of regional airports and air cargo role for the regional airports' development. The following section presents the methodology and results of the cases investigated, formulating implications of Road Feeder Services concept as an optional freight value proposition for the development of the regional airports and their possible participation in the air cargo market as a supplement instrument to generate additional revenue, thus making the airports more profitable and attractive.

2. Theoretical background

There are ca. 500 commercial airports in Europe that could be grouped into two categories: 1) Hub airports, providing a full range of services, e.g. business or leisure passenger traffic, domestic, or intercontinental flights as well as airfreight services. The hub-airports consolidate the air traffic from smaller and regional airports or provide the final-leg air connection to them; 2) Regional airports that feed hub-airports with passenger and air cargo and in some cases provide direct flights to other regional airports, herewith fulfilling the connection function to the centres of socio-economic activity. (Horst, 2006). Hub-and-spoke network pattern has been introduced and developed in the aviation world in the United States since the early 1980s, triggered by the enforcement of the Airline Deregulation Act in the USA in 1978 (White, 1979; Dennis, 1994; US Congress, 1978), which promoted considerable deployment of the hub-and-spoke network structures for the airports and airlines operations worldwide, and contributed also to the overall costs' reduction both for passenger and air cargo traffic (White, 1979; Wei, 2006). Since 1979 new airlines were allowed to enter the aviation industry and choose the routes they would like serve and the fares they would charge on their own (White, 1979). This liberalisation simplified also the bankruptcy

procedure for the airlines, which considerably increased the competitive environment and rush development of the aviation industry worldwide (Bauer, 1987). In the hub-and-spoke network model the flight routes consist of the central point (named as “hub”), which serves several ends (“spoke”). Hub functions as a consolidation point of passengers and airfreight that move from the various spokes and provide connecting flight to other destination points that might be other national or international hubs or spokes (Dennis, 1994). The network airlines may operate inter-hub flights several times a day with a high range and capacity aircrafts, which accept input of passenger and cargo from locations close to the hub. The airlines are also arranged for a hub-and-spoke, using smaller aircraft, to provide a higher frequency flights, feeding the hub with a number of spokes’ connections (Sugiyatoa et al., 2015). Hub selection is based on the location and relatively high market demand for a pair of "origin-destination" in favour of flight-operations (Rietveld et al., 2001). Rietveld et al. state also that some airport-hubs build partnerships with regional airline operator(s) or establish a subsidiary-network to remote area. The advantages of hub-and-spoke networks have been analysed by various authors that discussed the effects of hub on airline / airports’ costs and profitability. An airport-hub might allow the airlines to serve routes more frequently with larger aircraft at higher load factors, thus reducing costs (Bailey, 1985). Morrison and Winston (1986) investigated the effects of hub, stating that passengers basically benefit from the hub-and-spoke pattern through availability of more frequent flights with lower fares, shorter travel times and improved accessibility to remote regions.

In spite of the fact that the airline deregulation progressed relatively slowly in Europe, it acted however also as the main driving force for the airports’ and airlines competition, decreasing fares and thus stimulating demand for the aviation services considerably (Reis & Macário, 2009; Barett, 2000). Generally, it may be stated that the growth of hub-and-spoke network model enabled large and medium size airports to become the dominant airport hubs in their respective regions, herewith increasing competitiveness pressure on regional airports (Bootsma, 1997; Reynolds-Feighan, et al., 2006; Matsumoto et al., 2008; Wu, 2011). On the other hand, the constantly growing volume of flights through the hubs may result in congestion at hub airports and create new opportunities for the airports and airlines to provide point-to-point transport services. This model enabled offering services of short-haul flights, with no extra service and low-fare connecting flights to areas that are poorly served or regional airports closed urban areas. This business model also known as a “low cost carrier” model (LCC) provided promising opportunities to regional airports (Sugiyanto et al., 2015). Thus, the sustainable development of the LCC has stimulated the re-evaluation and development of the regional airports.

Although the regional and small airports mainly act as “spokes” and feeders for the main airport-hubs, the European Commission has clearly acknowledged their important role in the regional accessibility as well as the potential their to reduce congestion peaks in the central hub-airports, by developing efficient air transport network and improving regional accessibility through better air-rail and air-road access (Urbatzka and Wilken, 2004). The regional airports in Europe may benefit also from Articles 87-89 of the EC Treaties on the financial aid to regional airports and airlines departing from regional airports (EC, 2005). “The regional components of the airport network facilitate access to the core of the network or help to open up peripheral and isolated regions“ (EU, 2005).

2.1. Air cargo relevance and challenges for the airport development

O’Conner and William, (2001) state that passenger market in aviation business compared to air cargo market is balanced predictable. Although, airfreight logistics may be named as volatile, cannot function or operate isolated, represents only a single part in value and supply chain and depend on many factors, including country’s or regional logistics and informational infrastructure, commercial and policy regulation framework, competitiveness structure, air cargo enables considerably improved the connectivity to distant markets and global supply chains in a fast and reliable manner (Doganis, 2001; Kasarda & Green, 2005). Growing requirements in terms of time constrains and quality to logistics services triggered development of concepts aiming at efficient organization, improving technical integration and networking of the global economy (Hesse & Rodrigue, 2004). New drivers and trends in the globalized economy stimulated the air cargo sector to become highly dynamic and flexible, new goods became eligible for air transport, new stakeholders have been entering the market, new concepts and interactions have been developed (Reis & Macario, 2009). In this context the role of the air cargo transport can be hardly overestimated. In spite of the fact that air transport demands for additional services and logistics requirements, such security, information, financial intensive infrastructure, in the context of just-in-time or just-in-sequence concepts, the air cargo services fulfil already the requirements such as close documentation and secure handling processes. The potential of air cargo exists especially with time-definite or time sensitive products to provide efficient solutions in terms of a time-cost ratio (Ihde, 2001). Furthermore, the

airports' involvement in the supply chain through air cargo business may strengthen an airport's position in the catchment area (Hübl, 2001). Hübl provided also a number of empirical evidences demonstrating that industrial sites close to airports are generally interesting for production companies and their supply chain activities. Thus, air cargo may positively contribute to the airports' revenue situation (Airline Business, 2005; Boeing, 2015). Several studies evaluating even commercial advantages of airfreight at combined passenger and cargo airports demonstrated that cargo might count as cross-subsidisation for low yields even in the passenger segment (Terhorst, 1992). In the current operational environment, air cargo can be an important source of revenues and be a supplementary factor for profitability (Kasarda & Green, 2005; Horst, 2006).

Zondag (2006) noted that the relevance of air cargo to airports or airlines heavily depends on air cargo consideration as it might be: core cargo, ancillary or dispensable that might be demonstrated at two levels: 1) route or geographical level, where airports' / airlines profitability in long haul transport services is a main function of the air cargo business since passenger traffic may seldom provide enough revenues to generate a solid profit. Therefore, air cargo plays a key role for keeping routes and market coverage sustainable; 2) company level - for certain airlines, air cargo business seams rather marginal or supplementing activity contributing with as low as up to 4% of total revenues on other companies airfreight operations may contribute with as much as 50% of total revenues. The analysis of other researchers showcased that air cargo part in average may represents 15-30% of airlines' total turnover, whereas the passengers part may be characterised by relatively low margins (up to 7%) (Reis & Macário, 2009; Boeing, 2015). The air cargo in the biggest European hub-airports is mostly carried through the intercontinental networks as so called "belly-cargo" in the passenger freighters (cf. Airports Council International 2014). Furthermore, in order to keep the air cargo operations more profitable the airports are utilizing the transfer freight capacities to obtain a sufficient load factor that refers especially to bigger airport-hubs with regular and sustainable transfers made between two long-haul flights that normally have a higher part of transfer air cargo traffic (Boonekamp, 2015). The forwarders establish their own hubs at major airports, where a long-term strategic business is ensured. This leads to an integration of the forwarders' networks for transports to and from the hub airport, which reduces the importance of the hauliers in road feeder networks and of small air cargo stations at feeder airports, because of an exclusion of these destinations from the forwarders' networks (Freye and Steiger, 2004). Boonekamp (2005) noted that on other hand, the participation in the air cargo market of regional airports might be a challenge; since it is rather unrealistic that airlines would offer scheduled air inter-continental (passenger) transport services via regional airports. However, Boonekamp admits that certain regional airports that focused on airfreight, may handle large amounts of cargo through so-called dedicated or full freighters and it might be the niche market for regional airports in this sector. Other researcher also support this idea stating that inter-continental airlines with just one spoke airport might also operate at remote airports under the precondition that this service must be dedicated freighter or pure-freighter traffic without passengers (Schöfer & Seeck, 2005; Horst, 2006).

2.2. Air trucking relevance for regional airports in the air cargo market

As matter of fact, not every flight is a travel option for the air cargo nowadays. LCC do not carry airfreight at all (Boonekamp, 2015). The replacement the air transport mode by road is a growing trend worldwide (Reise, 2009; Boeing, 2015; Beifert, 2015). This model is called as "air trucking" or "road feeder service" (RFS). Efficient road-network infrastructure in Europe has made the development of alternative services to air transport possible via so called air trucking or road feeder services RFS). Due to the fact that majority of the pick up and delivery locations in Europe are rather at short or middle range distances, deployment of RFS often is the fastest, reliable and most cost efficient mode of transportation of the air cargo (Beifert, 2015). Therefore the feeder service fulfilled by a truck provides many advantages, such as higher accessibility e.g. by pick up or delivery services, availability / simplicity in regard to executive units (trucks vs. aircrafts), certain flexibility in regard to an official time-schedule applied for the real air crafts e.g. in form of the given time slots and route. Traditional RFS concept can be defined as a normal truck operating between two airports on so called Air Waybill (AWB) or an air consignment note, which refers to a receipt that is issued by an international airline. It is to note that one truck might have several route numbers or flight numbers if it is carrying goods from more than one airline. Air trucking from the point of view of documentation and security requirements are treated and handled exactly in the same way like real aircrafts, i.e. the "flying trucks" possess herewith exactly the same insurance as if the goods were transported by aircraft and on route number, they are fulfilling all custom and security regulations set by the relevant authorities as if the goods were really flying by air (Grandjot et al. 2007; Heinitz et al. 2013).

RFS are also used for the air cargo consolidation in the hub/home airport of a given airline. The RFS same as a real aircraft have a fixed time schedule, i.e. in comparison to traditional trucking services, the "flying trucks" dare not wait e.g. till the load capacity of a given truck is used to full extend, but it must leave the point of departure (e.g. Airport A) to a designated destination (e.g. Airport B) at exact time regardless of its current load capacity (Beifert, 2015). The road feeder services mostly belong to the main executive leg in the transport chain and therefore provided and operated by the traditional airlines. Therefore the airlines possess an efficient alternative to deploy RFS for the shipments e.g. from a small or regional airport to a bigger (e.g. international) airport hub. For some airlines RFS present an opportunity to charge of the entire supply chain, i.e. a vertical enlargement of the airlines spectrum (Schüller, 2003). On the other hand, most integrators possess their own supply chain for the front-end logistics, i.e. offering reliable service for time-sensitive goods (Turney, 2003). For many European airports the air trucking services count for the biggest part of their total airfreight movements (Vahrenkamp, 2003), e.g. the airfreight share transported by air trucking services at one of the biggest international air-hubs in Europe - Copenhagen Airport in 2014 accounted 40,79% of the total air cargo volumes excluding integrators; belly cargo: 37,82%, all cargo flights: 13,87%, and mail cargo: 7,59% (CPH, 2015).

The considerable increase of RFS role over the past decade has contributed to a strong decline of traditional scheduled airfreight, i.e. carried by air. The number of airport-to-airport pairs more than doubled since 2004 (Boeing, 2015). The main reasons for this trend are costs' and available space optimisation on board aircrafts, particularly those of medium to short haul flights (Heinitz et al., 2013). Heinitz, et al., argued also that RFS have been obtaining more importance as a feeder network for the central airport-hubs, where the long haul network is fed through a short-haul network, here: RFS are mainly applied to acquire freight from "spokes" to fill up long-haul flights. Furthermore, a competitive advantage of air trucking is that implementation and deployment of the air trucking "fleet" does not require intensive financial resources compared to the real or flying cargo. Thus, the increasing demand for transport of the time-critical goods and high-quality of RFS (Derigs et al. 2011) – may give a chance to regional airports to benefit from the air cargo market.

3. Research gap and research questions

It may be stated that a wide variety of qualitative research studies and definitions are available nowadays that relate to such subjects as: airport and airline business (e.g. Doganis, 2001; etc.), connectivity in air transport networks (e.g. Veldhuis, 1997; Burhouwt, 2006, Matsumoto et al., 2008; etc.), air cargo and its role in the aviation business (e.g. Sugiyantoa et al., 2015; etc.), supply and demand of the air cargo services (e.g. Taylor & Hallsworth 2000). However, it might be stated that too less attention has been paid to:

- the special needs and operational requirements of the regional airports;
- the possible role of the air cargo and especially air trucking or road feeder services as a possible business model to enter air cargo market.

Due to the assumptions that regional airports, as it has been stated before, may be positioned as "spokes" or feeders in the air transport network and that the concept of air trucking or road feeder services basically fulfil the "feeding" function it might be assumed that the regional airports may also benefit from air cargo growth and as the first step for the regional airports to enter the air cargo business might be the road feeder services. In the framework of this study the following research questions are investigated:

Research question 1: could air cargo sector be an appropriate supplement or main model of the sustainable business development for regional airports?

Research question 2: if the air cargo segment is an appropriate business model for a regional airport, could the air trucking services might the first step for regional airports to enter the air cargo market, feeding the central air-hub(s) with the air cargo?

4. Methodology

Based on the analytical approach for hub-and-spoke airport networks of Sugiyanto, et al. (2015), strategies' evaluation approach of relevance of air cargo business of Reis (2009) and on the qualitative analysis of competitive rivalry in the air cargo industry suggested by Zondag and Willem-Jan (2006), the author of this article is proposing the following evaluation or assessment matrix on the matter of appropriateness and potential of the involvement of regional airports in the air cargo market and the potential of the air trucking serving as a first step.

Table 1. Matrix assessment of regional airports' potential for air cargo business and RFS

Main criteria element	Assessment indicator	Weighting scale
Air cargo demand side	Regional potential of export/ importing industries or businesses, i.e. Regional business concentration indicator (a)	15%
	Regional potential of export/ importing industries or businesses, i.e. Regional density of high-growth enterprises indicator (a)	15%
	Evaluation of potential customers' awareness for the air cargo services in the region (b)	5%
	Estimation of regional air cargo volume potential (b) (based on airports' classification (EC, 2005)	25%
Air cargo supply side (b)	Airside/landside access in airports;	5%
	Apron facilities;	2%
	Airport's warehouses, special cargo handling facilities;	5%
	Facilities to service providers;	2%
	Internal security infrastructure;	2%
	Airport's operation time (24/7; restricted)	5%
	Level of airports' air cargo marketing, branding activities;	2%
	Competition environment of other modes (road, rail)	5%
	Expansion potential (warehouses, runway, terminals, etc.);	2%
	Availability of forwarders that may provide RFS	5%
	Regional road infrastructure (e.g. for RFS);	5%

(a) data source: secondary data (Eurostat, 2015), (b) data source: primary data (BACN, 2015)

The applied weighting scale of the assessment indicators (incl. the weight distribution between air cargo demand and supply sides) has been based on the overall compilation of the experts' evaluations and the results of the experts' interviews fulfilled in the framework of the BACN project. The BACN experts insisted that for the decision making, if air cargo might be an appropriate sector to participate in, the demand side for air cargo services, especially for regional airports prevails. In the above presented assessment matrix, the author deploys the following weighting scale of the selected criteria:

- air cargo demand side has been given 60% of the total weighting / importance share for the positive decision-making in favour of air entering / participating in the air cargo business;
- air cargo supply side has been given 40% of the total weighting / importance share for the positive decision-making in favour of air entering / participating in the air cargo business.

The following assessment presented in this paper has been based on primary and secondary data analysis. The assessment of such criteria as "regional potential of export/ importing industries or businesses, i.e. regional business concentration indicator" and "regional potential of export/ importing industries or businesses, i.e. regional density of high-growth enterprises indicator" has been carried out based on secondary data analysis (Eurostat, 2015), whereas the rest of the indicators have been evaluated based on primary data analysis from BACN project. With regard to the specific air cargo market in the Baltic Sea Region (hereafter: BSR) the current results presented in this paper are based on empirical data, including qualitative expert interviews and surveys produced in the framework of the EU funded research project Baltic.AirCargo.Net (BACN, 2014), financed by the EU Programme "INTERREG IVB, Baltic Sea Region", ERDF Funds. The empirical data was collected from diverse sources of evidence during the project life 2011-2014, i.e. primary empirical data sources in form of qualitative observations of researchers involved into the project activities, external experts' evaluations, project documentation and observations gathered from respective project activities such as workshops, conferences as well as from the field notes from project meetings. Following target groups and relevant stakeholders participated in the surveys and expert interviews a) representatives from Transport Ministries and Airport Management; b) representatives from Transport and Logistics companies from participating regions; c) representatives from the academic side, c) expert from aviation sector, air cargo security and air cargo freight sector. In terms of the presented investigated case studies, 67 qualitative interviews were conducted and evaluated.

Furthermore in order to assess airports' appropriateness for the air cargo business model as well as potential of air trucking services for the air cargo business, an evidence-based approach has been applied in this paper. The case studies of two regional airports from the BSR would be presented. As Yin (2009) pointed out a case study approach draws a special attention on contemporary study issues by addressing strategic question "know-why?". In spite of the fact that the applied qualitative methods here may make it difficult to validate the presented events (Yin, 2009), it may enable to highlight the particularity and complexity of the single case evidences (Stake, 1995).

5. Main findings and discussion

It is to be noted that within the BACN project, in total nine regional airports from eight countries from the Baltic Sea Region have been analysed and evaluated, however only two regional airports have been chosen by the BACN project as so-called pilot cases. The author is presenting these two case studies that have been evaluated on the air cargo business appropriateness with a special focus on promoting of the air trucking concept:

- case study of Tampere Airport (Finland),
- case study of Parchim Airport (Germany).

5.1. Tampere Airport

Tampere is the third largest city in Finland, with a population over 340.000 including the metropolitan areas. Tampere is also the largest inland city of all the Nordic countries and a traditional centre of Finnish industry. Today, the city is best known for its high tech and extensive know-how in various fields and has a well educated labour force. Approximately 17.500 enterprises operate within the Tampere central region, of which 80% employ less than ten persons. The unemployment rate in the Tampere central region is slightly higher than the national average, at approximately 12%. The gross national product per inhabitant is approximately EUR 24.000. Tampere airport is located 174 kilometres from Helsinki Airport, which can be reached in approx. 2 hours by a road. The airport's runway is 2,700 meters long. In 2011, 657,630 passengers passed through the airport, and there were a total of 18,671 landings. The following major production companies are located in the Tampere area: Sandvik (drilling machines), Metso Mining and Construction, AGCO Power (diesel engines), Bronto Skylift (skylifts), Cargotec (straddle carriers etc. container handling equipment). The airport is served by scheduled short haul passenger flights from airBaltic, Blue1 & SAS, Flybe & Finnair and Ryanair. The Airport handled in 2011 a total of 542 tons of cargo, a decrease of nearly 20% compared to 2010. There are 2 handling companies at Tampere Airport, Airpro OY and Swissport Finland. There are 2 passenger terminals at the Tampere airport, of which only terminal 1 is open on regular basis, and terminal 2 only when Ryan Air have arrivals and departures. BACN experts mentioned that of the biggest weak points for Tampere Airports is the short distance from the main Finnish Airport of Helsinki, which easily can be reached by road in 2 hours. For passengers the airport can only attract short haul feeder flights to larger regional airports, from where there is a large number of connecting international flights to all parts of the world. Therefore, cargo can easily and inexpensively be transported to either the main hub in Helsinki, or even to other international airports in the Nordic region (Copenhagen and Stockholm) as well as in continental Europe such as Amsterdam, Frankfurt, Brussels (BACN, 2014). DHL has previously operated on Tampere Airport, but has moved back to the central hub in Helsinki from where it is easier and more profitable to distribute to whole Finland as well as to neighbouring regions of Russia, i.e. St. Petersburg or Leningrad oblast.

BACN experts also pointed out that low air trucking volumes from other major hubs, like Copenhagen, also arrive to Helsinki and from there goods are distributed by local truck to the rest of the country. It is doubtful, if it is possible to move these flying trucks from Helsinki to Tampere. Most of the local trucking companies are situated in Helsinki, and if they should go to Tampere to pick up the goods this would mean low load capacity and therefore increasing transport costs. The Finnish Red Cross operates their relief flights from Tampere Airport. The Relief cargo is processed though the previous "Fire and Rescue" located at landside near city of Tampere. The Finnish Military also operates air cargo flights from Tampere Airport, however their cargo volumes, destinations, sequences, etc., are the classified information and may not be the object if this study. In order to handle the air cargo for the above flights more efficiently and to improve the attractiveness for both integrators and other cargo operators back to Tampere airport, BACN experts recommended to consider upgrading air cargo facility(ies) at the north east side of the airport. The terminal might be placed on the airside/landside border.

5.2. Parchim Airport

Parchim International Airport is situated near Parchim that is a regional town in the State of Mecklenburg-Vorpommern, Germany. The airport has been used for more than 70 years exclusively for the military purposes. In 1992 the airport was taken over by the Parchim County. In 2007 the airport was sold to a private investor, the Chinese company LinkGlobal - International Logistics Group Ltd. that is now the current owner of Parchim airport. The airport has a direct connection to the highway A 24, linking Hamburg and Berlin, as beyond to the German and European long-distance transport network. Rail connections are limited to regional traffic since a direct access to long distance rail lines traffic does not exist. No regular flights are offered at the moment. The geographical / transport and time distance by car from Parchim to the nearest airport hubs are:

- Berlin: 172 km, ca. 2 hours,
- Hamburg: 131 km, ca. 1,5 hour.

The new owners have planned the internationalization business model for the Parchim airport. The objective was to extend the site to an air cargo hub for transportation between Europe, Africa and Asia. Three flights a week were planned with an option for extension up to 30 flights a day. Furthermore, a sufficient logistics infrastructure was intended. These investments should be made in cooperation with Goodman Group. In 2007 two airfreight connections have been established, one to Zhengzhou (CGO) in the province of Henan and another to Urumqi (URC), the capital of the Xinjiang Uyghur Autonomous Region of the People's Republic of China. The aimed frequency of service on these flight connections could not be achieved at all so far. In 2010 only 8000 tons of air cargo were handled, a volume that has to be considered as completely insufficient to guarantee a cost-effective operation. For this reason more and more capacity utilization problems arise due to the fact that only a low activity rate can be achieved for the personnel and also the technical equipment (aircraft tugs, fire-fighting vehicles, etc.) needed for airport operations as well as for the offered logistic services. The current as well as the to-be expected volumes in air cargo transport are insufficient to generate the necessary revenues for maintaining operations at the airport. Relevant revenues coming from other business areas cannot compensate these deficits. Parchim airport's infrastructure belongs to one of the main tangible resources of Parchim airport: the new tower was built in May 2015, the length of the runway is 3000 meter, the airport has appropriate passengers and cargo terminals, including required security screening technologies. The following attributes have been mentioned by the BACN experts as the airport's distinctive intangible resources, i.e.: low costs operation airport, 24/7 operation, i.e. aircrafts are allowed to land and departure 24 hours daily and 7 days a week; no restriction to night flight operations; all types of aircrafts (incl. AN124 and A380) can be accommodated and handled at the airport, over-size cargo operations are possible; efficient customs services, that makes Parchim Aiport's cargo terminal to dry a port. So called "24/7" operation was mentioned as valuable or non-substitutable intangible resource of Parchim Airport. Comparing to other German airports, nowadays a number of official and civil discussion have been started to introduce a night ban for the state owned airports. Since Parchim Aiport is in the private hands, the owners and the airport management claim that in the mid-tem and in the long-term perspective, the 24/7 operation will be still valid for Parchim Airport and might not be questioned. Although considering expanding of the passenger traffic, Parchim Airport is clearly positioning itself as an international gateway to China with a strong focus on the air cargo. According to the current development plan, the airport will be upgraded to ICAO 4F class airport. The experts evaluated the level of value proposition as "good" considering the air-cargo development model and cost-performance ratio. BACN experts noted that although Parchim airport established some strategic functions like marketing and handling staff, the weekly operation, with a B747 cargo aircraft have ceased again after a short period. The cost to operate a B747 cargo to a small regional airport turned out to be too high as all regional aircrafts and trucks to distribute from there had be brought in and the market was too small.

5.3. Implications for regional airports - air cargo business and air trucking potential

In accordance to the evaluation matrix presented above (Table 1), the following assessment of two regional airports in the Baltic Sea Region took place, i.e. Tampere Airport and Parchim airport.

Table 2. Matrix Assessment of potential for the air cargo business and RFS

Assessment indicator	Weight applied	Scale applied	Tampere Airport		Parchim Airport	
			Criteria score	**Total score**	Criteria score	**Total score**
Regional business concentration indicator	15%	4 max; 1 min	2	0,30	3	0,45
Regional density of high-growth enterprises indicator	15%	4 max; 1 min	3	0,45	2	0,30
Customers' awareness for regional air cargo services region	5%	3 max; 1 min	2	0,10	1	0,05
Estimation of regional air cargo volume potential	25%	4 max;1 min	3	0,75	2	0,50
Airside/landside access in airports	5%	4 max; 1 min	3	0,15	2	0,10
Apron facilities	2%	4 max; 1 min	4	0,08	2	0,04
Airport's warehouses, special cargo handling facilities	5%	4 max; 1 min	4	0,20	3	0,15
Facilities to service providers	2%	4 max; 1 min	3	0,06	1	0,02
Internal security infrastructure	2%	4 max; 1 min	4	0,08	3	0,06
Airport's operation time (24/7; restricted)	5%	1 max; 0 min	1	0,05	1	0,05
Airports' air cargo marketing, branding activities;	2%	4 max; 1 min	3	0,06	1	0,02
Competition environment of other modes (road, rail)	5%	1 max; 4 min	3	0,15	1	0,05
Expansion potential (warehouses, runway, terminals)	2%	4 max; 1 min	2	0,04	3	0,06
Availability of forwarders that provide RFS	5%	4 max; 1 min	2	0,10	1	0,05
Regional road infrastructure (for RFS);	5%	4 max; 1 min	2	0,10	4	0,20
Total scoring	100%			**2,67**		**2,10**

Taking the weighting scoring and the scale applied to the selected indicators in the above presented assessment, the maximum possible scoring will be 3,8 and the minimum possible will be 0,95; the following strategic gradation or level of the possible air cargo involvement for regional airports (based on Reis and Macario (2009) and Zondag et al. (2006) combination models of passenger and air cargo businesses) might be presented as follows in Table 3.

Table 3. Air cargo involvement strategies

Level of the air cargo business involvement	Strategy description of the level of the air cargo involvement	Scoring
No Air Cargo Activity	The lowest possible level of involvement in air cargo sector for regional airports is simply not providing airfreight services. In this case scenario air cargo business' requirements and conditions are not economic competitive or beneficial at all. Air cargo demand might be very low or marginal e.g. to justify high investment costs in expansion of air cargo handling facilities	0,95 – 1,5
Outsource Air Cargo Strategy including RFS	Providing air cargo services with limited or minimum possible commitment. In this scenario, it might be recommended to develop strategic agreements with third parties, including freight forwarders, agents, specialised air cargo brokers and also companies providing Road Feeder Services. On this level the airport's management might focus more on passenger traffic, costs' optimisation, or trying to improve quality of provided services by delegating the air cargo business to specialised third party.	1,5 – 2,5
Dedicated Air Cargo Activity, incl. Air Cargo Charter	Establishing of a pure or dedicated air cargo business operations. This level of involvement may offer air cargo services airport-to-airport by combi-aircrafts, full freighters or RFS; as well as a number of other added value services, e.g. tracking and tracing of goods, customs' services, etc. This level may imply high level of airport's flexibility (Magalhães et. al., 2013), i.e. finding most optimal ways without big financial investments or airport's restructuring measures. Due to relatively high demand for air cargo services, dedicated air freighter might be deployed offering also intermodal transport services, i.e. airport-to-door, door-to-airport and door-to-door services.	2,5 – 3,5
Air Cargo Expansion Strategy	This air cargo involvement level may imply air cargo market expansion strategy, e.g. by establishing of a subsidiary representation of a given airport in other airport(s). Subsidiary unit may offer gull range of air cargo services that also may be independently defined (Reis and Macario, 2009).	above 3,5

Based on the above mentioned scheme and fulfilled assessment of the regional airports (here: Tampere Airport and Parchim Airport), the both research questions of this paper (Q1: if air cargo sector could be an appropriate supplement or main model of the sustainable business development for regional airports; and Q2: if the air trucking services might the first step for regional airports to enter the air cargo market, feeding the central air-hub(s) with the air cargo) might be answered positively.

The airport management of Parchim Airport since approximately 2007 has been trying implement air cargo involvement strategy "Dedicated Air Cargo Activity". The expert evaluation, however, fulfilled on the basis of the presented assessment matrix would rather suggest concentrating first on "Outsource Air Cargo Strategy including RFS". The first successful start indeed, might be the deployment and efficient utilization of the air trucking services. On the other hand, during the project BACN implementation period (2011-2014), Tampere Airport had been trying to establish air trucking service connection to Helsinki Airport, so far without success. However, due to relatively high demand for the air cargo services and also good supply side, it might be recommended to Tampere Airport to start to think of implementation of "Dedicated Air Cargo Activity", acting as a "spoke" to establish a regular / scheduled pure freighter connection to an international air-hub, e.g. to Copenhagen or Stockholm Airport.

5.4. Discussion

Generally it may be noted that during last decade, the regional airports in Europe and the Baltic Sea Region have improved point-to-point carriers operations due to sustainable growth of low cost carrier business model. The supply side of the air transport services within Europe has risen considerably; the competition among both airports and airlines has increased. Such "positive" consequences for passengers as: lower fares, increased frequencies and more destinations result also in lower revenues for the airports and airlines. Trans European air cargo of the Baltic Sea Region is mostly handled by the airports, which have intercontinental passenger flights: significant part of the Baltic Sea Region air cargo is utilizing belly cargo concept and intercontinental passenger flights operated by so called wide-body aircrafts. These airports are typically capital airports like Copenhagen Airport, Stockholm Airport and Helsinki Airport. Also the major part of the Baltic Sea Region freighter flights is operating to the same capital airports, which have the belly cargo flows. On the other hand, it can be generally noticed that in aviation business within the Europe (here: intra European air

transport) the passengers are flying, but the air cargo is mainly delivered by trucks, i.e. Road Feeder Services. However, due to the highly competitive air cargo market environment, it very difficult for regional airports to be competitive or profitable in this business segment. The traditional business model: i.e. airport-to-airport transport services, whereas an airline functions as a carrier and all other services are provided by a forwarder on behalf of the shipper, could hardly be suitable for regional airports today. Facing also the upcoming challenges in form of the cuts of the public aid, the regional airports must adopt their development strategies to be able to operate on more cost efficient and profitable basis.

As it has been indicated by a number of BACN experts, the inter-dependency between accessibility of the Baltic Sea Region and the hub-and-spoke transport system may be further discussed and investigated in other research studies. The most of the remote areas of the BSR could not reach the same accessibility (e.g. number of transport routes, destinations) as the central regions. In the current aviation transport market, the air-hubs like Copenhagen, Stockholm or Hamburg) offer intercontinental flight connections and the feeder traffic (e.g. flying truck, Road Feeder Service) is the spoke between the hub and the hinterland. Therefore, it can be further discussed, if that the Road Feeder Services along with the strong impact on the air cargo market might support the intercontinental passenger flights and the major air-hubs in the Baltic Sea Region and in whole Europe, since major aviation hubs of the BSR influence the accessibility of the BSR significantly, whereas the economic viability of the intercontinental passenger flights depends on the efficiency and profitability of the air cargo business.

The distribution of the importance or "weight" between the assessment criteria in the presented assessment model may represent a subject of future disputes and discussions. The experts of the BACN project pointed out that although this weighting scale might be very subjective, however the weighting scale needs to be integrated in this or another form in the evaluation process, since the assessment criteria are not equal. It has been further noted by BACN experts that this weighting scale is not a "universal" for every regional airport, but on the contrary the evaluation approach and the correspondingly applied weighting scale must be very individual, respecting the regional peculiarities, economic perspectives and regional stakeholders' interests.

Furthermore, air-trucking services might be the driving force for the regional entrepreneurship development in the operational environment of an airport. The technical implementation of RFS concept does not require considerable financial resources compared e.g. to the real airlines by deploying air-carriers and corresponding airport infrastructure. The pure air cargo sector implies big infrastructural investments, e.g. for the buying, leasing, maintaining of the aircrafts. On the other hand, according to the BACN project's results, only few air cargo companies in the BSR have real aircrafts' fleet, i.e. the whole airfreight "fleet" of majority of air cargo forwarders consists of trucks that deliver air cargo via air trucking services. Compared to big companies SMEs by providing such services may gain an essential competitive advantage in the air cargo supply chain, due to their traditional flexibility and innovative approaches.

6. Conclusions

Aviation industry, both airports and airlines, are facing strong competition and the Baltic Sea Region and the possibilities that are being offered by air cargo market and the concept of Road Feeder Service may strengthen the economic viability of the airports and the regions. The air cargo business may offer to the regional airports a supplementary opportunity to the passenger traffic, thus making an airport more profitable and attractive for regional business structures. Although the regional and small airports mainly act as "spokes" and feeders for the main airport-hubs, the efficient deployment of appropriate strategies, integration in the air cargo supply chain) may bring many advantages not only to the main stakeholders like airports and airlines themselves, but also to the regional community in terms of economic and social benefits, as well as improved accessibility. Belly cargo concept would almost be impossible to implement by regional airports since it is based on the intercontinental passenger flights. The freighter concept would be basically possible; however its implementation would require sustainable air cargo volume (approximately ore than 200 tons per week in and out). Thus, the Flying trucks concept might be at this time the only one realistic concept for remote and / or regional airports when they are trying to access to the air cargo market.

The above-presented results, as well as the results of the BACN Project showcase that the regional airports shall recognize and accept the usability of the Road Feeder Service or air-trucking concept much stronger than they do it today. Some other results of the BACN project pointed also out that relevant EU transport strategies clearly underestimate potential and the growing role of air trucking. Thus, it is of a vital importance to raise public and political awareness of the RFS concept and its role in the international logistics network, for it shall be more efficiently adapted to the EU and BSR transport policies as well as to regional development strategies.

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Annex 4. PUBLICATION IV

Article IV

Beifert, A.; Maknyte, L.; Prause, G. (2013). Sustainable Supply Chain Management Issues: Case Of Regional SMEs' Involvement In The Air cargo. Journal of Security and Sustainability Issues, 3(2), 41−52.

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SUSTAINABLE SUPPLY CHAIN MANAGEMENT ISSUES: CASE OF REGIONAL SMES' INVOLVEMENT IN THE AIR CARGO

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Abstract. This paper aims at conceptualising and assessing operational environment of small and medium-sized enterprises (SMEs) in sustainable supply chains in regional context. The paper starts an attempt to explore how SMEs in Mecklenburg-Vorpommern in Germany from transport, logistics related value-added services and especially from the air freight sector collaborate, perform and develop from supply chain management perspective, and what crucial determinants for burgeoning business performance and sustainable strategy are effectively to be linked for the benefits of SMEs. Using a qualitative case study approach, the paper bears on empirical evidences of the project "Baltic.AirCargo.Net" financed by the European Regional Development Fund / European Neighbourhood and Partnership Instrument in the framework of the Baltic Sea Region Programme 2007-2013. The paper builds upon a qualitative research approach involving expert interviews, focus groups analysis and secondary data research based on relevant project documentation and field notes from project meetings and workshops. Findings of the case study from the German air cargo service providers are explored and discussed through key theoretical concepts pertaining to sustainable supply chains and logistics of SMEs. Based on the relevant scholarly work and results of empirical evidence and case studies, a conceptual model is designed with propositions and possible future directions for SMEs. The paper showcases empirical findings gathered from the practices of regional SMEs operating in the air cargo transport and logistics service field, thus expanding this poorly conceived research area. The research is based on direct information and insights from SMEs located in Mecklenburg-Vorpommern and highlights how SMEs under the given circumstances may streamline their development paths operationally, tactically and strategically. Insights obtained from this paper can be employed as critical tool among SMEs' managers, strategy planners and policy decision-makers on how to utilize SMEs' practices in the context of supply chains, logistics networks and emerging scope of globalisation and trade.

Keywords: Sustainable supply chain management, sustainable strategy, air cargo, small and medium-sized enterprises, road feeder services, Mecklenburg-Vorpommern

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1. Introduction

Being already known as crucial players in national economies and trade, SMEs have gained also an indispensible role in modern supply chains. Enhancing competitive capability and sustaining the current competitive position of SMEs on regional, macro-regional and pan-European levels have shaped current and future-directed policy agendas in Europe. The issues of SMEs' behaviour in the air cargo sector, bearing opportunities to strengthen their contribution to the regional development as well as boosting entrepreneurship in the air freight sector - have been tackled in the project "Baltic.AirCargo.Net – Improvement of the air cargo transport sector by service

oriented ICT-methods and processing logistic network" that is being implemented in the framework of the EU Programme "Baltic Sea Region Programme 2007-2013". The focus on SMEs here implies that SMEs' role and impacts on supply chains and logistics networks have been prioritised on regional and European economic development agendas. The paper investigates SMEs' behaviour in the air cargo transport and logistics sector from the Northern German region Mecklenburg-Vorpommern and showcases how SMEs may benefit by learning from airfreight forwarders and air cargo related transport and logistics service providers how to perform, collaborate, network, design and implement strategic decisions. The paper calls for an integrated framework, which finds its conceptual roots in domains of supply chain, strategic and small business management, enterprise development, supply networks and supply chain management, enterprise culture and behaviour. Based on the existing thematic concepts, adapted to the environment of SMEs in the regional context, the paper streamlines the pathway of exploring SMEs behaviour in the air cargo supply chains and supply networks.

Supply chains structure and their management are core issues in discourses related to large enterprises (LEs). As a result, topical researches have generated a number of literatures on supply chains, supply chain management. However, scientific works on those themes regarding SMEs are sporadic (Dainty *et al.*, 2001; Macpherson; 2001; Macpherson and Wilson, 2003; Gunasekaran and Ngai, 2003; Quayle, 2003; Arend and Winser, 2005; Hong and Jeong, 2006; Thakkar *et al.*, 2008a and 2008b; Thakkar *et al.*, 2009 etc.). As it is apparent from the topical research scrutiny, SMEs behaviour in supply chains has been increasing research interest in the last decades. This can be traced back to diverse developments on regional and global scale. However, the most important criteria, which implied the shift in the research focus is a rational outcome. Since SMEs are of crucial importance for regional, national and global economics and a significant share of economic performance and value has been recently ascribed to SMEs, they are gaining a rising interest in the research community. SMEs foster entrepreneurial talent, employment generation and industrial development, as they are operating in all industry sectors.

However, beyond the trend of increasing research literature dealing with SMEs in supply chains and affects of supply chain management paradigm for SMEs, the most of the research has concentrated on manufacturing SMEs behaviour in supply chains and supply chain management for manufacturing SMEs (upstream). The link between SMEs from the service sector and supply chains & management is rather underestimated with an exception of several case studies. Furthermore, a very small share of research is done pertaining to the air cargo industry and air cargo service sector. Bernal et al. (2002) explores, however, a case of small freight forwarders in the context of competitor networks, whereas Gunesekaran and Ngai (2003) explains in their case study management of small logistics company, and Halley and Guilhon (1997) behaviour of small enterprises in logistics. Beyond this, studies on small businesses in the logistics discourses are likely to analyse SMEs through internationalisation theories (Chetty and Cambell-Hunt, 2003; Bernal *et al.*, 2002).

It is highly important to redesign and reengineer the role of SMEs in the regional context. To date, in the case region of Mecklenburg-Vorpommern SMEs' role is crucial, since nearly the entire regional economic structure is scaled by small businesses. Around 91 per cent of SMEs operating on the market have less than 10 employees. Despite this prolific number SMEs are likely to remain at the grassroots level when speaking about the specific area of the supply chain in the air cargo transport logistics (Statistical Office of the Federal State Mecklenburg-Vorpommern, 2011). Currently, we mostly speak of large shippers and forwarders who process air cargo volumes. In this regard, the paper at hands aims at contributing to the emerging research on SMEs behaviour and performance in the service-oriented sector. More specifically, the key objective is to underpin the role of regional SMEs in the air cargo industry, and especially, air cargo service providers' paradigm.

The paper is structured as follows. The research has first set about identifying key phenomena and issues from the fragmented literature base pertaining to supply chains (especially downstream activities) and SCM. Afterwards, elements and methods of the research are explained. The next section reflects results from the case study. Subsequently, implications are derived from the observed SMEs behaviour and performance in the air cargo supply chain and networks and presented by key managerial, strategic and oper-

ational concluding insights in terms of SMEs future directions and research contributions.

2. Literature review

In the scientific circles, SMEs have been largely perceived from the perspective of Large enterprises (LEs), i.e. most of the concepts and approaches developed to understand SMEs behaviour and performance in supply chains flow from the scholarly works, once generated for LEs. SMEs performance and operational configurations in supply chains have been dealt in different research streams pertaining to supply chains, namely, strategic alignment of supply chains, coordination of players in supply chains and configurations of logistics networks including infrastructure design, market servicing etc. (Creazza *et al.*, 2010, p. 155). Cooper *et al.* (1997) believes that all these processes mentioned are encapsulated by the SCM concept. Respectively, scholars underpin that SCM incorporates supply chain players with whom to link processes (1), the processes themselves (2) and how these processes are linked, managed and integrated (3) (Cooper et al, 1997, p. 6). Whereas players in supply chains constitute networks, business processes are activities, which generate specific output of value to the customer. Finally, the management implies managerial skills, resources and variables by which the business processes are integrated and managed across supply chains. Herein, crucial is identification of supply chain members, processes to be linked and of type / level of integration of those processes (Lambert et. al, 1998, p. 4).

Taking into account the present research scope, it interferes with phenomena ascribed to all the three research lines, as differentiated by Creazza *et al.* (2010), as the research addresses issues concerning SMEs strategic behaviour, involving questions relating to SMEs partners and collaboration within supply chains or pertaining to logistics networks through placing a focus on the air cargo industry servicing SMEs. Bearing in mind that SMEs business behaviour and operational activities in the service-oriented sector (here: SMEs as air cargo transport and air cargo related service providers), the conceptual foundation of the research derives from the concepts and approaches elucidating SMEs strategic thinking, planning and acting, organisational behaviour (integration and networking) and performance in the air cargo supply chain. In this light, phenomena, processes and activities are referred from the entrepreneurial and management perspective. Consequently, the research pertains management-related practices of SMEs. Hence, a supply chain management (SCM) within the context of SMEs refers to set of business activities, from purchase over processing to delivery to LEs (Thakkar *et al.*, 2008a, p. 98). More explicitly, SCM is integration of key business processes from end user through original suppliers that provides products, services and information, which add value for customers and other stakeholders (Lambert et. al, 1998, p. 1). In order to ensure regular orders from LEs, SMEs are forced to enhance value of end service products through offering special and differentiated features and quality (Thakkar *et al.*, 2008a, p. 98) or stressing behavioural qualitative differentiation and innovation (O'Gorman, 2001, p. 61). This is a critical issue, as delivering qualitative and differentiated services underlie a set of physical tangible and intangible resources and organisational capabilities, as needed by SMEs, such as technological peculiarities, infrastructural facilities, financial resources, information and knowledge in SCM, management skills etc. (Kraus *et al.*, 2006; p. 335-337). Strictly speaking, SMEs have to possess specific organisational, tactical, operational and strategic advantages to be able to compete efficiently in supply chains and transport networks. According to Porter, competitive advantage derives from organisation's activities in the external environment or on the market, i.e. how those activities strategically fit in the external environment or on the market and therefore creates economic and customer value (Porter, 1985, p. 35; 1991, p. 103). In the present context, SMEs have to fit their service-oriented activities, technology and the marketing strategy to their customers, i.e. to LEs that operate in the air cargo supply chains. Nonetheless, progress and differentiation is needed not only externally but also internally, i.e. through advancing organisational internal structures, resources employment, capabilities streamlining and development of core competences, as anchored in treatises on the resource-based view (Wernerfelt, 1984; Barney, 1991; Peteraf 1993, Prahalad and Hamel, 1990; Boxall, 1996 etc.). As a result, in gaining capabilities, effectively deploying resources, advancing organisational internal activities and adapting them to the customers and the air cargo supply chain environment, SMEs may be both proactive and reactive in terms of their performance and strategy. Hence, it is not enough anymore to be

only reactive and more cash focused, ignoring power of communications, internal knowledge and learning capacity, offering few services and deploying "classical" resources. The resources should be valuable, rare, imperfectly imitable and non-substitutable (Barney, 1991, pp. 105-106; Boxall, 1996, p. 65). Herein, a more novel way of thinking and operating (Thakkar et al, 2008a, p. 99; 2008b, p. 77; Kraus *et al.*, 2006, p. 341-342) or new approach towards mutual understanding of different operational cultures of SMEs and LEs, trust building and communication skills advancing are needed (Dainty *et al.*, 2001, p. 171; Machpherson, 2001, p. 9). As stressed by Vaaland and Heide (2007), SMEs will not be able to harness a full potential of SCM in terms of diverse management and integration procedures as applied to business process within the supply chains anymore, since SMEs are managed by LEs at arm's length and have to follow their standards and norms. Moreover, due to the price factor and relatively high supply side, already involved SMEs may be easily replaced by the competitors in the supply chains (Vaaland and Heide, 2007, p. 21).

Nevertheless, in many respects, SCM enables to combine external and internal processes and activities of SMEs. More specifically, SCM implies a streamlined approach to advance organisational performance tactically, operationally, and strategically. For instance, integration within the supply chains can be improved by means of internal processes and activities, such as communication, collective decision-making, partnering, trust building etc., whereas SMEs' performance in supply chains affects SMEs growth, planning and strategy (Thakkar et al., 2008a, pp. 110-112). From the external perspective, SMEs need to decide *where* to compete and *how* to compete (O'Gordman, 2001, p. 60). They need to clarify their strategic position in the supply chain and focus, i.e. compete in terms of low costs operations or value added operations (Hong and Jeong, 2006, p. 295).

Beyond a certain qualitative differentiation and level of innovation with combining resources and capabilities, important is in the supply chain context also a clustering perspective. As originally developed concept of clusters by Porter in 1990, clusters as geographic concentrations of companies, suppliers, service providers or institutions are crucial for competitive advantage, innovation, knowledge and technology exchange and absorption as well as learning capacity. They enable both competition and cooperation (Porter, 2000, pp. 15-16). Networking and cooperation helps SMEs to overcome size and resource constraints, reduce costs and circumstances of uncertainty (Thakkar *et al.*, 2009, p. 982). Furthermore, it facilitates development of individual relationships as part of a network, which is, in turn, perceived as construct of interdependent relationships. Since relationships are connected, they may positively or negatively affect SMEs behaviour in other networks. However, largely, through exchanging relationships across SMEs or, in other words, networking, SMEs are able to provide their customers with greater value than if SMEs would work individually. Through interconnected activities SMEs can work faster, more efficiently than competitors outside their network and therefore they can achieve flexibility, develop new business opportunities or find sources of new capabilities, resources and advantages in the network. Herein, through networking SMEs gain competitive advantage or, through developed collaborative relationships able to achieve critical resource of internationalisation, intra- or inter-organisational learning (Bernal *et al.*, 2002, pp. 244-245). Key reasoning behind entering and pursuing collaborative relationships is asset specificity and uncertainty. Herein, mutual trust and experience in collaborative relationships are likely to reduce uncertainty of transactions within those relationships, and therefore the transaction costs. Hence, due to informal contracts, mutual trust etc. a higher motivation might be observed by organisations to enter the supply chains. In terms of specificity, through networking activities, i.e. less geographical, physical and human distance, the relationships can be more specific, thus the SCM becomes more simplified (Macpherson, 2001, pp. 6-8).

SMEs business performance, competitive advantages and strategy can be sustained in the SMC context through intertwining of all three dimensions of sustainability, i.e. economic, environmental and social ones (Cliberti *et al.*, 2008, p. 1580). It has been frequently referred to more specific focus by SMEs on social responsibility, environmental awareness etc. The aspects of sustainability in the SCM discourses are gaining more resonance as a response to the current environmental challenges, globalisation trends etc. Nonetheless, an increasing incorporation of sustainability phenomenon is frequently tapped in the context of SCM of LEs. However, in terms of SCM of SMEs, sustainability issues can cover such

criteria as product-based green supply, environmentally friendly decision-making, cost reducing. Strictly speaking, sustainability refers to issues in SCM paradigm, whether environmental, ethical or social ones (Seuring and Müller, 2008, p. 456). For instance, Jorgensen and Knudsen (2006) interpret sustainable SCM as a form of value chain governance, since sustainable SCM encompasses aspects of labour, environmental standards etc. In this regard, values are affected in terms of social, environmental or labour-related settings and through two key functions within the value chain, i.e. rule making and rule keeping. Whereas LEs as rule-keepers control technologies, brands and access to market have started to apply certain sustainable standards, e.g. environmental protection or labour rights etc., rule keepers (SMEs) have to comply with those standards applied by Les (Jorgensen and Knudsen, 2006, pp. 450-451). Considering our research context, SMEs behaviour in the air cargo supply chain may be also characterized as influenced by "modern" sustainable issues, since the products delivery by air may be hardly "greener" as compared with other modes of transportation (rail, sea, road). As a result, an environmental issue here is a sustainability criterion. Furthermore, SMEs have to follow rules and standards on LEs as applicable in the air cargo forwarding in order to stay integrated in the air cargo supply chain.

4. Methods

Case study has been used as a technique in exploring SMEs behaviour and performance in supply chains, logistics or when examining the role of SCM for small businesses (Gunesekaran and Nagi, 2003; Bernal *et al.*, 2002 etc.). A case study method is assumed in this research paper as an appropriate one. The justification behind this choice is that the research aims at answering the questions how SMEs as local / regional airfreight forwarders and air cargo related transport and logistics services providers are operating at present within the national and global air cargo supply chains or networks as well as what determinants (capabilities, competences and other requirements) must be available to enable to outline a sustainable strategy for SMEs performance. Following Yin (2009), a case study research places focus on contemporary phenomena rather than on historical events. It normally addresses questions "*how?*" and "*why?*". Although this qualitative method leaves little room for researchers to control events (Yin, 2009, p. 2), it enables to catch the particularity and complexity of a single case (Stake, 1995, p. xi). In order to provide the most comprehensive view on development of SMEs, this research follows a collective case study, which encompasses a number of single cases, i.e. SMEs operating in the air cargo supply chain existing in the case region of Mecklenburg-Vorpommern (federal state level). Herein, single case studies frame a collective or a multiple-case study. The qualitative case study approach is exploratory and explanatory (Yin, 2009, pp. 8-9), as the research sets out to scrutinise development patterns of SMEs in the air cargo supply chain and to test how SMEs may pursue a sustainable way in collaborating, operating and benefiting in the air cargo supply chain and by means of SCM.

Empirical data used for the cross-case analysis were obtained in the frame of the project "Baltic.AirCargo.Net" financed by the EU the Programme "Baltic Sea Region Programme 2007-2013". The empirical material was collected from diverse sources of evidence over the period of project life cycle (2011-2013): qualitative observations of researchers involved into the project activities, external experts' evaluations, project documentation and observations gathered from respective project activities such as workshops, conferences as well as from the field notes from project meetings. Empirical data pertaining to SMEs are explored. Furthermore, a record of empirical evidence is complemented by semi-structured interviews conducted with the SMEs representatives or related stakeholders.

The analysis of qualitative empirical data builds upon topical concepts and approaches introduced above. The paper portrays the results in line with the concepts and approaches synthesised in the previous section. The observed and evaluated outcomes and outputs from the SMEs practices serve then for outlining propositions. Respectively, the propositions are tested and discussed by bearing on the empirical evidence.

5. Findings

Current SMEs practices in terms of the air cargo supply chain and the air cargo transport networks in Mecklenburg-Vorpommern have been traced and evaluated on the basis of evolutionary approach, i.e. how these practices emerged, how do SMEs perform and what future directions do result. In other

words, the findings are reflected through SMEs pace of development. Besides, following Hong and Jeong (2006, pp. 297-298), a model as proposed by Levy in 2001 has been adopted. Referring to Chetty and Cambell-Hunt (2003, p. 813), some conceptual stages were slightly modified. As a result, SMEs practices and performance are explored through three external or internal contextual dimensions: (1) air cargo forwarding sector and position in the air cargo supply chain (external environment), (2) external relationship patterns of SMEs within the air cargo supply chain and (3) SMEs structures, management and competences.

Air cargo forwarding sector and position in the air cargo supply chain

In this context, regional airports and other service providers are referred to as logistics service providers focusing on regional operations, and the logistics as a third-party logistics (Gunasekaran and Ngai, 2003, p. 826). Taking into account SMEs performance in the air cargo sector on the regional scale, empirical evidence has shown that the airfreight volumes, as handled by the regional airports Parchim and Rostock-Laage, are rather scarce. This is due to the large air cargo forwarders TNT, DHL, FeDex and alike, which are treated on the air cargo market as the first-tier transport providers. This, in turn, reduces the number of second-tier service providers in the downstream air cargo supply chain. Furthermore, of vital importance is in this particular case the prevalence of clusters. With the key air cargo forwarders concentrating around Berlin and Hamburg, the airports in Berlin and Hamburg have gained competitive advantage over air cargo transport service providers in Mecklenburg-Vorpommern. Herein, clustered air cargo forwarders can compete and cooperate directly against service providers operating individually in the region of Mecklenburg-Vorpommern through their already settled strategic alliances and collaboration with more dominant suppliers, distributors or carriers (Hong and Jeong, 2006, pp. 293-294). In this case, regional airports of Parchim and Rostock-Laage are missing resources, and competences such as inter-partnering or share of valuable information, knowledge etc. The fear of sharing the valued organisational information and knowledge can come to threaten the market position and organisational performance of the regional airports (Bernal *et al.*, 2002, p. 242). Hence, it becomes quite difficult to compete without being networked or a part of cluster. Nonetheless, as empirical data demonstrate, a geographical proximity and limited resources, such as air cargo handling capacity in Berlin and Hamburg due to, e.g. increased demand in air cargo forwarding, provide feasible opportunities for the regional airports.

External relationships patterns of SMEs within the air cargo supply chain

A more isolated position of the regional airports has affected their external relationships within the air cargo supply chain. Operating on behalf of core national logistics services providers (Deutsche Post and Lufthansa Cargo) to meet their objectives, i.e. to enable them costs reduction, cover their fluctuating (increased) demand or reduce their capital investments, regional airports have failed in sustaining their position. It is because the regional airports were not able to deliver more differentiated and qualitatively higher services, and the large logistics services providers exerting a more influence in the freight forwarding industry could easily replace them or cancel their negotiations due to les flows (operations) through the air cargo supply chain. As a result, the regional airport of Rostock-Laage, as initially incorporated into the network of "Deutsche Post" to handle the airmail forwarding at night due to increased demand in the airmail forwarding in Mecklenburg-Vorpommern, has been cancelled to deliver this service. Hence, frequently the external relationships are of more short-term manner. This, again, is shaped by the external environment in which the relationships emergence and are maintained. By echoing Hong and Jeong (2006, p. 298), in the environment of low costs competition, especially in this particular case, where the core focus is on cost reduction and capital-based savings, regional airports, as exemplified in case of Rostock-Laage tend to accept costs reduction target terms dictated by their customers (Deutsche Post) due to their weak negotiating positions, as they do not have negotiated acquisition ex ante (Thakkar *et al.*, 2009, p. 983).

In case of the regional airport Parchim, the managers have set to kick-off air cargo transport and related services at the airport through cooperation with China and potential air cargo flows from China. However, herein in this particular case, it is to note that the airport is not likely to harvest benefits of being integrated in the global air cargo supply chain and the network

due to very limited resources. Since air cargo processes and activities cannot be performed at the Parchim airport as a result of infrastructural shortcomings, the airport and the related air cargo service providers are not able to follow and adopt to the requirements as posed by the LEs in the air cargo industry. This is also curtailed due to regulatory constraints applying in the air cargo forwarding and handling industry. As long as there will be no valuable resources available at the airport, it will be not possible to deploy them and to built up distinctive competences that, in turn, allow obtaining competitive advantages in the market (Thakkar *et al.*, 2008b, p. 81). In this particular case, Parchim airport underlies, first, reengineering or acquisition of physical resources such as facilities (runway, apron, airport tower and business settlement area). With resources (facilities) built up, the aiport will be able to service large international carriers and achieve international standards (CAT III), and therefore gaining competitive advantage over other regional air cargo forwarders and service providers. Positively influenced is also the competitiveness through intangible resources or invisible assets, such as good knowledge and management skills. Herein, from the case it is evident that good knowledge of customers enabled through Chinese ownership of the airport, can accelerate air cargo handling activities (air cargo flows between Europe and China), thus allowing the airport to carry out activities differently from the competitors (gaining positional advantage through handling cargo directly from China).

Overall, potential positioning advantages for both regional airports are likely to emerge from their networking with the globally operating airports and air cargo hubs, such as Berlin, Hamburg etc. Bearing in mind geographical proximity with the existing air cargo handling clusters in Berlin and Hamburg, it is argued here that regional airports will be capable to deliver qualitative and differentiated services through deploying geographical location as a resource for air cargo handling at the Rostock-Laage airport, for instance, at night, which is possible due to either rural character of the region and lower population density and no night noise restrictions. Further advantages for this airport derive from the infrastructural (good traffic connection by road, business enabling facilities such as business parks), business (global carriers located such as Lufthansa Cargo) and geographical peculiarities (access to transport mode by sea through Rostock port as a maritime node).

SMEs structures, management processes and capabilities

In terms of SMEs structures, current management process and capabilities, it is evident from the empirical data that the regional airports and SMEs face organisational, management and institutional constraints. To exemplify, as evident from the interviews and experts' analyses, regional capabilities are jeopardised by missing knowledge, information and experiences in foreign business development, market setting in the target countries, lack of skilled labour or human resources processing international trade agreements etc. This embraces corporate or organisational resources that are a prerequisite for building up core competences, as to Prahalad and Hamel (1990, pp. 5-7). Furthermore, as articulated by interviewees and experts, there has been observed shortcomings in knowledge gathered through education. Following Dainty *et al.*, 2001, for the SMEs to be integrated into the supply chain, there is a need for specific training programmes for SMEs providing both specialised knowledge and soft skills such as interpersonal skills, customer care, communication skills and collective learning (Dainty *et al.*, 2001, pp. 169-170). To underpin this, by referring to observations made on a regional scale, one of the key weaknesses of SMEs as logistics service providers is lack of international competences and international orientation as well as missing trainings.

Furthermore, as it is apparent from the evidence, SMEs, especially in case of the regional airports are not willing in exploring and realising possibilities through shared knowledge and horizontal collaboration. In this, the small business sector in Mecklenburg-Vorpommern can be recognised as a reactive one, since it is drive by the visions and aims corresponding to the external environment in which those businesses are operating. This is a more passive view in contrast to businesses, which show higher deployment of intangible organisational competences such as knowledge and information share as well as trust.

6. Implications for SMEs: Determinants for SMEs future directions

Referring to the past and current SMEs practices and their endeavours to engage into air cargo supply chain and the air cargo network, a set of implications can be drawn to facilitate future-oriented directions of SMEs. The central clue is a need to decide where to compete and how to compete (O'Gordman, 2001,

p. 60). It is an external view. On the one hand, SMEs need to clarify their strategic position in the supply chain and strategic focus. On the other hand, there is a deficit in internal capabilities, trust built up, management skills, team building, understanding of business etc. (Dainty *et al.*, 2001, p. 169). Again, when recalling the duality of markets and resources (Wernerfelt, 1995, p. 172). Hence, combination of both perspectives is needed.

As a result, SMEs have to make strategic choices (O'Gorman, 2001, p. 60) and to clarify their strategic focus and supply chain relationship position (Hong and Jeong, 2006, p. 295). Based on the empirical results, SMEs need to redirect their strategic choices to the following external and internal contexts.

Hence, the present research reasons that:

Proposition 1: SMEs strategic positioning in the air cargo supply chain and their growth underlies a type and degree of collaboration with large air cargo forwarders operating in the air cargo supply chains and global networks.

The present research argues that SMEs involved into the air cargo forwarding or handling services as well as regional airports as the air cargo operations have to intensify collaboration partners with large and globally operating enterprises in the air cargo industry. This enables the small businesses, first, a better relationship positioning in the supply chain, since large airfreight forwarders as the first-tier logistics providers have focused on delivering multiple performance based on their competences. In this sense, SMEs could focus on the specific competences and offer differentiated services, thus meeting qualitative requirements of their customers. Through specific and differentiated services SMEs and regional airports are capable to gain a strategic position on the niche air cargo market, which is not fully penetrated by large air cargo forwarders and handling enterprises. Considering the regional case of Mecklenburg-Vorpommern, regional airports and SMEs should endeavour to foster collaboration with the national / global first-tier air cargo forwarders situated in Germany, e.g. FedEx in Frankfurt am Main, DHL in Leipzig Halle and UPS operating in Cologne/Bonn. In this regard, they could place more focus on building competences in the field of warehousing, air cargo handling and transportation.

According the finding from Baltic.AirCargo.Net project, one of the most promising opportunities in terms of air transportation services that might be suitable for SMEs or entrepreneurship is a so-called "Flying Truck" concept or Road Feeder Service (RFS), which would enable providing differentiated, specialised qualitative services. In fact, the pure air-freight-forwarding sector implies very high investments for the buying, leasing, maintaining, etc. of the machinery park, i.e. aircrafts. It will be rather a provocative assumption that SMEs may possess the required financial resources to start / enter pure air-freight operations. However, according to the secondary research data gained by the "Baltic.AirCargo.Net" project, among ca. 18 companies that offer air-freight transport services in Germany only few possess *real* aircrafts. The whole fleet of majority of air-freight forwarders consists of normal trucks only and the majority of these transport companies that have been successfully operating on the air cargo transport market are regarded as SMEs. And that were not the huge investments in the "hard-ware" infrastructure, i.e. aircrafts that allowed them to enter airfreight forwarding business, but rather strategically conceptual and "soft" changes. Rather small and medium transport companies with a "fleet" ranging from 10 to 30 ordinary trucks qualified themselves for air cargo transport business. According to the results of the "Baltic.AirCargo.Net", the importance of the RFS is constantly growing nowadays, e.g. in 2012 the relative volume of air cargo transported by "flying trucks" in the biggest air cargo hub in the Baltic Sea Region - Copenhagen Airport is ca. 35% from the total cargo volume.

The definition of "flying trucks" is scheduled trucks operating between two airports only, on behalf of an air carrier. Trucks are operating under a flight number and the cargo is moved under same conditions as normal air cargo and the liability is in accordance with the Montreal Convention. In other words, "flying truck" operates as a normal truck between to airports (departure from an airport security zone – and arrival to another airport security zone only) on so-called Air Waybill (AWB) or air consignment. The same as a real air carrier, a "flying truck" might have several route numbers or flight numbers if it is transporting freight from more than one airline. The flying trucks are treated and handled exactly in the same way like real aircrafts, i.e. the "flying trucks" possess herewith exactly the same insurance as if the goods were transported by aircraft and on route number, they are fulfilling all custom and security regulations set by the relevant authorities as if the

goods were really flying by air (Grandjot *et al.*, 2007, p. 87). The cargo transported by "flying trucks" is a real air cargo that must have fulfilled all required security and transport norms that apply to air cargo.

By providing such road feeder services SMEs would obtain essential advantages in the air cargo supply chain. This can be justified as follows. First, air cargo handling by means of flying trucks would allow SMEs to take advantages of the air cargo market and integration with large air cargo forwarders, e.g. from Hamburg, Berlin. To exemplify, road feeder services do not require intensive capital investments and physical resources what would be a premise in case of providing air cargo services by means of air-carriers (airlines). SMEs do not simply possess such resources. Naturally, by offering RFS to their customers from the air cargo hubs in Hamburg or Berlin, SMEs would better engage into the air cargo market and the air cargo supplier network. This is essential, since, as elaborated by Thomas and Barton, low technical capabilities of suppliers and limited physical resources (facilities, physical capital etc.) are likely to keep large air cargo forwarders and carriers from using in their supply networks and as part of their supply chains (Thomas and Barton, 2007, p. 491).

Second, integration of road feeder services into the SMEs operations would maintain their flexibility both in terms of costs and investments. Indeed, it is evident that SMEs providing flying truck services would not be subject to high investments, as opposed to investments related, for instance, to facilities if operating through regional airports. In this case SMEs would also be less exposed to risk associated with flying trucks operation costs.

Naturally, SMEs could offer distinctive service components to their larger partners due to meeting the order qualifier requirements of qualitative and time-sensitive delivery, as posed by large collaboration partners (Hong and Jeong, 2006, p. 295). Following Levy *et al.* (2001), by providing road feeder services SMEs would strategically focus on operating at competitive rates, as they do not usually have substantial financial resources to handle air cargo through carriers (airports), and meet changing customer requirements, e.g. reduced demand on air cargo forwarding or handling. Overall, it is very essential for SMEs to bear on this business opportunity, especially as customers, in this particular case large air cargo forwarding companies, are not keen to engage into relationships with suppliers if they are inflexible and lack technical capabilities. In such cases, large customers are more likely to outsource their air cargo forwarding activities to such suppliers, which meet their requirements, even despite the fact that these may be located in more remote regions. The road feeder services offer certain opportunities, e.g. SMEs would become capable of obtaining higher position in the air cargo supply chain as a result of the distinctive values they may provide to their customers, such as flexibility, time and costs savings for outsourced activities by large air cargo forwarders.

Proposition 2: Through interlinking with regional, national or international networks, organisations and institutions SMEs are capable to integrate in the air cargo supply chain and improve their relationship position.

Networks are crucial for small businesses. This is due to the fact that networks imply interdependent relationships, which can positively or negatively affect interactions of SMEs within the networks. Moreover, collaborative relationships within the networks are of paramount importance for competitiveness and competitive advantage. As elaborated by Bernal *et al.* (2002), collaboration within the network may enhance capabilities of SMEs, since these obtain access to resources and capabilities of other SMEs or organisations involved in those networks. Relationships within networks enable the firms to gain, as what Kanter (1994) calls, collaborative advantages. Beyond this, collaborative activities of the SMEs within the networks are likely to be conducive to access to new resources, enhance financial and organisational flexibility and contribute to inter- and intra-organisational learning and fostering absorptive capacity (Cohen and Levinthal, 1990, p. 128). To exemplify, due to low demand for air cargo forwarding and handling in Mecklenburg-Vorpommern, SMEs tend to be locked-up. In case of entering and integrating into new networks with enterprises (e.g. manufacturing, maritime etc.) from Mecklenburg-Vorpommern, SMEs would gain possibilities to increase the demand for cargo forwarding. Regional airports should also engage into the business networks, as according to the results from "Baltic.AirCargo.Net" up to date small and regional airports operate rather isolated. The role of networks is inevitable, since involved businesses are capable to develop new business opportunities and gain access to stronger support structures (Bernal *et al.*, 2002, p. 245).

Networking facilitates sharing of information and knowledge among partners who are geographically dispersed (Gunasekaran and Ngai, 2003, p. 830). Partnership is not a question of resources, but of establishing demand for services. It facilitates knowledge and information sharing and transfer, which are especially important when SMEs are developing or entering the market (Gunasekaran and Ngai, 2003, p. 836). It is worth mentioning that in terms of inter-organisational relationships the original focus on providing air cargo forwarding services should be extended to a variety of other areas. In case of regional SMEs, these should focus on additional services providing added value for their customers.

Practically, inter-organisational relationships can be built up and maintained through a network, as set to be established by the Baltic.AirCargo.Net project. This network may provide compelling opportunities for both regional airports and SMEs dispersed across the Baltic Sea Region (BSR). Trough networking activities, regional airports and SMEs would be better off in utilising road feeder services, especially when these ones will be underpinned by the entire network and networking regional agents, i.e. airports and small and medium-sized businesses. Moreover, the role of network focusing on effective and efficient utilisation of the flying truck concept might be facilitated by cross-networking, i.e. engaging into and promoting this concept in other regional, national logistics, business development and business support networks. Therefore, the SMEs and regional airports should pursue the way in promoting the value of differentiated qualitative value through road feeder services and the promising economic, organisational and strategic benefits thereof.

In this respect, organisationally and strategically SMEs and regional airports can develop through streamlining their internal resources deployment, engaging into knowledge transfer and gaining core air cargo forwarding services-related capabilities and competences. Hence, the paper argues that:

Proposition 3: SMEs building up (internal) organisational capabilities and core competences through learning, training and business networking SMEs obtain better competitive positions in the air cargo supply chain and network.

SMEs do face challenges also on the organizational behaviour level, i.e. in management. In order, however, to overcome challenges, SMEs need to undertake changes. This, in turn, requires shifts in management structures and skills. For this purpose, individual and organisational learning, trainings, skills (especially, as demanded, language and international business operations skills) are needed. Learning processes are of paramount importance not only to bring forward organisational performance. Indeed, they can accumulate economic benefits. By drawing on Cohen and Levinthal, absorbing new information and knowledge and internalising it, SMEs are better of to gain commercial profits (Cohen and Levinthal, 1990, p. 128). Therefore, information and human resources management structures are subject to changes (Halley and Guilhon, 1997, pp. 491-492). SMEs have to build up key capabilities or core competences, as underpinned by Prahalad and Hamel, 1990, pp. 5-7). Furthermore, having streamlined internal capabilities (management skills on business and logistics processes, language skills etc.), SMEs are capable to obtain a differentiated position in a operating environment. To Fillis, in terms of such determinants as intangible skills and other resources as well as creativity, trust level etc., SMEs compete unequally (Fillis, 2001, p. 777). Naturally, this enables to distinguish themselves. As a result, SMEs have to kick-off individual and organisational learning and to transform it into a regular cycle, what, in turn, is conducive to sustainability.

7. Conclusions

SMEs reveal shortcomings and challenges in both external and internal contexts (Halley and Guilhon, 1997, p. 482). Sustainable management successes underlie, however, an implementation of a holistic and dynamic model (Chetty and Cambell-Hunt, 2003, p.82). By building upon practices and lessons from the regional small and medium-sized businesses it is apparent that SMEs have come to be isolated and usually act individually beyond the boundaries of the specific air cargo logistics and transport-related networks. This, however, bring SMEs into unfavourable situation, and the entire regional businesses are being jeopardised. SMEs face problems in obtaining capital, resources, skills and novel knowledge and information.

As a response to the regional analysis and scrutiny of SMEs practices on the air cargo market the present research calls for a holistic and interactive model for SMEs, which enables them to respond to the changing

external and internal air cargo supply chain paradigm.

Empirical evidence demonstrates that SMEs lack strategic plans and are characterised rather by short-term advantages (Gunasekaran and Ngai, 2003, p. 830). To encounter such situation, SMEs should combine their technological, organisational and financial resources and deploy them respectively. This combination will allow them to acquire capabilities that, first, are to be used in terms of technology. As enlightened in the implications, SMEs should place their strategic focus, on new technologies for air cargo transportation. In this particular context, this refers to a flying trucks model. Hence, bearing in mind market position and market share of SMEs from Mecklenburg-Vorpommern, SMEs should adapt to the external environment instead of relying on inefficient financial and physical capital resources (airport facilities etc.), which then lead to scarce orders or low demand from large contractors.

Subsequently, SMEs have to learn from the current practices and to combine proactive and reactive vision what, in turn, enables better positioning in the air cargo supply chain and sustainable management. Being reactive, SMEs can adapt to air cargo market changes or customers requirements (increasing air cargo forwarding demand from, e.g. Berlin and Hamburg). With the flying trucks concept SMEs could easier adapt to the demands of large air cargo forwarders. Acting with a proactive vision, SMEs are able to gain benefits through their organisation / internal differentiation. Naturally, both visions enable to sustain the position and performance. Consequently, this helps SMEs to overcome some traditional problems.

Furthermore, a better bargaining power and integration of the flying truck concept into small businesses might be achieved through built up collaborative relationships in the specific networks. A better interpartnering can enhance operational performance of SMEs and provide them an opportunity to link up with other networks beyond the regional or national boundaries.

Overall, the authors believe that empirical insights from the current practices of SMEs in the region of Mecklenburg-Vorpommern can be useful in both current research discourses on air cargo supply chain and in terms of SMEs' role in it as well as in businesses circles. Lessons and experiences learned may benefit SMEs in other European regions in strengthening their performance and rethinking their strategic choices.

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Annex 5. Research Activities and Methods

Research activity	Methods applied	Results
Literature review, incl. relevant theories, concepts, policy regulations and guidelines	Systematic study and analysis of the relevant literature and policy documents, Internet search in scientific data bases for key words, snow-balling effect, cross disciplinary systematic analysis	Scientific base identification: • Supply Chain Management and Value creation theories • Business and Innovation Models • Resource Based View • Logistics Cluster theories • Hub-and-spoke network and other connectivity theories • Air cargo concepts • RFS or air trucking concepts Adaptation to the context of regional airports.
Project review, incl. secondary studies and secondary data analysis	Desktop review, systematic study of relevant research projects, incl. secondary data analysis in EU data bases	Identification of the previous results, evidences and practical case studies, incl. verification of relevance and initial problem analysis. Formulation of the research questions.
Participation in relevant research projects', incl. primary data collection	Qualitative and quantitative data collection, incl. experts' interviews and evidence based cases. Participation in project meetings, workshops, project events, incl. relevant academic, political and business stakeholders	Primary data set applied for the concept development in articles: • Assessment criteria for impact enhancers (article I) • Assessment criteria for business models and results (article II) • Assessment criteria for air cargo relevance (article III) • Weighting scales applied (article: I, II, III)
Primary data analysis	Systematic data analysis,	Evaluation and assessment concepts developed, tested and validated
Scientific validation and verification	Scientific validation and verification though presenting results at international scientific conferences • 12th International Entrepreneurship Forum Conference (Vilnius, 2013); • HICL 2013, Hamburg International	Developed assessment and evaluation concepts validated and approved

	Conference of Logistics, "Success Drivers of Logistics and Supply Chain Management" (Hamburg, 2013) • 14th International Conference "Reliability and Statistics in Transportation and Communication" (Riga, 2014); • 15th International Conference "Reliability and Statistics in Transportation and Communication" (Riga, 2015); HICL 2015, Hamburg International Conference of Logistics, "Logistics and SCM – The next Decade" (Hamburg, 2015)	
Practical validation and verification	Practical validations by presenting developed concepts to relevant stakeholders, incl. airports' management, policy makers on EU, national and regional levels; • TEN-T DAYS, international forum organized by EU Directorate-General for Mobility and Transport, Trans-European Transport Network Executive Agency (Tallinn, 2013); • Cluster Policy Conference. "Greening Transport – Blueprints from the Baltic Sea Region", high-level meeting with representatives from the European Commission (DG MOVE and DG REGIO) and from the European Parliament (Brussels, 2013); Several EU research project meetings with representatives from airports' management and business stakeholders (BSR and EU, 2011-2015)	Developed assessment and evaluation concepts have been tested, validated and approved
Pilot testing and implementation of the developed concepts	Pilot concepts implementation at regional airports in the BSR	Developed assessment and evaluation concepts have been tested, validated and approved

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Keel	Tase
Inglise keel	Kõrgtase
Vene keel	Kõrgtase
Saksa keel	Kõrgtase

4. Teenistuskäik

Töötamise aeg	Tööandja nimetus	Ametikoht
2005 –…..	Wismari Ülikool	ELi projektide keskuse juhataja, dotsent

5. Valitud projektid

Periood	Projekti kirjeldus
2016	Regionaalsete lennujaamade arendamise välisekspert, palgatud Šveitsi Riikliku majandus-, haridus- ja teadusosakonna poolt COST Programmi raames.
2016	Strateegilise juhtimise ja ettevõtlussimulatsioonide võimekuse arendamise välisekspert, palgatud Volkswagen AG poolt.
2015 - 2018	“Roheline logistika” – projekti üldjuht ja juhtpartner, 10 partnerit Saksamaalt, Eestist, Rootsist, Venemaalt ja Kasahstanist.
2014 – 2015	Otsene teenusleping tööjõu pakkumise kohustuste rakendamise kohta MLC 2006 kohaselt nii ELi sees kui väljaspool seda, palgatud ELi Komisjoni Transpordi ja mobiilsuse peadirektoraadi poolt.

2011 - 2014	Baltic.AirCargo.Net - projekti üldjuht ja juhtpartner, INTERREG IVB – Baltic.AirCargo.Net - Õhukargo transpordisektori arendamine teenustele orienteeritud IKT meetodite ja logistilise võrgustiku kaudu.
2009 - 2012	EWTC-II, regionaalne projektijuht (Saksamaa), INTERREG IVB-Project: "Ida-lääne transpordikoridor - II". 30 partnerit: Taanist, Eestist, Soomest, Saksamaalt, Lätist, Leedust, Poolast, Venemaalt ja Rootsist.

CURRICULUM VITAE (English)

1. Personal data

Name	Anatoli Beifert
Date of birth	19.10.1977
E-mail address	anatoli.beifert@hs-wismar.de

2. Education

Educational institution	Time period	Education (field of study/degree)
Tallinn University of Technology	Since 2011 -	Business Administration, PhD
Wismar University of Applied Sciences	2007 - 2010	Master of Science in Economy and Computer Sciences
Wismar University of Applied Sciences	2000 - 2005	University Diploma in Economy and Computer Sciences

3. Language Competence

Language	Level
English	Fluent
German	Fluent
Russian	Fluent

4. Professional Employment

Period	Organisation	Position
2005 – now	Wismar University of Applied Sciences	Head of EU Project Centre, Senior Researcher, Lecturer

5. Selected projects

Period	Project Description
2016	External Expert for Regional Airports Development, engaged by Federal Department of Economic Affairs, Education and Research, Switzerland in the framework of COST Programme
2016	External Expert for Capacity Building in Strategic Management and Business Simulation, engaged by Volkswagen AG
2015 - 2018	"Green Logistics" - General Project Manager and Lead partner, 10 Partners from Germany, Estonia, Sweden, Russia and Kazakhstan
2014 - 2015	Direct service contract on the implementation of labour supplying responsibilities pursuant to MLC 2006 within and outside the European Union, engaged by General Directorate for Transport and Mobility (DG MOVE) of the EU Commission

2011 - 2014	Baltic.AirCargo.Net - General Project Manager and Lead partner, INTERREG IVB – Baltic.AirCargo.Net - Improvement of the air cargo transport sector by service oriented ICT-methods and processing logistic network.
2009 - 2012	EWTC-II, Regional Project Manager (Germany), INTERREG IVB-Project: "East West Transport Corridor-II" 30 partners from: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden.

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