

Enterprise Risk Management in the Airline Industry
- Risk Management Structures and Practices

A thesis submitted in partial fulfilment of the requirements of Brunel
University for the degree of Doctor of Philosophy

By

Anna Misiura

Brunel Business School

Brunel University

London

May 2015

Abstract

This thesis expands on the literature in the under-researched field of airline risk management by exploring organisational structures and practices of airline risk management systems and their technical and institutional drivers. In particular, it focuses on the phenomenon of Enterprise Risk Management (ERM) and its alignment to the requirements of airline business contexts. The theoretical framework informing this study combines structural contingency theory with two strands of institutional theory, namely old institutional economics and new institutional sociology. In this thesis, the phenomenon of risk management is investigated in situ as an organisational practice through a two-stage empirical study. Firstly, an exploratory field study was undertaken in a panel of ten international airlines. Secondly, the field study was complemented with findings from two explanatory case studies.

This study explains how in developing risk management systems airlines balance the sometimes conflicting technical and institutional demands of their respective task and institutional environments. The adoption and implementation of ERM in airlines are found to be driven primarily by coercive and normative pressures, and expectations of improved organisational effectiveness and efficiency. This study additionally improves general understanding of the nature of ERM and its coupling and fluidity in the organisational settings of airlines. It lends evidence for systematic variations in roles, uses, and organisational design choices of ERM systems. It shows the interdependent nature of airlines' ERM systems and other management systems. The study also demonstrates that the adoption of ERM in airlines drives development of new institutions, rules, and routines for comprehensive management of risks. Consistent with the tenets of contingency theory, this study conveys lack of a universally appropriate design of an airline ERM system.

The main contribution of this thesis is to assess airline risk management systems, identify core drivers of effective risk management practice, and provide a framework with the aim of guiding airlines in the development of enterprise-wide risk management approaches aligned with the requirements of their institutional and technical contexts. Furthermore, this research overcomes the limitations of previous, mostly quantitative studies of ERM coupling and dynamics in organisations, as it explores and explains the structures, practices, and rationales of airline risk management systems within wider organisational contexts through the use of qualitative methodologies.

Dedication

To my parents, Teresa and Leon, for their everlasting love and endless support.

Acknowledgements

First and foremost I would like to thank Dr Abraham Althonayan and Dr Mirna Jabbour for their support and encouragement throughout the duration of this research.

I would also like to express appreciation to academic and administrative staff at Brunel Business School.

My heartfelt gratitude especially to Fernando, Julita, and Kamil, for their love.

Last but not least, my special appreciation to all my friends who sustained me with their encouraging words and wishes over the years of study.

Declaration

I, Anna Misiura, hereby declare that the contents included in this PhD thesis are entirely my own work, have been developed specifically for this research, and have not been previously submitted for any other qualification.

Table of Contents

Chapter 1: Introduction	1
1.1 Background	1
1.2 ERM concept.....	4
1.3 Risks and challenges in the airline industry	6
1.4 Research problem.....	9
1.5 Aims and objectives of the study	12
1.6 Significance of the study	14
1.7 Outline of the thesis.....	16
Chapter 2: Literature Review.....	17
2.1 Introduction	17
2.2 Evolution of the risk management discipline.....	18
2.3 Risk management in the airline industry	20
2.3.1 Airline business environment and risk management practice	21
2.3.1.1 Key areas of airline risk management practice.....	23
2.3.1.2 Operational risk management in airlines	27
2.3.2 Trends and new directions in research and practice of airline risk management.....	32
2.4 Adoption and implementation of ERM and their driving forces	39
2.4.1 Drivers of ERM adoption and implementation	39
2.4.2 ERM implementation	41
2.5 Overview of landmark ERM frameworks and risk management standards.....	44
2.5.1 Australian and New Zealand Standard for Risk Management AS/NZS 4360	48
2.5.2 COSO Enterprise Risk Management – Integrated Framework	49
2.5.3 ISO 31000 Standard	52
2.5.4 Alignment of ERM frameworks and risk management standards to organisational contexts	55
2.6 Limitations of literature.....	58
2.7 Conclusions	59
Chapter 3: Theoretical Framework	61
3.1 Introduction	61

3.2 Theoretical approach: Duality of technical and institutional environment	62
3.2.1 Contingency theory perspective	64
3.2.2 Institutional theory perspective	66
3.3 Theoretical model	70
3.3.1 Components of the theoretical framework: analysis under the contingency approach	72
3.3.2 Components of the theoretical framework: analysis under the institutional approach	78
3.4 Conclusions	81
Chapter 4: Research Design.....	83
4.1 Introduction	83
4.2 Research paradigm	83
4.3 Research methodology	86
4.3.1 Field study	87
4.3.2 Case study.....	89
4.4 Definition of units of study	91
4.4.1 Field study sampling	91
4.4.2 Case study sampling.....	96
4.5 Research methods.....	97
4.5.1 Data collection methods	98
4.5.2 Data analysis methods	104
4.6 Ethical considerations	107
4.7 Limitations of the field study and case study research, and reliability and validity considerations.....	108
4.8 Conclusions	112
Chapter 5: Field Study: Airline Risk Management Structures, Practices, and their Determinants	114
5.1 Introduction	114
5.2 Determinants of airline risk management approaches	115
5.2.1 Institutional pressures.....	115
5.2.2 Contingency factors.....	121
5.3 Review of airline risk management systems	125
5.3.1 Characteristics of airline risk management systems.....	126
5.3.2 Maturity and advancement of airline risk management approaches	133

5.4 Conclusions	138
Chapter 6: Case Study: ERM System in Alpha Airlines	142
6.1 Introduction	142
6.2 Outline of the case study	143
6.3 ERM model	144
6.3.1 ERM governance structures	145
6.3.2 ERM technologies	150
6.3.3 Pillars of the ERM model	157
6.3.4 ERM internal environment	166
6.4 Conclusions and lessons learnt	168
Chapter 7: Case Study: Risk Management System in Beta Airline	172
7.1 Introduction	172
7.2 Outline of the case study	174
7.3 Risk management model	175
7.3.1 Risk management governance structures	179
7.3.2 Risk management technologies	181
7.3.3 Functionality of Beta's risk management system	193
7.4 Conclusions and lessons learnt	196
Chapter 8: Discussion	199
8.1 Introduction	199
8.2 ERM framework in the airline industry	200
8.2.1 Risk governance structures	203
8.2.2 Management of enterprise-wide risks: ERM process and airline risk profile	207
8.2.3 ERM architecture	210
8.2.4 ERM internal environment	212
8.2.5 Context-specific design of an ERM system	215
8.3 Determinants of airline risk management and ERM systems	217
8.3.1 Institutional determinants of airline risk management systems	217
8.3.2 Technical determinants of airline risk management systems	224
8.4 Maturity, roles and uses of airline risk management and ERM systems	231
8.5 Conclusions	235

Chapter 9: Conclusions	239
9.1 Introduction	239
9.2 Research questions revisited	240
9.2.1 Determinants of adoption and implementation of risk management systems in airlines	240
9.2.2 Organisational structures and practices within airline risk management systems	242
9.2.3 Assessment of airline risk management systems	244
9.2.4 Recommendations for improvement of airline risk management systems...	246
9.3 Contribution of the study.....	247
9.3.1 Contributions to theory.....	248
9.3.2 Contributions to methodology applications	249
9.3.3 Contributions to knowledge and practice.....	250
9.4 Research limitations	254
9.5 Recommendations for further research	257
9.6 Final remarks	258
References	259
Appendix A: Theoretical Framework	288
Appendix B: Coding Scheme.....	297
Appendix C: Analysis of Field Study Findings	299
Appendix D: Extension of Findings from Alpha Case Study.....	326
Appendix E: Interview Agenda Designed for the Field Study.....	335
Appendix F: Interview Agenda designed for the Case Studies.....	341

List of Tables

Table 2-1: ICAO’s Safety Management System Framework	31
Table 4-1: Airlines participating in the empirical research	95
Table 4-2: Field study and case study interviewees	103
Table 4-3: Organisation and analysis of empirical data.....	106
Table 4-4: Triangulation.....	109
Table 5-1: Institutional pressures influencing airline risk management systems.....	117
Table 5-2: Contingency factors influencing airline risk management systems	123
Table 5-3: Perceived status of risk management development.....	127
Table 5-4: Characteristics of airline risk management systems.....	129
Table 5-5: Maturity and advancement of airline risk management systems.....	134
Table 8-1: Drivers of effective risk management in airlines.....	203
Table 8-2: Review of key findings.....	237

List of Figures

Figure 2-1: Airline risk management matrix.....	23
Figure 2-2: Evolution of safety risk management.....	28
Figure 2-3: Research trends in airline risk management.....	33
Figure 2-4: Evolution of airline risk management approaches	35
Figure 2-5: Implementation of ERM.....	42
Figure 2-6: Risk management process - AS/NZS 4360.....	48
Figure 2-7: COSO’s Enterprise Risk Management Integrated Framework.	51
Figure 2-8: Relation between the components of the ISO 31000 standard.....	53
Figure 3-1: Schematic representation of the theoretical model.....	71
Figure 8-1: ERM framework in the airline industry	201

List of Abbreviations

ATM - Air Traffic Management
AS/NZS 4360 - Australian and New Zealand Standard for Risk Management
CAPEX - Capital Expenditure
COSO - Committee of Sponsoring Organisations of the Treadway Commission
EASA - European Aviation Safety Agency
EMS - Environmental Management System
ERM - Enterprise Risk Management
EPS - Earnings Per Share Value
ESARR - Eurocontrol Safety Regulatory Requirements
FMS – Flight Management System
IATA - International Airlines Transport Association
ICAO - International Civil Aviation Organization
IS – Information System
ISO - International Organisation for Standardisation
IT – Information Technology
MCS – Management Control System
NIS - New Institutional Sociology theory
NYSE - New York Stock Exchange
OHSMS - Occupational Health and Safety Management System
OIE - Old Institutional Economics theory
SeMS - Security Management System
SUMS - Supplier Management System
S&P - Standard and Poor's
SOX - Sarbanes Oxley Act
SMS - Safety Management Systems
SOAM - Systemic Occurrence Analysis Methodology
SWOT – Analysis of Strengths, Weaknesses, Opportunities and Threats
QMS - Quality Management System

Chapter 1

Introduction

1.1 Background

This thesis explores organisational structures and practices of airline risk management systems and their technical and institutional drivers. Airline risk management systems are investigated within task (or technical) and institutional environments which, as conveyed respectively by contingency and institutional theories, exert technical and institutional demands on organisations. Under these theoretical perspectives technical pressures are concerned with enhancing efficiency and effectiveness of organisational performance (Scott, 2002; Gupta, 1994), and institutional pressures are concerned with gaining social legitimacy (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). The theoretical perspectives informing this study are discussed in more detail in Chapter 3. In this theoretical context, this study particularly focuses on the phenomenon of Enterprise Risk Management (ERM) in airlines, explained as follows in section 1.3 of this chapter, and its alignment to the requirements of airline business contexts. For the purpose of this study the researcher defines ERM as a continuous process of identifying, analysing, and managing exposures across different organisational units and functional areas in airlines, aimed at assuring the achievement of organisational objectives and therefore preserving and creating value through effective management of risks.

Interest in corporate governance, particularly within the domain of risk management has continued to grow in recent years (Hoyt and Liebenberg, 2011; Gephart et al., 2009; Power, 2007). Risk management moved up the agendas of cross-industry regulators, rating agencies, practitioners, and scholars (Lam, 2006; Paape and Spakle 2012; Woods, 2009). Although risk has always formed an integral part of business reality, the wide-spreading concern for risk management has been recently stimulated by the growing complexity and volatility of the global environment, making organisations susceptible to an increasing number of risks affecting their operations (Wharton and Skinner, 2007). Over time, a paradigm shift occurred in the perception of risk management (Gordon et al., 2009). The traditional, silo-based approach to managing risks evolved towards a more holistic perspective, denominated Enterprise Risk Management (ERM), which links risk management with organisational objectives (Power, 2009), and which is now

advocated by regulatory and normative bodies as a recommended mode of corporate governance (Spira and Page, 2003; Power, 2004).

Multiple principles, frameworks, and standards emerged to assist organisations in developing enterprise-wide risk management approaches, that conceptualised ERM in both regulatory and normative terms and have become widely followed across industries (Soin and Collier, 2013). Yet, scholars argued there may be a considerable value in adapting the “universal” and “hierarchical” risk management guidelines (Arena et al., 2010, p. 661) to match particular circumstances of organisations (e.g. Kaplan and Mikes, 2014; Woods, 2009, 2011; Power, 2007; Paape and Spakle, 2012; Barton et al., 2002). Despite the “near theological belief in enterprise risk management” (Power, 2009, p. 849) widespread among risk management professionals, critical arguments have been voiced in academia arguing that regulatory and normative frameworks should be a starting point for risk management, which needs to remain sensitive to organisational contexts (Woods, 2011).

Managing risk is considered a fundamental concern in the complex, hazardous, and dynamic environment of the airline industry (Adler and Gellman, 2012). Airline operations are encapsulated within a labyrinth of actors and norms, which exempt airlines from freedom to operate in the same way as other global businesses, making them additionally susceptible to a myriad of risks related to other parties they are strongly dependent on (Otero, 2006; IATA, 2011). Apart from internally driven risks, a substantial part of airlines’ challenges is embedded in the social, political, and macro-economic context with interdependent contextual variables (Tjorhom, 2010); in this complex system interlinking a network of human operators, technological systems, and policies and procedures, risks are interconnected (Netjasov and Janic, 2008). The operational complexities inherent in the airline business, and the highly volatile competitive environment of the industry, expose airlines to a number of significant risks; nowadays the challenges related to poor industry structure, misguided regulations, and inconsistent strategy choices of airlines are considered the major determinants of poor airline profitability (IATA, 2013). Although airlines create great value for other businesses along the air transport value chain, persistently poor profitability has been created for investors in airlines; over the last 40 years the airline industry, in comparison

with a wide array of other industries, registered some of the lowest returns on invested capital (IATA, 2013; Wojahn, 2012).

The specificity of airline business promulgates the need to embrace enterprise-wide approaches to managing risks from different dimensions of airline operating contexts (Belobaba, 2009). However, airline risk management approaches have traditionally been rooted in compliance with multiple industry regulations, or else segregated into various functional silos, often focusing on management of a limited scope of risks. It should be noted, however, that neither the regulations-based compliance approach nor the silo-based functional approach have allowed airlines to generate returns for investors that are even close to being comparable to those of other service industries (IATA, 2013), while airlines rarely achieved sustained profitability over the last decade.

Research centred in the phenomenon of risk management requires previous establishment of understanding of the term “risk”. A variety of definitions exist for this term, while the most commonly found interpretations in popular and academic discourses are possibility of loss or injury, potential for having a negative impact, and likelihood of an undesirable event (Hampton, 2009). Although the risk concept has been frequently associated with negative connotations, some organisations shifted towards a more positive view recognising the two-fold nature of risk, considering both the downside and upside factors associated with risk. Reflection of the upside of risk is an essential part of a strategic risk mind-set (Slywotzky, 2008); hence, risk management practice should not be aimed solely at eliminating risks and, as a result, the reward opportunities associated with them, but rather at balancing risk portfolios for optimal risk and reward ratios (Frigo, 2008). The two-fold view of risk is adopted by the issuers of the landmark guidelines for ERM. Standards Australia and Standards New Zealand (2004) define risk as “a possibility of something happening that impacts on the objectives; it is the chance to either make a gain or a loss”; ISO 31000 (2009) regards risk as the “effect of uncertainty on objectives”; similarly, COSO (2004) proclaims managing both events with possible negative and positive impacts, where events with negative impact represent risks potentially preventing value creation or eroding the existing value, and events with positive impact represent opportunities positively affecting the achievement of objectives and supporting the creation of value or its preservation. Following this logic, this research considers risk in terms of events which

may affect accomplishment of organisational strategies either in a positive or a negative way; similarly, the rationale for risk management lies in enhancing the likelihood of positive consequences and reducing the likelihood of negative consequences of events, both determined in relation to the objectives of organisational strategies.

1.2 ERM concept

Numerous ERM guidelines have been developed to date; an overview of the most prominent and frequently applied in practice frameworks, COSO's ERM Integrated Framework (2004), the Australia/New Zealand 4360-2004 Standard (2004) or AS/NZS ISO 31000-2009 (2009), and ISO 31000 (2009), is provided in the following chapter (Chapter 2, section 2.4). COSO's (2004) definition of ERM is one of the most commonly cited in literature: "Enterprise risk management is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives".

COSO's definition of ERM suggests a continuous nature of risk management, which should be regarded as a process rather than a one-time management initiative in organisations. Organisational risk portfolios are affected by dynamically fluctuating market cycles, and so risk management should be performed continuously, as an ongoing process designed to be aligned concurrently with changing market conditions and organisational strategies (Althonayan et al., 2011). Ad hoc risk management initiatives may create temporary advantages by punctually smoothing income streams; yet, markets may take sceptical views of such departures from the pattern, which may trigger uncertainty and consequently adverse reactions in the market (Chatterjee et al., 2003). Through the embracement of ERM as an integral part of organisational strategies and creating a continuous pattern of risk management, organisations may reduce uncertainty and generate positive responses from the market (Barton et al., 2002).

The need for an implication of key decision makers in the risk management function is highlighted in COSO's definition of ERM. It is an especially valid note, given that many of the failures of previous risk management approaches were attributable to a

marginal importance given by organisations' top management to risk management (Beasley and Frigo, 2010). Certain elements of risk management, such as objectives setting, risk assessment, defining risk responses, and communication and monitoring an organisation's overall risk position, are subscribed to the board (Carey and Turnbull, 2001). However, in order to make informed decisions boards need to thoroughly understand the risk profiles of their organisations and how the risks can affect strategies at both business and corporate levels (KPMG, 2010); ERM should thus be embedded in all organisational structures, forming an integral part of management oversight (Branson et al., 2008). COSO (2004) alludes to a risk culture permeating the entire organisation, with everyone in an organisation being risk aware and risk intelligent, alertly looking for opportunities and threats that could influence the organisation's performance (Branson et al., 2008).

As stipulated by COSO (2004), the hallmark of ERM lies in linking risk management closely to the objectives of organisational strategies (Power, 2009); such alignment steers the risk management initiatives and the formulation and execution of organisational strategies in the same direction as organisational risk appetites (Francis and Richards, 2007). In the execution of this alignment, risks are identified by taking into consideration the organisational objectives and managed consistently within pre-established, organisation-specific risk tolerance levels (Buehler et al., 2008). ERM aspires not only to preserve but also to create value in organisations, and thus risk is considered both in terms of the downside and the upside of events potentially affecting organisational strategies (Wang and Faber, 2006). Under the ERM approach not only should a broad palette of enterprise risks be taken into consideration, but also the interplay and confluences among the various types of risks; such entity-level portfolio view of risks facilitates identification of potential interdependencies between risks which tend to be ignored in traditional risk management models and coordination of risk management efforts across various departments (Hoyt and Liebenberg, 2011).

The above discussed attributes of ERM are believed to generate numerous benefits for organisations. Increased risk awareness should facilitate decision making at both strategic and operational levels, and consequently more objective allocation of resources leading to improved efficiency and return on equity; decreased earnings and stock price volatility should reduce the costs of external capital (Hoyt and Liebenberg, 2011;

Meulbroek, 2002; Miccolis and Shah, 2000; Beasley, et al., 2008; Lawrence et al., 2009; Nocco and Stulz, 2006; Barton et al., 2002; Lam, 2001; Cumming and Hirtle, 2001; Buehler, 2008). Apart from the arguments of a technical nature, related to enhancing organisational efficiency and effectiveness (Scott, 2002; Gupta, 1994), scholars also argued the benefits of gaining external legitimacy through improved communication of organisations' risk profiles and signalling commitment to risk management (Meulbroek, 2002). Making organisational risk management efforts transparent to external stakeholders is considered a recent, yet increasingly widespread pressure (Bhimani, 2009). Power (2007, p. 180) explained: "Risk management is no longer a private matter for experts, but is increasingly publicly certifiable and visible because of its role in defining organisational virtue and legitimacy". Finally, the argument of ERM maximizing enterprise value through the above cited indirect benefits has also been gaining momentum in literature; even the definition of ERM provided by Casualty Actuarial Society Committee (2003, p. 10) states "ERM is the discipline by which an organisation in an industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organisation's short- and long-term value to its stakeholders". However, empirical evidence of ERM's effects on shareholder value is limited or is often based on ill-designed measures of ERM (Lawrence et al., 2009; Hoyt and Liebenberg, 2011).

1.3 Risks and challenges in the airline industry

The business environment of the airline industry is uniquely complex. The airline industry has historically been one of the fastest growing industries in the world, despite numerous challenges inherent in the industry structure and surrounding provision of airline services (Swelbar and Belobaba, 2009). Airlines face general entrepreneurial risks just as any other business does, yet external challenges especially related to industry structure, macroeconomic conditions, or governmental interventions, over which airlines have limited or no control, are the most relevant challenges to airlines.

Analysis of the airline industry structure through Porter's 'five-forces' model delivers interesting results, suggesting the five forces are uniquely strong in the airline industry (IATA, 2011). The supplier power in the airline industry is high, with just few suppliers catering to the airline market while concentrated in oligopolies; airlines concern for

safety and quality, and the consequent need for regular updates of technological advances adds additional power to aircraft and engine producers. Expansion of airline operations is often restricted due to infrastructural shortcomings of airports and air traffic control systems (Brueckner and Dender, 2008). As air travel has become more accessible, infrastructure development has not kept the pace of demand growth, therefore hindering services' speed and quality, indirectly placing a burden on airlines' profitability, and jeopardising the ability of the airline industry to satisfy the growing demand for air transport services (Forsyth, 2007). Similarly, through the provision of transport services, airlines have extensive interaction with government and other agencies which influence the ownership of business processes, airport security, immigration, customs, airport authorities, etc. Airlines operate in a highly competitive environment, in which there are multiple direct and indirect rivals, while service differentiation among airlines is not substantial (Gillen, 2006); additionally, the threat of new competitors is high due to the weak entrance barriers. Due to perceived commoditisation of air travel, switching costs for buyers are minimal, while buyers tend to be highly sensitive to prices (Gillen and Morrison, 2007; Brons et al., 2002). Since air travel is often regarded as discretionary, demand for airline services is cyclical and linked to overall economic conditions; airlines experience significant growth of traffic during periods of prosperity, and carry substantial excess capacity during crises (Mason, 2005). Finally, the bargaining power of the global distribution systems (GDS) is also very high. On top of that, it should be noted that the industry is highly regulated in various areas such as safety, environmental impact, airspace usage, or passenger rights; with multiple restrictions and frequently changing regulations, airlines lack the commercial freedom to operate like other businesses.

Apart from the challenges related to flawed and complex airline industry structure, airlines face risks related to their capital, labor, technology-intensive business models, and relevant external risks (Goetz and Graham, 2004). Airline businesses are characterised by high fixed costs and low profit margins; the share of operating expenses related to labor and fuel costs oscillates around 60% (Tsoukala et al., 2008). The nature of airline operations makes them especially susceptible to hazard risks. Even though technological improvements have resulted in increased safety of air travel, accident risk is inherent to air transport; the severity and multi-dimensionality of consequences related to airline accidents underlies the importance of safety (Janic,

2000). Natural phenomena are extremely relevant for airlines. Adverse climate conditions may lead to distortions in operating plans – flight cancellations, delays, and other diversions, which imply additional costs to airline operators. Finally, external, ‘macro’ risks such as fluctuations of fuel prices, interest rates and exchange rates, political conflicts, changing legislations, among others, are regarded as extremely relevant, adding to the complex myriad of airline challenges.

Despite the complex and volatile business environment, over the last four decades airlines have managed to reduce unit costs in real terms by 50% (Pearce, 2012), by streamlining operational costs, concentrating on core, value-adding services, increasing aircraft utilisation rates, re-launching services in ways that generate additional revenue streams, and improving revenue and yield management techniques (IATA, 2011). However, these efficiency gains have been passed on to consumers and generated additional value to other participants of the air transport value chain, while airlines’ margins have remained abnormally low in comparison to other industries (Wojahn, 2012). This phenomenon is especially striking due to the high risk and volatility inherent in the airline industry. High risk is usually associated with potentially high returns while, conversely, investors expect low returns from low-risk investments. However, even though in the air transport value chain the airline business is attributed high risk and volatility, airlines have been earning the lowest return on capital, even below the cost of capital provided by investors (IATA, 2013; Pearce, 2012).

Airline industry is expected to face multiple high-impact developments in the forthcoming two decades which will require effective management to ensure long-term sustainability of airlines; some of the major future challenges include threats of substitute services, market liberalisation and deregulation, finiteness of fossil fuels, development of virtual communication, trends in emission trading, and increasing overall industry vulnerability (Linz, 2012; Florian and Markus, 2011). The increasingly complex and dynamic nature of the airline business, and the anomalously poor profitability of airlines in the context of air transport industry, suggest that airlines face a demanding GRC (governance, risk and compliance) profile (Watchtower, 2010; Yilmaz, 2008a) and need to develop effective risk management systems to match the complex and dynamic nature of their businesses (Adler and Gellman, 2012; Nicolau and Santa-Maria, 2012; Niemeier and Tretheway, 2012). In its exploration of airline

industry risk management profile and airlines' risk management strategies, structures, and practices, this research concentrates on passenger air transportation providers, including both scheduled and chartered services, while it excludes exclusive providers of air freight services.

1.4 Research problem

Enterprise risk management has gained momentum in the agendas of regulators, normative bodies, industry professionals, and scholars. Despite the multiplicity of principles, guidelines, and frameworks developed in the field of ERM, scholars still regard ERM as an unproven and emerging field in which important knowledge gaps remain in practice and in academe (Kaplan and Mikes, 2014; Paape and Spakle, 2012). ERM research is limited in terms of exploring the coupling and fluidity of ERM in organisational settings (Soin and Collier, 2013), and especially beyond the context of the financial industry (Arena et al., 2010). Exploring ERM in relation to a complex and volatile business setting with possible goal conflicts between diverse risk rationalities, such as those exemplified by the organisational settings of airlines, offers an interesting avenue for research.

Risk management is a crucial yet challenging component of airline governance (Otero, 2006; Yilmaz, 2008a). The current situation of the airline industry suggests the need for effective risk management (IATA 2013; Pearce, 2012; Adler and Gellman, 2012). However, despite relevance of this subject and demonstrated interest from related industry regulators, associations, and practitioners, scarce guidance from academic research has been offered to airlines in structuring their enterprise-wide risk management approaches. Literature in the field of airline risk management leaves ample room for development, especially with regard to ERM. Prior research comprehensively assessing airline risk management systems at all levels and in all functional departments, beyond the areas of operational risk management, and exploring organisational couplings and rationales underlying adoption of particular risk management approaches in airlines is scarce or, in relation specifically to ERM, barely existent.

Even though numerous models have been developed to date conceptualising ERM in universalistic terms, they are often criticised for failing to consider the specificity of organisations (Arena et al., 2010). Scholars argued there may be considerable value in developing ERM approaches aligned with the requirements of specific organisational contexts (Paape and Spakle, 2012; Barton et al., 2002). Contingency theory perspective has been suggested for developing customised ERM systems (Woods, 2009, 2011; Gordon, 2009; Moeller, 2007), which should encourage organisations to experiment with innovative configurations of ERM matching their contextual circumstances (Kaplan and Mikes, 2014). Contingency-based research was also called to explore more contemporary dimensions of management control systems (Chenhall, 2003), as represented by ERM, while the new studies were suggested to adopt stronger focus on the contexts and organisational and social outcomes of the systems (Soin and Collier, 2013; Scheytt et al., 2006). Under the recommendation to adopt the contingency perspective in development of ERM systems, this study considers contextual characteristics of the airline industry underlying the rationales by which airlines structure their risk management approaches, in terms of both adoption and non-adoption of ERM. Literature review suggested that the determinants of adoption of ERM stem both from organisational quests for external legitimacy and improved effectiveness and efficiency; this suggests the need to conduct the analysis of determinants of airline risk management approaches in both institutional and technical realms.

Prior research in the area of airline risk management focused on exploring airline risk management strategies, structures, and practices in relation to particular facets of risks, such as management of safety, financial, operational, fatigue risks and many others. However, the literature is scarce in empirical organisational studies adopting a more comprehensive approach to risk managements systems. Attending to this scarcity in literature, further research is needed to comprehensively understand and assess the phenomenon of enterprise-wide risk management in organisational settings of airlines, in terms of the structures, practices, and organisational logics constituting risk management systems, as well as their maturity, roles and uses, and their coupling with other management systems in airlines. Due to the signalled need for improvement of airline risk management approaches, attention should be directed at understanding the shortcomings of airline risk management systems in order to later address them, and the best practices of such systems for their further dissemination through this study.

Investigation of these diverse aspects of airline risk management systems is especially interesting to undertake from the under-researched perspective of ERM.

Apart from the signalled gap in literature regarding the exploration of ERM specifically in the context of the airline industry, the pool of ERM studies can be contributed to in other aspects. Previous studies of ERM adopted primarily quantitative approaches in order to investigate diverse ERM-related issues such as ERM adoption drivers (e.g. Paape and Speklé, 2012; Beasley et al., 2005; Gordon et al., 2009), the characteristics of organisations that adopted ERM (e.g. Liebenberg and Hoyt, 2003; Pagach and Warr, 2007; Hoyt and Liebenberg, 2011), the relation between ERM adoption and the values or performance of organisations (e.g. McShane et al., 2011; Gates et al., 2012; Nocco and Stulz, 2006), or ERM coupling within organisations (Kleffner et al., 2003; Walker et al., 2003). Although these studies provided evidence from a wide range of samples including numerous organisations, their methodological approaches inhibited them from exploring ERM in cultural and organisational contexts. Evidence collected primarily through surveys would not allow for the exploration of contextual issues related to ERM coupling in organisations. Furthermore, the selection of organisations with ERM was usually based on simplistic proxies indicating existence of commonly adopted auditable trails of ERM which provided poor indication of the level of embeddedness and integration of ERM in organisational structures.

A similar problem also relates to studies of drivers of ERM adoption in organisations, while academic literature on motivations for ERM adoption is generally scarce (Hoyt and Liebenberg, 2011). Research exploring the enactment of ERM in organisational practice and ERM adoption drivers within wider cultural and organisational contexts is limited. This indicates the need to employ more qualitative approaches in the studies of ERM. The need for recognising organisational fluidity and contextual sensitivity of management control systems in general, and risk management systems in particular, was previously emphasised by researchers (e.g. Power, 2009; Miller et al. 2008; Arena et al., 2010; Woods, 2009, 2011; Gephart et al., 2009; Mikes, 2009; Muralidhar, 2010); as explicitly expressed by Miller (1994, p. 9), risk management “could not, and should not, be studied as an organisational practice in isolation from the wider social and institutional context in which it operates”.

Although scholars have recognised the limitations of investigating independently the influences of task and institutional environments on organisational structures and practices (e.g. Scott and Meyer, 1983; Carruthers, 1995; Baxter and Chua, 2003; Suddaby, 2010; Covaleski and Dirsmith, 1988), previous research in the field of ERM still lacks a joint application of the technical and institutional perspectives. This infers that a considerable value can be derived from a conjoint consideration of the technical and institutional pressures shaping airline risk management approaches. Continuing with the theoretical perspectives, prior studies of management control systems and risk management systems would often rely on different strands of institutional theory, particularly old institutional economics (OIE) and new institutional sociology (NIS). Conjoint application of these perspectives allows for exploring both intra-organisational institutions, rules and routines, and the influences exerted by macro-institutions in wider organisational fields. This theoretical approach has not been adopted in prior organisational studies of airline management systems.

1.5 Aims and objectives of the study

Attending to the rationale outlaid in the preceding section, it can be inferred that further research in the area of ERM could benefit the airline industry, as well as contribute to closing the existing literature and knowledge gaps. An important purpose of airlines is to create value which, when applied in the context of risk management, translates to creating value through effective management of risks; adoption of ERM in airlines should balance legitimacy and technical rationalities in development of effective, value-creating risk management approaches. As such, this research aims to investigate structures and practices of airline risk management systems in order to develop an enterprise-wide risk management framework in the airline industry; the final product of the thesis, the ERM framework in the airline industry, is presented in Chapter 8.

A series of objectives has been set to facilitate achievement of this aim:

1. To investigate the influences of business contexts on the risk management systems of airlines.
2. To understand organisational structures and practices constituting airline risk management systems.

3. To investigate maturity and advancement, roles and uses, and shortcomings and best practices of airline risk management systems.
4. To develop an enterprise-wide risk management framework in the airline industry.

Four research questions were developed to guide this research. The first research question inquires about the characteristics of airline business context:

- RQ1: How do different institutional and technical contextual factors determine the adoption and implementation of airline risk management systems?

The second research question deals with organisational structures, practices, and dynamics of airline risk management systems:

- RQ2: How do airlines structure and perform risk management functions?

The third research question focuses on assessment of airline risk management approaches:

- RQ3: Where are airlines placed on the continuum of maturity and advancement of risk management approaches, and what are the roles and uses of their risk management systems?

Finally, this fourth research question focuses on developing propositions for the improvement of airline risk management systems:

- RQ4: How can airlines improve and align their risk management systems with the requirements of their business contexts?

Therefore, the matter at the heart of this research is to explore the drivers of effective risk management in airlines. As conveyed through the research objectives and questions, this research investigates organisational structures, practices, and rationales of airline risk management systems, paying special attention to identifying their shortcomings and best practices, in addition to investigating the contextual drivers of these systems. This should allow for developing recommendations on the design of enterprise-wide risk management approaches in airlines aligned to airline institutional and task environments, and for balancing legitimacy and technical logics within these systems so that they bring value to organisations. In this study ‘value’ is defined after Gattringer et al. (2014, p. 276) as “stakeholder’s perceived benefits as well as the

expected contribution to the attainment of their respective goals and objectives”. In order to achieve the aim and objectives of this research, this study relies on findings from relevant academic and industry literature and from an empirical study; the empirical study comprises a field study (as defined by Lillis and Mundy, 2005) conducted in ten international airlines, and two case studies involving the most informative cases from the pool of airlines selected for the field study.

In this research ‘risk management system’ is considered as a set of components which sustain and support risk management throughout an airline, comprising *foundations* such as objectives, framework of policies and procedures, mandate and commitment, and organisational *arrangements* such as processes, activities, relationships, a structure of responsibilities and accountabilities, and resources (developed based on ISO 31000). In this regard, within the area of *arrangements*, ‘organisational structures’ can be defined as arrangements of lines of authority, communication, rights and duties, which determine the assignment of responsibilities and accountabilities across an organisation. Throughout this thesis the term “risk management system” will refer to the different possible configurations of organisational risk management foundations and arrangements, and the term “ERM system” will be considered as one of the possible variations of the “risk management system”. Finally, risk management systems in airlines are investigated as integral parts of organisational management control systems (MCS), as “it is inept to consider management control as being distinctly separate and independent from risk management or corporate governance concerns” (Bhimani, 2009, p. 4).

1.6 Significance of the study

The significance of this study is underpinned by four principal motives. Firstly, the airline industry has a uniquely challenging risk profile, making risk management a core competence for airlines (Janic, 2000). In the context of historically poor profitability of airlines, the challenges facing the industry add significance to this research and suggest the need for effective management of airline risks, which has been previously voiced by regulators, normative bodies, and industry professionals. However, despite the growing interest and adoption of ERM in the airline industry, this field has remained under-

researched in academic literature. This investigation is one of the first to empirically explore issues related to adoption and implementation of ERM in airlines.

Secondly, attaining to the calls for conducting airline risk management practice beyond the functional silos (Yilmaz, 2008a), this investigation aims to explore risk management systems in airlines, with a special focus on the core drivers of effective, enterprise-wide risk management approaches. Furthermore, acknowledging the need to fit the framings of risk management systems with the requirements of organisational contexts, this research aims to provide recommendations and highlight the issues that developers of ERM systems in airlines should take into consideration.

Thirdly, although academic literature offers a broad range of studies on airline risk management systems conducted from diverse 'siloed' dimensions, focusing on management of particular types of airline risks, there is little empirical work available that empirically assesses the risk management structures and practices developed in airlines from a comprehensive perspective. This study is expected to fill the literature gap in this respect, and respond to the need for a better understanding of organisational coupling and performance of risk management systems in their multiple dimensions, in addition to exploring how they are affected by the demands of airline task and institutional environments.

Fourthly, previous empirical research on ERM implementation draws mainly from survey findings (Hyot and Liebenberg, 2011), which are criticised for ignoring contextual factors of organisational assembling of ERM, and which rarely explore in practice the enactment of ERM rules and routines (structures and practices, see section 1.5). The nature of ERM and its organisational coupling and fluidity vary in different organisational settings (Arena et al., 2010), and understanding ERM as an organisational practice requires attention to be paid to wider cultural, political, and social contexts. Therefore, this research attempts to overcome the limitations of previous studies by relying on field study and case study methodologies.

1.7 Outline of the thesis

In addition to the introductory chapter, this thesis is comprised of eight additional chapters and a series of appendices.

- Chapter 1: Introduced background to this research and stated the research problem, research aim, objectives, and questions.
- Chapter 2: Provides a critical review of literature related mainly to airline risk management approaches and landmark ERM frameworks and risk management standards.
- Chapter 3: Presents a theoretical framework informing this study, which combines structural contingency theory with two strands of institutional theory, namely old institutional economics and new institutional sociology.
- Chapter 4: Presents the research methodology and methods chosen for this study.
- Chapter 5: Describes the empirical findings from a field study conducted in ten international airlines.
- Chapters 6, 7: Report on the empirical findings from two case studies.
- Chapter 8: Critically analyses and discusses the empirical findings in the context of the theoretical framework and relevant prior research.
- Chapter 9: Presents conclusions drawn from this study, outlines its major contributions and limitations, and discusses directions for further research.

Chapter 2

Literature Review

2.1 Introduction

Understanding the latest developments in airline risk management approaches and risk management discipline in general are important prerequisites for addressing the research problem underlying this study. The literature analysis is conducted in the context of the research questions stated for this study, and is aimed at developing conceptual understanding of the risk management discipline in three principal dimensions, namely the influence of business context on airlines' risk management approaches, adoption and implementation of ERM and their driving forces, and provisions and characteristics of the most prominent ERM frameworks and risk management standards. In addition, the literature review presented in this chapter aims:

- To categorise the body of academic literature in the aforementioned themes.
- To identify the leading researchers in the field and learn about their contributions to the body of knowledge.
- To identify gaps in the existing body of knowledge.
- To guide the researcher in positioning this research among the contributions of other researchers, building on their work.

This review draws on a variety of different data sources. Priority was given to findings retrieved from high-ranked, peer-reviewed academic journals; however, since ERM is a relatively new concept in academic literature (Arena et al., 2010), the researcher found it beneficial to complement academic literature with industry publications. This proved to be especially relevant to the study of airline risk management approaches; although the academic literature offers a broad range of studies of airline risk management systems conducted from diverse 'siloes' perspectives, there is little empirical work available regarding the adoption and implementation of ERM in airlines.

The rest of this chapter is structured as follows: the next section briefly describes evolution of the risk management discipline. The critical analysis of literature commences in the following section, which is focused on airline business environment

and its influences on the risk management practice in airlines, uncovering the specificity of airlines' risk management requirements. This chapter further continues with an analysis of cross-industry studies of ERM adoption and implementation and their driving forces. The following section presents three internationally recognised ERM frameworks and risk management standards, and argues the need for alignment of their provisions to contextual requirements of different industries. Thereafter, the two last sections draw conclusions on the reviewed literature and identify gaps and areas requiring further development.

2.2 Evolution of the risk management discipline

Attitudes towards risk management have evolved over time from simple risk transferring strategies, through compliance-driven risk management initiatives, converting gradually to structured programmes forming an integral part of core enterprise strategies (Arena et al., 2010). Formal risk management programmes can be traced back to the 1950s, when risks were managed mainly through insurance, and the 1970s, which marked the development of financial risk management strategies (Fraser and Simkins, 2010; Woods, 2011). Risk management would initially concentrate on managing only the downside of risk, with no consideration of the possible upside of events (Buehler et al., 2008). The financial and insurance industries have often pioneered the developments in the risk management discipline. The nature and profitability of these industries are underpinned by the ability to manage risk effectively. Risk management constitutes a core competence in financial and insurance industries; thus, they were the first, with the exception of academic bodies, to think about risk systematically (Buehler et al., 2008).

It was only later that the notion of the opportunistic side and the value-creating potential of risk began to filter down to broader business communities; the defensive attitude toward risk shifted to a mind-set of exploiting risk (CAS, 2003). A series of factors drove the paradigm shift towards adopting ever more comprehensive approaches to risk management. Firstly, the competitive environment has become increasingly dynamic and turbulent, giving rise to ever more complex and interrelated risks (Chapman and Ward, 2003). Phenomena such as globalisation, deregulation, consolidation of markets or emergence of new ones, intensified competition, innovation in products and markets,

technological developments, information revolution, e-commerce, or economic crises, compelled the complexity of business environment and drove the need for evolution of the risk management discipline (Thomson, 2007; Verbanoa and Venturini, 2011; Floricel and Miller, 2001). Secondly, following a wave of corporate and financial scandals, external pressures have been exerted by regulators, rating agencies, institutional investors, and corporate governance oversight bodies that have been insisting on the need for a more comprehensive perspective of enterprise risks. This, consequently, triggered the introduction of laws and regulations (e.g. Sarbanes-Oxley Act in the US, the UK's Corporate Governance Code, Basel, or NYSE Corporate Governance Rules), and normative guidelines in risk-related areas of corporate finance and internal control (CAS, 2003; Arena et al., 2010; Beasley and Frigo, 2010; Fraser and Simkins, 2010).

Increasing market regularisation and professionalisation drove the development of structured risk management programmes in organisations; yet, the programs have initially been focused on the compliance function with multiple regulations and industry standards (Beck, 2004). Risk management initially consisted of implementing multiple auditing and controlling procedures of major business processes, which were gradually improved in terms of efficiency through the implementation of standardised procedures and automated monitoring controls throughout organisations (Abrams et al., 2007, Fraser and Henry, 2007). However, these risk management practices often proved insufficient to protect organisations' interests, due to incomplete portfolios of risks contemplated in the risk management programmes, or due to ignoring the interconnectivity of particular risk groups (CAS, 2003). The fragmented approaches to controlling risks, which are also frequently referred to as "silo-based", assumed managing particular risks independently, with little consideration of their interdependence (Olson and Dash-Wu, 2008). The "silos" would also often separate the strategic planning function from risk management initiatives; with no link between risk management and strategic planning, and ignorance of the interconnectivity of risks, organisations would overlook important strategic risks (Olson and Dash-Wu, 2008). The importance of implementing a broader approach to risk management became evident in the wake of the economic crises of the last decades, when the "siloed" risk management programmes often failed and abnormalities took serious tolls on organisations' performance (Power, 2004; Collier and Agyei-Ampomah, 2005). In the

aftermath of the crises, there has been an increasing consciousness that a more holistic, value-adding approach to risk management is a compelling need (Beasley and Frigo, 2010).

The ultimate development in the risk management discipline, as previously mentioned - ERM, emerged during the 1990s (Power, 2009; Arena et al., 2010). ERM evolved beyond the traditional risk silos to implement a common thought process in the identification, assessment and management of enterprise risks (Frigo and Andersen, 2011). Risks affect organisations in a holistic manner, and therefore their management should be holistic, trespassing arbitrarily chosen functional silos or disciplinary boundaries (Sobel and Reding, 2004). Thus, under the ERM approach, organisations should manage enterprise-wide risks through a comprehensive programme extending beyond internal control processes, internal audit, or adherence to compliance requirements. As interest in ERM has increased over time, the risk management function has been moved from organisations' peripheral areas to the corporate levels (Arena et al., 2010); the ERM initiative became one of the core strategic efforts for generating prompt and more accurate responses to changing market conditions and improving overall organisational performance (Hampton, 2009). The growing interest in embracing an increasingly wide scope of organisational exposures and developing integrated risk management approaches was followed by a gradual formalisation of enterprise-wide risk management frameworks and standards (Lawrence et al., 2009).

2.3 Risk management in the airline industry

The analysis presented in the section to follow focuses on the risk management practice in the airline industry. Firstly, the core dimensions of airline risk management systems are presented in the context of the requirements of airline business environment and of the risk profile of commercial aviation. Secondly, current trends in risk management literature and practice are presented, while the researcher reflects on under-researched topics in the field of airline risk management. In order to improve an understanding of the airline risk management practice, the researcher complemented the review of academic literature with a wide range of alternative data sources such as industry and policy publications, and data published by airlines in any form of communications.

2.3.1 Airline business environment and risk management practice

Risk management approaches in airlines are influenced by an interplay of institutional and technical factors and, among others, by the volatile business environment, the hazardous nature of airline operations, the highly regulated business context, or organisational risk profiles, aims and objectives (as discussed in Chapter 1, section 1.4). The airline industry is heavily regulated, and adherence to the regulatory framework to a large extent has an impact on the risk management practice of airlines (Adler and Gellman, 2012). The regulatory framework for civil aviation comprises international conventions, national laws, and rules and procedures issued by supranational legal authorities (Leloudas, 2009). Additionally, recognised industry organisations often prescribe best practices and standards, especially concentrating on quality and safety management systems (Boksberger, 2011). The head advisory organisation in the aviation system is International Civil Aviation Organisation (ICAO), dedicated to promoting and harmonising quality and safety standards in airline operations. Standards and Recommended Practices (SARPs) issued by ICAO are implemented and supervised by national civil aviation authorities. Supra-national organisations, such as Joint Aviation Authorities (JAA), additionally work toward a unified implementation of aviation safety standards. Other organisations, such as European Aviation Safety Agency (EASA), with a mandatory power operate, for example, as certification institutions. Additionally, professional organisations such as the International Air Transport Association (IATA) provide safety recommendations for airlines. Apart from the field of operational safety, airline air transport activities are additionally regulated in multiple areas such as, among others, the allocation of traffic rights, accesses to airports and time slots, and standards of aircraft noise and CO₂ emissions, which have an impact on organisational strategies, including the risk management strategies (IATA, 2011). Airline risk management programmes therefore need to consider the demanding compliance profile of the airline industry, as well as a multiplicity of entrepreneurial and market risks.

The core competency of airlines is delivering safe flights, yet they are evaluated in the market based on their ability to profit from taking complex risks, especially in the cases of listed organisations (Lin and Chang, 2008). Airlines, in the same way as organisations from other industries, face a dilemma of balancing risk and return in their

operations (Lin and Chang, 2008). However, the risk-return trade-off in the case of the airline industry, where lives may be at stake, differs from the capital-budgeting dilemmas of other industries (Simkins, 2011); maximisation of profit goals with little consideration of service quality and, implicitly, of safety goals generates higher costs to organisations (Noronha and Singal, 2004). Reason (1997) discussed organisational efforts directed at increasing system performance in complex socio-technical systems within the areas of safety and productivity; the scholar argued the productivity goals tend to be prioritised by organisations over protection goals. Previous studies also argued the trade-off between compromising quality by airlines and their financial health, suggesting that financially weak airlines do not prioritise the pursuit of safety and are more prone to compromising quality (Dionne et al., 1997; Golbe, 1986; Rose, 1990). Thus, airlines need to find the optimal balance between production and protection goals; safety management can be considered as a fundamental process supporting the management of business in pursuit of profits (ICAO, 2012).

The specificity of airline business environment is reflected in an airline's risk profile (set of major risks as defined in ISO 31000, 2009), which is characterised in particular by the prevalence of external risks with a low level of controllability. The risk management strategies of airlines are conditioned by the different levels of occurrence probability and potential impact of the risks they face (Lin and Chang, 2008). Risks of low frequency and high severity, such as aircraft accident risks, can be transferred to external parties through insurance policies. Risks of high severity and with a high level of occurrence probability are not-insurable. Airlines employ means to minimise losses through crisis management programs and wider risk management systems. Risks of low severity and low frequency of occurrence are often retained by airlines, which may employ, for example, captive-insurance solutions. Risks of high frequency and low severity, such as operational risks, can be managed in airlines through the establishment of internal control and risk management programmes. The following figure (Fig. 2-1) summarises the common strategies employed by airlines, adapted to the typology of exposures they face. In the two-dimensional matrix the vertical axis indicates the degree of potential loss an airline would experience if the risks were to materialise, while the horizontal axis indicates the level of occurrence probability (frequency) of particular risks.

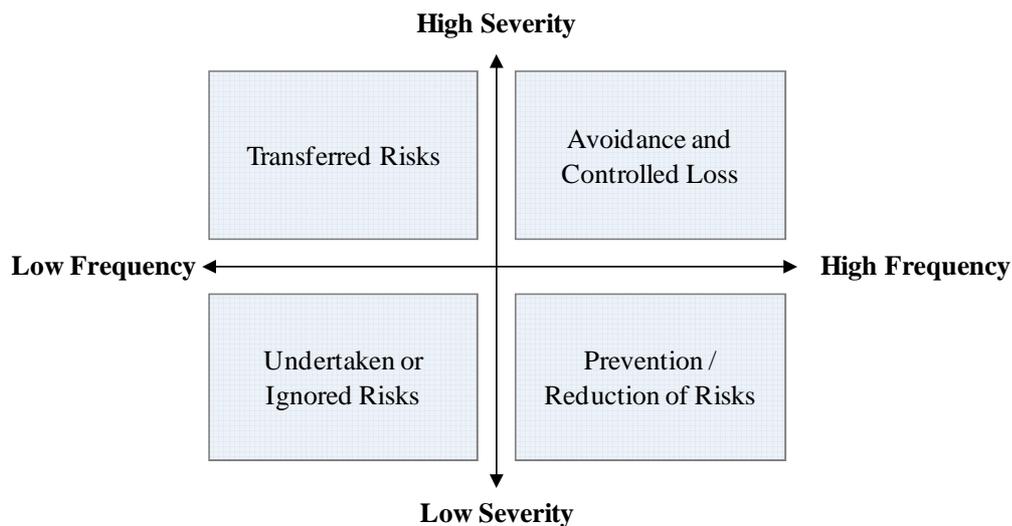


Figure 2-1: Airline risk management matrix
(Adapted from Lin and Chang, 2008, p. 455)

2.3.1.1 Key areas of airline risk management practice

The following sections discuss the key focus areas of airline risk management programmes, attending to the varying levels of occurrence probability and impact severity of risks commonly faced by airlines. The research cited throughout the following discussion does not claim to be exhaustive, but rather illustrative of trends and areas of special interest of airline risk management programmes.

Safety risk management

Air travel safety is a broad area, encompassing operational safety risks and security threats considered in terms of violent acts intended to harm aviation passengers or installations (Brooker, 2006). The assurance of safe operations, both on the ground and in the air, is the key concern of airline risk management programmes (Netjasov and Janic, 2008). An extensive regulatory framework has been developed, regulating operations of airlines and other organisations along the air transport service chain, aimed at limiting the risk of flying (Janic, 2006). Airlines are required to comply with numerous regulations in terms of safety by developing safety and security policies and emergency plans and procedures; in addition, airlines are required to report on the measures deployed in safety and security risk management programmes (Netjasov and Janic, 2008). This issue is further elaborated on in section 2.3.1.2 of this chapter.

The strong focus airlines place on safety management is due not only to the regulatory framework, but also to the severe consequences that safety failures may have on overall airline performance. Multiple studies highlight the importance of sound safety records from the business financial perspective (Noronha and Singal, 2004). Safety accidents, apart from material losses, generate multiple “hidden costs” for organisations, such as negative effects on airline reputation (ICAO, 2013; Graham and Bansal, 2007). Sound safety records in airlines generate higher customer demand (Squalli and Saad, 2006). Safety-related accidents generate immediate market responses, affecting multiple aspects of airline performance and market value (Dillon et al., 1999; Carter and Simkins, 2004). Financial context for safety provision in airlines was analysed by Noronha and Singal (2004), who stipulate that airline financial health affects organisational ability and willingness to provide improved safety measures.

Security of airline operations has become a frequently discussed topic, especially after the “9/11” terrorist attacks (Kim and Gu, 2004). Considering the nature of the airline business, and its strong dependence on regulatory frameworks and performance of external service providers (as discussed in Chapter I, section 1.4), security-related risks can, to a large extent, be classified as external risks. Bazerman and Watkins (2005, p. 365) refer to security-threatening events as “predictable surprises”, which are “events that take an organisation by surprise, although leaders had all of the information necessary to anticipate the events and their consequences”, and claim that “predictable surprises” occur regularly within organisations, and that it is the leaders’ responsibility to identify and avoid them – by recognising growing systematic weaknesses in organisations and taking steps to mitigate the scope of possible damages.

Airline insurance policies

Mitigating risks through insurance has traditionally been the most common form of risk management in airlines (Lin and Chang, 2008). Due to the nature of their core operating business, airlines are exposed to risks, such as accidental or incidental damage to aircrafts, and multiple resulting costs, such as liability claims related to passengers and general liability to third-parties. Hazard, safety and security-related risks, characterised by high severity and low probability of occurrence, are typically covered by insurance policies. Due to the complexity and financial impact of such risks if materialised,

insurance policies are jointly provided by various insurers who additionally trade the exposures on the reinsurance market (Lin and Chang, 2008). Insurance policies transfer the financial consequences of risks to another party (transferee), rather than the risk itself, and thus they help airlines to avoid the financial distress occasioned by unfortunate events (Lane, 2005). From a legal perspective, insurance is a contract "whereby one party, called the insurer or underwriter, undertakes, for a valuable consideration [premium], to indemnify the other, called the insured, against loss or liability from certain risks or perils to which the object of the insurance may be exposed, or from the happening of a certain event" (Article 2468 C.C.Q. cited in Leloudas, 2004). The importance of insurance policies in airline risk management strategies is reflected in airlines' structure of expenses; in 2006 over 70% of airlines' risk management resources were dedicated to covering insurance premiums (Jenner, 2007). Insurance costs have become remarkably relevant for airlines, as premiums have experienced significant increases in recent years, especially after the 9/11 terrorist attacks (Flouris et al., 2009).

Risk management through insurance facilitates only partial optimisation of the risk portfolio. Although airlines can purchase coverage for a growing number of risks, insurance costs against some types of risks may be prohibitive (Leloudas, 2009). Additionally, since risks are interrelated, occurrence of some of the risks commonly covered by insurance, for example, catastrophic risks such as safety accidents, can affect airline businesses in multiple ways (Flouris et al., 2009). Although insurance policies cover certain types of risks, there are many uninsured costs for airlines and the industry which are triggered by the occurrence of such risks, such as the above discussed loss of public confidence following safety accidents. This entails the need to adopt a more comprehensive approach to management of airline risks, which should also consider those risks which are not covered by insurance policies, particularly strategic risks (Fraser and Simkins, 2010).

Crisis management and contingency planning

Airline business is conditioned by multiple external risks which can alter the planned course of operations by causing flight diversions, delays, or cancellations, or even provoke major operational crises such as prolonged closure of airspace or aircraft

accidents. Causes of operational crises may be complex, involving multiple and interacting factors, combining external exposures such as weather conditions with internal failures such as faulty maintenance procedures. Operational crises represent a significant economic cost to airlines, but also trigger commercial and human consequences for airlines and their customers (Nigel and Elphick, 2005). Development of robust crisis planning and management tools, involving multi-agency planning for handling diverse exceptional circumstances, is regarded as imperative for airlines (Alexander, 2013; Bejou et al., 1996; Sally, 1999; Sellnow and Cowden, 2002). Coordinating inter-organisational efforts in times of crises is extremely challenging (Siomkos, 2000). The need to improve risk management programmes and crisis management plans has become evident to airline industry professionals over the last few years; for example, the closure of airspace in April 2010 due to a volcanic eruption, followed by adverse weather conditions, revealed just how unprepared airline managers were to handle crises of prolonged duration and extensive geographical range (Mikosz, 2011; Alexander, 2013).

Financial risk management

Airlines are exposed to significant financial risks, which create uncertainty of future cash flow and have a material impact on airline operating results. Financial risks, such as fluctuations in interest rates, adverse movements of foreign exchange currency prices, or fluctuations of commodity prices, cause changes in revenue, airlines' operating expenditures and financial expenses. Therefore, management of financial risks is considered to be of primary importance and is a commonly employed practice in airlines (Carter et al., 2006). The airline industry has a capital intensive nature, and airlines tend to operate with high debt leverage (Mikosz, 2011). Interest rate fluctuations may have important effects on the cost of debt and, consequently, airline operating results. Additionally, interest rates have an indirect impact on the airline industry by influencing progression of economic conditions and business cycles, while the industry is highly sensitive to economic cyclicalities (Loudon, 2004). The cash flow of airlines is strongly affected by volatile exchange rates; this is due to the fact that revenue, expenses, and loans are denominated in multiple currencies. Furthermore, demand for airline services is also indirectly affected by exchange rate ratios (Loudon, 2004). Finally, fuel costs account for a substantial part of airlines' operating costs, and

thus changes in jet fuel prices may cause variations in airlines' profitability (Morrell and Swan, 2006).

The financial and market risks facing airlines are hedgeable, and airlines engage extensively in hedging operations (Morrell and Swan, 2006). Academic researchers explored airlines' hedging practices, highlighting positive effects of hedging on airline operating performance (e.g. Berghöfera and Luceya, 2014) and on firm value (e.g. Carter et al., 2006). The use of hedging was argued to mitigate volatility of airlines' cash flow, as capital markets assign higher prices to stocks of airlines with a less volatile cash flow (Carter et al., 2006). Interest rate derivatives and foreign exchange swaps and forwards are commonly employed by airlines in order to mitigate the risks of their adverse changes. Similarly, airlines often operate in forward markets, purchasing oil and petroleum derivatives (Loudon, 2004; Spinetta, 2006).

2.3.1.2 Operational risk management in airlines

Operational planning under uncertainty and operational safety are concerns of considerable importance to airlines, and therefore this section discusses in more detail these broad areas of airline risk management practice. Airline operations need to be constantly re-adjusted for capacity rationalisation and route, network, hub, or code-sharing optimisation (Ahmed and Poojari, 2008). The operational risk portfolio encompasses a wide variety of challenges related to revenue and inventory management, promotion and distribution of services and products, cost containment, human resources policies, and IT and telecommunications systems, among many others; however, safety concerns, as indicated in the preceding section, constitute the main pillar of the broadly denominated airlines' operational risk management practice. Within the context of airline operational risk management programmes, safety is defined as "the state in which the possibility of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management" (ICAO, 2013, p. 2-1). As previously discussed, management of operational risks, interrelated with airline safety risks, is heavily regulated. Furthermore, in the areas lacking regulation, organisations such as, among others, ICAO, IATA, and EASA prescribe best practice

recommendations related to, for example, maintenance, ground handling, flight and cabin operations, or certification of personnel.

Evolution of safety risk management

Even though, over the years, reliability of technology in aviation has improved considerably, the reliability of human actions and overall systems has not evolved at the same pace (Liou et al., 2008). Accident risk is believed to be inherent to air travel (Netjasova and Janic, 2008). The evolution of operational risk management, and of safety risk management in particular, can be divided into three phases which are illustrated in the following Figure 2-2.

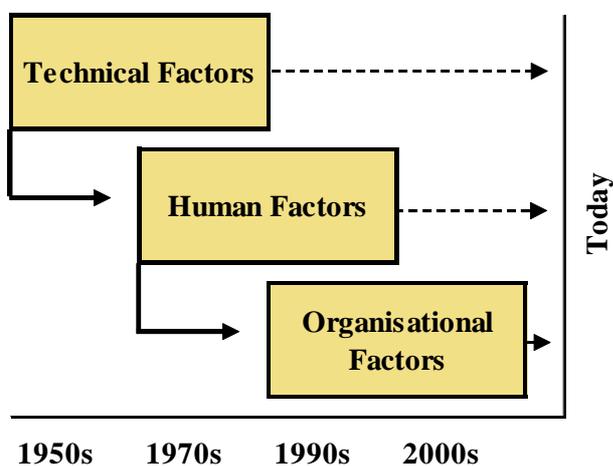


Figure 2-2: Evolution of safety risk management

(Adapted from ICAO, 2013, p. 2-2)

In the 1950s the focus of safety management programmes in airlines was placed on preventing technological failures, what consequently led to a decrease in frequency of aviation accidents. The field of operational risk management was later broadened to consider compliance to a regulatory framework of safety assurance. In the 1970s the focus of operational risk management shifted from technological issues to include human factors related to man-machine interface; human error had been increasingly recognised as a recurring factors in aircraft incidents and accidents. Consequently, since the 1990s human actions have been recognised as being influenced by complex

organisational factors. Aviation incidents and accidents have become perceived in a systematic perspective, considering the effects of formal frameworks and organisational culture on the effectiveness of safety risk controls. The reactive methods of collection and analysis of safety incidents and accidents data were complemented with proactive techniques of advanced detection of emerging safety threats. As the importance of human and related organisational factors in safety accident and incident causation was recognised, multiple accident causation and prevention models have been developed in the last decade. As technology has become more reliable, human factors have become perceived as a fragile component of complex socio-technical systems such as aviation. Therefore, safety accident causation models concentrate primarily on human factors such as human interactions with technology or human behaviours within organisations. Human factors are defined by Reason (1997) as “failure of planned actions to achieve their desired ends” (p. 71).

The scholarly developments of Reason and Snook provide accurate representations of contemporary approaches in the area of operational risk management, and of human factors in accident causation models in particular. Reason (1997) in the “Swiss Cheese” model contends that aviation safety incidents and accidents take place in consequence of not single-point safety system failures, but successive breaches of multiple system defences, which can be related to technological failures, human errors, or organisational issues. The model further conveys that operational safety accidents include a combination of active and latent conditions; active breaches are actions and inactions with an immediate effect on system performance such as errors of front-line personnel in airline operations; latent failures may remain within a system long before an accident is produced, and are activated by breaches of a series of system defences, such as faulty procedural designs or lack of a safety culture in an organisation. In the context of the interplay of organisational, technological and human factors in accident causation, the model asserts the need to consider both active failures and latent conditions in improving the performance of safety systems; organisational processes should be monitored to detect latent conditions and instil controls, and adequate workplace conditions, culture, and routines should be developed in order to prevent active safety breaches. Reason (1997) argued that the human condition cannot be changed, but “we can change the conditions under which people work” (p. 25). With reference to Reason’s postulate for detection of latent conductions, Dekker (2002) and Young et al.

(2004) argue that causality in airline accidents can be only attributed to latent conditions in retrospective.

Snook (2000) developed a concept of “practical drift” to describe the deviation of airline systems’ performance from their original design, caused by failures in anticipating operational disruptions. Three groups of factors are combined in airline systems designs: technology, people and formal frameworks, while their undisrupted, ‘model’ functioning is described as “baseline performance”. System designs consider “practical drifts” to take place as a consequence of limitations to operational performance of technology, people, or formal frameworks constituting the systems. Snook (2000) argues that despite the occurrence of practical drifts, people operating the systems are able to control the practical drifts by introducing punctual adaptations to the systems. The closer to the beginning of a “practical drift” from baseline system performance, the higher is the human potential to capture and analyse information on operational hazards and disruptions, and the easier it is to introduce adaptations in the systems and thus control and mitigate safety risks.

The two preceding approaches recognise the relevance of human performance in causation and prevention of airline safety accidents. Human performance in safety assurance systems can be further analysed within a context of multiple interrelated components of such systems by use of a SHELL model (Hawkins, 1993). The model conceptualises the relationships between humans and other multiple, interrelated components of complex system such as the aviation system; the model considers interactions of humans (liveware) with software, hardware, and environment. When visualized within an aviation system, the model conveys the interactions between all system components need to be considered in order to optimise safety assurance, and that a mismatch between liveware and other system components contributes to human errors.

Apart from stressing the role of human factors in accident causation in aviation systems, the importance of investigating safety incidents apart from safety accidents is often emphasised by scholars. Under the common cause hypothesis the pathways leading to incidents and accidents have a lot in common, and only minor alterations in the common factors influence the classification of the occurrences as incidents or accidents.

Therefore, investigation of pathways leading to the occurrence of incidents can result in generation of countermeasures preventing the occurrence of accidents (Heinrich, 1931). Similarly, Dekker and Hollnagel (1999) argued that incident analysis resulting in detection of breaches in safety barriers, which indicate vulnerability of safety systems, can prevent occurrence of accidents under the common cause hypothesis.

Safety Management System

Airline industry regulators and associations have been strongly advocating the use of the System Safety concept in managing a broad range of safety risks. The importance of managing safety risks was highlighted by the implementation of Safety Management Systems (SMS) in aviation service providers, which was mandated by ICAO; SMS can be defined as “a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures” (ICAO, 2013, p. xii). The ICAO’s SMS framework consists of four main components and twelve elements presented as follows in the table 2-1.

Table 2-1: ICAO’s Safety Management System Framework

Safety Management System	
Safety Policy and Objectives	<ul style="list-style-type: none"> Management commitment and responsibility Safety accountabilities Appointment of key safety personnel Coordination of emergency response planning SMS documentation
Safety Risk Management	<ul style="list-style-type: none"> Hazard identification Safety risk assessment and mitigation
Safety Assurance	<ul style="list-style-type: none"> Safety performance monitoring and measurement The management of change Continuous improvement of the SMS
Safety Promotion	<ul style="list-style-type: none"> Training and education Safety communication.

(Adapted from ICAO, 2013, p. 5-2)

Air navigation service providers are obliged to establish formal risk management structures within the SMS framework, which should integrate safety management initiatives conducted across different organisational departments related to flight safety. The structures should assure systematic assessment of the organisation's safety-related risks, establish risk mitigation measures, and define intra-organisational authorities to decide on tolerance levels for risks. These requirements, comprised within Eurocontrol Safety Regulatory Requirements (ESARR), were transposed by the European Commission into the Community law. Airlines are advised to complement the SMS framework with related safety risk governance models; for example, Systemic Occurrence Analysis Methodology (SOAM) is advocated by Eurocontrol for analysis of Air Traffic Management (ATM) occurrences.

2.3.2 Trends and new directions in research and practice of airline risk management

The previous section demonstrated how the business environment and unique risk profile of airlines condition organisational risk management structures and practices, among which the management of safety, hazard, and financial exposures is dedicated particular attention. As risk management, especially in the aforementioned areas, is at the core of airline competences, the academic literature exploring issues related to management of key airline exposures is extensive.

Academic research conducted over the last two decades in the field of air transportation can be broadly categorised into several main themes such as airline management, airports and infrastructure, passengers demand and price elasticity, changes and influences of regulatory frameworks, environmental issues including CO₂ and fuel emissions as well as acoustic pollution, network planning, alliances between airlines, cost bases of airline operations, financial performance of airlines, air transport safety, and parameterisation of the industry (Ginieis et al., 2012). Among these popular study areas, within the categories of airline management and safety, extensive research was conducted regarding airline risk management practice. The figure below summarises the main streams of scholars' interest related to the practice of risk management in airlines; the summary is illustrative rather than exhaustive and any more detailed review of

academic research conducted in these areas is considered beyond the interest of this study.



Figure 2-3: Research trends in airline risk management
(Developed by the author)

Previous research on airline risk management systems was often conducted in thematic silos, focusing on selected dimensions of airlines' risk profiles. There has been little work offering comprehensive assessments of airline risk management structures and practices. The most commonly studied dimensions of airline risk management practice, namely the management of, broadly defined, safety, financial, and operational risks, reflect the key focus areas of airlines' risk management efforts (Zea, 2004; Otero, 2006). As discussed in the preceding section, airline business environment and, in particular, the requirements of the regulatory frameworks have a strong impact on the designs of airline risk management systems. However, focusing on compliance with laws and regulations, or the risk management programmes' consideration of, for the most part, the risks which are the easiest to identify and assess, offers an incomplete form of assurance (Watchtower Risk Consulting, 2010; Abrams et al., 2006).

Recent research suggests that the most relevant challenges facing airlines, underpinning their persistently poor profitability over the last decade (Pearce, 2012), are related mainly to inefficiently designed regulation, poor industry structure, dynamics in the airline supplier markets, commoditisation of the airline product, and inconsistent strategy choices (IATA, 2011, 2013). Government policies are believed to have limited exit from airline business and hindered effective competition in the industry, while the overly-fragmented industry competes mainly on price (IATA, 2011). The importance of considering external and strategic risks has been emphasised in prior studies (e.g. Beasley et al., 2005; Power, 2004; Lam, 2006; D'Arcy and Brogan, 2001). Similar calls are articulated by industry practitioners (e.g. Bisignani, 2011; Zea, 2004; CAS, 2003; Berley, 2006); by way of an example, conclusions from the study of Zea (2004) attribute the losses of shareholder value in the airline industry primarily to strategic and financial risks, rather than to operational and hazard risks which, as claimed in the study, are at the core of airline risk management programmes; research of Barely (2006) suggests that 65% of factors driving declines of market capitalisation of organisations are strategy related, while 35% of factors are related to operational and financial risks. IATA's reports of airline safety records may suggest that in the era of sophisticated organisational systems and advanced technologies which have significantly improved safety of air travel, airlines should adopt a more forward-looking perspective on identification and management of relevant strategic risks, apart from focusing on the historically relevant safety and operational exposures. Air travel has become significantly safer over the last two decades, with a worldwide average aircraft accident risk of 0,00004% for every flight taken (data from 2006), compared to 0,0002% in 1986 (IATA, 2011). The year 2011 was the safest year ever for air transport (IATA, 2012). Similarly, security of air travel has improved over the last 40 years, to the point where the probability of participating in a flight subject to an 'act of unlawful interference' is less than 0,0001%, compared to 0,001% in the 1970s (IATA, 2011).

Over and above the studies conveying the relevance of external and broadly defined strategic risks for the airline industry, previous research of strategic management in airlines, and implicitly the management of strategic risks by airlines, is extensive, while further discussion of them is beyond the interest of this study. However, little is known specifically regarding the governance structures and processes institutionalised in airlines specifically for identification and management of strategic exposures.

Towards development of enterprise-wide risk management systems in airlines

Airlines have embarked on the journey towards adopting increasingly more comprehensive perspectives to managing enterprise-wide risks (Yimlaz, 2008a, 2008b, 2008c). The following figure 2-4 illustrates the transition of airline risk management practices conducted in functional silos, toward an integrated, enterprise-wide risk management approach.

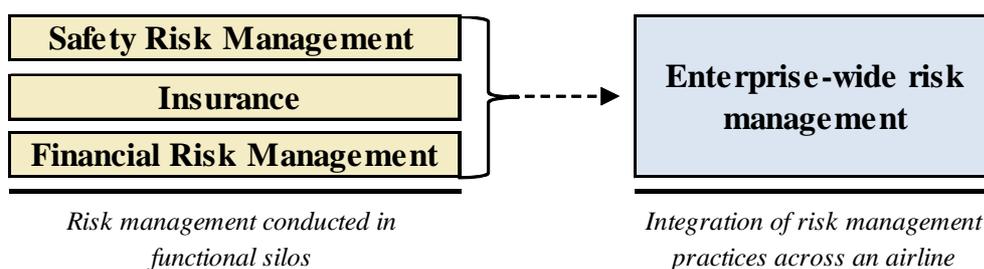


Figure 2-4: Evolution of airline risk management approaches

(Developed by the author)

Only scarce data is available in scholarly articles on the embedding of ERM principles in airline risk management structures and practices, empirically investigating the adoption and implementation of ERM and their driving forces, as well as accomplishments and challenges related to the implementation of ERM. The ERM concept is relatively new to non-financial industries, which were dedicated less attention in ERM research (Woods, 2011; Arena et al., 2010), thus it was no surprise to discover that the studies incorporating the notion of ERM related to the airline industry span over a relatively narrow time horizon of ten years. Although the vast majority of academic and industry publications regarding ERM in airlines has been conducted throughout the last decade, researchers of the airline industry laid the groundwork long before for a gradual development of this concept by anticipating the direction of future advancements of risk management practices. By way of an example, Davidson et al. (1987) investigated the impact of large losses related to airline accidents on the value of airlines; the study concluded that insurance policies cannot fully cover the large losses, and so the uncovered losses affected the enterprise value negatively; the scholars advocated the need to adopt a more comprehensive approach to the management of

airline risks, beyond merely purchasing insurance. By way of another example, Moss (1992) recognised the much needed change in risk managers' roles in commercial aviation organisations; the scholar argued that they should consider an ever broader spectrum of risks and prepare airlines for organisational crises while simultaneously balancing their related costs. Moss additionally highlighted the significant costs of some of the risks facing aviation, if they should occur, highlighting the importance of preventing even minor safety accidents.

Judgements of the adoption and implementation of ERM in airlines need to be made with caution, as little academic research exists in this regard, especially in terms of studies based on empirical evidence, and data in this area is supplied mainly by industry publications. The on-going transition towards enterprise-wide risk management in airlines was reflected in the survey commissioned in 2006 by the magazine 'Airline Business' and the insurance broker AON. The survey involved 51 airlines accounting for 41% of the world's top 200 airlines by total revenue. Two-thirds of the airlines participating in the survey reported having organisation-wide risk management strategies in place which considered strategic risks; average longevity of such strategies was two and a half years at that time. The survey revealed a positive trend in assigning ultimate responsibility for risk management to upper management levels, with 75% of the airlines imputing the responsibility at the boardroom level, and with the CEOs deciding on strategies for management of the most relevant risks in 45% of the participating airlines (Jenner, 2007). However, the survey failed to investigate the institutionalisation of ERM principles in airline risk management routines; thus, it cannot be concluded if the adoption of ERM claimed by survey participants was performance-driven and led to significant changes in risk management structures and practices of their respective organisations, or if the adoption was ceremonial, driven by external legitimisation demands, and if loose coupling existed between stated risk management objectives and actual work practices.

A review of public data issued by airlines in annual reports, on corporate web-sites, or through other forms of external communications, suggests their interest in adopting comprehensive perspectives to risk management. Many airlines declare having implemented ERM (for example Air France, KLM, Air Canada, Malaysia Airlines, Air Mauritius, and many others), often providing descriptions of their risk management

governance structures and processes. However, just as in case of the above cited survey, assessing the level of institutionalisation of ERM principles in airlines' risk management routines based on publicly available data is problematic; prior to empirical, contextualised examination of airlines' risk management structures and practices, the maturity and functionality of ERM cannot be credibly determined. Limiting identifiers of ERM to a few simple proxies of implementation reported in public data ignores the complexities of ERM; a few imprecise identifiers are insufficient to represent the integral constructs of ERM. For example, reporting on the existence of the position of Chief Risk Officer in airlines may imply the use of corporate resources for adopting a comprehensive view of risks, yet it does not entail the organisation followed through with implementation of all ERM principles (Beasley et al., 2008). Contrarily, organisations can assign the typical responsibilities of the CRO to other senior officers (COSO, 2004). Thus, caution must be exercised in concluding on the adoption and implementation of ERM in airlines based on uncontextualised empirical data.

The body of academic literature does not provide sufficient evidence regarding drivers of the adoption and/or implementation of ERM in airlines. The influence of professional airline industry organisations may be a factor at play, as they recommend extending the focus of risk management practices beyond the operational aspects of airline management, and adopting an enterprise-wide approach to managing risks (Salter, 2008). IATA is a good example of a potential normative influence on adoption of the ERM approach; as an advocate of best practices for the airline industry, IATA issued the "Integrated Risk Management Guidance Handbook", providing airlines with advice on integrating their siloed risk management practices (IATA, n.d.). Similarly, ICAO (2013) recommends integrating risk management processes conducted within multiple airline management systems such as SMS, QMS, EMS, FMS, OSHSMS, and SMS, into an overarching enterprise management system, while arguing "if the SMS were to operate in isolation of these other management systems, there may be a tendency to focus solely on safety risks without understanding the nature of quality, security or environmental threats to the organization" (pp. 2-16). An analysis of the transition stories of airlines which had embarked on the ERM journey, shared by airlines' representatives in industry publications, suggests that airlines perceive the ERM approach as helpful in achieving various company objectives, especially while the industry undergoes painful changes and faces ever more complex challenges (see

Nomura, 2003; Penzner, 2006; Geisel, 2008; Nyce, 2002). Furthermore, the concept of ERM was initiated in the financial industry and gradually spread to other industries (Fraser and Simkins, 2010); thus, ERM adoption in the airline industry might have been caused by imitating best practices of other companies, or through recommendations made by advisory companies, which proved to be the case in other industries (see Jabbour, 2013).

As discussed in section 2.5.4 of this chapter, scholars argued the need to adapt the provisions of the landmark ERM framework and risk management standards such as COSO (2004) or ISO 31000 (2009) to industry-specific business contexts (e.g. Arena et al., 2010; Paape and Spakle, 2012; Kaplan and Mikes, 2014). Following this rationale, and considering the demanding risk management profile of commercial aviation unmatched by other industries for its volatility and technical nature (Watchtower Risk Consulting, 2010), scholars, industry associations, and advisory companies have embarked on the idea of developing guidelines for airlines on conducting comprehensive and integrated risk management practices (see IATA, n.d.; Protiviti, 2008; Mercer Oliver Wyman in Zea, 2004). Despite growing interest in ERM and a recognition of the need to develop effective risk management systems matching the complex and dynamic nature of airline businesses (Adler and Gellman, 2012; Nicolau and Santa-Maria, 2012; Niemeier and Tretheway, 2012; Mikosz, S., 2011), little academic work has been developed to date exploring the business environment of airlines and proposing ERM solutions adapted to the context of this industry.

Implementation of more comprehensive risk management approaches is advocated by scholars in the field (e.g. Adler and Gellman, 2012; Nicolau and Santa-Maria, 2012; Niemeier and Tretheway, 2012; see section 1.3 of Chapter 1), with the focus directed at implementing ERM in particular (Yilmaz 2008a, 2008b, 2008c; Flouris and Yilmaz, 2010a, 2010b, 2010c). The scholars argue that implementation of ERM, which implies a more effective management of organisational threats and opportunities, could prevent further erosion of shareholder value in the airline industry (IATA, 2013; Wojahn, 2012), and improve investor returns by facilitating the achievement of organisational objectives. Yilmaz (2008c) proposed a model for integrating the concepts of ERM and corporate sustainability in airlines. Although the model conveys an interesting notion of conducting enterprise-wide risk management practices in airlines in a sustainable

manner, it requires further elaboration. The components and functioning of the model are vaguely articulated. Yilmaz (2008c) claims the model is “the best and effective way” for organisations to achieve corporate sustainability objectives and enlists a variety of management processes that the model should enable or support; however, the scholar did not provide convincing argumentation of how the proclaimed benefits can be achieved by airlines through application of the model. Similar critique applies to the ‘Enterprise Sustainability Risk Management Model’ developed by Flouris and Yilmaz (2010c, p. 6) in order to, as claimed by the scholars, assist airlines in incorporating “environmental, social, and economic considerations into business decision-making, actions, and performance”. The alleged benefits of the model are scarcely justified, and both components and functioning of the model are vaguely discussed. Additionally, the scholars claim the model can serve as a tool, yet fail to provide guidance on its operationalisation.

2.4 Adoption and implementation of ERM and their driving forces

Considering the research questions stated for this study, the main areas of interest lie in exploring the structures and practices of airline risk management systems and their determinants, among which the adoption, implementation, and drivers of ERM should receive particular attention. As argued in the preceding section, research of airline risk management systems concentrates on selected, siloed dimensions of the risk management practice; little research is available offering multi-dimensional assessments of airline risk governance structures and practices, especially in the context of ERM. The existing research links airline risk management structures and practices to the requirement of airline operating environments and airlines’ risk profiles; however, literature lacks studies of the determinants of airline risk management systems specifically in terms of adoption and implementation of ERM. Therefore, in order to understand organisational coupling of ERM and the driving forces for ERM adoption and implementation, the following review additionally evaluates relevant studies conducted in the context of other industries.

2.4.1 Drivers of ERM adoption and implementation

Evolution of the risk management discipline discussed in the introductory chapter (section 1.2) signalled the wave of corporate scandals and economic crises of recent

decades as the cause for the growing interest of regulators, and later risk management practitioners, in developing more effective risk management approaches (Baranoff, 2004). As the concept of ERM gained prominence, first in the financial industry (Mikes, 2005) and later through a spill-over effect across non-financial industries, scholars have analysed a multiplicity of driving forces of both the institutional and technical nature behind ERM adoption and implementation.

Increasing requirements of corporate governance were identified as motivators for advancements in risk management and internal control practices. NYSE Corporate Governance Rules, the UK's Combined Code on Corporate Governance, or the Sarbanes Oxley Act in the USA are examples of regulatory requirements introduced internationally and exerting pressures on organisations for improved corporate governance (Financial Reporting Council, 2010). Regulatory requirements imposed responsibility on boards to provide sound and broad-in-scope risk management programmes, in addition to reliable financial reporting (Collier et al., 2006). Regulatory pressures were recognised as drivers of ERM adoption in the empirical studies of Kleffner et al. (2003) or Cowherd and Manson (2003); furthermore, according to Pagach and Warr (2011), regulated industries were indicated to be at the forefront of ERM adoption. Subsequently, the corporate governance best practice codes have been adopted in industries regardless of the intensity of regulations (Woods, 2011). Rating agencies such as Moody's or Standard & Poor's demonstrated interest in ERM and included risk management-related criteria in their rating methodologies. Relevance of agency ratings was empirically demonstrated to drive ERM adoption (Hoyt and Liebenberg, 2011).

Popularisation of risk management frameworks and standards such as COSO (2004) was demonstrated to influence organisational perception of risk and configuration of risk management programmes (Beasley et al., 2005). Diffusion of ERM models was fostered though consulting companies advocating implementation of the recognised international standards or risk management programmes developed in-house (Beasley et al., 2005). Scholars debated the issue of ceremonial adoption of ERM, pointing to the importance of demonstrating legitimacy to shareholders, which was argued to drive adoption of ERM (Mikes, 2009). Shareholders pose demands on organisations for sound

corporate governance systems and communication of risk management initiatives (Nielson et al., 2005).

Adoption and implementation of ERM were associated with the influence of risk specialists within organisations who, due to their professional and educational backgrounds, would contribute to the advancement of risk management systems (Colquitt et al., 1999; Mikes, 2009). The influence of Boards and executive directors was demonstrated to affect the development of ERM in organisations. Through official endorsements of the risk management function Boards and top management foster organisation-wide development of positive risk cultures (Altuntas et al., 2011). The presence of dedicated risk functions at executive levels in organisations, such as Chief Risk Officer and its equivalents, or cross-disciplinary risk management committees, were argued to be associated with the embedding of ERM in organisations (Walker et al., 2003). Scholars investigated the relationship between adoption of ERM and organisational sizes and complexities, concluding on the propensity of large organisations to adopt more structured and systematic risk management approaches such as ERM (Pagach and Warr, 2011; Hoyt and Liebenberg, 2011).

2.4.2 ERM implementation

Selected ERM frameworks and risk management standards such as COSO (2004) or ISO (31000) have gained international acceptance and have been applied across multiple industries in pursuit of improved governance and greater managerial efficiency and as means for communicating sound risk governance to various stakeholder groups (Power, 2009). Academic researchers discussed the potential benefits that implementation of ERM frameworks may bring to organisations such as reduced earnings and stock price volatility, increased capital efficiency, improved, risk-based decision making, increased firm value, or recognition among important external stakeholder groups (e.g. Hoytt and Liebenberg, 2011; Cumming and Hirtle, 2001; Meulbroek, 2002). However, it is believed that ERM brings value to organisations only if embedded correctly in organisational business processes; ERM needs to be adapted to the requirements of business contexts in order to drive benefits for organisations (Power, 2009).

The process of ERM implementation was summarised by Hampton (2009) in six major steps as presented in figure 2-3. Hampton advocated the need to assign responsibilities and accountabilities for risk management processes across organisational hierarchies, establish dedicated risk units for coordination and integration of enterprise-wide risk management efforts, and define procedures and tools facilitating performance of the risk management function at different levels in organisations.

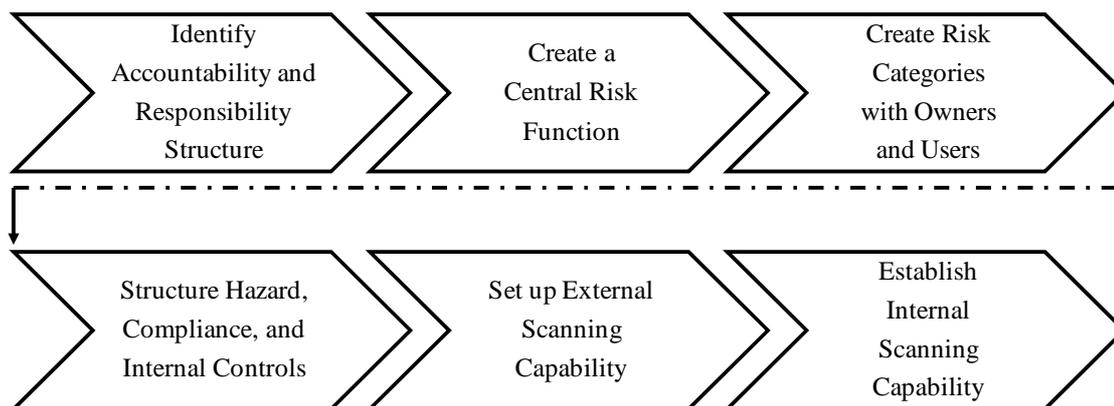


Figure 2-5: Implementation of ERM

(Adapted from Hampton, 2009, p. 73)

The following section reflects on the propositions and characteristics of selected prominent and internationally recognised ERM frameworks and standards, and argues the need to implement their provisions with sensitivity to contextual requirements, which should inevitably result in systematic variations of ERM configurations. Although the various ERM frameworks and risk management standards normatively define elements for the implementation of risk management systems in organisations, risk management functions may retain a narrow, technical focus, or alternatively become of strategic importance, depending on how well the provisions of the risk management frameworks and standards are coupled with organisational realities (Arena et al., 2010).

ERM was argued to serve as an umbrella for diverse configurations of organisational risk management practices (Power, 2007). Although ERM frameworks and risk management standards are often based on common principles and propose the

development of similar structural components for performance of the risk management function in organisations (Woods, 2011), empirical research demonstrated how ERM implementation is contingent upon the requirements of internal and external environments of organisations, and the logics of organisational actors involved in risk management processes (Mikes, 2009). Collier et al. (2006) discussed similarities among basic structures of ERM systems implemented in different organisations; however, the scholar argued that risk management at the operational level is contingent upon factors stemming both from intra- and extra-organisational environments. These findings were confirmed by Woods (2009, 2011) and Mikes (2005, 2009), who provided field-based evidence of systematic variations in ERM practices of different organisations, and co-existence of alternative models of ERM contingent upon varying organisational contexts. In line with this notion, Gordon et al. (2009) argued that the relation between ERM and firm performance is dependent on the coupling between ERM and organisational internal and external contexts; the scholar suggested that implementation of ERM frameworks should be conducted in consideration of several contextual factors relevant to organisations, with special consideration of environmental uncertainty, competition within the industry, organisation size and complexity, and monitoring performed by board of directors.

There is a general debate in literature regarding organisational motives for adoption and implementation of ERM. Empirical research conducted in a variety of industries lent evidence for both legitimacy drivers leading to ceremonial implementations of ERM, and ERM adoption in pursuit of direct economic benefits. By way of an example, Pagach and Warr (2011) attributed ERM adoption decisions of organisations to their expectations of improved effectiveness and efficiency of organisational processes. Contrarily, Arena et al. (2011) provided evidence of ERM adoption being motivated by compliance with formal requirements of regulatory frameworks and expectations of external stakeholders. The diverse motives of ERM adoption in organisations condition the level of institutionalisation of ERM principles in organisational structures and processes (Bruce, 2005). Legitimacy-driven implementation of ERM may be focused on producing auditable trails of evidence signalling organisational interest in sound risk governance, which may be manifested through creating CRO positions or formalising risk management processes through issuance of internal documentation. Despite that, ERM may be poorly embedded in organisations (Arena et al., 2010). Contrarily,

performance-driven ERM systems, often characterised by their comprehensiveness, high level of embeddedness across organisational strategies, and integration of enterprise-wide risk management initiatives, may lack highly formalised structures or risk management positions typically associated with ERM (Woods, 2011).

2.5 Overview of landmark ERM frameworks and risk management standards

The objectives stated for this study call for development of recommendations guiding airlines in designing customised, enterprise-wide risk management systems. Therefore, it is necessary to learn about the latest developments in the risk management discipline. This section analyses the propositions of the most prominent ERM frameworks and risk management standards, demonstrating their common characteristics and arguing about the need to align their provisions to the unique contexts of particular industries. The findings from this review are later drawn upon in the discussion and development of recommendations for airlines, as presented in Chapter 8.

The relevance of the enterprise-wide approach to managing risks has been globally recognised and has become a fast-growing field in the management science (see Chapter 1, section 1.2); there has been an increasing consciousness among industries of the need to conduct the risk management function in organisations in a structured manner (Zolkos, 2008). Consequently, numerous risk management frameworks and standards (and later ERM frameworks and standards) have been developed by academics (e.g. Lam 2003; Mikes, 2005; Beasley et al., 2005; Liebenberg and Hoyt 2003;) and practitioners (e.g. CAS 2003; COSO 2003, 2004), providing valuable guidance on the principles of effective risk management approaches, and guiding organisations on how to manage risks in a structured and systematic manner. The risk management frameworks and standards were published by professional, guidance-setting organisations from different backgrounds (financial, insurance, safety, government, environment, engineering fields etc.), or international standard bodies. Some of the frameworks and standards are recommended to organisations, others are legally implied in their respective countries (IMA, 2011). Depending on the background of the issuer organisation, the frameworks and standards adopt different approaches, and may lean towards different fields such as financial reporting, internal control, etc.; while some of the risk management frameworks and standards are problem-focused,

concentrating on selected aspects of management, others, denominated as ERM frameworks and standards, aspire to cover a wide range of different risks (Shortreed et al., 2003).

There have been numerous risk management frameworks and standards delivered worldwide, including generic, problem-based or industry-focused frameworks and standards, which provide standardised principles and steps recommended for establishing effective risk management programmes. Out of the many risk management frameworks and standards developed over recent decades, a few - which have risen to prominence and are most commonly applied in organisations or recommended by governments and industry associations, have been chosen for analysis in this section. According to a global survey conducted by ISO in 2011 (ISO, 2011), the enterprise-wide risk management standards most often drawn upon in organisations were ISO 31000, COSO ERM, and AS/NZS 4360 (mentioned in order of popularity); the AS/NZS4360 risk management standard was the world's first national definition of standard procedures of risk management, developed first in 1995, then re-issued in 2004 jointly by Standards Australia and Standards New Zealand, and finally re-issued as AS/NZS ISO 31000:2009 jointly with ISO. The researcher does not regard it useful nor feasible to review the multiplicity of the existing risk management standard and frameworks; therefore, this section presents the three selected and above mentioned, internationally recognised frameworks and mainstream risk management standards with an enterprise-wide scope, which have become models of reference for risk management best practices (Muralidhar, 2010; ISO, 2011), and is aimed at exploring their major provisions and overlapping approaches. This purposeful selection represents just a small sample of the risk management frameworks and standards published to date; hence, the purpose of their presentation in this section is to demonstrate their contribution to the body of knowledge in the risk management area, rather than to analyse the whole variance of the frameworks available. The chosen frameworks and standards for risk management are analysed from a general and comparative perspective - a detailed study of their practical aspects is purposely restrained by the researcher.

Components of ERM frameworks and risk management standards

The ERM frameworks and risk management standards tend to be conceptually similar, although their structural representations vary, especially in terms of how their integral parts are defined and grouped. They provide guidance on the principles of effective risk management, advocating customised implementation of such principles in organisational structures and practises (see forthcoming section 2.5.4). With reference to the definition of ‘risk management systems’, initially provided in section 1.5 of Chapter 1 (and as defined in ISO 31000, 2009), which comprise risk management *foundations* and *arrangements*, the principles of effective risk management conveyed by the various ERM frameworks and risk management standards developed to date can be regarded as *foundations* of organisational risk management systems. The principles conveyed through the various ERM frameworks and risk management standards affect the hierarchies of organisational risk management objectives, which are further reflected in formal frameworks of policies and procedures regulating risk management *arrangements* in organisations. In other words, risk management *foundations* embracing principles of effective risk management affect the way in which organisations constitute the “*arrangements* of activities or processes that assist and inform decision-makers about the risks in question, the assessment of the risk, the views of stakeholders, possible treatments available and the likely risk reductions and residual risks that will result” (Shortreed et al., 2003, p. 25). Therefore, the various ERM frameworks and risk management standards facilitate both public and private organisations to put in place their own customised risk management systems (Woods, 2011); they provide organisations with recommendations regarding, among others, designing enterprise-wide risk governance structures and risk management processes, developing positive risk cultures and formal frameworks of policies and procedures, or adopting adequate risk management tools and technological solutions.

Synthesis of the selected ERM frameworks and risk management standards of reference

The following ERM frameworks and risk management standards (further referred to as “the framework/s” or “the standard/s”) are summarised in this section, according to their order of issuance (of the first edition):

- Australian and New Zealand Standard for Risk Management AS/NZS 4360
- The COSO Integrated ERM Framework
- ISO 31000 Standard

The three selected frameworks and standards share several common characteristics:

- The frameworks and standards do not target any specific industry, but rather they are applicable to a wide range of both private and public organisations across many economic sectors.
- The frameworks and standards suppose the continuous nature of the risk management process.
- The frameworks and standards specify the need to carefully determine the context of organisations’ operations, either through an analysis of general business environment or organisational strategies and objectives.
- The frameworks and standards set out generic guidelines for designing risk management processes in organisations, and propose universal elements of risk management processes.
- The frameworks and standards have a generic character; they are principle-based rather than prescriptive, while sharing an assumption that their provisions should be later adjusted to the varying business environments in which different organisations operate.
- The frameworks and standards consider both negative and positive effects of risks, and assume both qualitative and quantitative methods of their assessment.
- The frameworks and standards emphasise the importance of integrating the risk management function within the organisation’s culture, core strategies, and processes.
- The frameworks and standards stipulate that risk management processes should be conducted consistently across different business units and at all organisational

levels, and that open communication of risks across organisational structures is essential.

2.5.1 Australian and New Zealand Standard for Risk Management AS/NZS 4360

The Australian and New Zealand Standard for Risk Management (AS/NZS 4360) was first issued in 1995 jointly by Standards Australia and Standards New Zealand, major non-government standards organisations in their respective countries; the standard was further revised in 1999 (second edition), 2004 (third edition), and 2009 (re-issued jointly with ISO as AS/NZS ISO 31000:2009). The AS/NZS 4360 standard provides generic, conceptual guidance on the risk management process, without focusing on any specific industry or economic sector, and states that the final configuration of the risk management function should be shaped by the varying needs of different organisations. Unlike in other standards and frameworks issued subsequently (e.g. ISO 31000, to be discussed below), general principles for risk management were not presented in the standard. The following figure 2-6 presents the seven components of the AS/NZS 4360 Standard along the risk management process.

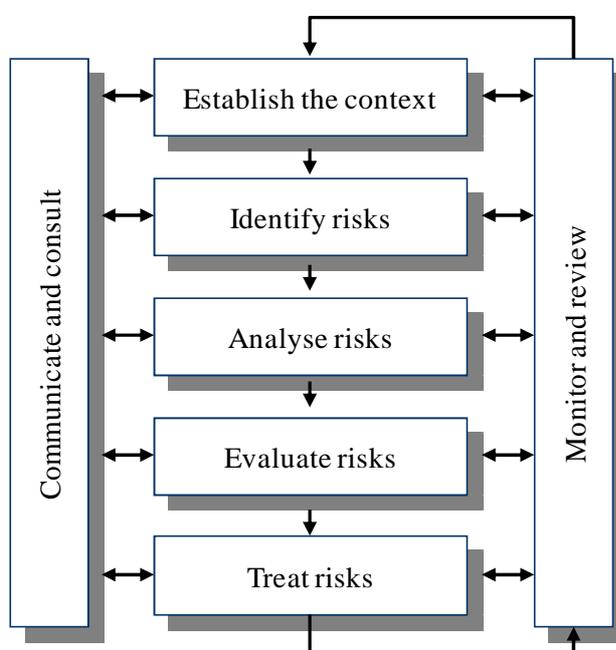


Figure 2-6: Risk management process - AS/NZS 4360

(Adapted from AS/NZS 4360, 2004)

The risk management process needs to be conducted within the context of the organisation's goals, and taking into consideration the objectives of the organisation's stakeholders. An analysis of the operating environment (context) of an organisation facilitates defining parameters for risk identification and management. The analysis of the context for the risk management process constituted an innovation in the risk management discipline when the standard was first issued (Fraser and Simkins, 2010). A thorough portfolio of risks needs to be created, with a special focus on the scenarios which may have major effects on core strategies of an organisation. Following the analysis of the context and identification of risks, the next step in the proposed process consists of examining the identified risks and determining their significance. Risks are analysed in terms of possible likelihood and impact they may have on achievement of organisational aims and objectives. In the following stage, risks are evaluated and divided into acceptable and unacceptable risks, which should later be either monitored or treated respectively. Risk treatment involves determining response strategies to the risks deemed unacceptable. Treatment strategies may be aimed at avoiding risks by ceasing the activities generating particular risks, or reducing the likelihood or impact of potential events. Progress in the treatment of risks should be monitored on a continuous basis, and the overall portfolio of risks needs to be reviewed regularly. The risk management process should be applied across all organisational levels, from specific projects to assisting with specific decisions.

The AS/NZS 4360 standard served as a basis for other countries to develop standards relevant to their respective contexts, and also laid the groundwork for the development of an international ISO 31000 standard in 2009. Following publication of ISO 31000, the issuing organisations of AS/NZS 4360 officially adopted the international standard, and released Australian/New Zealand Standard Risk Management Principles and Guidelines AS/NZS ISO 31000:2009.

2.5.2 COSO Enterprise Risk Management – Integrated Framework

Numerous normative models outline the principles of ERM, while the COSO ERM framework, published in 2004 by the Committee of Sponsoring Organisations of the Treadway Commission, is believed to have become a global template for risk management best practices (Power, 2007; The Institute of Internal Auditors Research

Foundation, 2008; Tekathen, 2013; Beasley et al., 2010; Muralidhar, 2010). COSO was created under the sponsorship of several US-based professional accounting organisations in order to explore issues related to corporate financial reporting. The organisation further developed to cover other aspects of corporate management ethics and corporate governance, including internal control issues. The COSO Internal Control Framework eventually became an industry benchmark, and it was cited in the Sarbanes-Oxley Act of 2002 as a recommended scheme for public companies to maintain systems of internal control (Charette, 2010). Consequently, voices from the industry argued it would be beneficial for organisations to expand their risk management activities beyond financial control, including a wider range of business risks. Hence, the COSO's Enterprise Risk Management - Integrated Framework was developed on the basis of the previously published Internal Control – Integrated Framework document. The ERM Integrated Framework by COSO expands on internal control issues, providing a broader perspective on the ERM-related subjects; the internal control framework is considered as part of a broader “enterprise risk management” framework. The ERM framework aspires to both satisfy the needs for internal control in organisations and advise them on implementing solutions for a more comprehensive and effective risk management process. The framework is additionally complemented with a document, denominated “Application Techniques”, providing advice for implementation of the principles of the framework in organisations.

The COSO's ERM Integrated Framework is based on a premise of maximisation of enterprise value through balancing the objectives of organisational strategies and their associated risks (COSO, 2004). The framework aligns organisational objectives and risk management components in a three-dimensional matrix, in the form of a cube (see Figure 2-2). The vertical columns represent four different levels of organisational objectives. “Strategic” objectives are associated with the organisation's mission and vision. Objectives at the “operations” level are aligned with decisions on deployment of resources. “Reporting” objectives aspire to establish reliable reporting practices, while objectives from the “compliance” level refer to conformity of business practices with laws and regulations. The horizontal rows demonstrate the ERM process, and the third dimension – highlights the various levels of organisational units.

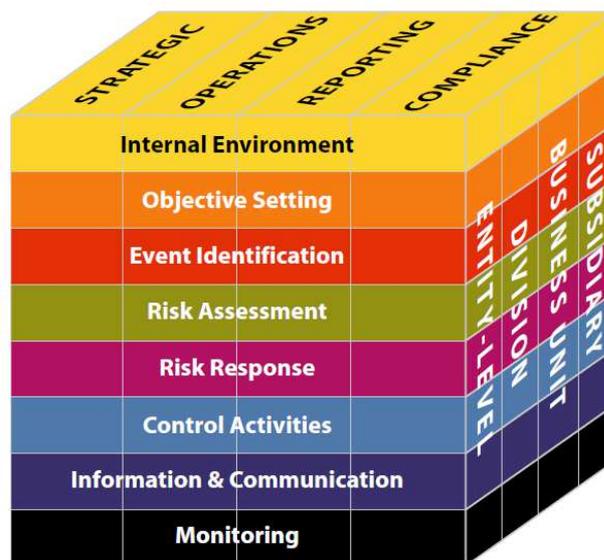


Figure 2-7: COSO's Enterprise Risk Management Integrated Framework
(Source: COSO, 2004)

The proposed ERM process is comprised of eight components. “Internal environment” sets the context for risk perception within an organisation and determines its risk appetite. In the stage of “Objective setting” risk management objectives are articulated in consistency with the organisation’s mission and the previously defined risk appetite. “Event identification” leads to a delivery of the events that, if they occur, can have an impact on whether the organisation achieves its objectives or not. “Risk assessment” consists of analysing the level of risk likelihood and the possible impact of risks on the achievement of organisational objectives. “Risk responses” are elaborated based on the previous assessment of risks, recognising the organisation’s risk appetite and risk tolerances. The “Control activities” stage leads to the establishment of policies and procedures to ensure proper execution of risk responses. The “Information and communication” stage refers to capturing and sharing relevant, risk-related information across an organisation. “Monitoring” allows for evaluating the effectiveness of the risk management process, and modifying the process if needed.

The COSO ERM Integrated Framework became a widely recognised benchmark for risk management schemes in organisations. While government regulators have not entirely embraced the framework as a standard, corporate credit rating agencies (Moody’s Investors Service, Standard & Poor’s, Fitch Ratings,) are gradually

acknowledging its importance by evaluating organisations' ERM practices as a part of their ratings (Charette, 2010).

2.5.3 ISO 31000 Standard

Although the COSO ERM Integrated Framework has gained recognition on the international stage, a more recent risk management standard - ISO 31000, was delivered in 2009 by the International Organisation for Standardisation (a world famous developer of international standards). Although other ISO standards are certifiable, the ISO 31000 cannot be used for certification, yet it does provide useful guidance on effective risk management practices. The standard is claimed to be universally applicable, and is also regarded as an important benchmark for enterprise risk management best practices (Fraser and Simkins, 2010; IRM, 2010)

The ISO 31000 standard builds on developments from other recognised risk management and ERM frameworks and standards – the COSO's ERM Integrated Framework, the Project Risk Management Framework, the Australian and New Zealand Standards (AS/NZS 4360:2004), and other renowned risk management standards and frameworks. The ISO 31000 Framework is presented in the following documents:

- ISO 31000: Principles and Guidelines.
- IEC 31010: Risk Management - Risk Assessment Techniques.
- ISO/IEC 73: Risk Management – Vocabulary.

The ISO 31000 standard has three integral components: risk management principles, risk management framework, and risk management process. The risk management principles (component 1) guide creation of the risk management framework (component 2), which is employed in organisations through implementing the risk management process (component 3). The relation between the three components of the ISO 31000 standard is summarised in figure 2-8.

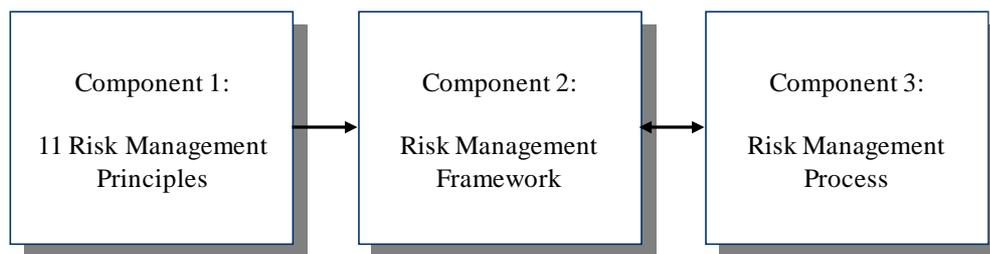


Figure 2-8: Relation between the components of the ISO 31000 standard
(Adapted from ISO 31000, 2009)

The ISO 31000 standard has a descriptive, principle-based character rather than a prescriptive one. The following eleven principles proposed by ISO 31000 stipulate that the risk management frameworks in organisations should:

- Create value for organisations.
- Form an integral part of organisational processes.
- Form part of decision-making processes, through an analysis of potential risks / rewards.
- Explicitly address uncertainty.
- Be systematic, structured and timely, while generating verifiable outcomes.
- Be based on the best available information that an organisation is able to gather from a variety of external and internal sources.
- Be tailored to the organisation, its objectives, capabilities, and business environment in general.
- Consider human and cultural factors.
- Be transparent and inclusive through continuous communication with both external and internal stakeholders.
- Have a dynamic and iterative nature - undergoing a continuous process of improvement.
- Lead to continual improvement of organisational processes.

The above mentioned principles convey that the risk management framework in organisations should be determined by organisational needs, and thus the ISO 31000

standard can be adapted to meet the needs of organisations of different types and sizes. The framework outlines the following interrelated steps required to establish a risk management system in an organisation:

- Mandate and commitment.
- Design of framework for managing risks.
- Implementing risk management.
- Monitoring and review of the framework.
- Continual improvement of the framework.

Under the ISO 31000 standard, the proposed risk management framework should serve as a means of support for the risk management process. Alignment of enterprise-wide risk management processes with other processes and structures is an underlying principle of the framework (principles 2 and 3). The proposed risk management process is comprised of the following five interrelated stages and constitutes the essential element of the ISO framework: (1) establish context, (2) risk assessment, (3) treat risks, (4) monitor and review, and (5) communicate and consult. The flow of the risk management process proposed by the ISO 31000 standard follows a similar structure as presented in other frameworks, which the ISO framework is based on. The stages of the risk management process are interconnected and form a cycle, reflecting the recommended continuum of risk management efforts. Organisations should first analyse the internal and external context of their operations in order to identify and assess relevant risk factors. Risk criteria are elaborated on the basis of strategic and operational objectives, and serve to verify tolerability of risks in deciding whether to pursue an opportunity or act upon a threat. Risk criteria allow for properly evaluating risk factors and assigning adequate responses. The overall process needs to be monitored and reviewed on a continuous basis. Additionally, the organisation's internal and external stakeholders should regularly be informed of risk management issues, so that they can ensure that both the personnel accountable for risk management in an organisation and external stakeholders understand the basis for particular management decisions, and to ensure compliance with legal disclosure requirements (ISO, 2009). Any decision in an organisation should be considered for its associated risks (uncertainties) and their possible impact on the objectives of an organisation; there may be multiple risk management processes taking place in an organisation at any given time. The

framework, therefore, should improve the decision maker's comprehension of the effects that risks (uncertainties) may have on organisational objectives. As stated in principle 2, the risk management process should be integrated within other organisational business processes. It might be beneficial to consider it "embedded" within other processes, rather than as a separate activity linked with other processes.

2.5.4 Alignment of ERM frameworks and risk management standards to organisational contexts

ERM frameworks and risk management standards, the "universal, hierarchical models" of enterprise-wide risk management (Arena et al., 2010, p. 661), despite being globally legitimised have been broadly criticised by scholars for taking a simplistic view of organisations and their risks (Power, 2007), failing to consider fluidity of the ERM concept and the extent to which it is coupled with managerial and control processes specific to organisations (Arena, 2010; Miller et al. 2008), or for ignoring socio-political dimensions of the processes of identifying and analysing risks (Williamson, 2007). Arena et al. (2010) argued these models tend to conceptualise ERM in regulatory terms, yet they are disassociated from organisational realities and fail to consider specificity of organisations. Power (2009) in his critique of the COSO framework (2004) additionally raised the notion of a problematic proposition by COSO of a singular organisational risk appetite, complicity of ERM lying in the significance of 'logics of auditability', and framework's inability to comprehend critical risks.

Critics of normative ERM models raised the concern that advertising the models as applicable to all organisations and risks inhibits organisations from matching frameworks' provisions to their unique organisational circumstances. The most often referenced ERM frameworks and risk management standards, despite adopting a universal perspective and recommending alignment of their provisions with contextual peculiarities of different industries, may lean towards particular fields such as financial reporting or internal control, depending on the background of issuer organisations, suiting the needs of some industries more than others (Shortreed et al., 2003). The critics also convey that despite the existence of multiple risk management guidelines, the risk management discipline needs further development and exploration of newly emerging approaches aligned with organisational circumstances (Kaplan and Mikes,

2014). Finally, Mikes (2009, p. 33) appeals to risk management standard setters to “accommodate more subjective and exploratory risk management styles” in future attempts of ERM modelling and standardisation.

Along with the aforementioned criticisms of the normative ERM models and risk management standards, the issuers of some of the models (e.g. COSO, IRM) also recognise the need to align ERM with the features of organisational contexts, such as organisational structure, culture, competitive environment, and others. COSO (2004) suggested a contingency perspective towards designing ERM systems, and thus acknowledged that the enactment of ERM should vary between organisations; this is exemplified by COSO’s guidance linking risk management to the objectives of organisational strategies and risk appetites which vary between organisations. Power (2009, p. 849) further recognised the dynamicity of ERM as proposed by COSO (2004), in that “the model is that of a thermostat which adjusts to changes in environment subject to pre-given target temperature”, contingent on the changes occurring in organisational environments. Organisational uniqueness is also periphrastically recognised in COSO (2004) in the lack of prescriptive implementation techniques in the framework; that is to say, the annex to the framework offers practical operational guidance on ERM implementation, yet remarks this should not be considered as universally applicable best practices.

Industries are characterised by distinct business environments (Chenhall, 2003). A complex set of industry-specific exogenous factors and organisation-specific endogenous factors constitutes the background for both formulation and execution of corporate strategies at various levels, and for managing their related risks under organisations’ inclination towards risk taking; thus, risk profiles vary among organisations from different industries. This suggests the universal provisions of general ERM frameworks and risk management standards can be further tailored to better reflect the specific business environments of particular industries (Beasley et al., 2005; Moeller, 2007; Locklear, 2012). Similar propositions were advocated in previous studies specific to the risk management systems. Gordon et al. (2009), in his empirical study of ERM implementation in US-based organisations, argued that aligning ERM with contextual settings is beneficial to organisational performance. Kaplan and Mikes (2014), who based their research on longitudinal data from three organisations,

concluded on the need to adapt ERM implementation to the specificity of organisational contexts; they outlined a “minimum necessary contingency framework” for ERM. Woods (2009) advocated applicability of the contingency theory to designing an ERM framework for the public sector, whilst Paape and Spakle (2012) similarly suggested benefits of developing ERM approaches tailored to the needs of organisations from the public sector. Mikes (2009) attributed the variety in risk management routines of financial institutions to their differing cultures and needs.

Similar conclusions were presented in the case studies conducted by Arena et al. (2010), who attributed cross-organisational differences in risk management routines to pre-existing risk management logics stemming from organisation-specific business environments. Woods (2011) recognised similarities in risk management models of four large organisations, yet argued that the risk management routines of each of the investigated organisations were contingent upon their context-specific factors such as objectives, sizes, cultures, or business models. Woods advocated the need for sensitivity to organisational contexts in ERM implementation, and advised practitioners to refer to risk management standards and frameworks simply as a starting point for designing their respective risk management systems. Barton et al. (2001) compared ERM implementation in five organisations from different industries and concluded on the uniqueness of each of the adopted ERM perspectives resulting from contextual differences among industries; the researchers argued against the universality of ERM designs. The notion of aligning ERM to the specific features of organisational environment was further advocated by multiple theorists and practitioners of ERM (e.g. Beasley et al., 2005; Moeller, 2007). The above discussed arguments match the findings from studies of various management control systems (MCS); research in MCS provided evidence of the need to align organisational control systems to context-specific settings of particular organisations (e.g. Otley, 1980; Chenhall, 2003; Gerdin and Greve, 2008; Colquitt et al., 1999; Gordon and Narayanan, 1984; Evans et al., 1986; Luft and Shields, 2003; Mouritsen, 1999). Therefore, this research adopts a multiple contingent approach as defined by Gresov (1989) and recognises the need to tailor airline risk management systems simultaneously to multiple external and internal, and both technical and institutional pressures (see Chapter 3, section 3.3 for further information).

2.6 Limitations of literature

Despite the growing interest of scholars and practitioners in improving the risk management practice of airlines, the discussion of relevant literature on this subject revealed a series of limitations in academic research. Firstly, the existing studies of airline risk management systems tend to tackle different dimensions of the risk management practice in an isolated manner, contributing to loci-research on risk management structures and practices in airlines, and marginally subscribing to the complex understanding of risk management in a comprehensive perspective. The available research on certain aspects of risk management in the airline industry is extensive, while other dimensions of risk management remain enigmatic. Risk management has been analysed in academic literature in different dimensions, such as hazard, safety, financial, operational, etc., and the researcher argues that a unified conceptualisation and understanding of these dimensions is needed, for their integration has been poorly assessed in subject literature.

Secondly, although ERM is becoming a commonly accepted approach in airlines, its practical implementation remains under-researched. There is little research available that empirically investigates the embedding of ERM principles in airline risk management structures and practices, and the accomplishments and challenges related to the implementation of ERM. Thirdly, the academic research investigating airline business environment, in addition to its influences on risk management approaches adopted in airlines, is broad. However, the driving forces of adoption and implementation of ERM in particular have been scarcely explored. Fourthly, although the ERM frameworks and standards commonly adopted across industries have been criticised for ignoring organisational specificity, and although scholars called for development of ERM guidance better tailored to fit the business contexts of particular industries, scarce guidance has been developed for airlines in this regard.

This research responds to the aforementioned limitations by providing empirical evidence of the governance structures and processes developed in airlines in deployment of the ERM approach. The research additionally investigates the determinants of ERM adoption in airlines, and the factors influencing the organisational

designs of airline ERM systems, by considering both institutional and technical realms of airlines' business contexts.

As reflected in section 2.4, due to the scarcity of academic research on adoption and implementation of ERM and their driving forces in the context of the airline industry, the researcher examined findings from relevant cross-industry studies. Although interesting empirical studies have been developed exploring ERM implementation in organisational settings by employing case study methodology (e.g. Arena et al., 2010, 2011; Mikes, 2009; Woods, 2009, 2011), the studies of determinants of ERM adoption and implementation, and organisational configurations of ERM, have been conducted prevalingly through surveys (e.g. Liebenberg and Hoyt, 2003; Gordon, 2009; Paape and Spakle, 2012; Beasley et al., 2005, 2008; Baxter et al., 2012). This study uses field study and case study methodologies to explore organisational coupling of ERM and the determinants of ERM adoption and implementation.

2.7 Conclusions

This chapter critically analysed literature relevant to the business environment of the airline industry and its impact on the risk management systems adopted in airlines. The literature review suggested both a growing need and interest in the development of enterprise-wide risk management approaches in airlines. However, the field of ERM adoption and implementation in airlines remains largely unexplored. This review also presented a pool of cross-industry studies on ERM coupling in organisations, reflecting their various roles and uses, and which signaled both the institutional and technical nature of determinants of ERM adoption and implementation. Prevalence of survey-based studies in these areas suggests this research would best benefit academic literature by investigating ERM in organisational settings and by considering contextual circumstances under a qualitative research paradigm.

Furthermore, this chapter provided a review of three selected landmark ERM frameworks and risk management standards, arguing the benefits of tailoring their provisions to the contextual specificity of the airline industry, which will be later reflected in the discussion of empirical findings from this study and the recommendations that this research aims to produce. Findings from the review of both

the principles and the major components of the landmark EMR frameworks and risk management standards are later drawn upon in development of the aforementioned (in Chapter 1) ERM framework for airlines, which is presented in the forthcoming Chapter 8. The following chapter develops a theoretical framework aligned with the objectives of this research, which will underpin the collection and analysis of empirical data. The theoretical framework will combine structural contingency theory with two strands of the institutional theory: new institutional sociology and old institutional economics.

Chapter 3

Theoretical Framework

3.1 Introduction

Literature review conducted in the course of this research provided a critique of current airline risk management systems, which often remain rooted in compliance with multiple industry regulations, or else are segregated into various functional silos (Adler, 2012); neither the regulations-based compliance approach nor the silo-based functional approach have prevented airlines from impairing profitability of their businesses in the last decade (IATA, 2013). It is believed airlines could benefit significantly from implementing enterprise-wide risk management approaches (ERM) customised to fit the unique business environment of the airline industry (see discussion in Chapter 1). Previous research of management control systems in general, and of risk management systems in particular, recognised the need to consider the specificity of organisational context in designs of risk management systems (Miller et al. 2008; Arena et al., 2010); as stated by Woods (2011, p. 3): “All risk management systems need to be sensitive to the context and that means they will be individual to each organisation”. Thus, this research aims to understand organisational contexts and their deterministic influences on airline risk management systems, as well as the structures and practices comprising such systems.

As the objectives stated for this research are related to understanding the structures and practices of airline risk management systems and their determinants, this chapter explains the theoretical framework which lays the basis for exploring the design choices of airline risk management systems and their determinants. The theoretical framework resumes the system of key concepts and theories supporting and informing this research, and positions this research among other key studies conducted within particular theoretical strands presented herein. This chapter begins with a discussion of the theoretical background in which the relevance of different organisational theories to risk management studies is analysed. Based on the theoretical discussion a multi-theoretical model is presented, which allows for conceptualising and later empirically assessing the structures and practices constituting airline risk management systems and their determinants. The research questions guiding this study are outlined in the light of the

multi-theoretical model in order to illustrate how the selected theoretical perspectives can address particular research questions. The model considers an interdependence of institutional forces and contingency factors in shaping the framing of organisational structures and practices of airline risk management systems. The multi-theoretical model integrates structural contingency theory with selected strands of institutional theory, in particular new institutional sociology (NIS) and old institutional economics (OIE). The proposed approach responds to recent calls for organisational studies of risk management (Gephart et al., 2009) to adopt a more holistic approach to organisational practices, considering risk within broader cultural frameworks (Lounsbury, 2008), investigating organisational coupling of risk management (Mikes, 2009), and conducting institutionally grounded studies of practices (Arena et al., 2010).

As will be reflected later in this chapter, the contingency and institutional perspectives have often been drowned upon in organisational analysis of management control systems and, in the field of risk management in particular, proving their validity for investigating the organisational dynamics of risk management systems of airlines. In this study the institutional perspective is adopted to present airline risk management systems as sets of structures and practices embedded in a wider institutional environment which “defines and delimits social reality” (Scott, 1987, p. 507); in conceptualisation of risk management structures and practices, this research refers to the concepts of rules, routines, and institutions. Apart from addressing the question of “how are organisational risk management systems structured?” the institutional perspective also provides basis for analysis of the “why” behind adoption of particular structures and practices, especially in terms of the factors that make the risk management systems legitimate. Apart from investigating the institutional factors determining adoption of particular risk management structures, the contingency perspective extends the analysis of such determinants to include the technical, efficiency factors.

3.2 Theoretical approach: Duality of technical and institutional environment

Organisational settings are embedded within a dual context of task and institutional environments. The extent of pressures posed on organisations by the task (technical) and the institutional environments varies across different sectors (Scott and Meyer, 1983). Organisations interact with the task environment by delivering products and

services in response to customers' demands, and by securing the inputs necessary to deliver products and services; the primary imperative for organisations within the task environment is to adapt their structures so that they enhance efficiency and effectiveness (Scott, 2002). Foregoing the criteria of efficiency and effectiveness, alternative theories emerged highlighting the role of institutional environment, the prevailing societal norms, values, rules, and cognitive systems, in shaping organisational structures, and the focus of institutional environment on external legitimacy (Fernandez, 2010).

The influences of technical and institutional factors on development of formal organisational structures have been researched primarily with contingency and institutional theories (Gupta et al., 1994). The contingency theory perspective to organisational design focuses on technical facets of environment; task environment and the technical nature of work performed shape coordination and control structures within organisations (Gupta et al., 1994). By emphasising the technical and economic pressures of environments, this perspective views the efficiency and effectiveness principles aimed at improving technical performance as the main adaptive forces for organisations. On the other hand, the institutional perspective highlights the importance of symbolic and cultural environments of organisations – the impact of legal systems and widely shared beliefs and norms; it argues the role of institutional factors and points to legitimacy as the main adaptive force of organisations, regardless of whether the newly adopted structures and practices lead to improved technical performance (Castel and Friedberg, 2004). Although contingency and institutional theories seemingly adopt contradictory approaches to understanding the determinants of organisational formal structures, interrelations between these theoretical perspectives were demonstrated in literature. Gresgov (1989) and Meyer and Rowan (1977) argued organisational control structures and practices may serve both figurative and instrumental purposes; organisations may both conform to external expectations by means of developing particular control structures, and target them at improving organisational control and performance. Scott (1987) advocated the need to consider both institutional and contingency theories in order to understand the technical and institutional determinants of management control systems and the instrumental and symbolic functions of such systems.

Considering the above, this research approaches complexity of the design of airline risk management systems through the conjoint application of the two theoretical perspectives, contingency and institutional, recognising the effects of both task and institutional environments on airlines' organisational structures and practices; both efficiency (technical) and non-efficiency (institutional) factors have been identified in previous research as determinants of management control systems in organisations. Applying this combination approach facilitates gaining a better understanding of the determinants of airline risk management systems, the structures and practices comprising such systems, and the instrumental and symbolic roles fulfilled by them.

3.2.1 Contingency theory perspective

Along with institutional theory, contingency theory is one of the predominant approaches in the field of organisational design (Gupta, 1994). Contingency theory focuses on the fit between task environment, organisational characteristics such as leadership (Fiedler, 1967), strategy (Fredrickson, 1984), or structure (Donaldson, 2001), and organisational performance. Contingency theory approach in studies of organisational structure is rooted in organisation theory, and is commonly referred to as structural contingency theory (Pfeffer, 1982). The focus of structural contingency theory is both on an organisation and its environment. The leading notion of contingency-based approaches is that differences in formal organisational structures can be attributed to the differences in organisational contexts (Fisher, 1998); organisational structures depend on contextual factors existing within the environment.

Organisational structures examined by contingency theorists are comprised of two elements: structure and processes (Van de Ven and Ferry 1980). Structure describes disaggregation of organisational tasks and allocation of sub-tasks to organisation members, while process refers to coordination of sub-tasks conducted by organisation members in order to complete organisational tasks and achieve organisational objectives. The prevailing notion among contingency theorists is that organisations are able to rationally align their structures to contingencies existing in the environment. Organisational performance is dependent on the fit between organisational structure and contingency factors specific to its respective task environment. Misfit between organisational designs and contextual factors results in performance losses. This

approach also conveys that there is no single, effective way to design efficient organisational structures in all organisations (Blau, 1970; Child, 1973; Thompson, 1967). Organisational structures are chosen rationally in pursuit of organisational effectiveness (Donaldson, 1995, 1999, 2001). They are dependent on contingency factors specific to organisational settings, that is, internal features of organisations, as well as the conditions of external environment. Appendix A to this thesis extends the review of contingency theory literature, and discusses the different groups of contingency factors analysed by scholars.

Contingency-based design of MCS

Applied to management control systems, contingency theory conveys that control system structures are contingent upon the context of organisational settings and the strategic focus adopted by organisations. Aligning control systems to organisation-specific contingency factors should lead to improved organisational performance. Contingency perspective has often been referred to in the study of management control systems (Dent, 1990; Fisher, 1998). Previous studies often focused on examining the designs which best suit organisational contexts in terms of various contingency criteria, principally the environment, technology, size, structure, strategy, and national or organisational culture (Chenhall, 2003). Appendix A to this thesis provides a review of contingency-related literature in the management control area, illustrative of the issues pertinent to development of the theoretical framework guiding this research.

Drawing on the findings of researchers in the structural contingency field (see Appendix A) it can be concluded that airline risk management approaches should be tailored to the peculiarities of changing environments, considering organisation-specific contingency factors. Airlines are exposed to risks typical to their specific business contexts and their risk profiles display significantly different characteristics to those of organisations from other sectors. Many of the risks faced by airlines stem from a complicated industry structure, its flawed dynamics, and the specific capital, labour and technology-intensive business model, all of these increasing the complexity of the risk management challenge. Thus, the contingency perspective should provide valuable insight into the analysis of determinants of airline risk management structures.

3.2.2 Institutional theory perspective

The institutional perspective comprises various strands of research which are united by recognition of institutional context in the study of organisations. The prevailing notion is that, in order to prosper, organisations need to conform to social norms and beliefs in addition to achieving operational efficiency and effectiveness; institutional studies consider “the relationships among organisations and the fields in which they operate, highlighting in particular the role of rational formal structures in enabling and constraining organisational behaviour” (Lawrence and Suddaby, 2006, p. 215). Institutional theory inquires how organisational structures such as schemas, rules, and norms, guiding social behaviour are formed, diffused and adopted (Scott, 2004), and points to socially generated arguments and the drive for legitimacy as an explanation of these structures (Baxter and Chua, 2003). Selznick (1996, p. 273) argues that “legitimacy is seen as an organisational ‘imperative’ that is both a source of inertia and a summons to justify particular forms and practices”. The analysis of risk management systems in airlines conducted in this study builds principally on two streams of institutional theory: new institutional sociology (NIS) and old institutional economics (OIE). These theoretical approaches have often been referred to in previous research of managerial control systems. Despite having evolved from different intellectual traditions, both perspectives consider institutions and institutional processes and provide rich theoretical grounds for conceptualising risk management structures and practices.

New Institutional Sociology

The stream of new institutional sociology builds on the research of Meyer and Rowan (1977) and DiMaggio and Powell (1983), who emphasised organisational legitimacy and embeddedness in organisational fields, placing the focus on external institutional pressures determining organisational structures, products of norms, values, and beliefs originating in a wider institutional context. The NIS perspective considers organisations in a wider context of macro-economic, social and political institutions (Scott, 2001), which exert legitimacy pressures and cause organisations to become isomorphic (Scott, 1987; Covalleski et al., 1996). Institutions are described as “the rules of the game in a society... the humanly devised constraints that shape human interaction” (North 1990, p. 3). Under the NIS perspective and in the context of management control systems,

institutions can be regarded as the commonly accepted principles of management control defined at the macro-level.

Meyer and Rowan (1977) stated that organisations adopt socially institutionalised structures in pursuit of legitimacy rather than rationally, overlooking the impact on organisational efficiency and effectiveness. The scholars argued that “institutionalised products, services, techniques, policies, and programmes function as powerful myths, and many organisations adopt them ceremonially” (p. 340). Social legitimacy requirements are derived from external constituents. The adopted organisational structures and practices serve to demonstrate conformity with institutionalised templates, legitimising organisations in the institutional context. In this context, the structures of management control systems play a role of “rationalisation machines” (Burchell et al., 1980), shaped with the purpose of strengthening legitimacy while portraying organisational rationality according to institutionalised templates. The process through which organisational structures and practices become legitimated, adopted beyond the effectiveness and efficiency criteria, is referred to by Meyer and Rowan (1977) as institutionalisation. DiMaggio and Powell (1983) extend this reasoning by introducing the concept of institutional fields comprised of extra-organisational institutions which is linked to the structuration theory (Giddens, 1979, 1984), and by suggesting that organisations within organisational fields become isomorphic with their common institutional environment.

Under the NIS perspective, the framing of risk management systems in airlines should be considered within the organisational fields in which airline organisations are embedded. According to DiMaggio and Powell (1983), organisational field is comprised of independent but interdependent organisations which, in aggregate, constitute a recognised area of institutional life, e.g. suppliers, consumers, regulatory agencies, or other organisations offering similar products and services. As explained by Scott (1994, p. 207), “the notion of field connotes the existence of a community of organisations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field”. Organisations within their respective fields adopt similar formal structures in pursuit of legitimacy; gaining homogeneity within an organisational field is denominated by DiMaggio and Powell (1983) as a structuration process. Organisational

fields comprise three principal components – actors, institutional logics, and governance structures. Analysis of the organisational dynamics requires “following actors in action” (Latour, 1987) and interpreting their behaviour in an institutional light as “enabled and constrained by the prevailing institutional logics” (Thornton and Ocasio, 2008, p. 103). Both individuals and organisations can be referred to as actors, and their actions are embedded in institutional logics (Lounsbury, 2008). Institutional logics can be described as values, norms, beliefs, and meaning systems guiding the behaviours of actors. Finally, regulative and normative frameworks imposing control over field actors and the wider field level are referred to as governance structures. Thus, the analysis of airline risk management systems needs to consider the mechanisms of institutional logics both at the wider societal level and at the organisational level; institutional logics act as interpretative schemes underlying values, beliefs, and intentions which shape organising principles and strategies of organisations, in addition to motivating organisations to adopt particular control structures (Greenwood and Hinings, 1993). Appendix A extends the review of institutional theory literature with additional insights regarding organisational phenomena such as isomorphism, institutional divergence, and institutionalisation of new practices in organisations.

Old Institutional Economics

NIS is criticised for insufficient consideration of cultural and political constructions of intra-organisational reality, for it mostly focuses on external institutional determinism (DiMaggio, 1988). While NIS is concerned primarily with extra-organisational dynamics, other strands of the institutional theory are applicable to studies of intra-organisational relationships; old institutionalism is regarded as internally-focused, analysing micro-level institutions (Scott, 2001) and intra-organisational conflicts of actors related to power issues (Burns, 2000). The strand of old institutional economics (OIE) emerged at the end of the 19th and at the beginning of the 20th century (in the works of Thorstein Veblen, Wesley Mitchell, John R. Commons). OIE recognises the existence of both formal and informal institutions, while institution is defined as “a way of thought or action of some prevalence and permanence, which is embodied in the habits of a group or a customs of a people” (Hamilton 1932, 84). Formal institutions are grounded in procedures, manuals, and formal rules, whereas informal institutions have a rule-like status as they stem from traditions of applying institutionalised practices.

Unlike NIS, which adopts a dynamic view of macro-institutions at the societal level considering their emergence and change, OIE considers the micro-institutions comprising intra-organisational reality which determine and constrain organisational behaviours.

Scapens (1993, 1994) argues OIE provides an adequate framework for understanding structures of management control systems, for this theoretical strand considers management control practices as institutionalised routines (social practices influenced by institutions; formalised or institutionalised habits – Hodgson, 1993) within a wider framework of rules. Burns and Scapens (2000), relying on the work of Giddens (1979) and Barley and Tolbert (1997), developed a theoretical framework applicable to intra-organisational studies. Drawing on the concepts of routines, rules, and institutions, the scholars elaborated on how organisational practices (habits of individual organisation members, understood as predisposition to engage in previously adopted forms of action) become routines (unlike habits, involving a group of people), and over time become institutionalised; institutions are defined in their study as “collective taken for granted assumptions of a group of people about some action or thought” (Burns and Scapens, 2000, p. 8) which “evolve as routinised actions of actors” (Abdel-Kader, 2011, p. 425). Rules are defined as “formalised statements of procedures”; rules are necessary to achieve coordination and coherence of actions of groups of individuals (Scapens, 1994). Routines are regarded as procedures that are actually in use in organisations, or “patterns of thought and action which are habitually adopted by groups of individuals” (Burns and Scapens, 2000, p. 11), and they can be institutionalised if they “become the taken-for-granted ways of behaving”. Rules and routines are enacted and reproduced through actions, and they are influenced by the existing institutions. In the ongoing process of enacting and reproduction, changes may occur to rules and routines, and such changes later may become institutionalised (Abdel-Kader, 2011).

In this study risk management phenomenon in airlines is conceptualised as a set of organisational rules and routines. In the context of airline risk management systems rules can be regarded as formal risk management frameworks translated into formal procedure manuals, while routines are regarded as the risk management practices actually in use which may vary from formal procedures and, which when enacted and reproduced over time, can become institutionalised. Under the OIE perspective risk

management routines can be institutionalised in the context of ceremonial or instrumental dichotomy (Siti-Nabiha and Scapens, 2005). Ceremonial institutionalisation of routines refers to organisational rituals used to preserve the status quo and the existing distribution of power among organisation members rather than to support decision-making processes; instrumental institutionalisation of routines is directed towards enhanced, informed decision-making.

3.3 Theoretical model

As indicated in the literature review (Chapter 2), empirical research comprehensively assessing airline risk management structures and practices and their determinants is scarce; literature review signalled several areas related to airline risk management systems which require further investigation. Following the review of theoretical perspectives informing research in organisational design, the researcher developed a theoretical model in response to the objectives and questions stated for this study; the theoretical model guides the collection and analysis of data on risk management phenomenon in airlines presented in subsequent chapters. According to the research objectives and questions elaborated in the previous chapters, this research investigates the design choices of airline risk management systems and their determinants in order to subsequently assess their maturity levels, best practices, and shortcomings.

This research applies the combined approach of contingency and institutional perspectives in order to examine structures and practices within airline risk management systems, and technical and institutional determinants of organisational designs of such systems in a cross-case analysis. Contingency theory perspective is adopted in order to examine airline internal and external task environments in terms of contingency factors influencing organisational designs of risk management systems. Institutional theory perspective is employed in an analysis of airlines' risk management phenomena in the context of organisational fields of airlines, considering governance structures, actors, and the institutional logics within the organisational fields, and the institutional pressures exerted on airlines. Airline risk management systems are examined in terms of their constituents, in particular institutions, rules, and routines. This research approach is graphically summarised in the following figure 3-1, presenting a schematic theoretical model.

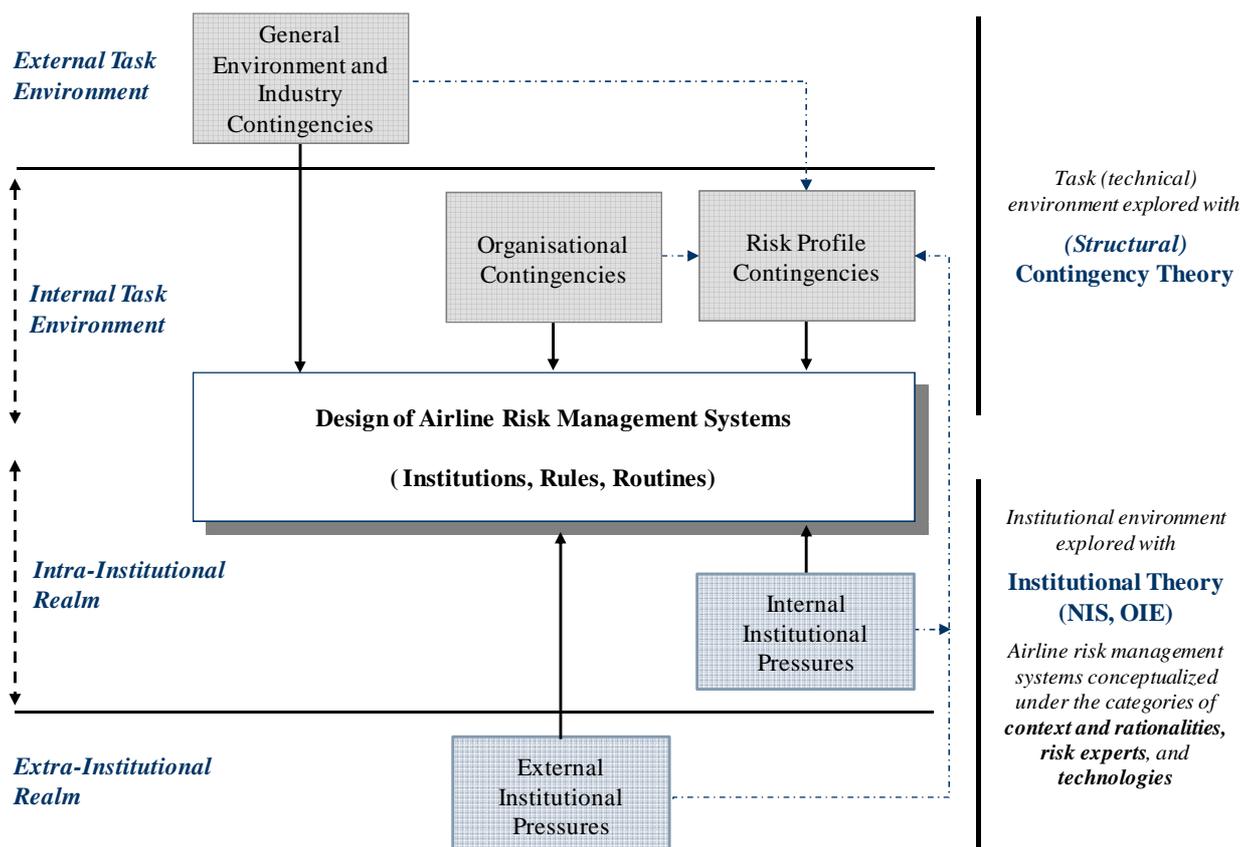


Figure 3-1: Schematic representation of the theoretical model

The investigation of airline risk management systems considers them as “outcome variables” (Chenhall, 2003, p. 134) of simultaneous tailoring to multiple institutional pressures and technical determinants. Chenhall (2003) recommends the study of organisational structures in disequilibrium conditions (in the presence of conflicting institutional and technical rationalities) to primarily establish adoption and uses of management control systems, then to examine their roles in enhancing decision quality and, finally, to investigate their effects on organisational performance. This study follows the recommended order, however, as previously explained, a detailed analysis of the effects of risk management systems on organisational performance is beyond the scope of this study.

As per the investigation of technical and institutional determinants of airline risk management systems, it should be noted that categorisation of the nature of causality of drivers according to their institutional or technical origins may raise debate; the drivers

are often interrelated and may appeal to both of these realms. As conveyed by DiMaggio and Powell (1983), strategies developed in the task environment under effectiveness criteria may, over time, transform to institutional norms if they are adopted across many organisations. This issue was also raised by Carruthers (1995) and Granlund and Lukka (1998, p. 159), when the latter stated: “in practice, economic and institutional pressures (or their effects) may get confused due to their interconnected relationship”. Thus, task and institutional environments are considered in this study rather as a continuum than a dichotomy (Cai and Yan, 2011).

3.3.1 Components of the theoretical framework: analysis under the contingency approach

Contingency theory applied to management control systems posits the designs of such systems are contingent upon the context of organisational settings; no unique system should be applied by organisations in all circumstances. Organisational performance can be improved if such systems are aligned to fit the contextual contingency factors (Emmanuel et al., 1990; Otley, 1980). Thus, structural contingency theory perspective is adopted to answer the question of the effects of airline task environments on organisational designs of airline risk management systems, and to conduct the analysis of relevant contingency factors.

Researchers in contingency theory adopted different approaches to define the fit between organisational structure and task environment, which can be broadly classified into selection, interaction, and system approaches (Van de Ven and Drazin, 1985; Drazin and Van de Ven, 1985). The selection approach examines the relation of single variables to organisational structures; effects on organisational performance are excluded from analysis (e.g. Perrow, 1967). The interaction approach examines pairs of organisational environment and structure factors, and their effects on organisational performance (e.g. Schoonhoven, 1981). The system approach, or as defined by Gresov (1989) the ‘multiple contingent approach’, analyses holistically multiple contingency factors and their effects on structural characteristics and performance of organisations. This research adopts the multiple contingent approach to studying the contingency factors of airline risk management systems in a sense that multiple contingency factors are examined in relation to organisational designs of coordination and control structures. However, this research does not pre-define characteristics of organisational

structures and organisational performance; neither does it assess the direct effects of the chosen characteristics of task environment on organisational performance. Furthermore, influences exerted on risk management systems by different contingency factors may conflict, and thus simultaneous alignment of such systems to all factors is not possible and may require trade-offs in adapting the designs to some factors (Fisher and Govindarajan, 1993).

As discussed in previous sections of this chapter, research within the contingency perspective can consider a wide variety of contingency factors (also referred to as 'variables' in quantitative studies). According to Fisher (1998), contingent variables are relevant to the degree that organisations differing on such variables also differ in how their systems are related to performance. Airline task environment is broad and complex, therefore the researcher referred to prior studies in order to learn about general characteristics of task environments and the investigated contingency factors. In order to develop categories of contingency factors relevant to the subject of this research, the researcher investigated the contingency factors previously considered by structural contingency theorists; in the proposed broad categorisation of the characteristics of airline task environment, the researcher refers to the concepts proposed by Miller (1992) and Kaplan and Mikes (2014). Miller (1992, p. 313) discussed uncertainties (risks) faced by organisations operating internationally and examined organisational responses to manage uncertainties. The scholar discussed the alignment of organisational strategies with the uncertain environment and proposed an "integrated risk management perspective" considering numerous interrelated uncertainties. Miller's framework for categorising uncertainties relevant to managerial decision making includes three broad categories of uncertainties which are related to (1) general environment, (2) industry, and (3) firm-specific variables. Similar categorisation of risks was considered by Kaplan and Mikes (2014). In response to the critique of universal propositions of ERM frameworks (discussed in Chapter 2, section 2.4.4), and following the arguments of scholars advocating the contingency approach for designing management control systems, Kaplan and Mikes proposed a "minimum ERM contingency framework". The framework identifies three broad categories of contingency factors which condition the design of organisational risk management systems. The scholars extended the taxonomy of the major groups of contingency factors discussed by researchers under the contingency theory perspective (section 3.2.1) with a new category of factors concerned

with the typology of risks the organisational risk management frameworks target to address; they distinguish between the categories of (1) internal, firm-dependent factors, (2) external and industry factors, and (3) risk types. Kaplan and Mikes (2013, 2014) claim that management of strategic, external, and preventable risks requires adopting different approaches in terms of organisational structures and processes. Thus, the framings of risk management systems need to be tailored to the nature and controllability levels of the risks organisations face.

Drawing on previous studies of contingency theorists, this research considers airline risk management systems as affected by a typology of contingency factors distinguishing three major categories as presented below. In this research all environmental and organisational conditions stemming from external and internal task environments and affecting the design of airline risk management systems are defined as contingency factors and are categorised as 1) general environment and industry contingency factors, 2) organisational contingency factors, and 3) contingency factors related to airline risk profiles. This research recognises the iterative nature of the process of defining contingency factors (Hambrick and Lei, 1985); some of the contingency factors are selected by organisations, e.g. contingency factors related to strategy choices (Govindarajan and Fisher, 1990), while others are determined exogenously, stemming from prior management decisions or from external circumstances beyond the direct control of organisations (Fisher, 1998). Under the multiple contingent approach (Gresov, 1989) this research acknowledges possible correlations or conflicts between the contingency factors.

The combinations of contingency factors specific to particular airlines influence the designs of their risk management structures and practices, which are reflected in variations of “risk management mixes” among organisations. The concept of risk management mix (originally denominated as “ERM Mix”) was introduced by Mikes (2005, 2009) and further referred to by Kaplan and Mikes (2014) as a constellation of risk management practices and structures reflected across five categories: (1) processes for identifying, assessing, and rolling up risks, (2) frequency of risk roll-ups, (3) risk tools such as risk maps or matrices which allow for a visual display of risk data, (4) linkages from risk management to other important control processes, and (5) the roles played by organisational risk units. Mikes (2005) claims that, although key structural

elements of risk management systems of organisations operating within a particular industry are similar, their “risk management mixes” vary according to organisation-specific contingency factors. This research examines the “risk management mixes” of airline risk management systems, yet not as outputs of solely contingency factors but also institutional pressures affecting such systems. The section related to analysing risk management systems under the institutional perspective further elaborates on examining heterogeneity among airline risk management structures and practices.

General environment and industry contingency factors

In this research the “General Environment and Industry” group of contingency factors describes multiple aspects of external technical environment of airlines, encompassing both general environmental conditions relevant to various industries and the environmental dynamics specific to the airline industry. With reference to general environment uncertainties, Miller (1992) discussed the following groups of factors at play: political, government policy, macroeconomic conditions, social context, and natural conditions. Regarding industry dynamics, the scholar elaborated on the effects of input and product market structures, and of competitive environment on organisational risk management structures. These two broad groups of external contingency factors influence organisations’ strategy choices and, consequently, their business models and management control system designs (Woods, 2011).

External environment in airlines is especially relevant in terms of regulative and normative frameworks. Civil aviation is a highly specialised and regulated industry, requiring adherence to regulations and normative standards in the conduct of airline operations; regulative and normative frameworks have an impact on overall organisational strategies, structures, and practices of airlines, and specifically on their risk management systems. In the risk management area, regulators’ and industry professionals’ attention has concentrated principally on safety and hazard related issues, broadening and reinforcing airline risk management structures targeting these exposures.

Organisational contingency factors

Organisation-specific factors related in broad terms to business model choices represent an important set of contingency factors affecting the design of management control systems (Chenhall, 2003); Osterwalder et al. (2005, pp. 17-18) define business model as “a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing, and delivering this value”. Organisation-specific factors resumed under a business model design comprise features such as size, organisational structure, strategy, complexity of operations, resources, competencies, and technology; as previously indicated, different business model design features have often been the subject of contingency-based research in management control systems.

Airline business model choices are conditioned on the sources of competitive advantage that organisations are intent on pursuing (Casadesus-Masanell and Ricart, 2010), which tend to be cost or benefit-related (Huettinger, 2014). Based on these two categories of competitive advantage drivers, airline business models have typically been categorised as legacy or low-cost; yet, over time, airlines have evolved in their models, creating new, hybrid forms in order to adapt to changing market conditions (Gillen and Gados, 2008). Airlines basing their business models on cost-related advantages seek either to offer benefits which are similar to their competitors yet of a lower cost base, or offer fewer benefits compensated with lower prices; cost-related drivers have underlined creation of the low-cost carriers’ business model. To the contrary, legacy carriers base their business models on benefit-related advantages, offering supplementary benefits to customers; if a premium price can be charged for the benefits, airlines differentiate their business offer, while if no premium is charged then the benefits help to distinguish the offer among competitors. The cost or benefit-driven or hybrid business models are characterised by different combinations of organisational features (Graf, 2005) which constitute contingency factors of airline risk management system designs.

Risk profile contingencies

As illustrated in the schematic representation of the theoretical framework (figure 3-1), airline risk profiles are affected by external environments in which organisations operate, and by their intra-organisational characteristics. Kaplan and Mikes (2012)

argue risk management programmes should be tailored to the typology of risks facing organisations; the scholars propose a distinction between three major categories of risks – preventable, strategy-execution, and external risks. Risks from each of these three groups are characterised by different degrees of controllability and probability of occurrence and impact, and require different approaches to their identification, assessment, and management. Preventable risks arise from operational breakdowns or employees' incorrect actions. Strategy-execution risks are taken in order to generate superior returns from strategies. External risks arise from events outside of an organisation's ability to influence or control. Thus, the designs of organisational risk functions should be dictated, among others, by the nature and volatility of organisational risk profiles.

The critique of airline risk management systems summarised in Chapter 2 conveys the inefficiencies in risk management systems which are often designed in a way that favours managerial focus on operational risks and does not facilitate management of other risks relevant to organisational performance. However, the downgrading performance of airlines is believed to be mainly driven by factors related to poor industry structure, misguided government intervention, and inconsistent airline strategy choices (IATA, 2013; Zea, 2004), and not the operational type of airline risks. This suggests airline risk management programs need to be re-adjusted according to the nature of their risk profiles, better suiting them for management of all three groups of risks - external, strategy-execution, and preventable risks; this implies adjustments in airline risk management practices, governance structures, technologies, etc. The preventable group of airline risks can be eliminated through monitoring of operational processes and effective internal control. Airlines should strive to eliminate the incidence of operational risks, since taking them on brings no value (Kaplan and Mikes, 2012). Kaplan and Mikes (2012) argue that strategic risks are not completely undesirable, as assuming these risks is essential for achieving strategic returns. Dealing with strategic risks in airlines should focus on their identification and cost-effective management of their likelihood and potential impact. ERM can provide airlines with strategic advantage by facilitating management of high-risk and return projects. Airline risk profile is characterised by high relevance of external risks arising from events outside of an organisation's control ability, such as natural and economic disasters, geopolitical changes, etc. Some of the external risks can be classified and managed as strategic risks,

while others, where the probability of occurrence is extremely low, are difficult to analyse in strategy planning processes. Due to the nature of airline operations, management of external risks is considered organisational imperative, and is executed via a wide array of crisis planning and other risk management tools (Shaw, 2011).

3.3.2 Components of the theoretical framework: analysis under the institutional approach

This research draws on different strands of the institutional theory (OIE and NIS) in order to examine the institutions, rules, and routines comprising airline risk management systems, and their institutional determinants. It adopts the view of airlines as pluralistic entities composed of various groups of actors promoting different values, goals, and interests, and shaped by the institutional pressures they are subject to (Barley and Tolbert, 1997). Apart from exploring the risk management institutions, rules, and routines (OIE), under the NIS perspective this research investigates the institutional pressures which exert influence over airlines and under which risk management systems are shaped in order to gain legitimacy. The analysis conducted herein considers airline risk management systems in a wider institutional context, forming part of an organisational field of airlines, subject to influences of institutions at a macro-level. Thus, the proposed approach considers the dynamics of different institutional demands stemming from relevant individual and collective actors and their prevailing logics, embedded in wider governance structures.

External and internal institutional pressures

Airlines are exposed to multiple institutional demands imposed by their corresponding institutional environments, emanating from broader regulatory, social, and cultural contexts (Pache and Santos, 2010), exerting coercive, mimetic, and normative pressures. Coercive pressures are exerted by institutions upon which airlines are dependent, and are often related to political influence and legitimacy issues, and materialised as changing legal environment and authorities imposing new regulations on organisations (DiMaggio and Powell, 1983); coercive pressures have been evidenced in multiple studies of management control systems (e.g. Arena and Azzone, 2007; Arnaboldi and Lapsley, 2003; Boland et al., 2008). Airlines operate in a highly regulated environment and their businesses are constrained by a multiplicity of national and international

regulations imposed by governments and industry associations. Thus, coercive pressures are relevant in shaping airline control and risk management systems, causing coherency and homogeneity among structures and procedures within those systems. Furthermore, airlines faced with uncertainty may adopt mimetic behaviours in applying standard responses to uncertain conditions. Environmental uncertainty or lack of clarity of organisational strategies or technologies encourages imitation of organisational structures and practices (DiMaggio and Powell, 1983). Previous research provided evidence of mimetic isomorphism in relation to organisational structures, processes, strategies, or choices of technology (e.g. Benders et al., 2005; Burns and Wholey, 1993; Haveman, 1993; Massini et al., 2002, 2005; Yand and Hyland, 2012; Lapsley and Pallot, 2000). Airline business environment is extremely dynamic where uncertainty prevails. This lends itself to conclude that mimetic behaviour could be a relevant motive for the adoption of novice risk management practices in airlines. Modelling risk management practices on those of more successful airlines might be a reflection of organisations' pursuit of legitimacy or improved performance. Normative isomorphism within organisational fields may be related to professionalisation of the fields through the existence of professional norms, roles, and values (Zucker, 1987). DiMaggio and Powell (1983) pointed to university education and professional networks and training as the most relevant sources of normative isomorphism. Homogenisation of management practices can also be supported by professionals migrating between organisations, or by normative pressures exerted at a supra-individual level such as national or corporate cultures (Granlund and Lukka, 1998). Normative isomorphism was evidenced to affect organisational management control structures; this can be seen in the studies of Cruz et al. (2009) or Tsamenyia et al. (2006). Professional organisations in an organisation field of airlines (e.g. IATA, ICAO), aiming for improvement of the situation in the airline industry, promote adoption of ever more comprehensive risk management systems in airlines; thus, the influence of normative pressures on airlines risk management systems can be substantial.

Institutional demands are exerted on airlines through regulatory frameworks, normative prescriptions, and social expectations (Scott, 2001). Regulative and normative frameworks delimit and coordinate the actions of airlines within their organisational fields. Governance structures controlling the organisational field of airlines are especially relevant in the present analysis, as airline businesses are highly regulated;

regulatory frameworks governing the airline industry comprise international conventions, national laws, and rulings and procedures issued by supra-national legal authorities; among normative frameworks, recommendations of recognised industry organisations are especially relevant. Institutional demands are carried over to airlines through institutional logics (Thornton, 2005), broader cultural templates providing organisational actors with means-ends designations. Actors in the organisational field of airlines comprise both individuals and organisations; actors can be located either inside the airlines, performing organisational roles and involved to different extents in conceptualising and controlling uncertainty (Arena et al., 2010), or externally in professional organisations, regulatory bodies, or other types of external stakeholders, exerting institutional pressures on airlines. Actors enact within broader institutional logics (Friedland and Alford, 1991; Thornton and Ocasio, 1999); the values and norms, ideas, beliefs, and broader meanings systems, all influence the actions of actors (Scott, 2010). Institutional logics influence how actors in airlines understand the priority goals of organisational strategies, and within them the risk management strategy, and how uncertainty is conceptualised in airlines. Airlines act within various conflicting logics; by way of an example, their core competency lies in delivering safe flights, yet they are also evaluated based on the ability to generate profit. Conflicting goals of maximising profits and maximising safety need to be conciliated, yet they imply opposite cost strategies; trade-off exists between safety management and costs (Holloway, 2008) and airlines strive to find the optimal balance between production (profit maximisation) and protection (safety maximisation) goals, while they conceptualise safety management as a fundamental process supporting the management of business in the pursuit of profits.

Rules, routines, institutions of risk management

Through adopting the institutional perspective this research examines the rules, routines, and institutions comprising airline risk management systems, and a variety of institutional pressures driving the designs of such systems. The framing of analysis follows the concepts introduced by Arena et al. (2010) and later referred to by Tekathen and Dechow (2013), who summarised organisational dynamics of the risk management phenomena under several broad categories. Airline risk management systems are conceptualised under the categories of ‘context and rationalities’, ‘risk experts’, and ‘technologies’. Context and rationalities are concerned with external and internal motivations for adopting particular framings of risk management systems in airlines

(e.g. compliance-driven vs. performance-driven approaches; coercive, normative, mimetic pressures), and with the way organisations conceptualise uncertainty into risks forming their risk portfolios. The concept of technologies denotes the complex set of rules, routines, and tools enrolled in the management of risks (previously mentioned 'risk management mix'). Risk experts refer to the roles and responsibilities assigned to organisation members involved in conceptualising and controlling risks. This conception of studying organisational coupling of risk management systems through risk management technologies and risk experts coincides with the dimensions of organisational systems proposed by Weber (1947), such as division of work, hierarchy, rules and procedures, and formalization. This analysis also considers the structural characteristics of organisational management systems summarised by Vroom (2002), such as differentiation and coordination of task responsibilities, standardisation of the performing of tasks through establishment of rules and routines, formalisation of processes, centralisation of power, and hierarchical configuration.

3.4 Conclusions

This chapter discussed the theoretical framework informing this research, guided by the research questions outlined for this study. This chapter provided an overview of core tenants of the theoretical perspectives, and explained their relation to the subject of the study. Conducting this research through the lenses of structural contingency theory, new institutional sociology theory, and old institutional economics should allow the objectives stated for this research to be achieved and address the gaps in the literature of airline risk management systems.

The multi-theoretical framework developed for this research lays the basis for exploring the designs of airline risk management systems and their determinants. In particular, the framework suggests to explore airline risk management structures and practices under the tenets of OIE and NIE, as a set of institutions, rules and routines. Additionally, the framework facilitates exploring airlines' organisational contexts and their deterministic influences on risk management system designs. Collection and analysis of empirical data, conducted under the tenets of this theoretical framework, complemented with the findings of the preceding literature review, consequently lead to development of an empirically-based ERM framework in the airline industry, presented and discussed in

the forthcoming Chapter 8 (section 8.2). The following chapter elaborates on the research methodology and the chosen methods of empirical data collection and analysis.

Chapter 4

Research Design

4.1 Introduction

This chapter presents the overall philosophical approach adopted to conduct this study in the field of airline risk management, and describes and justifies the research design chosen in order to address the research questions underlying this study. It commences by discussing the interpretive paradigm guiding this research, and its implications on consequent methodology choices. In the following sections of this chapter, the researcher elaborates on suitability of the field study and case study methodologies and outlays the design of the empirical research in terms of data collection and analysis methods. Finally, reliability, validity, quality and ethical considerations related to the chosen approach are addressed. The last section presents conclusions of this chapter.

4.2 Research paradigm

Research paradigms provide larger frameworks and world views, foundations for conducting research (Kuhn, 1962). The choice between positivistic and interpretive paradigms to underpin this research is conditioned on the nature of the research problem and the aim and objectives stated for this research. Positivistic research is concerned with researcher independence and analytical objectivity, while it proposes studying social phenomena in a similar manner to conducting studies in natural sciences; contrarily, the interpretive approach perceives research as infused with culture, beliefs, and values ingrained in socially constructed reality, and recognises researcher's engagement with actors and the contextual environment with which they interact (Morgan and Smircich, 1980). The nature of the research problem is defined in terms of an organisational phenomenon, and the aim and objectives of this research determine adoption of the interpretive paradigm concerned with exploring reality as a social construction "emergent, subjectively created, and objectified through human interaction" (Chua, 1986, p. 615). Previous research in management control systems and, specifically, in the risk management area would often be conducted under the interpretive paradigm (e.g. Arena et al., 2010, 2011; Mikes, 2005, 2009; Woods, 2009,

2011), as it allows for studying phenomena in wider historical, organisational, institutional and social contexts (Strati, 2000).

The interpretive paradigm is chosen due to its ingrained assumptions about the world, the study of knowledge, and values (Collis and Hussey, 2003); the assumptions inherent in the interpretive approach determine the research methodologies and methods selected for this study. Under the ontological assumptions of the interpretive paradigm, the world is considered as socially constructed and can be understood through exploring the perceptions of human actions; reality is considered subjective and multiple, as perceived by participants in a study. This study is concerned with understanding reality as a social construction, as it defines the research problem in terms of an organisational phenomenon. The study explores the phenomenon of risk management in airlines, emphasising the importance of its social aspects. The phenomenon of risk management is studied with regard to its enactment by actors in organisations, considering not only formal organisational rules and structures, but also informal routines and practices actually in use. This study also pays attention to risk perceptions among organisation members in addition to the cultural and institutional influences on organisational logics. The epistemological assumptions under the interpretive paradigm consider researchers' beliefs as determinants of what should count as facts, while under the axiological assumptions of the interpretive approach research is value-laden and biased by researchers' values, which determine what is recognised as facts and interpretations; the researcher's perception depends, to some extent, on prior knowledge, state of preparedness, and expectations. The researched field is acknowledged not only as forming part of the empirical world, but also as being "shaped by the theoretical interests of the researcher" (Ahrens and Chapman, 2006, p. 820).

Under the above cited assumptions, risk management systems of airlines are studied in this research in natural settings, while the risk management phenomenon is explored in terms of meanings people assign to it, and considering the interaction of organisational risk management systems with both technical and institutional contexts. The chosen approach allows for exploration of organisational settings from the inside, contrasting the existing theory with empirical reality, challenging the taken-for-granted theoretical propositions and development of new concepts and relationships and more informed theoretical propositions. The research is conducted under an inductive approach.

Inductive arguments are derived from a limited number of specific facts to general conclusions (Chalmers, 1996). Although this research first deducts from the existing theories, forming explanations and predictions of theoretical constructs (see Chapter 3), it later relies on facts acquired through observation to create extension of theory through induction.

One of the hallmarks of the interpretive paradigm is drawing on multiple theoretical perspectives to examination and interpretation of the researched reality; the processes and relationships observed in the field can be explored with multiple theories, each providing different but incremental insight into the overall interpretation (Collis and Hussey, 2003). Ahrens and Chapman (2006, p. 820) describe conducting empirical studies under the interpretive paradigm as involving “an on-going reflection on data and its positioning against different theories such that the data can contribute to and develop further the chosen research questions”. As discussed in Chapter 3, the theoretical framework underlying the basis for conducting this research involves institutional and contingency theory perspectives; furthermore, as is also explained in Chapter 3, studies drawing on the institutional perspective would typically be conducted within the interpretive paradigm, while studies drawing on the contingency perspective would be conducted within the positivistic paradigm. However, this research proposes a qualitative analysis of diverse contingency factors affecting the structures and practices of airline risk management systems and, while it additionally involves various streams of the institutional theory, it is conducted under the interpretive approach.

The interpretive paradigm determines the methodology choice for conducting research on the identified research problem. The interpretive paradigm suggests employing research methods which are “an array of interpretive techniques which seek to describe, translate and otherwise come to terms with the meaning, not the frequency of certain more or less naturally occurring phenomena in the social world” (Van Maanen, 1983, p. 9). Van Maanen (1998) emphasises the focus of interpretive research on meaning, the use of analytic induction and maintaining close proximity to data. Since interpretive research is concerned with meanings rather than measurements of social phenomena, it implies collecting primarily contextualised, qualitative data through examining small samples in their natural locations, in order to gain in-depth information and make sense of it. Qualitative data places emphasis on quality, depth of information, allowing for

capturing richness of detail and nuance of the studied phenomena (Collis and Hussey, 2003); such data is analysed in an inductive process of constructing abstract concepts and theories. Thus, rich and contextualised accounts can be developed of organisational reality, delivering a deeper understanding of actors' practices within organisational settings. This approach allows not only for discovering what happens in organisations, but also how and why phenomena occur (Ferreira and Merchant, 1992).

4.3 Research methodology

Research methodology refers to the philosophical and practical construction of research, from theoretical grounds to data collection and analysis; in this context, research methods specifically reflect strategies for collection and analysis of data (Collis and Hussey, 2003). The level of complexity of the risk management phenomenon under study, its social, organisational nature, the importance of contextual influences on the investigated phenomenon and, finally, the research aim and objectives call for employment of two related research methodologies, namely field study and case study methodologies. Prior to introducing the methodology in more detail, it is necessary to comment on the two-fold interpretation of the term "field study". As indicated by Lillis and Mundy (2005, pp. 120, 121), "field study" may refer to a specific methodology of studying the "nature of the constructs on which the theory is built, the relations among these constructs, or their empirical interpretation" and the "nature and impact of key social and contextual influences". On the other hand, the term "field study" may be used interchangeably with the term "empirical study", referring to research involving gaining knowledge by means of empirical observation or experience. Following the distinction proposed by Jabbour (2013), it is important to clarify that in this research the term "field study" refers to the choice of methodology, while the expressions "empirical study" or "empirical research" describe the empirical study as a whole.

In this research the field study methodology is employed in order to explore the diversity of configurations of airline risk management systems and their technical and institutional determinants. Additionally, the field study contextualises the fragmented literature findings of airline risk management practices through a systematic assessment of the degree of assimilation of ERM principles in airlines and, on a related note, the developments and shortcomings of airline risk management systems. Subsequently, the

case study methodology is employed in order to examine in more detail organisational coupling of risk management, the links with organisational logics, and the rationales for the alignment of airline risk management systems with their respective business contexts.

Through employment of the field study and case study methodologies, this research responds to the calls for organisational studies of management control systems, exploring their characteristics in wider social, cultural and organisational contexts (voiced, for example, by Arena et al., 2010; Power, 2009; Mikes, 2009; Muralidhar, 2010; Altuntas, 2011; Ahrens, 2010; Baxter and Chua, 2008). Particularly in the field of ERM previous research often explored adoption of this risk management approach and its driving forces, organisational configurations and effects on organisational performance by employing the survey methodology (e.g. Beasley et al. 2005, 2008; Paape and Speklé, 2012; Liebenberg and Hoyt, 2003; Pagach and Warr, 2010; Desender, 2007; Gordon et al., 2009). The positivistic approach of surveys was often used for collecting data through questionnaires and structured interviews, with the purpose of making statistical inferences about populations (Babbie, 1990). The survey methodology allows for studying larger samples, yet it has the negative point of not being able to provide a complex picture of the studied phenomena, for it misses contextual interpretations of research findings. Previous, survey-based studies demonstrated the rules of risk management systems, but they failed to demonstrate the enactment of routines by organisational actors, the constellations of employees, their risk management logics, and the influences of organisational and cultural contexts. The questions which this research aims to address require the study of airline risk management structures, practices, rationales, and their institutional and technical determinants in wider organisational contexts which cannot be captured through surveys within the limitations of time and resources.

4.3.1 Field study

The field study methodology chosen for conducting a part of this research was originally proposed by Merchant and Manzoni (1989). This methodology involves conducting several limited in-depth studies at a non-random selection of sites (Lillis and Mundy, 2005). The field study methodology exploits, to some extent, the breadth and

depth of research usually associated respectively with survey and case study methodologies. As explained by Lillis and Mundy (2005, p. 127, and based on research of Eisenhardt, 1989, and Aherns and Dent, 1998), field studies “draw on a larger number of observations than in-depth case studies, but can also deal with more complex ‘how’ and ‘why’ questions than survey approaches”. The field study methodology allows for deliberately focusing on selected relevant elements of airline risk management systems, while the focused versus complex study of the phenomenon is offset by extending the sample of participating organisations.

According to Lillis and Mundy (2005), the field study methodology is best applicable to research contexts where there exists significant theory, but there is still doubt about the empirical interpretation of the constructs on which the theory is built, and the relationships between such constructs or their empirical interpretation. This methodological approach is especially applicable to exploring new and developing areas (Klein and Myers, 1999). Critique of the existing academic literature in the fields of ERM and airline risk management systems conveyed in the previous chapters of this thesis points to frequently occurring simplified modelling of risk management systems in empirical studies, and failures to identify important intervening factors in such simplified models. The critique also reports on problems with definition and measurement of theoretical constructs, partly attributable to their highly contextualised nature; for example, conceptualisation of determinants of complex and highly contextualised risk management systems in organisations is often reduced to a limited number of simple constructs. As argued by Lillis and Mundy (2005), the field study methodology can improve understanding of theoretical constructs studied empirically. Field studies pay attention to contextual influences of the constructs, yet they also allow for detecting cross-case patterns in issues that would otherwise be masked in extensive case study write-ups. Through investigating theory-defined constructs such as risk management rules and routines, institutional pressures or contingency factors in organisational settings of airlines, the theoretical constructs are empirically refined. The refinement is achieved by combining contextual interpretation of the theoretical constructs with their replication in different cases. In addition, the field study methodology allows for investigation of homogeneity and variations in a practical interpretation of theory-defined constructs. Cross-organisational verification of

theoretical constructs improves credibility and generalisability of the field study findings (Lillis and Mundy, 2005).

Conducting only a limited number of in-depth case studies in the course of this research would similarly allow for documenting the rationale underlying the organisational dynamics of risk management systems of airlines; however, it would fail to provide evidence on cross-organisational patterns between multiple airlines. On the other hand, the survey methodology applied to this study would allow for increasing the sample of airlines, but it would omit contextual explanations of the findings such as causal reasoning of individual actors, organisational logics, or the effects of contingency and institutional factors on airline risk management systems. The field study methodology applied to exploring of airline risk management systems allows for making theoretical generalisations in much the same way as a case study methodology, while the relevance of such generalisations is improved by drawing on findings from multiple organisations; this also facilitates identification of patterns in empirical observations which improves the validity of findings, and allows for detecting variations between the investigated factors in different organisations. The aforementioned arguments indicate appropriateness of the field study methodology for conducting the research, attending to the objectives stated for this research and to the theoretical propositions informing this research. Finally, concerns regarding the chosen methodology are addressed in detail in the forthcoming section 4.7 of this chapter, where limitations, validity and reliability, and quality of the field study research are addressed.

4.3.2 Case study

Complex social phenomena and processes requiring in-depth descriptions are often recommended to be explored with the interpretive methodology of a case study (Yin, 2009). Yin (2009) suggests employing the case study methodology for examining contemporary events over which the researcher has little or no control, especially when the 'real world' context of the phenomena is important. The scholar also advocates suitability of the case study methodology in studying the phenomena which are best addressed with 'how' and 'why' questions. Case studies focus on understating the dynamics of phenomena within a particular context, while they concentrate on a limited number of units of analysis (Eisenhardt, 1989). The case study methodology implies

collection of in-depth, contextualised data on the units of analysis. Data is collected through multiple means such as interviews, observation, archival records and other documentary evidence (Eisenhardt, 1989). Case studies are applicable for providing descriptions of phenomena, testing theory or generating theory (Eisenhardt, 1989). Case studies are especially recommended for research relying on prior theoretical propositions which guide data collection and analysis, while through their confirmation, modification, or rejection, analytic generalisations can be drawn (Yin, 2009). Through an in-depth analysis of phenomena within its contextual setting, case studies explain complex causal links which cannot be featured through other, especially positivistic, approaches such as surveys (Yin, 2009). Under the case study approach, phenomena can be investigated through single- or multiple-case studies, while in the case of the latter, cross-case conclusions can be drawn about the phenomena and surrounding reality.

As previously outlaid, the field study methodology was employed in order to address some of the questions stated for this research in cases where identifying cross-organisational patterns was especially beneficial. However, in order to address in full all research questions, the case study methodology was additionally introduced into this study. Employment of the case study methodology was particularly determined by the need to explain, in detail, organisational coupling of risk management in order to understand organisational logics and rationales, and to explore the alignment of risk management system configurations with airline contextual settings. Combining the field study findings with more detailed, contextualized analysis of airline risk management systems through case studies provided richer, more in-depth data on the investigated phenomena. The highly complex, contextualised and contemporary nature of the above mentioned aspects of the risk management phenomenon fit with the features of the case study methodology. Applicability of the case study methodology to this research is also related to the reliance of this study on the theoretical framework developed in Chapter 3. Institutional studies of management control systems and risk management systems in particular were often conducted through case studies (e.g. Arena et al., 2010, 2011; Brignall and Model, 2000; Covaleski et al., 1993; Soin et al., 2002; Granlund, 2001; Modell, 2001); employment of case studies conducted under the contingency theory perspective is less significant, yet the few existing studies offer valuable insight into management control systems and risk management systems (e.g. Woods, 2009, 2011). Different types of case studies have been conducted in the management control

discipline, such as exploratory, explanatory, descriptive, experimental, or illustrative (Ryan et al., 2002). The case studies conducted in this research combine to certain extents elements of exploratory and explanatory studies; they explore characteristics of the risk management phenomena in the analysed cases; they further explain the relationships between the risk management systems and their contextual settings.

4.4 Definition of units of study

The interpretive approach guiding this research suggests employment of purposeful sampling of information-rich units of study (Yin, 2009). Purposeful sampling involves using the researcher's judgment in selecting illustrative units of study facilitating achievement of research objectives (Saunders et al., 2003). Sampling, based on dimensional lines, is usually proposed by researchers employing the field study methodology (e.g. Arnold, 1970; Lillis and Mundy, 2005). It consists of identifying the dimensions along which members of a relevant population should vary. The list of relevant dimensions should serve as a sampling frame for selection of a relatively small number of units of study from a population. Thus, the researcher critically chooses sampling frame parameters and selects accordingly the organisations illustrating features and processes of particular interest to this study. In the cases studies, of the initially chosen field study sample the researcher chooses the units of study most illustrative of the phenomenon to be explored.

4.4.1 Field study sampling

Since this research, among other objectives, is concerned with developing guidance for designing effective, enterprise-wide risk management systems in airlines, in the first instance it may suggest selecting for the field-based study a sample of airlines which have successfully adopted ERM principles in their organisational processes and structures. However, several issues arise from this rationale, which are related mainly to identifying organisations which have implemented truly enterprise-wide risk management systems. Firstly, determining the existence of ERM in airlines prior to conducting empirical research, based only on publicly available information, may be problematic, especially in terms of one-dimensional determinants of ERM adoption. The ERM adoption determinants referred to in former studies, such as existence of a CRO figure in organisations or an equivalent risk-related position (e.g. Beasley et al.,

2008; Pagach and Warr, 2008, 2011; Hoyt and Liebenberg, 2003, 2011), explain little about the quality, depth, breadth, and impact of organisational risk management processes. Apart from that, ceremonial structures of ERM can be designed by organisations in pursuit of compliance or other forms of external legitimacy, while decoupling may occur of risk management routines from rules. Thus, simplistic proxy measures may fail to identify organisations which have implemented truly comprehensive risk management systems. Similar concern can be raised regarding searches of publicly available information such as 10-Ks, corporate websites, proxy statements, or any other type of public announcement for affirmations of ERM adoption. This strategy seems overly simplified, as it relies on the organisation's definition and perception of ERM, and again, organisations may choose to publicly announce adoption of ERM principles in pursuit of external legitimacy, yet may not follow through with it.

Finally, it was evidenced in subject literature that ERM is shaped by particular organisational settings, and translated into different organisational structures and practices (e.g. Arena et al., 2010, 2011; Mikes, 2005, 2009); literature suggests that organisations may adopt comprehensive approaches to risk management without actually referring to them as 'ERM' (e.g. Woods, 2011). Additionally, public disclosure on risk management issues may concentrate on management of specific types of risks, while little data may be revealed on managing risks in an integrated manner (Hoyt and Liebenberg, 2003). Thus, judging the existence and maturity of ERM is not a straightforward task, and a myriad of different organisational characteristics should be considered. There is still a vivid discussion in subject literature on organisational determinants of implementation of the ERM approach (Arena et al., 2010). Keeping these nuances in mind, organisations in this research are selected for analysis based on diverse criteria, not only the proclaimed or presumed adoption of ERM.

An important principle to consider is that this study should benefit from variability in risk management systems of the airlines forming the sample. Variability enriches the findings on the contextual factors determining risk management systems, and of the possible alternatives of their organisational configurations, while both groups of findings can be further translated to implications for context-sensitive designing of ERM systems in airlines. Similarly, findings on shortcomings and best practices of

current airline risk management systems, drawn from airlines with varying levels of maturity of risk management systems, can be further capitalised on in developing implications for designing effective, enterprise-wide risk management approaches. Following this rationale, organisations for the field study are chosen with the underlying aim of promoting diversity within the sample, in terms of factors which, as explained above, are considered likely to cause variation in the framings of risk management systems of particular airlines. In order to define dimensions along which organisations forming the sample should vary, the researcher referred, in broad terms, to the constructs of the theoretical framework (Chapter 3), and specifically to the typology of the contingency factors presented therein; thus, sampling in this research can be considered as theoretically grounded. Firstly, two characteristics of airline business are selected pertaining to two different categories of contingency factors outlined within the framework. The two dimensions guiding selection of the sample in this research are (1) size and complexity of organisational structures of airlines, and (2) location of their businesses.

Firstly, size and complexity of organisational structures (1) pertain to the group of 'organisational' contingency factors defined within the theoretical framework. Size and complexity of organisational structures were proved to be positively correlated in organisations (Beck et al., 2006), and thus in this research each of these organisational features is regarded as an indicator of the other, while they are both classified under the same dimension. Business models adopted by airlines determine the complexity of organisational structures and, among them, corporate governance structures (Alves and Barbot, 2007). Previous studies showed that complexity of governance structures is often related to comprehensiveness of risk management systems in organisations (Beasley et al., 2005; Hoyt and Liebenberg, 2011). The researcher is interested in examining contrary cases of airlines with complex and simple organisational structures of the risk management function. Secondly, location of the business (2) conditions to some extent the contingency factors classified within the theoretical framework under the category 'general environment and industry'. Airlines operating in different geographical markets are subject to different regulatory frameworks and different types of risks, both of which affect the framings of risk management systems. Therefore, this research aims to examine risk management structures of airlines operating in different geographical markets. Since a majority of airlines nowadays conduct international

operations, origins of the airlines and locations of their headquarters were regarded as indicators of their prime locations.

The third category of contingency factors outlined within the theoretical framework is related to the organisational 'risk profile', and is partly affected by the factors pertaining to the two aforementioned categories. Airline risk profiles are influenced by their intra-organisational characteristics and by external environments in which organisations operate. This group of contingency factors is not employed as a separate criterion for selecting the field study sample, as the typology of risks faced by particular organisations is difficult to define based on publicly available information prior to actually conducting empirical research within organisations; a sampling criterion derived in this manner would not be regarded as viable. Finally, the researcher defined an additional dimension along which airlines in the sample should vary (3), namely the perceived comprehensiveness of the risk management systems. The researcher was interested in examining the risk management structures of airlines with proclaimed comprehensive risk management systems, in addition to airlines where risk management systems are expected to be less advanced. The underlying idea is to examine, in both cases, the organisational designs of risk management systems and their determinants, with special emphasis placed on the airlines which adopted mature and advanced systems.

In total, ten airlines were selected in order to obtain a heterogeneous sample, diverse in terms of geographical locations, organisational sizes and complexity, and the perceived advancement of their risk management systems. As argued by Lillis and Mundy (2005, p. 122), this sample size is appropriate for capturing "cross-case patterns in specific issues". Furthermore, studies of Merchant and Manzoni (1989) and Bruns and McKinnon (1993), which also draw on the field study methodology, were conducted based on samples of similar size (12 organisations in both studies). Organisations were selected according to the discussed criteria, based on publicly available information. In total 19 organisations were invited to participate in this study, out of which, as indicated above, ten organisations agreed to cooperate to an extent which allowed for collecting satisfactory amount of empirical data. The chosen sampling strategy maximised the likelihood of collecting meaningful data on the subjects of interest. Due to the variability within the sample, observations were repeated under a variety of conditions,

which additionally promoted making sound inductive inferences. The following table (Table 4-1) provides a summary of relevant characteristics of the airlines participating in the field study.

Table 4-1: Airlines participating in the empirical research

Airline Code	Location ⁽¹⁾	Organisational Size ⁽²⁾	Risk Management Approach ⁽³⁾
Alpha-1	Confidential	Large	ERM
Alpha-2	Confidential	Medium	ERM
Beta	Confidential	Medium	Traditional
Gamma	Confidential	Small	Traditional
Delta	Confidential	Small	Traditional
Epsilon	Confidential	Medium	ERM
Zeta	Confidential	Large	ERM
Eta	Confidential	Medium	ERM
Theta	Confidential	Medium	ERM
Iota	Confidential	Medium	ERM

Due to the confidentiality terms safeguarding the agreements with the participating airlines (addressed in section 4.6), this research must not reveal the identities of the organisations nor any data which might easily suggest their recognition.

(1) There is only a limited number of airlines headquartered in particular countries; therefore, revealing locations of the headquarters of the participating organisations might be prejudicial to safeguarding the confidentiality of their identities.

(2) The sizes and complexity of airline operations were defined for the needs of this research by the simple proxy of passengers carried in 2013 by the particular airlines. Airlines classified as ‘large’ carried more than 30 million passengers, ‘medium’- between 30 million and 10 million passengers and, finally, ‘small’ – less than 10 million passengers.

(3) The perceived state of advancement of the risk management systems of particular airlines was simplistically categorised for the needs of their presentation in this chapter as ‘ERM’ – referring to airlines which publically indicate adoption of ERM, and ‘traditional’ – referring to airlines which do not claim in publicly available reports the adoption of ERM.

4.4.2 Case study sampling

Scarcity of empirical research of organisational ERM dynamics in airlines contributed to the choice of the case study methodology for an in-depth analysis of a particular case in which ERM is considered to be at an advanced level. The selected case, code-named Alpha, comprises a pair of airlines, Alpha-1 and Alpha-2 forming part of a holding which also forms part of a large, multinational group of organisations. The first part of the empirical research, the field study, revealed maturity of the ERM systems adopted in Alpha-1 and Alpha-2. The two airlines were analysed jointly with their holding company due to the fact that these organisations operate under a consolidated ERM system. This definition of the unit of analysis allowed for explaining how the risk management is structured across the group of organisations, specifying cross-organisational division of responsibilities and accountabilities, and the reporting links.

Additionally, attending to the research questions inquiring about the alignment of airline risk management systems with contextual forces, especially regarding adoption or non-adoption decisions of ERM, the second case study conducted in the course of this research comprises an airline whose risk management system was assessed in the course of the field study as advanced, yet which does not claim adoption of ERM. The airline is code-named Beta and forms part of a large airline group. Although risk management systems of the Alpha and Beta airlines were assessed as advanced, the two cases present contrasting characteristics of proclaimed adoption and non-adoption of ERM. Therefore, this deliberate combination of cases does not seek direct replication, but rather an extension of the perspective on theoretical concepts and the practices that may advance the risk management discipline, even though they may not be denominated as ERM or may be performed outside of the risk management function (Kaplan and Mikes, 2014). Furthermore, analytic conclusions drawn from multiple cases versus an

individual case are considered more compelling (Herriot and Blackstone, 1983, cited in Yin, 2014).

4.5 Research methods

According to Geertz (1995), in interpretive research where the field is regarded as a social reality, the field can only be understood if it is defined with reference to a theoretical framework. Thus, requirements for conducting empirical research are derived from the basis of the theoretical framework developed for this investigation (Chapter 3), combining theoretical tenets of the institutional and contingency perspectives. As discussed in section 3.3 of Chapter 3, this research conceptualises organisational dynamics of airline risk management systems under three broad categories of theoretical coordinates, namely context and rationalities, risk experts and risk management technologies; this typology was inspired by the research of Arena et al. (2010) and Tekathen and Dechow (2013). Context and rationalities are concerned with external and internal, and both technical and institutional, motivations for adoption of particular designs of risk management systems in airlines. This concept also refers to the way organisations conceptualise uncertainty into risks comprising their risk portfolios. The concept of risk experts refers to the roles and responsibilities assigned to organisation members involved in conceptualising and controlling risks. The concept of technologies denotes the complex set of rules, routines, and tools (instruments) enrolled in management of risks. Risk experts and technologies combined constitute organisation-specific “risk management mixes” Mikes (2009).

The field study and case study methodologies chosen for this research are well fitted for examining the above discussed intricacies of airline risk management system designs, their determinants and the surrounding contexts. Empirical research methods encompassing strategies for collection and analysis of data (Collis and Hussey, 2003), are chosen in this research to fit with the requisites of the field study and case study methodologies, for “specific research methods might be used for different methodologies” (Ahrens and Chapman, 2006, p. 822). The interpretive approach guiding this research relies on words rather than on quantification in the data collection and analysis, and guides the researcher in selection of methods to empirically investigate the studied phenomena (Morgan and Smircich, 1980).

4.5.1 Data collection methods

This research falls into the realm of cross-sectional studies, for the data was collected from a sample of organisations within a period of three months; evolution of data over time is not considered in this study. In the course of both the field study and the case studies, data on the risk management phenomena in airlines was collected through multiple means according to their capacity to extract data of a qualitative nature, for the interpretive approach seeks to “describe, translate and otherwise come to terms with the meaning, not the frequency of...phenomena in the social world” (Van Maanen, 1983, p. 9). Data was collected principally through semi-structured interviews, due to their potential to generate qualitative, contextualised data. Under the interpretive paradigm adopted for this research, interviews were employed in order to comprehend interviewees’ views of the nature of management control in relation to their work (Ahrens and Chapman, 2006); the interviews were used as a means for expressing social reality, rather than clarifying objective reality (Alvesson, 2003). Data collection was extended to include publicly available data, such as corporate reports accessible through airline websites or publications issued through various industry-related organisations. In the airlines participating in the two case studies, data collection was further complemented with internal documentary evidence such as risk management policies, procedures, and management reports. Additionally, risk management tools, such as risk management software, corporate risk registers, and risk maps and matrices, were reviewed.

Semi-structured interviews

Any attempt to investigate in detail airline risk management systems would inevitably fail to cover many issues due to time constraints limiting availability of the interviewees. Thus, the multiplicity of issues related to airline risk management was brought down to a limited number of themes drawn from the theoretical framework informing this research, and a series of descriptive, open-ended questions was developed. Appendices A and B offer an introduction to the interview guideline. Prior to conducting interviews with the selected professionals from the sample of airlines, a pilot study was conducted with a total of three academics and risk management professionals from unrelated organisations. The pilot study allowed for refining the questions in order to elicit more relevant information, ensuring clarity of wording of the

questions, and adjusting the duration of the interviews to the busy schedules of the interviewees.

Interviews with selected airline professionals, although informal, were guided by a pre-designed schedule, and therefore they were not completely free-flowing. The approach to stating questions in the interviews was largely open-ended, which provided a qualitative component. This interview format facilitated discussion of the issues which were of particular concern to the interviewees and allowed for the generation of supplementary questions. This choice of interview structure also allowed for modifying the order of the questions according to the flow of conversation, and paying extra attention to the topics which were of special interest to either of the parties (Creswell, 2009). Due to the inductive nature of this empirical research, the interviewees were encouraged to wander freely in their responses, facilitating emergence of new lines of discovery that could not be anticipated *ex-ante*. The researcher followed interviewing techniques recommended in previous research (e.g. Hannabuss, 1996) in order to facilitate rapport and unconfined flow of information. Limiting the researcher's role in steering interviewees' narratives helped to minimise researcher bias in the collected data. In the data collection process, factual descriptions of the components of airline risk management systems were differentiated from interviewees' personal views of their appropriateness, influence and usability. The interviews, guided by the earlier discussed theoretical coordinates, allowed for exploring individual interviewees' roles and responsibilities in the risk management process, and knowledge and perspectives of organisational risk management structures and processes.

The majority of interviews were conducted individually, allowing for recording of individual interpretations; in the airlines participating in the case studies informal discussions were additionally conducted, involving groups of airlines' members. The interviews were conducted face-to-face, via telephone, or using web-based conference tools, depending on interviewees' location and preferences; the use of web-based conference tools and telephone allowed for interviewing airline representatives from various geographical locations. The interviews were conducted in three different languages depending on the interviewees' preferences, what facilitated expression of ideas unrestricted by language barriers. Interview questions were prepared according to the desired duration of the interviews. Interviews with the top management members to

be conducted in the field study and in the case studies were designed to be held for up to 40 minutes. Interviews in the case studies with middle and lower management members were designed to be held for up to 30 minutes. However, during the course of the interviews, in the majority of cases, the participants engaged in longer discussions beyond the expected timeframe, reaching up to 90 minutes in the case of face-to-face interviews. In the airlines participating in the case study research the semi-structured interviews were often complemented with a less structured discussion with the most informative interviewees, and with their colleagues who the interviewees often referred the researcher to during the visits to their premises, presenting them as knowledgeable of the specific topics of interest to the researcher.

The collection of empirical data was conducted only after ensuring participants that their responses would be treated as anonymous and confidential, respecting the terms and conditions of non-disclosure agreements signed with the individual organisations. Ensuring anonymity and confidentiality is believed to have improved the accuracy of the findings from the empirical study. Rich, qualitative, non-standardised, descriptive data was collected in the interview process. Nearly all interviews were digitally recorded with prior interviewees' permission, and then transcribed verbatim in order to ensure accuracy and facilitate further analysis, while in several cases interview summaries were reviewed by their respective informants. Additionally, notes were taken during the interviews, and major ideas or thoughts were written up in more detail immediately following the interviews. During the face-to-face interviews the informants often supported their responses by presenting documentary evidence, software, or tools they used along the risk management process.

Selection of interviewees

Within the chosen airlines the researcher initially approached their most informative members, with high levels of responsibility and accountability for risk management, whose knowledge and experience were most relevant to this study, and who were believed to provide the most valuable input. The researcher believed that in order to best investigate diverse aspects of airline risk management systems it was necessary to reach professionals from the top organisational levels involved in the development of risk management strategies, and/or performing oversight over the risk management function.

Online research was conducted in order to identify the target group of professionals from the selected sample of organisations, and their contact data. Additionally, recommendations of airline professionals and their contact details were shared with the researcher through networking. Initial contacts were established via emails and phone calls inviting the professionals to participate in this study. Repetitive follow-up contacts were made via emails and phone calls. Referral sampling was also used in this study, as the interviewees indicated other knowledgeable professionals from within their networks in their respective organisations.

As previously explained, seven of the ten approached airlines participated solely in the field study, while the remaining three airlines participated additionally in the case studies. With regard to the airlines participating in the field study only, the researcher interviewed some of the most knowledgeable airline members with regard to the risk management functions of their respective organisations, mainly responsible full-time for coordinating or facilitating the risk management function; in the organisations where the risk management function was performed on a part-time basis by their members, and which lacked dedicated risk management positions, the researcher interviewed diverse professionals knowledgeable about the risk management systems of their respective organisations. In the course of the field study, between one to three professionals were interviewed in particular organisations; if, after the first interview, not all the questions had been fully answered, other professionals were also invited to participate until a satisfactory amount and quality of data had been collected from each organisation. Upon completion of the field study, the empirical research was extended by two case studies which engaged multiple members of the selected organisations, both performing the risk management function on a full-time and part-time basis, such as risk management professionals, members of executive committees, top management, heads of the Internal Audit, Safety, Finance departments, and others. Not only top management professionals, but also middle and lower management and operational positions were involved in the case studies; this was due to the need to understand the embeddedness and awareness of the risk management principles across organisational hierarchies.

Table 4-2 provides a tabular overview of the interviewees and the positions they held within their organisations. The interviews varied significantly in length and quality of

the information they provided, which was mainly conditioned by interviewees' expertise and experience in the subjects of interest to the researcher. With the aim of safeguarding the undertakings of the aforementioned non-disclosure agreements signed with the airlines participating in this research, the titles of the positions held by the interviewees were purposely changed in such a way so that they only generally reflect the functions performed by particular individuals. Due to the specificity of some of the original job titles held by the interviewees, revealing them might facilitate identification of the airlines under study.

Table 4-2: Field study and case study interviewees

Airline Code	Interviewee Code	Abbreviated Code
Alpha-1, Alpha 2, Alpha holding company	Member of the Management Committee	MCM-Alpha
	Chief Risk Officer	CRO-Alpha
	Treasury and Risk Manager	TRM-Alpha
	Safety Risk Manager	SRM/1-Alpha
	Safety Risk Manager	SRM/2-Alpha
	Director of Risk and Compliance	DRC-Alpha
	Manager of Structured Finance	MSF/1-Alpha
	Manager of Structured Finance	MSF/2-Alpha
	Structured Finance Specialist	MSF/3-Alpha
	Strategy and Development Analyst	SDA-Alpha
	Transition Specialist	TS-Alpha
	IS Manager	ISM-Alpha
	Internal Audit Specialist	IA-Alpha
Ground Operations Officer	GOO-Alpha	
Beta	Chief Financial Officer	CFO-Beta
	Head of Internal Audit	HIA – Beta
	Director of Compliance	DC-Beta
	Director of Treasury and Risk Management	DTR-Beta
	IT Director	ITD-Beta
	Head of Safety Systems	HSS-Beta
	Internal Audit Specialist	IA/1-Beta
	Internal Audit Specialist	IA/2-Beta
	Fleet Financing	FF-Beta
	Structured Finance Specialist	SF-Beta
	Maintenance Manager	MM-Beta
Flight Safety Manager	FSM-Beta	
Gamma	Chief Financial Officer	CFO-Gamma
	Representative of the General Director for Network Planning	RGD-Delta
Delta	Chief Commercial Officer	CCO-Delta
	Operational Research Project Manager	ORM-Delta
Epsilon	Head of Risk and Compliance	HRC-Epsilon
Zeta	Risk Management Director	RMD-Zeta
Eta	Manager of Risk and Compliance	RCM-Eta
Theta	Senior Corporate Risk Officer	SCRO-Theta
Iota	Risk Management Coordinator	RMC-Iota

4.5.2 Data analysis methods

The methods of data analysis were selected according to how suitable they were to the study conducted under the interpretive paradigm. An inductive approach, associated with the interpretive paradigm selected for this study, was adopted in the analysis of empirical data. The inductive approach was associated by Creswell (2009, p. 174) with generating themes and patterns by categorising the data into “increasingly more abstract units of information”; the inductive approach attempts to “ground science in observation and not purely logic”, for logic is concerned with deduction of statement from other given statements. According to Chalmers (1996), “all that logic can offer in this connection is that if the premises are true and the argument is valid, then the conclusions must be true. But whether the premises are true or not is not a question that can be settled by an appeal to logic. An argument can be a perfectly valid deduction even if it involves a false premise” and thus “scientific knowledge cannot be derived from the facts if ‘derive’ is interpreted as ‘logically deduce’”. The interpretive paradigm proposes inducting theory from observation, yet by acknowledging that the researcher’s perception of the observed facts is affected by previous theories. A narrative approach was adopted to analyse open-ended interview questions. Contrary to the realist approach, which treats respondent accounts as true representations of reality (Silverman, 2010) and which is more typical of positivistic studies, the narrative approach explores individuals’ subjective perceptions of reality.

Techniques of organising and analysing data

Organisation and interpretation of rich data collected throughout the field study and case study stages was undertaken in a rigorous and systematic manner. Data collection and analysis were conducted simultaneously during the interview stage. Interviews were transcribed verbatim and data was continuously reviewed and coded. The overall interpretive paradigm adopted in this study, and the requirements associated with the objectives of the empirical research phase, determined analysis of data by employing a selection of non-quantifying methods.

The analysis of qualitative data was conducted in four main stages as proposed by Miles and Huberman (1994): data reduction, data display, conclusion drawing and verification of the validity of the conclusions. There are two alternative approaches for coding

interview data: free-coding unconstrained by prior theory and deriving codes based on theoretical constructs (Malina and Selto, 2001). As Miles and Huberman (1994, p.56) noted, “codes are tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study. Codes are usually attached to ‘chunks’ of varying size – words, phrases, sentences or whole paragraphs”. Since prior to analysing the data the researcher developed a theoretical framework, interview data was consequently coded, using non-numeral methods, under the categories pre-defined in the theoretical framework and synthesised by the drawing together of relevant themes and concepts, following the recommendations of Yin (2009), Miles and Huberman (1994), and Strauss and Corbin (1998). Axial and selective coding was applied to detect emergent themes pertaining to particular theoretical categories, to make connections among the categories, to summarise them into themes, and to refine them around explanatory concepts. Such synthesis of data allowed for comparing it with previous findings collected in the desk research stage and, in particular, contrasting it with the theoretical background. Besides the codes derived from the framework, “free” codes were further developed as suggested by additional topics which emerged from the data, permitting empirical flexibility and revision of the existing theory (Malina and Selto, 2001).

The two data analysis techniques, deriving a matrix of categories according to theoretical concepts and constructing a descriptive framework of new topics emerging from the data, are reflected in the explanatory-exploratory character of the forthcoming Chapters 5, 6, and 7, which report the empirical data from this research. The use of qualitative coding techniques promoted completeness and rigor of the analysis and provided useful audit trails through multiple sources of data. Based on the theoretical framework developed for this study and literature review, the researcher suggested explanations for particular features of the observed phenomena of risk management in airlines. In the process of theorising (Morse, 1994), links were made with the existing theory, and in the process of induction the theory was extended and refined with new developments. The following table 4-3 presents the process of organisation and analysis of empirical data. Additionally, Appendix B to this thesis presents general categories of a coding scheme.

Table 4-3: Organisation and analysis of empirical data

Organisation and analysis of empirical data	
Field Study	
<i>Explores: 1) diversity of configurations of airline risk management systems, 2) their technical and institutional determinants, 3) assimilation of ERM principles in airlines</i>	
1	Publicly available data
	Review of publicly available data regarding organisational risk management systems
2	Interview data
2a	Data reduction: Coding of interview data (codes derived from theoretical framework, free coding, axial and selective coding) Discarding irrelevant data
2b	Data display Organising data into themes
3	Verification Constrasting findings from different data sources
4	Drawing conclusions
Case Study	
<i>Explores: 1) organisational coupling of risk management, 2) the links with organisational logics, 3) the rationales for the alignment of airline risk management systems with their respective business contexts</i>	
5	Publicly available data
	Review of publicly available data regarding organisational risk management systems
6	Interview data
6a	Data reduction: Coding of interview data (codes derived from theoretical framework, free coding, axial and selective coding) Discarding irrelevant data
6b	Data display Organising data into themes
7	Internal documentation
	Analysis of risk management policies, procedures, and management reports
8	Risk management tools and technologies
	Review of risk management software, corporate risk registers, and risk maps and matrices
9	Verification Constrasting findings from different data sources
10	Drawing conclusions

4.6 Ethical considerations

Conducting research with human subjects may pose ethical concerns regarding the well-being of the participants. The following discussion contemplates various ethical issues related to participation in the empirical study, confidentiality of data, anonymity of informants and their respective organisations, and security of the collected data. The Research Ethics Committee of the Brunel Business School approved on the procedures of the empirical research, which were later meticulously followed by the researcher.

Participation in the study was voluntary. Informants were provided upfront in writing with a brief overview of this research, information on the requirements for participation, description of the data collection process, and they were assured that the data revealed in the course of their participation would be confidential. Participants were informed of their right to refuse to complete the study at any point or to answer any questions with which they might feel uncomfortable, and to approach the researcher with any doubts they might have. Permission was obtained from the informants relevant to the use of any data which was not publicly available shared by them in any forms other than verbatim.

This research respected informants' right to confidentiality and anonymity. Empirical data was collected only after ensuring the informants that any type of publication drawing on this study would not reveal any data which might allow the readers to deduct informants' identities or the identities of their respective organisations. Thus, informants to this study and their respective organisations are referred to in this thesis in a codified manner. Non-disclosure agreements were signed between the researcher and the organisations participating in this study, assuring that confidential data would be accessible only to authorised members of academic institutions assessing this research. The researcher ensured security and confidentiality of empirical data by employing diverse measures. The encrypted data is stored on password-protected devices. The transcription of all interviews was carried out by the researcher.

4.7 Limitations of the field study and case study research, and reliability and validity considerations

Adoption of the interpretive research paradigm as a basis for this study, and the subsequent choice of the field study and case study methodologies, allowed the researcher to fully explore the research questions stated for this study. However, the chosen methodological approach entails a series of concerns relating to validity and reliability of data collected in the course of this research and the findings it produced.

This interpretive research aimed to provide credible accounts and understanding of airline risk management systems, by applying correct procedures in response to research questions and to produce convincing accounts as an implication of the research. Reliability of findings in this context can be challenged with the question, if based on the collected data, repeated assessment would provide findings consistent with the ones initially delivered. Although reliability tends to be low in interpretive studies, the researcher undertook efforts to conduct the research process in a systematic, rigorous, and well documented manner, and thus to assure reliability of this study. A consistent data collection protocol was employed in collecting data from different organisations. The data analysis framework was described in terms of coding procedures. The research procedures were duly reported and documented, with interview protocols and transcripts available for an independent review. Considering the interpretive nature of this research exploring social reality surrounding the risk management phenomena in organisations, the researcher interacted with representatives of the organisations participating in this study and thus cannot be regarded as a neutral, independent observer. In response to this concern, this research employed various means to mitigate the data and researcher biases in interpreting social reality. Multiple sources of evidence were collected and contrasted; interview data was corroborated with multiple types of documentary evidence. The triangulation of data improved construct validity of this research. Finally, by employment of the field study, apart from the case study methodology, the methodology bias was naturally reduced; the field study methodology chosen for conducting this research benefits, to some extent, from the breadth and depth of studies usually associated with alternative methodologies such as case study and survey.

Table 4-4: Triangulation

Triangulation	
Field Study	Case Study
Data sources: <i>Verification of consistency of data proceeding from:</i>	
Interviews	Interviews: contrasting opinions of multiple organisation members at different organisational levels
Publicly available data: corporate reports accessible though airline websites or publications issued through various industry-related organisations	Publicly available data: corporate reports accessible though airline websites or publications issued through various industry-related organisations Internal documentation: as risk management policies, procedures, and management reports Risk management tools and technologies: risk management software, corporate risk registers, and risk maps and matrices

Theory/ perspective : Data examined and interpreted from contingency theory and institutional theory perspective	

Methodology: Field study combined with a case study in order to a) verify and b) extend findings	

Validity is concerned with the extent to which the designed research process allows for assessing what it meant to assess and what is claimed by the researcher, and the extent to which it accurately reflects the state of reality; validity can be considered in terms of internal and external validity (Yin, 2009). Internal validity is concerned with legitimacy of results deriving from adopting accurate sample and diligent data collection and analysis protocols. The internal validity of this study was assured by conducting the research based on a carefully selected sample, and by applying appropriate and diligent data collection and analysis procedures. By applying the interpretive paradigm to this research, rich, contextualised insights were extracted on the investigated phenomena. The researcher embraced and became involved in the context of the phenomena, assuring that findings properly reflect the context from which they are drawn. Although interpretive research may be criticised for poor definition of theoretical grounding and fuzzy definition of research protocols, which poses concerns for its internal validity, in response to this threat the researcher developed a strong theoretical foundation prior to conducting the empirical study, and identified the constructs in the theoretical framework which were to be investigated empirically. A clear connection between the

interview protocol and the theoretical constructs was assured, adding rigor to the analytical procedures and assuring data was collected within a tightly defined domain. Meanwhile, the research protocol still allowed for capturing contextual variability related to particular theoretical constructs. Linking the analytical procedures to theory promoted “completeness” in assessing the constructs in relation to the cases investigated, which additionally improved credibility of data (Lillis and Mundy, 2005). Apart from constructing the research protocol, theoretical constructs were used in this research to guide the data analysis process, such as coding of data and their arrangement into themes. Such analysis allowed for interpretation of data based on existing theory. Rival explanations for data were contrasted, and the researcher additionally examined patterns in the collected data.

External validity is concerned with generalisability of research findings, or their transferability to other populations. Since interpretive studies tend to be highly contextualised, questions may arise about the generalisability of their provisions (Greene and Caracelli, 1997). This limitation of the qualitative approach generates doubts about extrapolation of findings from qualitative studies. However, Yin (2009) by specifically referring to the case study approach, argued that qualitative studies can be generalised to theoretical propositions (analytic generalisation) rather than to broader populations (statistical generalisation). The researcher acknowledges the limitation of the chosen methodology for conducting the empirical study regarding statistical generalisation from the findings. This limitation is believed to have been partly outweighed by providing rich and contextualised data which allowed for generating patterns and concepts and for making conceptual developments in the area of airline risk management systems. Norman (1970) argued about the possibility to generalise from few cases if the analysis has captured correctly the characteristics of the research phenomena and generated concepts, patterns or theories which, although generated in a particular environment, can be transferred to other environments. The researcher deliberately employed a sampling strategy which maximised variability in relevant dimensions of the sample in order to gain a meaningful comparative of data in the particular dimensions. Data was further analysed in a systematic manner, allowing for drawing patterns across cases. Thus, the researcher gained confidence in transferability of the observed patterns and theoretical concepts and principles to other members of the population of commercial airlines. Results obtained from this research highlight

important factors of organisational coupling of airline risk management systems, rationalities behind the selection of particular framings of such systems, and ‘best practices’ in the area of airline risk management; these results are relevant to other organisational settings beyond the investigated sample.

Quality considerations

There has been growing debate within social sciences regarding assessments of the accomplishments of qualitative research (Baxter and Chua, 2008). Apart from evaluating the reliability and validity of this study, alternative validation criteria of particular relevance to qualitative research are considered. In the debate on the appropriateness of criteria for evaluating interpretive research, scholars proposed a variety of different assessment measures such as “trustworthiness”, “methodological” or “interpretive rigour”, or “convincingness”, argued respectively by Stiles (1993), Fossey et al. (2002), and Golden-Biddle and Locke (2003). The latter argued that interpretive researchers can convincingly validate their insights based on qualitative data by adhering to the criteria of authenticity, plausibility, and criticality.

Authenticity of research refers to providing written assurance of the researcher’s genuine presence and comprehension of the investigated field. The authenticity criterion was fulfilled in this research by facilitating analysis of the airline management and risk management fields, and by providing rich descriptions of the empirical study conducted in the fields. Plausibility in qualitative research refers to providing credible, rigorous accounts of the fields, assuring that “renditions of the field make sense” (Baxter and Chua, 2008, p. 104), connecting the reader with the studied phenomena in such a way that it facilitates easy understanding. Plausibility of this research was assured through linking the provisions of the contingency and institutional theory perspectives to interpretation of the data collected in the empirical study and to inductive reasoning, and assuring accurateness of the interpretations drawn from the data. As claimed by Ahrens and Chapman (2006, p. 820), “the task of connecting data and theory to compelling research questions [author: in qualitative research] is a source of great discipline”. According to Lukka and Modell (2010), authenticity and plausibility share an “intricate relationship” and are suitable criteria for the validation of highly descriptive and explanatory interpretive research. Finally, criticality refers to the

imaginative possibilities which may be provoked by empirical research, such as raising new research ideas or questions from the research (Golden-Biddle and Locke, 1993). Criticality of this research was achieved by challenging the reader to consider various possible interpretations of data, providing guidance through novel ways of thinking and interpretation of theoretical constructs underlying the empirical study.

4.8 Conclusions

This chapter discussed the overall philosophical approach and the consequent design chosen for this research. The interpretive paradigm perceives reality as a social construction, and thus it best fits the nature of the research problem explored in this study, defining risk management in terms of a social phenomenon. The interpretive paradigm and the questions which this research seeks to answer jointly determine the choice of the field study and case study methodologies that allow for considering the complexity and importance of contextual issues in exploring the risk management phenomena in airlines. The field study and case study methodologies are consistent with the theoretical framework informing this research. Institutional and contingency theoretical perspectives provided accounts for conceptualising airline risk management structures and practices and their determinants, and provided the framing for conducting empirical research.

The interpretive approach has often been adopted by scholars exploring organisational management control systems in general, and risk management systems in particular from the institutional theory perspective, and less from the contingency theory perspective. Notwithstanding, scarce previous research has adopted the methodological approach as employed in this study to explore organisational risk management systems and their determinants. The empirical study of airline risk management systems relied mostly on semi-structured interviews and documentary evidence, emphasising words rather than measurement in the collection and analysis of data. The philosophical and methodological choices underlying this study allowed for achieving a “fit”, as described by Silverman (1993, pp. 1–2), necessary for a qualitative study to contribute to the literature.

Empirical research conducted as described herein, allowed the researcher to collect data regarding the designs of airline risk management systems and institutional and technical determinants of such systems. Analysis of the empirical data, complemented with findings from the literature review (Chapter 2), led the researcher to develop an ERM framework in the airline industry, which conveys key drivers of effective risk management in airlines. The following Chapters 5, 6 and 7 present findings from the empirical research.

Chapter 5

Field Study: Airline Risk Management Structures, Practices, and their Determinants

5.1 Introduction

This chapter presents the empirical evidence from a field study undertaken in ten international airlines. The field study attained to the research questions as outlined in Chapter 1 (section 1.6), and collected data of airline risk management contexts and rationalities, risk experts, and risk management technologies as defined in Chapter 3 (section 3.3). In particular, the field study was focused on exploring the diverse configurations of airline risk management systems and their determining forces, while it also set out to assess assimilation of ERM principles in airlines, additionally revealing a series of 'best practices' of their adopted approaches. The field study findings are elaborated on in two case studies presented in Chapters 6 and 7, which deepen the understanding of organisational couplings of airline risk management systems and their alignment with airlines' respective business contexts.

A combined approach of contingency and institutional perspectives is applied in order to examine the diversity of configurations of airline risk management approaches, and the determinants of risk management rules and routines constituting such approaches. The analysis presented herein considers airlines in the context of a wider organisational field (DiMaggio and Powell, 1983), comprising actors, logics and governance structures which, in aggregate, constitute a recognised area of institutional life. As suggested by Scott and Mayer (1991), the forthcoming analysis considers the interdependence of airlines' institutional environment and task environment; the latter assigns meaning to airline risk management structures within airlines' technical goals, and emphasises the efficiency and effectiveness principles of organising towards achieving improved technical performance.

This chapter commences with a cross-organisational analysis of institutional pressures and technical factors denominated herein as contingency factors, determining organisational designs of airline risk management systems. The analysis considers

multiple institutional demands imposed on airlines by their corresponding external and internal institutional environments, emanating from airlines' broader regulatory, social, and cultural contexts (Pache and Santos, 2010). In addition, the analysis considers external contingency factors related to airline environment and the industry, internal, organisation-specific factors, and factors related to the typology of risks that airline risk management frameworks target to address. Secondly, the analysis focuses on the formal and informal institutions at a micro-organisational level (Scott, 2001), combined with the systems of rules and routines, evidencing systematic variations between them. The following part of this chapter introduces a critical, multi-dimensional analysis of the attributes of maturity of airline risk management systems. The final section draws conclusions from this chapter. For the comfort of the reader, the field study findings presented herein have been summarised in tables, while an extended analysis of the findings, with supportive quotes from the interviewees, is enclosed in Appendix C to the thesis.

5.2 Determinants of airline risk management approaches

Following the recommendations of, among others, Scott and Mayer (1991), Carruthers (1995), Suddaby (2010), (Gupta et al., 1994), and Baxter and Chua (2003), this section presents the factors exerting determining power over airlines' risk management rules and routines, by recognising the effects of both task and institutional environments; the institutional and technical realms are considered as two interdependent dimensions. Extending the organisational analysis beyond the technical aspects of environment by including the institutional aspects, facilitates gaining a better understanding of the contextual requirements, and of the risk management systems themselves (Suddaby, 2010). The following report of field study findings considers an interplay of factors which directly affect the design choices of airline risk management systems as per their rules and routines, and the factors which drive adoption decisions and implementation of increasingly enterprise-wide risk management approaches.

5.2.1 Institutional pressures

Under the (neo) institutional perspective, the environment is viewed as a location of institutional rules which exert a deterministic influence over organisational structures and practices (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Scott and Meyer,

1983). Conformance to the institutionalised norms is believed to produce legitimacy, which, under the aforementioned perspective, is considered as the main adaptive force of organisations, regardless of whether the newly adopted structures and practices lead to improved technical performance (Castel and Fredberg, 2004). The findings presented in this section consider specifically the multiple institutional demands imposed on airlines by their corresponding external and internal institutional environments, emanating from airlines' broader regulatory, social, and cultural contexts (Pache and Santos, 2010).

Drawing on the concepts proposed by DiMaggio and Powell (1983), who observed how organisations within their respective organisational fields become isomorphic with their common institutional environment, the following analysis considers coercive, normative, mimetic, institutional pressures and other external institutional pressures. Actors within organisations act accordingly to institutional logics (Thornton and Ocasio, 1999) such as values and norms, ideas, beliefs, and broader meanings systems (Scott, 2010), which influence how actors understand priority goals of organisational strategies and, within them, the risk management strategy, and how uncertainty is conceptualised in organisations. Therefore, internal institutional pressures, derived from institutional logics ingrained within organisations, are also considered in this analysis. The following table (5-1) provides an overview of the external and internal institutional pressures which, as indicated by the interviewees, influenced the rules and routines of their respective risk management systems (see also Appendix C for relevant interviewees' arguments).

Table 5-1: Institutional pressures influencing airline risk management systems

Pressures / Airlines	Alpha-1	Alpha-2	Beta	Gamma	Delta	Epsilon	Zeta	Eta	Theta	Iota
External institutional pressures										
Coercive pressures										
Regulatory framework governing airline operations	X*		X	X	X	X	X	X	X	X
Regulatory requirements for listed companies	X*		X	X			X			
Rating agencies assessment methodologies	X*			X			X			
Mimetic pressures										
Influence of the approach adopted in group organisations	X*		X	X		X	X	X	X	X
Adoption of best practices of other organisations	Y*		X							
Normative pressures										
Professionalization of the risk management field	X*		X			X	X	X		X
Recommendations from consulting companies	Y*			Z		Y	X	X		
Other external institutional pressures										
Meeting shareholder expectations	X*									
Credibility in the eyes of capital providers			X	X						
Internal institutional pressures										
Impulses from management team	X*					X	X			X
Organisational culture	X*		X		X		X			X

X - evident - clearly stated and/or agreement on the argument between organization members
Y - not evident - contrary opinions of different organization members
Z - discarded - in the eyes of the interviewees does not apply to their organization
X* or Y* - applies to the Alpha holding company and/or the Alpha group

a) Coercive pressures

The interviewees of this field study suggested relevance of three major types of coercive pressures influencing the designs of airline risk management rules and routines. They emphasised the influence of the regulatory framework governing airline operations, the regulatory requirements for listed companies, and the requirement of demonstrating financial strength to rating agencies.

Regulatory framework governing airline operations

- Interviewees from all ten airlines pointed out the importance of the regulatory framework governing numerous areas of airline operations; the interviewees pointed out that the regulatory framework has an impact on organisational structures and practices of airlines in general (in multiple areas), and also specifically the risk management rules and routines.
- Although the regulatory frameworks relevant to particular airlines impose standards and requirements for multiple areas of business operations, it is the air transport associations (for example, IATA), rather than the regulators, who advocate best practices in the area of centralised management of corporate risks, in addition to issuing recommendations and requirements for management of operational, safety, or hazard risks.

Regulatory requirements for listed companies

- Evidence supporting the influence of regulatory requirements applicable to listed companies on airline risk management structures and practices was found in a cluster of both publicly traded and privately held airlines - Alpha-1, Alpha-2, Beta, Gamma, and Zeta.
- The case of Beta provided additional evidence of airline's concern for compliance of its integrated internal control and risk management systems with the regulatory framework, and specifically with the ICFR framework.
- A possibility of legitimacy motivations for developing auditable trails of advanced risk management systems in organisations was indicated in the field study, which may not be matched with organisational routines. It is an interesting notion in the context of increasingly growing expectations of the involvement of organisational boards in instituting sound corporate governance systems and assuring reliability of public disclosures of performance data.

Rating agencies' assessment methodologies

The interviews with airline representatives suggested that airline risk management approaches are driven by the concern for demonstrating financial strength to the rating agencies.

b) Mimetic pressures

The field study findings revealed two types of mimetic pressures occurring among the airlines forming the sample. The majority of airlines demonstrated that their risk management structures and practices have been influenced by the risk management approaches adopted in other organisations from their respective groups. Adoption of best practices of unrelated organisations from both the airline industry and other industries was also discussed with airline representatives, yet scarce evidence was found for this mimetic pressure.

Influence of the approach adopted in group organisations

Field study evidence demonstrated how the risk management approaches of nine out of ten airlines forming the sample were influenced by the pressures exerted by other organisations from their respective groups. Although some interviewees pointed out synergies achieved through affiliation with airline or multi-enterprise groups and adopting unified rules across group organisations, contradictory opinions were expressed by others regarding their perceived usefulness of the alignments developed, to varying extents, between the risk management systems of the investigated airlines and their respective groups. Additionally, the high uncertainty of airline business environment was mentioned as a reason for airlines to model their risk management systems on those of other organisations.

Adoption of best practices of other organisations

The field study interviews provided records of varying extents of airlines' modelling of risk management structures or practices on those of other organisations outside of their respective groups.

c) Normative pressures

The findings revealed that professionalisation of the risk management field had an influence on risk management structures and practices of some of the airlines forming the field study sample. The professionalisation mechanisms relevant to the airlines under study were evidenced to be primarily related to an increasing popularity of normative guidance in the risk management discipline provided by organisations such

as COSO or ISO, and to recommendations from air transport associations regarding strengthening governance over airline risks. The interviewees also pointed to the role of the consulting companies in shaping airline risk management practices and structures.

Professionalisation of the risk management field

The interviewees reported on the influence of the international risk management standards and frameworks such as COSO or ISO31000 in framing of the risk management systems of their organisations; these landmark frameworks guided development of organisational risk management rules, causing a certain level of coherence among them. However, the analysis showed how risk management routines became institutionalised in the organisations adhering to the requirements of their specific intra- and extra-organisational contexts, causing diversity at operational and performance level of the risk management functions. It was also emphasised in some airlines that although the risk management models of their respective organisations incorporate general principles of such standards and frameworks, more importantly they have been designed to fit with the particular risk management approaches the airlines aimed to adopt. The interviewees, when asked about the recommendations from air transport associations such as IATA or ICAO regarding their effects on airline risk management systems, would primarily focus their responses on issues related to selected dimensions of risk management, such as safety, fatigue, hazard exposures, and many others. Surprisingly enough, however, although some of interviewees acknowledged familiarity with the recommendations of air transport associations regarding ERM, they did not indicate them as relevant determinants of the risk management approaches of their respective organisations.

Recommendations from consulting companies

Representatives of six airlines reported having been advised by consulting companies in the development or optimisation of their risk management systems. However, opinions varied in respect to the usefulness and applicability of consulting advice, which influenced the ERM adoption decision in airlines rather than its implementation across the organisations.

d) Other external institutional pressures

Apart from the trio of coercive, mimetic, and normative pressures often discussed in academic literature under the institutional perspective, the field study signalled relevance of additional external legitimacy pressures which are related to gaining credibility in the eyes of capital providers, which is also related to the aforementioned findings of rating agency influences such as meeting shareholder expectations or gaining credibility in the eyes of capital providers.

e) Internal institutional pressures

The interviewees indicated two additional types of institutional pressures, stemming from the inside of the organisations, which are impulses from the management team and organisational culture.

Impulses from the management team

Representatives of all the airlines from the sample claiming adoption of ERM mentioned in the interviews in general terms the role of ‘tone from the top’; the interviews suggested the importance of the commitment of management teams in ERM adoption decisions and ERM implementation processes.

Organisational culture

Organisational culture was evidenced in this study to affect the way in which airlines conceptualise risks, form risk management rules, and enact risk management routines. The interviewees reported on cultural influences of their respective countries and organisations, as well as on the effects of institutional versus private ownership structures, on the adoption of particular risk management approaches.

5.2.2 Contingency factors

Having reported in the previous section on the effects of institutional environments on the designs of airline risk management systems, in this section the researcher extends the analysis and, additionally, recognises the effects of task environments through the lens of the structural contingency theory. Under the structural contingency theory, organisations adapt their structures to best fit with their rational, task environments

(Donaldson, 1996). The primary imperative for organisations within the task environment is to adapt their structures so that they enhance organisational efficiency and effectiveness (Scott 2003).

Influences of the task environment on airline risk management systems were denominated in this research as the contingency factors. In order to develop discrete classes of contingent factors relevant to the subject of this research, the researcher drew on the work of Miller (1992) and Kaplan and Miles (2014). Miller (1992) proposed a framework for categorising uncertainties which determine organisational risk management responses; three broad categories of uncertainties were considered, related to “general environment”, “industry”, and “firm-specific variables”. Kaplan and Miles (2014) proposed three broad categories of contingency factors, or “contingency variables” as denominated by the authors, conditioning the design of organisational risk management systems; the “contingency framework” suggested by Kaplan and Miles (2014) distinguished between “firm variables”, “industry variables”, and “risk variables”. In a previous study (2012) Kaplan and Miles proposed a taxonomy for classifying different types of risks according to their sources, degrees of controllability, and approaches required for their identification, mitigation, and management; three major risk categories were proposed: preventable, strategy, and external risks. Thus, drawing on the work of Miller (1992) and Kaplan and Miles (2014), this research considers three broad categories of contingency factors: external factors related to the environment and the industry, internal, organisation-specific factors, and factors related to the typology of risks that airline risk management frameworks target to address. The following table (5-2) provides an overview of the contingency factors which, as indicated by the interviewees, affected airline risk management rules and routines, classified into the three aforementioned categories (see also Appendix C for relevant interviewees’ arguments).

Table 5-2: Contingency factors influencing airline risk management systems

Drivers / Airlines	Alpha-1	Alpha-2	Beta	Gamma	Delta	Epsilon	Zeta	Eta	Theta	Iota
Environmental and industry-related contingency factors										
Macroeconomic volatility	X*		X	X	X	X	X	X	X	X
Uncertainty of natural environment	X*		X	X	X	X	X	X	X	X
Political and social instabilities	X*		X	X			X			
Competitive environment	X*		X		X					
Organisation-specific contingency factors										
Organisational size and complexity	X*		X			X	X	X		
Organisational strategies and objectives	X	X				X	X		X	
Ownership structures	X*		X	X		X	X	X	X	X
Contingency factors of airline risk profiles										
Typology of risks in airline risk portfolios	X	X	X	X	X	X	X	X	X	X

X - evident - clearly stated and/or agreement on the argument between organization members
Y - not evident - contrary opinions of different organization members
Z - discarded - in the eyes of the interviewees does not apply to their organization
X or Y* - applies to the Alpha holding company and/or the Alpha group*

a) Environmental and industry-related contingency factors

Uncertainty of airline operating environment was a frequently occurring theme in the discussions held with the interviewees. They would underline the uncertainties in multiple dimensions of airline business context, such as macroeconomic volatility, political and social instability, and uncertainty related to natural environment, among others. The high volatility and uncertainty characteristic of the airline industry was commonly recognised in the field study to drive development of airline risk management systems.

Within the broad category of 'environmental and industry-related' contingency factors, one group of factors, related to volatility of the macroeconomic environment, was regarded as especially relevant by the interviewees. Macroeconomic volatility was also reported to have a strong influence on demand for airline services, while cyclical, apart from seasonality of airline business, was emphasised. Representatives of all ten airlines forming the sample for this research stressed the importance of managing

broadly defined macroeconomic risks, among which they considered the most relevant to be volatility of jet fuel prices, currency exchange rates, and interest rates.

Findings from the interviews suggest that management of financial and market risks is considered one of the major pillars of airlines' risk management frameworks, independently of the maturity level of airlines' risk management approaches, or interviewees' functions within their respective organisations. All ten airlines have structures and practices in place for the management of financial and market exposures. The importance of creating risk management systems directed specifically at managing operational, safety, or hazard risks related to natural hazards was emphasised; airline businesses are susceptible to uncertainty and hazards related to the natural environment.

Field study findings underlined the importance of responding to risks embedded in political or social contexts, which required maintaining flexibility in airline operational and business planning. Geopolitical instability in various areas of the world was reported to have a major impact on airlines' operations. As per the industry-related contingency factors, in the discussions with airlines' representatives issues related to the competitive environment were mentioned as another variation of contingency factors influencing airline risk management approaches; by way of an example, the need for aligning strategic planning with risk management processes in the context of dynamic changes in the airline market structure was underlined.

b) Organisation-specific contingency factors

Findings from this study provided evidence that the size and complexity of organisational structures and operations were important determinants of the design choices of airline risk management systems; the level of formalisation of the airline risk management approaches was often linked with organisational sizes and complexity, yet the need to adopt risk management systems aligned with unique organisational structures and needs was also discussed. Another group of internal contingency factors can be broadly defined as related to organisational strategies and the objectives they are driven with. The interviewees reported on numerous achieved or perceived benefits of developing ever more structured and comprehensive risk management approaches, which were generally believed to enhance the achievement of organisational objectives.

The increasingly advanced designs of airline risk management systems were reported to be determined by organisational attempts to achieve the objectives set out in organisational strategies.

c) Contingency factors related to airline risk profile

As is broadly conveyed across this thesis, airline risk profiles are affected by factors stemming from both external and internal institutional and task environments, while organisational logics also strongly influence the way in which airlines conceptualise uncertainty into risks forming their risk portfolios, and the way in which priority is assigned to management of particular risks. As previously discussed, Kaplan and Mikes (2012, 2014) argued organisational risk management systems should be tailored to the typology of risks that organisations face, while distinguishing between three major groups of risks characterised by different degrees of controllability and probability of occurrence and impact – preventable risks, risks related to strategy-execution, and external risks which require different approaches to their identification, mitigation and management. This field study provided evidence that the design choices of the risk management systems of all ten airlines forming the sample were conditioned by the nature and volatility of risks forming their risk portfolios, and by organisational perception of priority of particular exposures over others.

Independently of the level of maturity and advancement of airlines' risk management approaches (further discussed in section 5.3.2), all ten airlines under study proved to have structures in place facilitating the management of, among others, financial, safety, and hazard exposures, and contingency plans related to risks of operational disruptions. However, aside from the impact of regulatory requirements enforcing the development of risk management structures in airlines targeting specific types of exposures, evidence was found to support the argument of airline risk management rules and routines being aligned to the typology of risks which the airlines considered most relevant to their businesses.

5.3 Review of airline risk management systems

The contingency theory perspective adopted in the study of management control systems conveys that control system structures are contingent upon the context of

organisational settings and the strategic focus adopted by organisations; there is no “universally appropriate” control system applicable to all organisations and in all circumstances (Otley, 1980). The preceding sections reviewed a variety of institutional pressures and contingency factors determining the design choices of airline risk management systems. This section briefly presents empirical evidence of the designs of airline risk management systems, while it examines homogeneity and variability of such systems and assesses their corresponding levels of advancement. Appendix C to this thesis extends on the different characteristics of airline risk management systems and quotes interviewees’ opinions in support of the findings presented therein.

5.3.1 Characteristics of airline risk management systems

From the perspective of old institutional economics (as discussed by Burns, 2000), airline risk management systems are conceptualised in this research as a constellation of formal institutions grounded in procedures, manuals, formal rules, and informal institutions with rule-like status, which are developed as institutionalised routines (Scapens, 1994). This research analyses risk management rules and routines, and explores in situ their enactment and reproduction through the actions of organisational actors (Burns and Scapens, 2000). The phenomenon of risk management in airlines is explored at different organisational levels, revealing diversity in risk management rules and routines designed to fit different organisational purposes. The configurations of airline risk management systems are articulated in this study through four principal dimensions. The comparative considers the level of structuring and formalisation of airline risk management frameworks, distribution of roles and responsibilities along risk management processes performed across organisations, as well as the methodologies and tools employed in performing these processes. In order to provide a useful context for interpreting the particular configurations of airline risk management systems, the following comparative reviews the perceived status of risk management systems in the particular airlines, as articulated by their respective members; the perceptions of the state of development of such systems should facilitate understanding of the design choices related to the risk management function. The following table 5-3 presents interviewees’ perceptions of the state of development of the risk management systems employed in their respective organisations.

Table 5-3: Perceived status of risk management development

Airline	Perceived Status of Risk Management Development
Alpha-1	Officially adopted ERM, perceived as mature
Alpha-2	Officially adopted ERM, perceived as mature
Beta	Effective risk management system, in transition, planned ERM adoption
Gamma	Basic yet considered relatively well suited to airline's needs, recognised need for improvement; further development not probable in the near future
Delta	Basic, siloed approach, recognised need for development, discussions on introduction of a more structured approach
Epsilon	Officially adopted ERM, perceived as mature
Zeta	Officially adopted ERM, perceived as mature
Eta	Officially adopted ERM, perceived as mature
Theta	Officially adopted ERM, perceived as mature
Iota	Officially adopted ERM, perceived as mature

Perceived status of risk management development

Seven out of ten airlines forming the sample claimed adoption of the ERM approach in publicly available reports: Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta, and Iota; the risk management approaches of these airlines were generally regarded as mature by their interviewed members. Representatives of Beta reported that the risk management system is currently in transition toward a more enterprise-wide approach. The risk management systems of Gamma and Delta were recognised by their organisation members as rather basic and traditional in terms of focusing risk management efforts on selected types of exposures such as safety and security, hazard, or financial risks. However, judging the levels of advancement and maturity of ERM based solely on the perceptions of organisation members may be problematic, as it is conditioned on their levels of knowledge and expertise of risk management best practices developed across industries. Additionally, as signalled in the preceding sections of this chapter, organisations may claim adoption of ERM in pursuit of external legitimacy, while the depth and breadth of implementation of ERM principles in their structures and processes may be low. Therefore, the researcher conducted an independent analysis of

the state of development of airlines' risk management approaches and contrasted it with the perceptions and announcements of airline members, additionally discussing the issues of ceremonial versus instrumental ERM adoptions, external legitimacy, and decoupling between risk management rules and routines. The following table 5-4 summarises the main characteristics of the risk management systems of the airlines under study.

Airline Code	Formalisation of Risk Management	Roles and Responsibilities	Risk Management Process	
			Methodology	Tools
Alpha-1	Highly formalized	Dedicated risk management positions at the executive levels in the airlines and in the holding company; risk committee in Alpha-1; risk ownership assigned across the organisations	Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software
Alpha-2	Highly formalized		Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software
Beta	Formalized management of selected types of risks	Risk management responsibility assigned to Internal Audit	Methodology defined for selected groups of risks	Risk maps, matrices, risk registers
Gamma	Minimally formalized	Local, separate risk management units responsible for segmental risks; lack of a central coordinating unit	Methodology defined for selected groups of risks	Basic risk registers
Delta	Minimally formalized	Local, separate risk management units responsible for segmental risks; lack of a central coordinating unit	Methodology defined for selected groups of risks	Basic risk registers
Epsilon	Highly formalized	Centralized coordination of ERM at the executive level by dedicated units; risk ownership assigned across the organisation	Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software
Zeta	Highly formalized	Centralized coordination of ERM at the executive level by dedicated units; risk ownership assigned across the organisation	Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software
Eta	Highly formalized	Centralized coordination of ERM at the executive level by dedicated units; risk ownership assigned across the organisation	Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software
Theta	Highly formalized	Centralized coordination of ERM at the executive level by dedicated units; risk ownership assigned across the organisation	Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software
Iota	Highly formalized	Centralized coordination of ERM at the executive level by dedicated units; risk ownership assigned across the organisation	Formalized, enterprise-wide methodology; standardized at group level	Risk maps, risk registers, risk management software

Table 5-4: Characteristics of airline risk management systems

Formalisation

The level of formalisation of airline risk management systems varies from highly structured systems to ones which are characterised by only a minimal level of formalisation. In the airlines with highest levels of formalisation of risk management systems:

- ✓ Risk management frameworks are outlined in numerous documents specifying responsibilities and accountabilities in the risk management process, as well as policies and procedures for identification, assessment, treatment, and reporting of risks.
- ✓ Formalisation is reflected through translation of risk appetite to risk tolerances defined for a variety of exposures such as, among others, maximum acceptable debt ratios or safety incidents ratios.

Airline representatives reported to have followed the normative propositions of landmark ERM guidelines such as COSO (2004) or ISO 31000 (2009), which may have influenced a certain level of coherence in airlines' risk management structures; this is noticeable, among others, in governance structures based on three lines of defence, in the appointment of risk management professionals, risk committees, or maintaining central risk registers. Despite the apparent similarities in risk management rules among the organisations which claimed adoption of ERM, diversity was noticed in risk management routines reported by the interviewees from different airlines, such as processes for identification or reporting risks. Airlines with less formalised risk management approaches demonstrated having formal structures in place for management of selected types of risks, such as risks related to financial reporting, safety risks or financial and market risks, yet management of a variety of other types of risks is conducted in a non-formalised manner, in compliance with relevant regulatory frameworks.

Roles and responsibilities

A noticeable difference was observed between the airlines claiming ERM adoption and the airlines with more traditional risk management approaches in assignment and coordination of risk management responsibilities across organisational structures.

Airlines claiming ERM adoption (Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta, and Iota) demonstrated the following characteristics:

- ✓ Risk management units at the executive levels which coordinate risk management processes.
- ✓ Risk committees exist either in the airlines or in their respective holding companies, in order to overview enterprise or group-wide risk management systems.
- ✓ Dedicated risk management positions at the executive levels which coordinate and bear responsibilities for proper functioning of ERM, denominated as chief risk officers, heads of risk management, risk directors, and others.
- ✓ Pyramid-like risk ownership structures in which the boards were specifically assigned responsibility for risk management, and risk management responsibilities and accountabilities are cascaded throughout their hierarchies.
- ✓ Formally assigned responsibilities for managing risks in specific dimensions.

Beta's risk management system assigns accountabilities and responsibilities as follows:

- ✓ Coordination of enterprise-wide risk management processes is formally assigned to Head of Internal Audit, reporting to the Audit Commission and superior risk structures of its respective holding company.
- ✓ Lack of a centralised risk review structure at the executive level overseeing enterprise-wide risk management initiatives.
- ✓ Risk committees dedicated exclusively to management of safety and financial risks.

Finally, in Gamma and Delta:

- ✓ Multiple organisation members manage different types of risks, either formally or informally, yet without reporting to a head person or unit responsible for coordination of enterprise-wide risk management efforts.
- ✓ No central senior level executive position or unit coordinating the management of enterprise-wide risks.

- ✓ At the operational level risks managed within functional areas.
- ✓ Safety management and crisis prevention are the most structured areas in the organisational panorama.

Risk management process

The airlines which claim adoption of the ERM approach appear to have developed and formalised methodologies guiding risk management processes:

- Risk management methodologies are delineated in procedures and protocols for identification, assessment, treatment, and reporting of particular groups of risks.
- Variety of risk identification strategies in use:
 - ✓ Bottom-up risk identification approach; members from all across organisational hierarchies engaged in the process.
 - ✓ Identification of important types of exposures, such as strategic or emerging risks, subscribed to the executive levels in organisations.
 - ✓ Key risk indicators (KRIs) defined in selected areas of operations.
- Qualitative and quantitative risk evaluations.
- Variety of tools and technologies facilitating risk management processes: risk management software, risk registers, and risk maps or matrices, which facilitate robustness, accuracy, and timeliness of processing and reporting risk data.

As previously explained, the level of formalisation of risk management frameworks of the airlines which did not claim ERM adoption is significantly lower than that of the rest of the airlines forming the sample:

- Protocols are in place for the management of selected types of exposures, often as required by applicable regulations; lack of protocols guiding identification, assessment, treatment, and reporting on some important groups of risks, such as strategic or emergent risks.
- Less sophisticated tools to support their risk management processes; lack of specialised risk management software; risk registers and risk maps, rather than being operated through automated systems, are prepared through the use of Word documents, Excel spread sheets or Power Point presentations.

5.3.2 Maturity and advancement of airline risk management approaches

Continuing with the review of the institutions, rules, and routines of airline risk management systems, the researcher assesses the maturity of airline risk management systems, drawing conclusions on where particular airlines position themselves on the continuum between traditional, ‘siloed’ approaches, and enterprise-wide risk management approaches. The degree of assimilation of ERM principles in the airlines under study is assessed independently of the interviewees’ perceived level of development of the risk management approaches of their respective airlines (discussed in the section 5.3.2, with additional data in Appendix C).

The criteria for assessing the level of development of airline risk management approaches were adapted from academic literature (e.g. Arena et al., 2011) and normative literature (e.g. COSO, 2004). Risk management systems are assessed as per the comprehensiveness of the risk portfolios considered by particular airlines and priorities assigned to management of particular risks within the portfolios, the level of embeddedness of the risk management function across organisational hierarchies, the level of integration of various risk management practices from across the organisations, and the roles and uses assigned in airlines to the risk management function. The assessment of airline risk management systems’ maturity conducted by the researcher returned results which were highly coherent with the aforementioned interviewees’ perceptions in this matter. The risk management approaches of the airlines claiming adoption of ERM were assessed as advanced with regard to the four analysed dimensions, and focused on serving instrumental purposes rather than ceremonial displays of legitimacy. The following table 5-5 summarises the maturity hallmarks of the risk management systems of the airlines under study.

Airline Code	Comprehensiveness	Embe ddedness	Inte gration	Roles and Uses
Alpha-1	Comprehensive, enterprise-wide risk portfolio	High embeddedness	High integration both at airline and group level	Support in definition and execution of strategies
Alpha-2	Comprehensive, enterprise-wide risk portfolio	High embeddedness	High integration both at airline and group level	Support in definition and execution of strategies
Beta	Comprehensive, enterprise-wide risk portfolio	Moderate embeddedness	Medium integration	Alignment with Internal Audit function; support in decision-making
Gamma	Moderate comprehensiveness	Low embeddeness	Low integration, independent risk management routines at the airline level; integrated management of strategic risks at the group level	Compliance and decision making function
Delta	Moderate comprehensiveness	Low embeddeness	Low integration, independent risk management routines	Compliance and decision making function
Epsilon	Comprehensive, enterprise-wide risk portfolio	Unclear	High integration both at airline and group level	Support in definition and execution of strategies
Zeta	Comprehensive, enterprise-wide risk portfolio	High embeddedness	High integration	Alignment with organisational strategies and with management accounting
Eta	Comprehensive, enterprise-wide risk portfolio	High embeddedness	Medium-high integration; independently operating safety and corporate risk	Support to operational decision-making and planning
Theta	Comprehensive, enterprise-wide risk portfolio	High embeddedness	High integration	Support in definition and execution of strategies
Iota	Comprehensive, enterprise-wide risk portfolio	High embeddedness	High integration	Focus on internal control; support in decision-making and planning

Table 5-5: Maturity and advancement of airline risk management systems

Comprehensiveness

Comprehensiveness of airline risk management systems refers to the range of risks they consider (Arena et al., 2011). While traditional airline risk management approaches were primarily focused on managing hazard, safety, and financial risks (Zea, 2004), ERM advocates consideration of a wider range of intra- and extra- organisational exposures, including important strategic and emergent risks (Olson and Wu, 2007; DeLoach, 2000). According to the interviewees' accounts, comprehensiveness of the risk portfolios of their respective organisations varies from high to low:

- The interviewees from the airlines Alpha-1, Alpha-2, Beta, Epsilon, Zeta, Eta, Theta, and Iota described processes for management of a wide variety of risks, including relevant external risks, which are difficult to assess.
- Although Beta's risk management structure demonstrates only a limited formalisation, the airline considers a wide variety of risks through a combination of formal and informal risk management practices.
- The risk portfolios of Gamma and Delta concentrate on financial, safety, hazard, operational, and compliance risks, while the airlines lack formal structures for management of important strategic or market risks which, as reported by the interviewees, are managed through informal routines.

Embeddedness of risk management

Risk management systems of the investigated airlines vary in terms of embeddedness of risk management responsibilities and accountabilities across different organisational levels and functions. Through interviewees' accounts it was inferred that while in some airlines risk management ownership is distributed across multiple lines and levels of business and reciprocal influence was noticeable between them, in other airlines risk management responsibilities and accountabilities are concentrated solely on a limited number of organisational units. Notwithstanding, due to the nature of the airline business and extensive requirements of regulatory frameworks, risk management is implicitly embedded in selected areas of airline operations. Such implicit embeddedness is especially noticeable in the production departments, where risks are managed through adherence to regulations, operational manuals, and performance standards.

- The airlines Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta, and Iota demonstrate high levels of embeddedness of the risk management function across their organisational structures:
 - ✓ Responsibilities for identifying and managing risks are assigned across different organisational levels and functions, although diversity was observed in terms of assigning ownership for different types of risks across the airlines.
 - ✓ The interviewees stressed the importance of institutionalisation of risk management being among the priorities of line managers.
- The level of embeddedness of risk management in Beta is perceived to be relatively lower than in the above mentioned organisations, yet it can still be classified as moderately high; this is due principally to the actions of internal auditors who, on a regular basis, require airline members related to particular business processes to report their view of the risks related to their areas of responsibility. Additionally, formal risk management structures were established in selected divisions, which are complemented by numerous informal practices conducted across the airline.
- The level of embeddedness of the risk management function is considered relatively low in Gamma and Delta, where responsibilities for risk management are concentrated in only a few selected areas within the organisations, such as, among others, safety and financial departments.

Integration of risk management

Evidence from the field study interviews suggests a relatively higher level of integration of risk management routines enacted across the organisational hierarchies in the airlines Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta, and Iota, which claim adoption of the ERM approach, than in the remaining airlines of the sample. Under the ERM approach particular risks should be considered as parts of an overall risk portfolio managed in an integrated manner (COSO, 2004). The researcher concluded on the degree of integration of risk management routines based on the existence of central risk management units in all of these airlines, and interviewees' explanations of the risk integration techniques employed in their respective organisations. The central risk management units, such as enterprise-wide risk committees and not committees dedicated only to selected types of risks, or risk management coordinators such as CROs or their equivalents, compile risk-

related data from across the organisations and report on an integrated view of risks to organisational boards.

In Beta an integrated view of risks is achieved at the executive level through informal routines, namely an inter-departmental collaboration in the development of corporate and business strategies which involves analysing strategy-related risks. Although different types of risks are considered at these occasions, integrating risk-information constitutes an unstructured process. The airlines Gamma and Delta demonstrated traditional risk management approaches in terms of integration of risk management practices. Traditional risk management approaches are attributed managing risks separately in functional silos, while little importance is dedicated to risk interrelations (Lam, 2003).

Roles and uses of risk management

Risk management in organisations can be linked to various management and control processes such as strategic planning or internal control (Mikes, 2009), and have different modes of focus and use in decision making or corporate governance processes (Arena et al., 2011). This field study provided evidence of different rationalities underlying the development of airline risk management systems, leading to their varying roles and uses ranging from support in planning and decision making processes to internal audit or compliance functions, which appear to be overlapping to some extent:

- In Alpha-1 and Alpha-2 risk management is aligned with strategic and business planning processes, while the airlines also strive to convey an image of sound corporate governance.
- In Beta the risk management function falls into the realm of internal audit, but organisation members perceive risk management, both in its formal and informal dimension, as a function providing material benefits to the organisation.
- The airlines Epsilon, Eta and Theta demonstrated alignment of risk management processes with strategic and business planning.
- The risk management frameworks of Zeta and Iota have been designed to specifically support the management accounting (in Zeta) and internal control (in

Iota) functions, while also being aligned with strategic and business planning processes.

- The formal risk management rules of Gamma and Delta are predominantly framed under the compliance rationality; except for airlines' financial risk management, the remaining risk management structures seem to have been created in adherence to the requirements of relevant regulatory frameworks. On the other hand, multiple informal risk management routines were evidenced in Gamma and Delta to support decision making processes in an unstructured manner.

5.4 Conclusions

This chapter reported findings from a field research conducted in ten international airlines. Firstly, an analysis was conducted of the determinants of organisational design choices of airline risk management rules and routines, including the driving forces for adoption and embedding of ERM. Secondly, this chapter reported on diverse configurations of airline risk management systems in general and of the implementation of ERM in particular. Thirdly, the maturity of airline risk management systems was assessed, whilst it revealed a series of 'best practices' and shortcomings of their approaches. The analysis of field study findings was conducted herein under the perspectives of institutional theory, with a special focus on new institutional sociology theory and old institutional economics, and of structural contingency theory. Therefore, the analysis considered airline risk management systems as embedded both in the realms of their respective task and institutional environments. Findings reported herein are further extended on in the Appendix C to the thesis.

Findings from this field study provide evidence of isomorphic pressures present in the organisational field of airlines. The principles of legitimacy and survival are the driving forces of isomorphism in airline risk management approaches (DiMaggio and Powell, 1983). Evidence was found in support of coercive, mimetic, normative, and other external, as well as internal, institutional pressures exerting a deterministic influence over the design choices of airline risk management systems. The findings suggest a particularly high relevance of coercive pressures, and especially the importance of the regulatory frameworks and of the corporate governance best practice codes, in the structuring of airline risk management systems.

The evidence from this field study provided support for the influence of a variety of contingency factors on airline risk management approaches. Contingency factors drive the development of airline risk management structures in pursuit of enhanced organisational efficiency and effectiveness (Scott 2003). Three broad groups of contingency factors were considered, based on categorisation proposed by other scholars and based on the themes which emerged from the interview data, namely external factors related to the environment and the industry, internal, organisation-specific factors, and factors related to the typology of risks prioritised in airline risk portfolios. The field study findings suggest that airline risk management systems were developed in response to the volatile nature of the airline operating environment, and in an attempt to improve organisational performance and achieve organisational objectives, among other factors. Evidence supports the relation between the size and complexity of airline organisational structures and operations and the ownership structures, and the design choices of risk management frameworks. Finally, in accordance with the propositions of Kaplan and Mikes (2014), this field study provided evidence of the design choices of airline risk management systems being conditioned by the types of risks which the airlines considered most relevant in their overall risk portfolios.

Drawing on the concepts of rules, routines, and institutions, diverse configurations of airline risk management systems were reviewed in an examination of their homogeneity, variability, and maturity as assessed by diverse criteria. Under the premises of structural contingency theory, evidence from this study suggests diverse and contingent designs of airline risk management frameworks, adopted to fit airline-specific operating environments and organisational contexts (Fisher, 1998). Airline risk management approaches range from highly structured and formalised to unstructured, which appeared to be primarily related to whether the airlines have officially implemented ERM or not. Airlines claiming adoption of ERM have created dedicated risk management units at the executive levels which coordinate enterprise-wide risk management processes, have developed formalised methodologies guiding risk management processes, and rely on different risk management tools and technologies facilitating such processes.

This study examined the level of embracement of ERM principles in airline risk management approaches according to the comprehensiveness of risk portfolios, the level of embeddedness of the risk management function across organisational structures, the level of integration of various risk management practices, and the roles and uses assigned to the risk management function. The airlines forming part of this study lie in different places on the continuum between traditional and enterprise-wide risk management approaches. With regard particularly to the airlines claiming adoption of ERM, the maturity of their risk management approaches was regarded as relatively high. Despite the effects of the isomorphic mechanisms acting in the organisational field of airlines and exerting pressures of social legitimacy on airlines, the findings suggest rather non-ceremonial adoption of ERM; evidence from this study supported links between the risk management function and the decision-making and planning processes in the airlines claiming adoption of ERM. Finally, the findings suggest that despite lacking advanced risk architectures and formalised frameworks, and while not announcing introduction of ERM, airlines can adopt effective enterprise-wide approaches to managing risks and embrace ERM principles into their day-to-day activities (Woods, 2011); this case is exemplified by Beta, and is further described in Chapter 7.

In conclusion, the theoretical framework developed for this research facilitated analysis and understanding of the determinants and organisational couplings of airline risk management rules and routines, as well as an assessment of the embracement of ERM principles in the airlines forming the sample. A detailed discussion of the field study findings in the context of theory underlying this research and in the context of literature is presented in Chapter 8. The findings presented throughout this chapter, complemented with case study findings (Chapters 6 and 7), laid the grounds for development of the ERM framework in the airline industry, which conveys drivers of effective, enterprise-wide risk management in airlines, and which is also presented in Chapter 8.

As previously signalled, based on the case study findings the researcher selected airlines exemplifying the most interesting cases with regard to the research questions stated for this study. In the following chapters (6 and 7) the case study methodology is employed in a more detailed examination of organisational coupling of risk management systems,

the links with organisational logics and the rationales for the alignment of such systems with airlines' respective business contexts. The forthcoming Chapter 6 presents a case study of Alpha-1 and Alpha-2 airlines jointly with their holding company, which operate under a consolidated ERM framework. The ERM approach implemented in the Alpha airlines is considered very mature, and thus they constitute a suitable case for learning about organisational dynamics of ERM; the case should deliver valuable implications for airlines considering the adoption of ERM principles.

Chapter 6

Case Study: ERM System in Alpha Airlines

6.1 Introduction

The objectives stated for this research call for a more in-depth empirical investigation of the integral components of airline ERM systems, particularly the aspects related to organisational logics and rationales of ERM and its alignment within wider contextual circumstances. Attending to these objectives, this chapter presents a case study in which the unit of analysis is comprised of the airlines Alpha-1 and Alpha-2, and of their holding company, all operating under a consolidated ERM framework; the group of these three organisations is jointly codenamed ‘Alpha’ in this study. As evidenced in the field study, the ERM approach embraced in Alpha is very mature, and thus Alpha can provide rich illustrations of the issues of interest to this study.

Any attempt to investigate organisational coupling of ERM in organisations as large and complex as the airlines forming Alpha would inevitably fail to cover many important issues. Therefore, the analysis in this chapter is structured around a number of research questions and selected concepts from the two theoretical perspectives (institutional theory and contingency theory) underpinning this study. Drawing on the theoretical framework developed in Chapter 3, and on the data collection and analysis scheme presented in Chapter 4, the case study of Alpha explores organisational risk management systems in terms of ‘risk management technologies’ and ‘risk management experts’. In addition, the case study provides complementary insight into the ‘context and rationalities’ of airlines’ risk management approaches that were previously analysed in the field study (Chapter 5; Appendix C). The analysis is based on the use of different theoretical concepts such as organisational fields and actors, risk management institutions, rules and routines, or institutionalisation. Attending to the objectives stated for this research, the case study presented in this chapter has both an exploratory and an explanatory character. An exploratory study of organisational coupling of ERM in Alpha is a necessary pre-requisite providing a context for further explanation of the logics and rationales of the interconnected designs of the risk management system in Alpha organisations; thus, this study not only answers the ‘how’ but also the ‘why’ questions regarding Alpha’s risk management system.

The primary source of data for this case study were interviews conducted with senior management executives, middle and lower management, and operational staff from diverse organisational areas in the two airlines and in the holding company. These included, among others, financial, risk management, production, or internal audit units (see Table 4-2 in Chapter 4 for a list of the 14 interviewees). In addition, informal and unscheduled conversations were held with members of the Alpha airlines at different organisational levels. The secondary source of evidence was internal documentation provided by Alpha, such as internal reports, presentations, and company regulations including risk management policies and procedures. Thirdly, risk management tools and technologies were presented to the researcher in support of interviewees' arguments, such as risk registers, risk maps and matrices, or the software employed for storing and analysing risk-related data. Finally, the researcher studied the web sites of Alpha in search of relevant information, and reviewed publicly available reports issued by the Alpha holding company and Alpha-1 and Alpha-2 airlines.

The remainder of this chapter is divided into four sections. The second section succinctly outlines the unit of analysis under study and defines the nomenclature to be used across this chapter. This is followed by an analysis of the key elements of Alpha's ERM model, as discussed in the third section. The last section summarises the findings from the case study. Additionally, Appendix D to this thesis provides insights into the evolution of risk management systems in the Alpha airlines, and elaborates on the maturity and advancement of the systems.

6.2 Outline of the case study

Alpha is a multinational airline holding pertaining to one of the world's largest airline groups. As previously mentioned, this analysis includes the Alpha holding company and only two of its subsidiary airlines, Alpha-1 and Alpha-2 airlines, also referred to as 'Alpha airlines', while all three entities are denominated jointly in this study as 'Alpha'. The Alpha airlines are legacy carriers and operate under separate brand names. The Alpha holding company is a listed company trading on stock exchanges of the countries of origin of its subsidiary airlines. The operations of Alpha airlines encompass both passenger air transport services and cargo services. The Alpha airlines operate scheduled services, both short-haul and long-haul, to numerous destinations across

Europe, North America, Latin America, Asia Pacific, Africa, Middle East, and South Asia.

The following analysis reports on the overall consolidated risk management system of Alpha, explaining how the risk management function is structured across the Alpha holding company and its subsidiary airlines; organisations within Alpha which operate independent (non-consolidated) risk management systems, independently of their level of advancement, have been excluded from this analysis. The description of the Alpha holding company and its subsidiaries, the Alpha airlines, is purposely limited solely to general information on the scope of their operations. Disclosure of a more detailed description of Alpha, its structures and operations, might provide suggestions to the readers regarding the identity of the analysed entities, and compromise contractual confidentiality and anonymity undertakings agreed upon between the entities and the researcher. Similarly, with the aim of safeguarding such undertakings, as explained in Chapter 4 (section 4.5.1), the titles of some of the positions held by the interviewees from Alpha were purposely changed in such a way that they only generally reflect the functions performed by particular individuals, for revealing the exact titles held by the interviewees might facilitate identification of the Alpha airlines and Alpha holding company under study.

6.3 ERM model

The consolidated ERM model of Alpha resembles the standardised approaches outlined in internationally recognised ERM frameworks and risk management standards, such as the COSO framework (COSO, 2004) or ISO 31000 risk management standard (ISO, 2009), especially in terms of the objectives and rules underpinning risk governance and management processes. However, as further reflected in this chapter, the ERM approaches of the Alpha airlines were customised according to multiple technical and institutional rationalities, aligning the approaches with the specificity of airlines' business environment, especially in terms of airlines' risk profiles and compliance requirements. Alpha's ERM approach is guided by a formalised risk management strategy, which specifies the objectives of the risk management processes and defines organisational risk appetite. ERM principles are grounded across Alpha through a framework of formal institutions and rules, including corporate statutes and regulations

which assign responsibilities and accountabilities for risk management and which regulate risk management routines across the Alpha airlines and the holding company. Internal regulations assign responsibilities and specify procedures and mechanisms of identification, assessment, and management of risks at different corporate levels, and outlay reporting lines; such regulations enter into a high level of detail, which can be exemplified by, for example, specifying the frequency with which risk owners are required to update risk registers with new data relevant to their assigned risks. Internal regulations additionally specify risk appetite by particular categories of risks, together with risk tolerance levels. Apart from general internal regulations governing risk management systems across Alpha, more specific policies and procedures have been developed which are relevant to specific groups of risks such as financial and safety risks, while their implementation is supervised by related functional committees. For example, policies regulating management of financial risks specify risk tolerance levels for particular exposures and outlay principles of hedging strategies. Finally, the risk management function in Alpha airlines is also institutionalised through related regulations, such as in Codes of Conduct and Corporate Social Responsibility principles developed in certain airlines. Appendix D to this thesis additionally elaborates on the perceptions of Alpha's representatives regarding the level of formalisation of the risk management system.

The following sub-sections present findings on the key constructs of Alpha's ERM approach. Firstly, ERM governance structures and technologies are discussed. The researcher then considered it relevant to this study to describe in more detail the two important pillars of Alpha's ERM approach - the financial and safety risk management systems. This section concludes with a discussion of the internal environment of Alpha's ERM programme.

6.3.1 ERM governance structures

As discussed in the preceding section, formal rules delineate within Alpha the roles and responsibilities assigned to organisational 'risk experts' involved in conceptualising and controlling risks (as defined in Arena et al., 2010 and Chapter 3 of this thesis). Ultimate responsibility for the risk management function in Alpha is assigned to the Board of the Alpha holding company, which delegates the supervisory function to the Audit

Committee (full name altered to protect confidentiality). In the Alpha holding company ERM is led by the Management Committee, which, as reported by the interviewees, cooperates closely with the aforementioned Board and the Audit Committee. Alpha's risk management strategy and risk profiles are reviewed by the Board and the Management Committee semi-annually, in accordance with stipulations of regulatory frameworks governing operations of the listed airlines integrated within Alpha. The general opinion regarding the involvement of the Board in the risk management function, as inquired among influential members of the holding company, was positive. By way of an example, CRO-Alpha noted:

“Executive directors who are on our Management Committee would get quite involved in ERM, discussing risks in quite some detail” (CRO-Alpha).

According to the accounts of CRO-Alpha, discussion on enterprise-wide risks regularly takes place during Management Committee and Board meetings, and risks are considered in the strategy setting process. Additionally, as evidenced in the archival documentation of the Alpha holding company, Alpha's enterprise-wide exposures are reviewed by the Audit Committee. Risk management systems established in the Alpha airlines are similarly under the control of their respective Boards, which review airlines' risk profiles on a quarterly basis, while the risk management function in the airlines is also led by their respective risk teams and committees.

Discussion on risks at the holding company level is facilitated by CRO-Alpha, who captures exposures of particular airlines and group-level risks on a joint risk map, plotting risks on impact and probability scales. CRO-Alpha thus maintains a consolidated view of all relevant Alpha exposures, facilitating their review to the Management Committee and to the Board of the Alpha holding company; CRO-Alpha additionally establishes the risk management methodology and overviews its implementation across the holding company and the airlines. CRO-Alpha highlighted the need to consider all major exposures at executive levels in the Alpha holding company, for in his view it facilitates an integrated view of risks:

“I deliver data on all corporate risks to the Management Committee and the Board, and this is where discussion takes place and a global view of all risks and their interrelation is generated” (CRO-Alpha).

CRO-Alpha also noted:

“But before I even take the risk map to the Management Committee, I talk to the strategy guys about it, see their view and get their input into it. Then risks are discussed with the Management Committee, and they propose a strategy considering risk information... The Board also discusses risks and sets a strategy for the business” (CRO-Alpha).

Both Alpha airlines have risk management structures in place facilitating identification and management of relevant risks, which are supervised by their corresponding Risk Management Committee (Alpha-1) or Management Committee (Alpha-2) and Boards. The risk function in the individual Alpha airlines is led by Risk Directors (e.g. cited herein as DRCs-Alpha), reporting to the Management Committee and the Risk Management Committee and to CRO-Alpha. The Risk Directors compile risk data from across the airlines and plot them on separate risk maps, which, as mentioned before, are later consolidated at the group level. As expressed by the CRO-Alpha:

“We are a small holding company, so risks need to be actually managed in particular airlines, so lots of responsibility is delegated to them... They have their own risk systems, which are different but are compatible in terms of the risk maps they generate” (CRO-Alpha).

Risk Directors provide guidelines to heads of different functional departments across the Alpha airlines responsible for managing particular risk groups. They also compile registers of all the identified risks and include data relevant to their management. Internal Audit departments of the Alpha airlines are additionally involved in the risk management function, mainly in that they oversee the controls put in place for particular types of risks.

There are separate structures in place in the Alpha holding company and in the Alpha airlines for management of financial and safety risks. The areas of financial and safety risk management constitute separate, yet integrated, pillars of the ERM framework. TRM - Alpha holds ultimate responsibility for financial risk management within Alpha, and presides over the Financial Risk Committee established in the holding company. TRM-Alpha supervises treasurers of Alpha airlines and their teams of traders in the financial markets; TRM-Alpha is also in charge of the financing of Alpha operations, including asset purchases and leases, in addition to societary transactions. Operational

safety at the holding company level is overseen by the Safety Committee, which monitors the systems, procedures, and resources dedicated to safety activities across the Alpha airlines, yet the responsibilities for safety management and technical assessments lie within the airlines. Production and technical departments of individual airlines have safety structures incorporated within them. Additionally, crisis and business continuity committees are involved in safety risk management.

As reflected above, institutionalisation of ERM across the Alpha entities was associated with creating governance units often considered as auditable trails of ERM, such as the risk director positions or risk committees (Gordon et al., 2009). Criticisms have emerged in management control literature regarding organisations developing ceremonial displays of ERM through governance structures, which do not guarantee embeddedness of the ERM principles in organisational routines (Bruce, 2005; Collier et al., 2006; Fraser and Henry, 2007). However, as will be further discussed in sections 6.3.2 of this chapter, through the assessment of organisational routines and the logics of organisational actors, the researcher concluded on ERM principles being encoded not only in organisational rules but also in the routines enacted across Alpha. Although legitimacy motivations for creating ERM governance structures are not discarded (see Chapter 5, section 5.2.1, Appendix C), evidence was found in support of the perceived functionality of such structures among organisational actors, suggesting instrumental in addition to ceremonial uses of ERM and developing auditable ERM structures and formal rules.

The description provided above of the ERM governance structure of the Alpha holding company and Alpha airlines was the necessary introduction for discussion on the concept of three lines of defence for risk management, as established in Alpha public communications, or towards which Alpha is still aiming, as reported by IA-Alpha. Although IA-Alpha considered the ERM governance structure to be well fitted to Alpha's needs, the interviewee emphasised that it is still undergoing a gradual transformation, as explained:

“We know where the process is going. We should reach a point where we would be able to create an assurance map under a truly joint perspective in order to detect areas of ‘over-assurance’ and ‘under-assurance’ of risk management. This is required by the level of materiality of our risks” (IA-Alpha).

Among several shortfalls of Alpha's ERM approach, where IA-Alpha also included the above discussed excessive formalisation of risks in certain areas hindering organisational agility, the interviewee considered lack of a truly integrated view of risks as one of the biggest flaws. It was argued by IA-Alpha that despite apparent coordination and synergy of the risk management perspectives of the different Alpha entities, it still has not been fully institutionalised or become the taken-for-granted way of behaving" (Burns and Scapens, 2000, p. 11). According to IA-Alpha, the organisational members in charge of risk management are used to acting under the perspective of individual organisations rather than from the consolidated perspective of various entities. This implies the need for further institutionalisation of the ERM principles in organisational cultures of Alpha.

IA-Alpha was of the opinion that the three lines of defence in the risk management process, involving risk owners, the organisation members performing day-to-day risk management activities, and internal auditors, perform their respective risk management responsibilities at a rather satisfactory level in the individual entities of Alpha. This view, as further discussed in section 6.3.2, is shared by other representatives of various Alpha entities. However, the interviewee considered the levels of assurance provided by the individual lines of defence in the different Alpha entities as non-homogenous and, as aforementioned, lacking a common perspective developed from the Alpha holding company towards the airlines, which would allow for balancing assurance across the Alpha entities. IA-Alpha concluded:

"What we have is a simple aggregation of [Alpha airlines'] risks assessed under individual airlines' perspectives on the common risk map. What we should be looking for is not simply aggregating all risks together and then filtering them by materiality, but as a group saying this is the catalogue of our critical risks, and we make sure that what our airlines consider important is consistent with this catalogue. So we should look at the critical risks of different airlines from the group perspective, thinking about whether they can materialise or not in the airlines, and assuring effectiveness of the controls across the airlines, which are designed to make sure our residual risks correspond with our risk appetite, the group's appetite and not the ones of individual airlines" (IA-Alpha).

IA-Alpha continued:

“If not, some risks in our group catalogue can be under-assured, some may be over-assured, typically because different departments do the same thing, and also we use the external assurance services. So we should manage the map better, the distribution of assurance of particular risks between the airlines. This is exactly where ERM can add value across the group” (IA-Alpha).

6.3.2 ERM technologies

The concept of risk technologies denotes a complex set of rules, routines, and tools enrolled in the risk management process (Arena et al., 2010; see Chapter 3, section 3.3.2). In the context of risk management systems, institutionalised rules regulate enterprise-wide risk management processes and governance structures in Alpha, constituting the formal risk management system. The rules are enacted in routine practice, for routines are the “patterns of thought and action which are habitually adopted by groups of individuals” (Burns and Scapens, 2000, p. 6). This section describes ERM technologies, yet focuses in particular on the enactment of formal rules in the daily routines of Alpha organisations’ members. Consequently, it therefore demonstrates the level of institutionalisation of ERM principles in organisational routines, and the coupling between ERM rules and routines, allowing the researcher to later judge the maturity of Alpha’s ERM systems. Rules may be implemented in the airlines in demonstration of legitimacy from the holding company or external constituencies. However, they may become decoupled from the practices of organisational actors performed under the criteria of preserving technical efficiency (Siti-Nabiha and Scapens, 2005). It also explores the enactment of common risk management policies established at the holding company level, and enacted according to organisational logics of actors in Alpha airlines, causing differences among the performed routines in different airlines.

Risk management processes, formally institutionalised in Alpha through a framework of policies and procedures, facilitate identification, assessment, management, and review of relevant risks. Identification of risks is formally conducted at multiple levels across the Group, from lower operational levels in the Alpha airlines to executive levels of the individual airlines and of the Alpha holding company.

As explained by CRO-Alpha:

“Risk teams in the airlines interview directors of different departments at least every quarter to see what is going on in the business, how risks are being managed and what new problems have come up... Emerging and strategic risks are discussed by executives in the airlines” (CRO-Alpha).

Risks are additionally identified in individual functional committees of the Alpha airlines and Alpha holding company. As previously indicated, the involvement of organisational actors from across Alpha’s hierarchies, if formally required through the extensive framework of Alpha’s policies and procedures, was acknowledged by Alpha members to effectively streamline risk identification processes. With regard to financial and safety exposures in particular, within Alpha’s risk management system there are separate strong pillars of financial and safety risk management, and there are review structures in place assuring these systems are often updated. Interviews conducted with individuals holding related positions in Alpha-1 and Alpha-2, in functions related to safety and financial risk management such as MSF/1-Alpha, MSF/3-Alpha, SRM/1-Alpha, or SRM/2-Alpha, despite being guided by a common framework of policies, revealed differences in the risk identification routines performed in the two organisations.

Review of risk tools in use in the Alpha airlines and Alpha holding company facilitated during site visits allowed the researcher to verify how risks are formally recorded in risk registers which compile data relevant to all identified risks. Records of exposures include information on the nature of risks, their assessed levels of probability of occurrence and potential impact, criticality, risk owners and related persons who should cooperate in their management, and a description of the controls in place. Each risk figuring in the registers is assigned at least one owner; for example, in cases of risks related to operational crises, risk ownership is assigned to heads of contingency plans. Differences have been detected in assignment of ownership for risks in Alpha-1 and Alpha-2, in terms of assigning single versus multiple owners to particular types of exposures. Additionally, risk register records include estimations of future increases or decreases of particular exposures and indicate what other risks are related to the exposures. Finally, the records indicate how audits should be performed on the exposures. Risk registers are formally required to be updated on a quarterly basis;

however, representatives of risk teams claimed to encourage risk owners to update the registers more frequently, in order to keep the records as accurate as possible.

CRO-Alpha explained how emerging and strategic risks are considered at the executive levels of Alpha airlines and the Alpha holding company, which was later confirmed in the accounts of other interviewees. Group executives demonstrated awareness of the importance of the emerging and strategic risks.

MCM-Alpha pointed to the volatility and unpredictability of airline business environment:

“Unknown unknowns will happen, so you cannot know what it will be, but you have to be prepared for something extraordinary to happen” (MCM-Alpha).

In a different discussion he also stated:

“...It shows that the black swans, they happen. They happen and they stay, causing a change in paradigm” (MCM-Alpha).

TRM-Alpha similarly confirmed the importance of emerging risks:

“In this sector the most relevant risks are the ones we don't know yet” (TRM-Alpha).

Formalised policies enforce assessment of the identified risks in terms of their perceived levels of probability of occurrence and potential impact on organisational performance. Both quantitative and qualitative measures are used in the risk assessment mechanism. According to CRO-Alpha:

“Risks at operational level tend to be evaluated in a more qualitative manner, while higher level risks, for example major financial risks, are often quantified” (CRO-Alpha).

The Alpha airlines evaluate the economic impact of particular risks on separate scales according to the sizes of their operations; for example, risks evaluated as having a “low economic impact” in one Alpha airline may fall into the category of “medium economic impact” in a smaller Alpha airline. Risks from across the airlines are consolidated at the holding company level; however, risks classified with “low economic impact” in a smaller Alpha airline may not get included in the risk maps issued at the holding company level, as these are excluded from analysis risks when the potential impact is below a certain value. DRC-Alpha highlighted difficulty in assessing the economic impact of certain risks; while referring to the risk of operational disruption, and

specifically to the eruption of volcanic ashes which paralysed the European airspace in April 2010, the interviewee stated:

“The volcanic ashes crisis demonstrated how challenging it is to evaluate the economic impact of certain events; even after the crisis had finished, it was still very difficult for us to calculate how much it had cost us” (DRC-Alpha).

This is partly due to correlated effects of risks on multiple areas of airline operations; DRC-Alpha also noted:

“Evaluating the economic impact of risks is, to some extent, an exercise of the imagination... For example, in the case of an air crash, it may cause the deaths of 10 or 300 people, each scenario implying different consequences on insurance policies, airline reputation, or resources required to manage the situation” (DRC-Alpha).

Despite the difficulty in assessing the economic effects of certain risks, this exercise is systematically performed across the Group, for as expressed by the TRM-Alpha:

“Unless you can at least approximately assess risks, you cannot deal with them” (TRM-Alpha).

Furthermore, DRC-Alpha emphasised the need to consider multiple aspects of risk impacts in Alpha’s assessment methodologies.

DRC-Alpha stated:

“The financial bottom line cannot be the ultimate criteria for assessing risks. For example, we cannot think of safety only in terms of how much safety risks can cost us in this business human lives are at stake” (DRC-Alpha).

Priority is given to management of risks with relatively high levels of potential impact and probability of occurrence. Risk controls are defined for the majority of risks and they are developed by the owners and related parties assigned to particular risks. However, as verified by the researcher through a review of corporate risk registers, not all risks featuring in the risk registers of Alpha airlines are assigned controls; this was explained by DRC-Alpha:

“No controls are assigned to, for example, the risk of economic downturn. But we do look at the effects of economic downturn, for example, on profitability of long-haul routes and we take it from there; or in terms of effects of the economic crisis on market risks – let us say interest rates, we implement controls, we make sure airlines go to the market and place hedges according to our policies” (DRC-Alpha).

Based on a review of internal documentation the researcher concluded that the reporting lines for communicating risk-related data are clearly established in the policies developed at the holding company and at individual airline levels. Reporting on risk exposures is officially conducted every three months, although in some Alpha airlines risks are reviewed more frequently; as explained by DRC-Alpha:

“It is sometimes necessary to review risks more often so that we can correctly capture the dynamics and volatility of particular exposures, and to better control the evolution of particular risks, and also to see which risks are no longer a priority, which risks have materialised... (DRC-Alpha).

DRC-Alpha also commented on the reporting extraordinary risks:

Apart from regularly reporting schedules we often prepare reviews of risks which we consider should be discussed immediately by different committees; they need to know what the major threats are and how they are being managed. They need to be frequently updated on the risk situation in order to make informed decisions” (DRC-Alpha).

During periodical reviews the levels of probability and potential impact of risks are reassessed, and the effectiveness of controls in place for mitigation of risks is revised. The researcher verified, in internal documentation, the existence of risk tolerances and Key Risk Indicators (KRIs) which are established in individual Alpha airlines, yet not at the group level, in order to facilitate review of risks.

The need to constantly maintain the risk management system up to date was stressed by different interviewees, who reported how, previously, risks would be reviewed and reported across Alpha airlines and the group every six months. According to DRC-Alpha and TRM-Alpha, this was not enough taking into account high volatility of the airline operating environment. TRM-Alpha additionally stressed the importance of presenting risk information across the group in an understandable and accessible manner. In the discussion on the models and equations underlying the group’s Financial Risk Management framework he noted:

“We often present findings from the Financial Risk Management framework in a graphical manner, in order to make them more understandable for non-financiers... It is important to understand the outcomes of the models we use, rather than making everyone understand the econometrics and the mathematics behind the conclusions” (TRM-Alpha).

Quarterly reporting requirements imply conducting regular reviews on the development of particular risks and identification of new exposures. DCR-Alpha noted:

“If during several consecutive reviews a particular risk position does not change, it is often the case that the risk is defined improperly, so it needs to be redefined in order to better reflect the nature of the risk and its volatility” (DRC-Alpha).

As previously discussed (section 6.3), the risk management framework of Alpha is characterised by a high level of formalisation which, despite criticisms of excessive bureaucracy voiced by some organisation members, was argued to be necessary in order to ensure a uniform level of diligence throughout all phases of the risk management process and across all Alpha entities. This organisational objective seems to be partly achieved, as shown by the evaluation of the effectiveness and efficiency of the risk management processes, in which the interviewees in general expressed positive views of the functionality of the processes. However, some organisation members called for more clarity and uniformity of risk management processes conducted in the different Alpha entities. IA-Alpha explained:

“Indeed, we should have a better idea of what the controls are in each company, what is the treatment of each of the inherent risks that make the risks later settle at the residual levels within our risk appetite.... We are in different places right now when it comes to giving transparency to these issues in the individual companies [Alpha entities]” (IA-Alpha).

IA-Alpha continued:

“Because it’s really easy to put on paper ‘our residual risk is EUR 300 million, but it tells me nothing if I don’t know exactly what is the inherent risk behind it, what controls have been put in place to lower the risk to EUR 300 million” (IA-Alpha).

The alleged lack of clarity and uniformity in risk management processes conducted in the airlines may be another factor causing variations in organisational routines, despite them being guided by a common set of highly formalised rules.

Based on the review of responsibilities and accountabilities throughout the different stages of Alpha’s risk management processes, the researcher concluded that the risk management function facilitates strategy-setting and decision-making processes in the Alpha airlines and Alpha holding company.

CRO-Alpha commented on the alignment of these functions:

“Risk and strategy are related, to put it simply, in that we take into account risks when strategy is being developed. If you look at our strategy, and you look at our risks, we do not map one to another on paper, but this is implicit, they are discussed by the same people at executive level” (CRO-Alpha).

CRO-Alpha elaborated on this thought:

“We don’t bother to make the leap to mapping risks onto the strategy, because it’s something people should have at the back of their minds and not by producing extra matrices and documentation” (CRO-Alpha).

MSF/2-Alpha also noted how structures and practices implemented in the Alpha holding company support close cooperation of the risk management and strategic management functions:

“The Management Committee meets in the office next door, so we [the risk function] know them well and cooperate with them very closely. So every risk report or presentation we produce, almost immediately [TRM-Alpha] visits the Management Committee and is delivered, so it is all ultra-quick” (MSF/2-Alpha).

Following the assessment of the risk technologies employed in Alpha, the researcher concluded they facilitate generation of an integrated view of risks across the Alpha entities. This is due to the risk management rules and routines as reflected above, as well as the tools supporting the risk management function. Multiple risk owners are assigned to many types of exposures in figuring in risk registers, while the records also indicate related professionals who should provide advice to the risk owners. Formal involvement of the risk owners and the related parties representing various business areas which could be affected by risks boost integrated risk management in Alpha. The cooperation of the risk owners with the related parties was formalised in such a way that all parties figuring in the risk register in relation to a particular risk are required to provide written input on a regular basis, including an independent assessment of the levels of probability of risk occurrence and risk impact, and a proposition of mitigating measures.

Furthermore, the researcher was shown by Alpha members how the risk registers allow for exporting risk-related data to different formats of reports such as risk maps. The systems employed across Alpha, although different in terms of technological solutions

in use, are compatible when it comes to generating reports and risk maps, and merging risk data from different airlines to consolidated reports of the Alpha holding company, which facilitates obtaining an integrated vision of risks faced across the Alpha entities. For example, one of the Alpha airlines developed a proprietary intranet application for risk management, arguing in-house development of the risk tool allowed them to best tailor utility of the tool to organisational needs, facilitating incorporation of the risk management function into the ordinary business activities of individual departments. The tool was claimed to be compatible with the technological solutions operated in the remaining Alpha entities in that it allowed for combining data and feeding data to the risk maps generated in the Alpha holding company. The researcher reviewed different risk maps which consolidated data on threats related to the execution of company strategies, as explained by CRO-Alpha:

“Risk maps present the business situation from the bad news point of view” (CRO-Alpha).

Review of risk maps demonstrated how they integrate exposures from different management frameworks operated across Alpha airlines, such as safety, quality, security management systems, and others. While risk maps concentrate on the ‘downside’ of risks, Alpha’s risk management approach was concluded to also consider the ‘upside’; opportunities related to strategies are discussed in Alpha through different mechanisms. CRO-Alpha explained how, for example, the acquisition of a competitor airline would be regarded as an opportunity and would fall within discussion of strategy departments; however, once the acquisition had been executed, integration risk would be displayed on the risk maps.

6.3.3 Pillars of the ERM model

The risk management function in Alpha, as previously reported (section 6.4), lies within three independent yet integrated pillars: corporate risk management, financial risk management, and safety risk management. The corporate risk management pillar comprises management of enterprise-wide risks, and, as indicated in the discussion on Alpha’s ERM technologies, it draws on the input from financial and safety risk management pillars. Due to extraordinary importance of financial and safety exposures to Alpha’s business, this section provides a more detailed overview of the rules and

routines directed at their management, and shows integration of financial and safety risk management pillars within the corporate risk management pillar.

Financial risk management

In the case of legacy carriers such as the Alpha airlines, jet fuel currently constitutes about 35% of their overall cost base; Alpha airlines compete in the commodity market with sophisticated investors with speculative approaches, and thus are forced to employ advanced hedging strategies in order to put some degree of certainty into the business. The recent financial crisis restricted funding to airlines, which experience difficulties in gaining access to debt unless their credit ratings are relatively high. ‘Black swan’ events such as the terrorist attacks of September 2001 demonstrated the importance for airlines to maintain strong cash positions; among other things, airlines need to carefully manage the balance between owned versus leased assets, in order to ensure availability of cash flow during changing economic cycles. Taking into account the nature of operations of Alpha airlines that predisposes them to substantial financial risks, it came as no surprise to the researcher to learn how the Alpha airlines devoted particular attention to management of the financial risks. This also shows the aforementioned argument (Chapter 5, section 5.2.2; Appendix C) that the risk profiles of the Alpha airlines are relevant contingency factors determining airlines’ overall risk management approaches.

The Financial Risk Management model (hereinafter to be referred to as FRM) employed in Alpha seems to play an important role in Alpha’s efforts to align the risk management function with the strategic management function. The framework was designed in order to allow for testing different scenarios of the materialisation of risks, while the outputs the model delivers are largely dedicated to the strategic planning and decision-making processes. The FRM model considers the appetite established for particular types of risks and provides guidance on optimising strategies in accordance with risk appetite. As explained by TRM-Alpha:

“The model suggests policies which maximise the cash retained in each airline per unit of risk retained” (TRM-Alpha).

Possible scenarios of business plans of the Alpha airlines or the Alpha holding company are tested within the limits of risk appetite established for particular types of exposures, and the FRM model estimates cash positions in the hypothetical scenarios in a defined

time horizon. As explained by the TRM-Alpha, in designing strategic and business plans for Alpha, the FRM model considers the macro-questions which might create new risks for Alpha, hypothesising on possible scenarios such as changes in the Joint Aviation Requirements (JAR) in the matters related to airline operations, a sudden rise in emission trading (ETS) costs, an unpredicted necessity to replace the fleet, and other macro-challenges.

A Financial Committee has been established in the Alpha holding company in order to centralise the financial risk management function among the Alpha entities and facilitate discussion on policies regarding cash management and management of fuel, foreign exchange, and interest rate risks. The Financial Management Committee holds monthly meetings attended by relevant members of financial departments of the Alpha airlines, and it serves as a forum for an exchange of ideas and concerns regarding financial risk management. The Financial Committee was evidenced to cooperate closely with operational planning departments, which is aimed at adjusting structured finance policies to the business plans of the Alpha airlines. The Financial Committee, as reported by the interviewees connected to the finance functions in the Alpha entities, regularly delivers reports directly to the Management Committee of the Alpha holding company. Close cooperation of these two organisms is believed to facilitate informed decision-making and timely re-adjustments of financial risk management policies to corporate strategic decisions. Despite the existence of highly formalised policies and procedures regulating the financial risk management function across Alpha, the researcher evidenced positive feedback among the interviewees related to this particular function. Contrarily, the interviewees engaged in risk management processes targeting other types of exposures had a negative opinion of the issues of high formalisation versus organisational agility. As explained by MSF/2-Alpha:

“Everything we [Financial Committee] work on in terms of risks gets reported directly to the Management Committee, there are no communication burdens in between” (MSF/2-Alpha);

MSF/2-Alpha provided an example of flexible cooperation between the Financial Committee and the Management Committee of the Alpha holding company:

“For example, in December we saw really attractive levels of euro/dollar, and we decided to take advantage of that. We approached the Management Committee and requested a waiver from the previously defined policy in order to take advantage of

the situation, and it was approved immediately, so we passed it on to the airlines which traded accordingly with the new policy” (MSF/2-Alpha).

The interviewees related to the financial risk management function also conveyed their understanding of the importance of maintaining diligent records of the evolution of financial risks and their effects on the overall performance of airlines:

“It is crucial for us to maintain a database where we record the evolution of risks... We register all relevant [financial] risks with their management status... It allows us to track how operating results were affected when we were, for example, more exposed to currency fluctuations” (MSF/1-Alpha).

With regard to the integration of the financial risk management pillar with corporate risk management systems and, as previously mentioned, separate reporting lines have been created by linking the financial risk management dimension to the top corporate levels of airlines and the Alpha holding company, while data on major financial risk positions is additionally communicated to airlines’ Risk Directors and to the CRO-Alpha for their inclusion in corporate risk maps. As evidenced by the researcher, evolution of the financial risks is recorded in separate databases together with their corresponding controls. Furthermore, policies regulating management of the financial risks are developed at the Alpha holding company level and imposed for implementation in the Alpha airlines. As explained by MSF/1-Alpha:

“In terms of fuel, we control whether all airlines operate within the levels stipulated in the fuel hedging policy of the Group. In terms of foreign exchange and interest rate risks it’s similar; we check whether all airlines operate within the limits pre-established in group policies... As per the cash management, we check airline liquidity levels, and check whether the financial counterparts of individual airlines have satisfactory ratings” (MSF/1-Alpha).

MSF-1 also explained how market forecasts are discussed during the Financial Committee’s meetings, and conclusions are fed-back to the policy makers, with suggestions on hedging mandate quotas for the coming months.

Hedging of financial risks is an indispensable risk management strategy for airlines, for it retains and restores liquidity while being considered a competitive factor in the industry (Carter et al., 2006). However, according to MCM-Alpha hedging alone is not enough to effectively manage all financial risks facing airlines. MCM-Alpha reported

on his journey that led him to conclude on the need to invest in sophisticated financial risk management software and specialists due to the fact that “the marginal productivity is very high”. MCM-Alpha advocated development of a systematic approach to managing financial risks, where risks are measured through aggregation and are stress-tested through simulation while the overall approach is aligned to strategic business plans of Alpha airlines. A proprietary methodology, the Financial Risk Management model (FRM) was designed in order to assist the decision-making of senior management in the light of the full set of risks faced by Alpha. The model was internally developed in one of the Alpha airlines, based on risk modelling solutions implemented in the financial industry, and later its scope was extended to cover group-wide exposures. The majority of the interviewees, in discussions during which the subject of FRM appeared, believed that it allows for aligning the risk management function with strategic and business planning functions. The researcher studied the functionality of the model in order to verify this belief, mainly through interviews with members of the Alpha holding company, but also through a review of different business scenarios ‘stress-tested’ by using the FRM model, which led the researcher to confirm interviewees’ opinions in this regard. The researcher recognised the FRM model as one of the ‘best practices’ identified in the course of the empirical research, while its functioning and utility are reviewed as follows.

The FRM model is operated in the Alpha holding company, and outcomes of the model are used not only for establishing financial management policies across Alpha but also for evaluating the impact of different management scenarios on Alpha’s overall performance. The FRM model facilitates projection and evaluation of management decisions in five major areas. Firstly, the FRM model tests the effects of management decisions on the evolution of financial ratings granted to the Alpha airlines by their rating agencies. Secondly, the FRM model is used for optimisation of the hedging strategies across Alpha. Thirdly, the FRM model tests affordability of investment decisions across changing business cycles; long-term capital expenditure scenarios are assessed, for example, in designing fleet acquisition strategies. Fourthly, corporate growth decisions are evaluated by using the FRM model, to test whether, for example, the acquisition of a competitor airline would be accretive or dilutive in terms of shareholder value, as reflected in earnings per share values (EPS). Finally, the FRM

model is applied in advanced scenario analysis, in order to estimate the impact of operational disruptions on Alpha's performance.

FRM is oriented towards maximising Alpha's utility function at pre-established levels of risk appetite. A Monte Carlo simulation is conducted, creating thousands of scenarios with stress-forecast financial statements. The FRM performs stress tests of business plans, considering three main groups of variables - macroeconomic conditions, operating conditions, and financial variables. Airline business is strongly correlated with the evolution of macroeconomic conditions in the global economy (Mason, 2005); therefore, the FRM model considers projections of macro-variables in the future. Alpha airlines' operations can be temporarily restricted by a wide array of 'unknown unknowns' events such as strikes or adverse weather conditions which cause disruptions to operational schedules; the FRM model allows for considering restrictions in the scheduled operations of particular airlines, in addition to the financial consequences of such events. Furthermore, airlines' business plans are tested at different values of three financial variables: fuel prices, currency exchange rates, and interest rates. A complex structure of variances and co-variances was incorporated in the FRM model, in order to reflect correlations among the inputs of the model. Business plans tested in short horizons assume moderate volatility of inputs, while testing in long horizons assumes extreme volatility of inputs in order to capture extreme scenarios, the so called 'black swan' events. Testing of business plans in the FRM model reflects development of financial measures in hypothesised scenarios such as cash flow, free cash flow, cash to equity, debt, operating profit, funds from operations, or EPS. As explained by TRM-Alpha:

"We can factor into the FRM model any type of event that appears on the risk map of [...] and check its financial impact... So the model, by assessing impact, allows us to prioritise risks" (TRM-Alpha).

With regard to the previous discussion on the role of the model in developing an integrated view of Alpha-wide exposures, TRM-Alpha explained how the FRM model combines Alpha-wide scope while testing different hypothetical operational scenarios:

"Definition of correlations between various risks and operational scenarios is a crucial part of the [FRM] model. It would make no sense to assume that the variables we consider in the model are independent of one another... For example, volatility in fuel prices may be related to different events, such as changes in GDP"

levels, a financial crisis, or terrorist attacks, so it is important to have a well-defined structure of correlations in place in order to capture the interrelation of variables of the model” (TRM-Alpha).

The developers of the FRM model stressed that it provides an additional input to the decision-making process, yet such input does not constitute a base for decisions. TRM-Alpha claimed:

“We are aware of the modelling mantra ‘trash in, trash out’” (TRM-Alpha).

By this logic the quality of input determines the quality and usability of the FRM model’s outputs. TRM-Alpha continued:

“We are using FRM as an additional source of data, sometimes in order to test the intuitions of Management, yet we are not fanatics of this model. Nothing can substitute common sense, experience, and expertise of the managers that we are lucky enough to have in our Management Committee leading the Group” (TRM-Alpha).

Since the FRM model provides input in the first instance to the financial risk management team of the Alpha holding company, and in the second and third instances to its Management Committee and the Board, it was no surprise for the researcher to realise that despite the important role that the FRM model plays in the risk management and strategic management function of Alpha, awareness of the model was barely existent among the Financial Risk Managers or Risk Directors of the Alpha airlines.

When this issue was raised in a complementary, informal discussion with the developers of the FRM model, TRM-Alpha argued:

“It’s not important to know how to build a car; it’s important to know how to drive a car... Managers in the [Alpha] airlines are involved in the process in that they participate in risk meetings, we exchange information on financial risks, and they are informed of the policies and the quotas, for example, for hedging. But we run the system internally, in the [Alpha] holding company” (TRM-Alpha).

TRM-Alpha continued:

Also, when we talk to the Management Committee, there are some great minds there, strategic minds, and not always numerical minds. So when they ask us to evaluate a strategic decision, we come back to them with ‘yes or no’ and ‘because’, but without

explaining mechanisms that lead to our feed-back, they don't need to know how we play with the numbers [laugh]" (TRM-Alpha).

Safety Risk Management

Safety risk management, just as financial risk management, is an independent yet interdependent pillar within Alpha's ERM model. Safety risks encompass a wide range of operational exposures, ranging from minor incidents to important hazard risks which, if materialised, can have multiple severely negative consequences for airlines, including financial or reputational losses. The safety risk management framework employed in the Alpha airlines, denominated in the industry as 'Safety Management System', is strongly conditioned by an extensive regulatory framework encompassing stipulations of air transport associations such as, among others, IATA, IOSA, and EASA (Otero, 2006; Curran and Fisher, 2012), that demonstrates the effects of, among other things, risk profile contingencies and coercive pressures on the development of risk management solutions in airlines (see Chapter 5, section 5.2.1; Appendix C). Thanks to the courtesy of the interviewees, the researcher was able to examine some of the risk management procedures guiding collection of relevant safety data in special risk registers, or general rules for handling diverse types of incidents. The researcher also reviewed analytical software employed in the airlines in order to spot trends in safety records and mobilise intervention strategies when necessary. The major issues of interest to this research, regarding the safety management framework of Alpha, are the coupling between safety rules and routines enacted by organisation members, in addition to its functionality and alignment with the corporate risk management system.

As previously indicated, the safety risk management function in Alpha has dedicated safety governance structures at the executive levels in the airlines and in the holding company, led by the Safety Committees. The safety risk management function in Alpha is regulated through a complex framework of policies and procedures for the prevention and handling of operational accidents and incidents; contingency plans are developed to deal with major safety-related threats and events, and crisis manuals are defined and tested on a regular basis. Safety missions are defined and guidance is provided to safety officers on the requirements of safety management strategies, with clearly defined and detailed objectives and priorities. However, as indicated by the interviewees, there are

discrepancies between the formalised rules and institutionalised routines in the Alpha airlines. The safety function is structured close to operational / production departments, encompassing, among others, pilots, maintenance engineers, flight attendants, or ground crew. As indicated in particular by SRM/1-Alpha, adherence to safety manuals in their different dimensions varies among particular groups of the production departments, which are additionally influenced by their cultural backgrounds, for, as explained by the interviewee, some cultures foster following the rules more than others.

Attaining to the problem of decoupling, and in order to promote positive risk cultures, several initiatives have been undertaken in Alpha in an attempt to extend the merits of safety systems from reactive to preventive safety risk management. According to SRM/2-Alpha, the most important initiative was aimed at changing the reporting culture, in order to foster trust and incentive communication sharing rather than suspicion reigns. Since pilots play an important role in safety structures, they are encouraged to become safety managers, and full-time dedication to this position is encouraged rather than it simply being performed in addition to flying. The safety risk management function generates separate risk maps and risk reports. Major safety-related threats such as aircraft crash would be included in the general risk maps presented by the Risk Directors of the Alpha airlines or by CRO-Alpha for the sake of completeness. However, as reported by the interviewees, they do not constitute the core of discussion within Alpha's ERM model; safety risks are reported and discussed within separate structures established for this purpose. As noted by SRM/1-Alpha:

"Because in the safety area we do not compromise, there is not much room for discussion, risk tolerance is extremely low" (SRM/1-Alpha).

DRC-Alpha additionally explained:

"Safety management systems are quite independent, although essentially integrated, within the general corporate risk management system... ERM considers major safety risks mainly because they are related to other risks such as, for example, reputation risk, so we share information regarding safety risk situations with safety risk management structures" (DRC-Alpha).

6.3.4 ERM internal environment

Internal environment sets the tone for organisational ERM approach. It can be regarded in terms of institutional logics encompassing values, norms, ideas, beliefs, and broader meaning systems influencing the actions of actors, actors' understanding of organisational strategies including the risk management strategy, and the conceptualisation of uncertainty (Arena et al., 2010). The elements of Alpha's internal environment which are particularly relevant to the performance of the ERM approach are risk appetite and risk culture. Risk appetite, which reflects Alpha's inclination toward risk, is set by the Board in risk management strategies, considering the interests and risk-preferences of major external and internal stakeholders. Risk appetite varies in different areas of Alpha's operations. While the risk appetite for strategic risks is defined as high, Alpha claims to have no tolerance for safety risks or breaches of legal and regulatory obligations. Risk appetite is applied to risk management strategies and is employed throughout the Group in the risk management processes via tolerance thresholds established for particular groups of risks.

Members of Alpha airlines interviewed for the purpose of this research shared common beliefs regarding the importance of developing risk awareness at all levels within the organisations. MCM-Alpha made an interesting point on this subject:

“I think risk management in airlines is a culture that has to be implemented from operations to strategy, and you need to develop awareness at every level. This approach is more effective [ERM embedded across the organisation] than having big theoretical [risk management] models. You can have a very nice model, but if risk awareness is not embedded at different levels within the company, it will be useless” (MCM-Alpha).

MCM-Alpha further emphasised the commitment of Alpha organisations to fostering positive risk cultures within all levels of organisational hierarchies. DRC-Alpha explained how risk-aware culture is promoted within Alpha by risk teams established in the Alpha airlines, which, among other initiatives, develop manuals and provide training on risk management processes and procedures:

“We [a risk team of one of Alpha airlines] deliver training across the airline in order to explain the risk management approach that we want to promote... We explain how risk identification and management should be incorporated into the

everyday activities of employees... We also train people on how to use the risk software, and we advise them sometimes on how to properly define controls” (DRC-Alpha).

On a similar note, CRO-Alpha emphasised that in order to formalise desired risk management approaches within the Alpha airlines, risk management responsibilities are included in the job descriptions of employees at different levels in the organisations.

In order to better understand, among other things, the risk culture across the Alpha organisations, the researcher conducted interviews not only with representatives of top organisational levels, but also with employees from middle and lower management; additionally, during the site visits the researcher had the chance to speak informally to employees at the operational level. The researcher concluded that the awareness of organisational risk management strategy and employees’ commitment to the risk management function varied across different functional and organisational levels. Notwithstanding, the researcher concluded that active efforts are undertaken in Alpha in order to promote positive risk management culture. By way of an example, an interview with MSF/2-Alpha revealed how the risk management rules and routines institutionalised in Alpha facilitate adoption of desired risk management approaches. MSF/2-Alpha described the work of the Financial Committee that the interviewee forms part of and which is operated by the Alpha holding company. The Financial Committee meets regularly in different international locations, gathering financial risk management experts from the various Alpha airlines in order to discuss the main risk exposures. MSF/2-Alpha noted:

“The fact that we [Financial Risk Committee] meet regularly facilitates continuity of risk management initiatives... Also, the fact that people travel from different countries in order to meet and discuss risks gives extra importance to our role, showing that risk management is treated seriously, and I think it helps our operations a lot... The data sharing culture [regarding risk issues] is really open” (MSF/2-Alpha).

Alpha’s risk profile is regularly discussed by the Management Committee and the Board of the Alpha holding company, which establishes the strategic direction for Alpha. Similarly, risk discussions take place in the individual airlines on a regular bases at equivalent executive levels. While actively involved in the analysis of risk maps, the

executive and non-executive directors set the tone from the top encouraging risk awareness across the Alpha airlines and advocate implementation of risk management rules and routines. CRO-Alpha, who cooperates closely with these corporate governance units, explained:

“[Tone from the top encouraging ERM] tends to come from executive and non-executive directors. Also, if a non-executive director says something new should be done in terms of ERM, it’s because they have seen it done elsewhere, so they make suggestions as to how to improve our systems. But not everything that works elsewhere would work well in our business, airlines are very specific” (CRO-Alpha).

6.4 Conclusions and lessons learnt

The analysis of the Alpha case conducted herein was considered within the context of the group’s broader regulatory, social, cultural, and technical environments, which shape the logics of organisation members and the rationales of their actions; the analysis recognised the effects of various and sometimes conflicting pressures for legitimacy, effectiveness and efficiency in designing Alpha’s risk management system. This being said, Alpha’s choice of risk management system, in accordance with the theoretical tenets of the contingency perspective, was influenced by the group’s organisational context. The analysis demonstrated how the transition of risk management systems within the Alpha airlines towards adopting the enterprise-wide approach to managing risks was mostly incremental and elapsing at a different pace within the individual airlines, except for the revolutionary step of aligning the Alpha-2 approach with that of other Alpha entities upon its incorporation into the group. The evolution of Alpha’s joint risk management approach led to institutionalisation of the ERM principles in the system of organisational risk management rules and routines. Scarce evidence of decoupling between ERM rules and routines suggested mostly instrumental rather than ceremonial roles and uses of ERM in the organisations under study. The analysis of Alpha’s risk management rules and routines confirmed previous conclusions (Chapter 5) of a high level of maturity and advancement of the ERM system. The analysis allowed the researcher to draw conclusions on the best practices and shortcomings of Alpha’s risk management system, and provided valuable lessons for implementing ERM in airlines in such a way that allows for an alignment of the risk management function

with strategic planning and decision-making. A selection of these multiple lessons is outlaid as follows.

Firstly, findings from this study suggest that creating a positive risk management culture is essential for effectively managing enterprise-wide risks. In Alpha high formalisation of the risk management system was necessary due to the size and complexity of the Alpha airlines (see Chapter 5, section 5.2.2 for discussion of organisational contingency factors; see Appendix C); meanwhile, the criticism of excessive formalisation was voiced by some organisation members who believed it hinders organisational agility. However, the existence of risk management rules does not guarantee that actors in organisations will enact them diligently. The risk management routines reproduced by organisational actors may be driven by their individual criteria of technical utility of actions; if organisational actors do not perceive sufficient value in risk management rules, their actions may be contrary to what is conveyed in the rules, and the reproduced actions may lead to institutionalisation of routines which do not embrace ERM principles. Therefore, educating organisation members, creating a positive risk-culture, and conveying the value of ERM to them is a condition for their 'buy-in' and successful implementation of ERM across organisational hierarchies.

Secondly, findings from the case study of Alpha's risk management system suggest the importance of developing mechanisms which facilitate enterprise-wide identification of risks, including important strategic and emerging risks. The risk management procedures instilled in the Alpha airlines were evidenced to involve organisation members from top, middle, and lower management in the risk identification process. This allows not only for detecting the process-level risks affecting mainly the cost bases of airlines' operations, but also for including external and strategy-related risks in the risk portfolio.

Thirdly, the case study of Alpha exemplified how the airlines designed their risk management frameworks in function of their risks profiles; as previously mentioned, and as discussed in more detail in Chapter 5 (section 5.2.2), there are multiple institutional pressures and contingency factors which airlines need to balance in development of functional risk management approaches, while risk profile demands, in the researcher's opinion, should be devoted particular attention. Development of

separate pillars for the management of financial and safety risks, as exemplified by the Alpha airlines, serves as an example of the case for the need to align risk management structures and practices to risk profile requirements.

Fourthly, through the analysis of the risk governance structures of Alpha organisations, the researcher learned about the importance of appointing dedicated risk units, such as risk committees or risk directors, which are responsible for coordinating enterprise-wide risk management efforts and developing an integrated view of enterprise-wide exposures. Additionally, findings from the case study point to the importance of integrating three lines of defence in the risk management systems of organisations, and of creating an assurance map from the group rather than individual airlines' perspective.

Fifthly, findings from the case study demonstrate following the alignment of the risk management function with strategic planning and decision making in organisations as a best practice. The Alpha case study demonstrated the existence of different organisational routines which empower an integration of these functions, one of which is development of the FRM model. The FRM model allows for testing business and strategic plans in different time horizons, in the context of changing macroeconomic, operational, and financial conditions, whilst it considers the potential effects of hypothesised scenarios on the evolution of airlines' financial ratings; ratings granted to airlines by rating agencies are of utmost importance in order for airlines to be highly leveraged. The FRM model allows for testing major capital expenditures such as acquisition of competitor companies, affordability of new fleet orders, or setting up new routes in the network.

The above mentioned and other best practices discussed in more detail in Chapter 8 (section 8.2), have allowed the Alpha organisations to adopt a functional, enterprise-wide risk management approach which is considered by the interviewees as beneficial for their respective Alpha organisations and which, as reported by the interviewees, has transformed the way that organisation-wide routines are performed in multiple areas of airline operations. The interviewees reported, among other factors, aligning hedging policies with operational business plans. Alpha airlines increased the amount of cash and cash equivalents in order to be better equipped to face unexpected challenges. Financing sources were diversified; the airlines would lend smaller amounts from a

larger pool of banks, and would issue bonds in order to reduce dependence on the financial entities. A systematic, enterprise-wide approach to managing risks in Alpha supports shareholder value creation by reducing the volatility of Alpha's performance; as explained by TRM-Alpha, reduced volatility leads to improved credit ratings and lower costs of both equity and debt capital, while also decreasing the probability of liquidity problems. ERM adoption in Alpha is believed, as expressed by the interviewees, to have improved their understanding of risks, which, by their accounts, led to a more informed strategy setting and better preparation of the group for operational crises and 'black swan' events. The findings from the Alpha case study are discussed and analysed in more detail in Chapter 8, which additionally draws on Alpha's risk management 'best practices' in formulating the ERM framework in the airline industry.

Chapter 7

Case Study: Risk Management System in Beta Airline

7.1 Introduction

The previous chapter analysed the integral components of the ERM system of the Alpha airlines, the rationales underlying its organisational design, and the logics of organisational actors involved in performing the risk management function. This chapter aims to extend the analysis of airline risk management systems by presenting a second case study; that of the Beta airline. In the first case study, the unit of analysis was chosen due to the advancement of the ERM systems implemented in Alpha-1 and Alpha-2 airlines, as indicated in the field study analysis, which was later confirmed through the case study analysis. The choice of the airline codenamed 'Beta' as a unit of analysis of the second case study was motivated by several factors. The field study analysis revealed that although Beta has not officially adopted ERM, as ERM adoption was planned to occur in an undefined future time horizon, the airline's risk management system was evaluated to be fairly advanced; notwithstanding, despite recognising potential for improvement in Beta's risk management system, the airline's representatives regarded the system as functional and well aligned to organisational needs (see Chapter 5, sections 5.3.1 and 5.3.2; Appendix C). Previous research provided evidence of how ERM may fall into a rule-based compliance function in organisations (e.g. Power, 2007, 2009; Bowling and Rieger, 2005; Bruce, 2005), while serving as a ceremonial demonstration of external legitimacy (Covaleski et al., 1996). Contrarily, organisations may adopt ERM principles as a means of achieving organisational objectives, without announcing the adopted approach as "enterprise-wide" or "ERM" to external stakeholders (Woods, 2009, 2011). Therefore, the case study of Beta provides an interesting base for investigating an alternative yet effective way of organising risk management structures and practices in airlines.

The second important characteristic differentiating Beta from the Alpha airlines is the business model. While the case study of Alpha (Chapter 6) focused on two legacy airlines, Beta is a low-cost carrier. Therefore, the researcher found it interesting to analyse a risk management model in an organisational setting of a different business model. Thirdly, and related to the second rationale for choosing Beta's risk management

system for further investigation, the scope of Beta's operations is smaller than that of the analysed Alpha airlines; again, it is interesting to investigate the coupling of the risk management function in a different organisational setting – in terms of the organisation's size and complexity of operations. Fourthly, since the airline industry undergoes a process of intense consolidation (Belobaba et al., 2009), examining the perspective of a single airline, subsidiary of a large airline group (versus the consolidated perspective analysed in Chapter 6) may be enriching to this study. Hence, the case study of Beta should allow for examining the alignment of the airline's risk management system to varying contextual circumstances; the context for examining Beta's risk management system versus that of the Alpha airlines varies in terms of organisational settings such as the business model, size and complexity of operations, or presenting a subsidiary airline perspective, as well as in terms of different extra-organisational factors.

Following the layout of the analysis presented in Chapter 6, the analysis of Beta's risk management system presented herein considers the airline's 'risk management technologies', 'risk management experts', and the 'context and rationalities' of the risk management approach that were previously analysed in the field study (Chapter 5). Similarly to the perspective adopted in Chapter 6, the analysis of Beta's risk management system is grounded in the theoretical perspectives of institutional and contingency theory, and refers to the concepts of organisational fields and actors, risk management institutions, rules and routines, institutionalisation, or contingency and institutional pressures. Similarly to the approach adopted in the analysis of the risk management systems of the Alpha airlines, the analysis conducted throughout this chapter has both an exploratory and explanatory character, and addresses both the "how" and "why" questions regarding Beta's design choice of the risk management system. This case study explores the integral components of Beta's risk management system, explains the rationales underlying its configuration from both institutional and contingency theory perspectives, and explains the logics and perceptions of organisational actors regarding the risk management function.

Data for this case study was collected via multiple means, while the study relied in particular on the data from 12 semi-structured interviews conducted with Beta's representatives, mainly from the fields of finance, internal audit, safety, IT, and

production (see Table 4-2 in Chapter 4 for the interviewees' list). Internal documentation was analysed, such as the framework of policies and procedures regulating performance of the risk management function in Beta or internal audit reports. In addition, the researcher reviewed the risk management tools employed in Beta, such as risk maps and matrices. Publicly available information on Beta was finally examined in order to gain a better understanding of the airline, and in order to contrast the researcher's conclusions of Beta's risk management rules and routines with the information reported to investors and to the general public.

The analysis presented in this chapter is organised into four sections. The section to follow provides a brief overview of the case under study and outlines the nomenclature to be used throughout this chapter. The third section presents the risk management system of Beta; risk management governance structures, rules, routines, and tools are reviewed, and both interviewees' and researcher's views are reflected regarding the maturity and functionality of Beta's risk management system. The final section summarises the major findings from the case study.

7.2 Outline of the case study

Beta is a low-cost carrier which forms part of an international group of airlines. Terminology used across this chapter distinguishes between 'Beta', the single airline forming the unit of analysis for this study, and the 'Beta group' or 'the group' referring to all airlines forming Beta's respective group including the holding company. Due to a competitive business model and its cost base, Beta has consistently increased its capacity while remaining profitable during recent years, which can be considered a rather rare occurrence in the context of the challenging macroeconomic environment of the airline industry and its persistently low profitability (IATA, 2013; see Chapter 1, section 1.4). Beta's business model stands on high utilisation of a single-aircraft fleet, high crew productivity, and short turnarounds. Beta operates several international bases, providing services primarily across Africa and Europe. Despite operating as a group subsidiary, Beta's risk management system, at the time the empirical study of the airline was conducted (April-May 2014), had not been aligned with the ERM framework officially implemented in other airlines of Beta's respective group. This was reported to be mainly due to the size of Beta's operations and the consequent level of materiality of

the airline's exposures, which are considered low in the context of the group. As further explained throughout this chapter, despite operating a non-consolidated risk management system, the rules and routines constituting Beta's risk management system have been, to a certain extent, affected by the airline's affiliation to the group.

Following the rationale presented in the case study of the Alpha airlines (Chapter 6), the description of Beta and its respective group has been purposely limited in order to safeguard their confidentiality, as stipulated in a formal agreement between Beta and the researcher. Disclosure of more detailed information on Beta's operations or societary structure might facilitate uncovering the identity of Beta or its respective group, and thus compromise the confidentiality and anonymity undertakings. For the same reason, titles of some of the positions held by the interviewees from Beta, due to their specificity, were purposely alternated in such a way that they describe in general terms the functions performed by the individuals while masking their original titles, thus preventing the readers of this thesis from discovering the identities of Beta's representatives and the airline itself.

7.3 Risk management model

Governance guidelines issued by both "statutory and professional bodies" (as defined by Crawford and Stein, 2004, p. 498) reflect the view that risk management, internal control, and corporate governance functions are inter-related, while the boundaries between these functions appear blurred (Woods, 2009). Organisations may assign diverse roles to the risk management system, focused on facilitating decision-making processes, internal auditing, or compliance to corporate governance codes; these roles, however, are not exclusive (Arena et al., 2011). According to Arena et al. (2011), the importance assigned by organisations to the particular roles of the risk management function determines where organisations are placed on a continuum between compliance-driven and performance-driven approaches. The risk management approach adopted in Beta appears to integrate the three risk management objectives discussed by Arena et al. (2011) through a combination of both formal and informal risk management institutions; while formal institutions are grounded in procedures, manuals and rules, informal institutions such as norms, routines, or political processes have a rule-like status (North, 1990). Although the formal risk management rules developed in Beta

suggest the airline's risk management approach supports principally the internal audit and compliance to corporate governance codes functions, as is further demonstrated in section 7.3.2, a combination of formal and informal risk management routines supports informed, risk-based decision making in the airline. The risk management approach of Beta, assigning different roles and uses to the risk management function, is reflected in the formalisation of risk management rules and routines, assignment of responsibilities and accountabilities for risk management throughout the airline, and the risk management processes and tools described throughout this section.

Risk management and internal control functions are often aligned in organisations in response to regulatory requirements which impose an increasing amount of responsibility on boards of directors in terms of creating strong corporate governance structures and communicating reliable data on company performance (Miccolis et al., 2001; Spira and Page, 2003). The integration of the internal control and risk management systems in Beta is directed at providing assurance of conformity of the airline's financial statements to the regulatory framework. As a subsidiary of a listed company, Beta is required to comply with the requirements of the Internal Control over Financial Reporting (ICFR) framework and risk reporting requirements relevant to its host country. This was clearly stated by the HIA-Beta, who reported:

“Our risk management approach is to a large extent focused on compliance with the requirements of the ICFR framework” (HIA-Beta).

Thus, Beta's risk management system includes a series of mechanisms for timely identification and management of risks related to generating viable financial information. HIA-Beta continued:

“We have got many procedures in place which guarantee that we properly identify risks related to the quality of financial information and reporting and that our controls are effective” (HIA-Beta).

Internal Audit's relation to the risk management function in organisations is often defined as supportive, in that internal auditing should ensure the effectiveness of risk management processes (Fraser and Henry, 2007). The outputs of the risk management function are often capitalised on in designing internal audit plans (Arena and Azzone, 2007). As is explained in more detail in the following sections of this chapter, in Beta the risk management function is closely integrated with the Internal Audit function,

while the latter may appear to dominate in this relationship considering a high level of formalisation of the internal audit processes versus a low level of formalisation of risk management processes in several areas of the airline's operations. However, upon a closer analysis of both formalised and informal risk management routines it becomes clear that risk management is dedicated significant attention in Beta. HIA-Beta commented on the coupling of the risk management and internal audit functions performed in the organisation:

“Taking into consideration that the terminology is the same, and the underlying concepts are similar, the line dividing the fields of competences of risk management and internal audit is not clear. However, risk management and internal audit should be regarded as independent functions, and so they are in [Beta]. Internal audit reviews the efficiency of the controls we have in place, while risk management covers a broader range of activities... Internal audit provides support to the management of [Beta]” (HIA-Beta).

As previously mentioned, Beta's governance, risk and compliance framework (GRC) is characterised by a high level of formalisation of the internal audit and internal control functions; governance structures and policies and procedures have been put in place in support of these functions. IA/1-Beta explained:

“When it comes to auditing our operations and verifying the controls, we put a lot of interest into having these processes well regulated and documented” (IA/1-Beta).

IA/1-Beta went on to say:

“The role of internal audit is clearly defined in [Beta]... We have regulations in place which lay out our processes and responsibilities” (IA/1-Beta).

Contrarily, based on an analysis of risk management routines performed in selected functional departments, and based on an analysis of the airline's internal documentation, the researcher concluded that the level of formalisation of risk management routines varies significantly depending on the type of exposure they are targeted at. By way of an example, financial or operational safety risks were evidenced to be managed through highly formalised routines. Notwithstanding, other types of risks such as IT risks or, to a certain extent, market risks, are managed rather informally. ITD-Beta noted:

“We are trying to avoid excessive formalism in our risk management initiatives. I don't think regulating all aspects of your operations brings value at the end of the day” (ITD-Beta).

Similarly, DTR-Beta stated:

“Risk management does not constitute unnecessary bureaucracy” (DTR-Beta).

This notion was also supported by DC-Beta in a discussion on Beta’s risk management system versus the systems implemented in other airlines from its respective group:

“Some airlines have implemented more structured systems, but it all depends on the resources you have and that you want to put into this. If we implemented a system that works for us and at a lower cost, as long as it works it means we are more efficient” (DC-Beta).

CFO-Beta was convinced of the functionality of Beta’s current approach:

“What we have is a healthy common sense approach to risk management, and I think it works quite well” (CFO-Beta).

Although in the interviews with Beta’s representatives such as HSS-Beta, FSM-Beta, IA/2-Beta, or MM-Beta, the researcher evidenced a high level of overall satisfaction with the risk management system, some of the interviewees, among others FF-Beta, SF-Beta, and DC-Beta, voiced the need for the introduction of a more structured approach.

Many scholars argue that the risk management function should be ideally integrated with organisational strategic and business planning processes, in order to effectively manage strategic uncertainties and facilitate informed decision-making (e.g. Beasley et al., 2006; White, 2004; Beasley and Frigo, 2007). The risk management system of Beta, although regarded to a large extent as informal in that the existing formal protocols for risk identification, management, and reporting do not cover all types of exposures, was evidenced to extend beyond the compliance arena, and to provide significant input into decision-making processes at corporate, strategic, and operational levels in the airline. Risks in Beta are conceptualised in different terms; for example, as non-compliance with regulatory requirements, as non-conformity with manuals, as not-reaching performance standards, or as events causing adverse deviation from strategic and business objectives. Thus, as will be further discussed throughout this chapter, Beta’s risk portfolio considers a wide array of risks ranging from risks threatening reliability of financial information, to enterprise-wide risks such as safety, financial, market risks, and others.

7.3.1 Risk management governance structures

The multi-functionality of Beta's risk management approach determines the division of responsibilities and accountabilities across the airline's organisational hierarchy. As noted by HIA-Beta:

"As you will see, we do not give priority in our formal GRC framework to risk management. We don't even have a specific risk management unit in the organisation" (HIA-Beta).

However, HIA-Beta further explained:

"But it does not mean the function doesn't exist, it's very complex indeed, although the processes are often more informal" (HIA-Beta).

The ultimate responsibility for risk management is assigned to the internal audit department, which reports to the Audit and Compliance Commission of the Beta holding company and to Beta's management team. The internal audit department collaborates with different functions from across the airline in collecting and assessing data of both risks related to financial reporting and other enterprise-wide exposures (except for management of hazard and safety risks, see section 7.3.2). The internal audit department maintains a central risk register and, based on the data included therein, risk maps and risk reports are generated for further discussion among Beta's management team and for risks reviews at the group level. HIA-Beta insisted on the independency of the internal audit function:

"Internal Audit assesses the controls designed to manage different risks... We operate independently so we can properly assess the effectiveness and adequacy of controls" (HIA-Beta).

HIA-Beta also reported:

"Independent audits are indispensable because the executives have a natural tendency to perceive the controls they have designed as effective" (HIA-Beta).

As explained by HIA-Beta, by integrating data on risk controls from across the organisation and reporting on them to relevant levels in the organisation, the internal audit department facilitates discussion on risks and promotes understanding of the airline's overall risk profile. However, the close involvement of the internal auditors in risk management processes may raise questions regarding their independence and providing unbiased assurance of functionality of the risk management system.

Consistent with the above arguments, DC-Beta noted that a cross-functional advisory risk unit should be appointed in Beta in order to, among other things, better integrate risk-related information from across the company; the interviewee stressed:

“It would be easier to get a global perspective of our risks” (DC-Beta).

Contrarily, CFO-Beta and HIA-Beta, with regard in particular to the integrated view of enterprise-wide risks, were of the opinion that the existing risk governance structure does allow for incorporating enterprise-wide risk information into key management decisions; as stated:

“[In Internal Audit] we integrate information on risks from across the company... It is clearly visible on risk maps” (HIA-Beta).

However, as will be further elaborated on in the forthcoming section, it can be doubted whether Beta’s management effectively relies on the risk maps in the discussion on risks and strategies. CFO-Beta would rather emphasise informal risk management routines institutionalised in Beta, which facilitate risk-based strategy setting and decision-making in the airline. By way of an example, CFO-Beta explained:

“In preparation of business plans we need to cooperate with different departments to see their projections and concerns and to consider them in key decisions... So we know what the key risks are because the departments talk amongst each other... We have a working environment in which information sharing is very open” (CFO-Beta).

In the discussion with other managers such as DC-Beta or DTR-Beta, the existence of risk maps compiled by internal audit was acknowledged, yet the researcher did not find clear evidence supporting their extensive use in organisational risk management routines.

Although lacking formal appointments, the empirical study evidenced that responsibilities and accountabilities for the risk management function are cascaded through Beta. Multiple actors are involved in the risk management processes across the organisation, although few policies and procedures exist in Beta which formally lay out the risk governance structure, in particular at the lower management levels. Some functional areas within Beta have dedicated risk management units; by way of an example, the Financial Risk Committee oversees Beta’s financial exposures and the Safety Commission delegated by Beta’s board of directors oversees the management of

safety and hazard risks. Managers of other functional areas were reported to act informally as local risk experts within their respective areas of responsibility.

7.3.2 Risk management technologies

As previously referred to in this thesis (Chapter 6, section 6.4.2) and as defined in Arena et al. (2010), the concept of ‘risk technologies’ denotes a complex set of rules, routines and tools enrolled in the management of risks. The following analysis examines Beta’s risk management technologies, considering both formal and informal risk management rules and routines; in addition, it also reflects on the extent to which formal risk management policies and procedures are translated into the practices enacted by individual actors within the organisation. The following analysis of the major pillars of Beta’s risk management model demonstrates how the organisation’s rules, routines, and tools are designed to fit with the diverse roles assigned to the risk management function in Beta, which, as previously discussed, provide support in decision-making processes, internal audit processes, and in compliance with corporate governance codes. The analysis is conducted from a subsidiary perspective, where risk management technologies are, to a certain extent, either formally imposed or recommended by Beta’s holding company. The holding company indicates a series of group-level risks which need to be regularly considered for plausibility at the subsidiary level, apart from the formal requirement of considering the risks under the ICFR framework. In multiple ways the risk appetite of the holding company is transferred to Beta by requiring conformance to policies and decisions generated at the group level, thereby affecting the risk management technologies implemented in Beta.

Management of enterprise-wide risks

Several formalised and non-formalised risk management processes are simultaneously conducted in Beta, which consist of successive steps of identification, assessment, management, monitoring, and reporting of risks. Formalised risk management processes of financial or operational safety risks coexist with less formal or informal routines for management of other types of risks. As previously indicated, the internal audit department coordinates the enterprise-wide risk management efforts. Internal audit compiles catalogues of enterprise-wide risks, which are identified and managed with different levels of formalisation in their corresponding functional departments. Apart

from risks which are relevant specifically to Beta's operations, Beta is requested to additionally assess the applicability of several group-level risks at the subsidiary-level.

As explained by HIA-Beta:

“We are requested to analyse the risks applicable to other subsidiaries or to the holding company, and assess their plausibility... For example, exposures related to fuel prices and transferring it to ticket prices tend to be shared at the group level... Although pension plan risks are only relevant to [group subsidiary], due to their importance and materiality they are discussed at the group level... Aircraft financing is important to the group; however, due to our fleet structure we do not consider it a key risk, our financing in this area is well managed”(HIA-Beta).

Risks applicable to Beta are analysed in terms of their materiality and, if assessed important enough, they are incorporated into the consolidated risk catalogue at the group level. However, due to the size of Beta's operations, the materiality of its risks is considered very low at the group level, and thus they are rarely incorporated into the group's risk management system. Beta's risk management process is additionally conditioned by the group in that, apart from conducting internal risk assessments in the airline, decisions of Beta's management team in several areas require approval at the group level. By way of an example, investment expenditures of above a certain level need to be reported and approved at the holding company level; fleet capacity decisions, among others, once analysed within a wider business plan context at the subsidiary level, require approval of the holding company. Similarly, financial risk management policies are imposed by the holding company, although the subsidiary is provided with a certain margin of flexibility.

Risks are assessed by using an impact and probability matrix. HIA-Beta explained:

“We evaluate risks in these two dimensions based on our subjective perceptions, we do not conduct any detailed risk modelling” (HIA-Beta).

Risk assessment methodology used in Beta is different from the approach employed in other group companies. Risks in other subsidiaries of the group and in the Beta holding company are assessed at their residual levels, in terms of their respective levels of probability of occurrence. However, risk assessment in Beta commences at a previous stage; it considers inherent risks and the effectiveness of their controls to arrive at

residual risks and determine their respective levels of probability of occurrence. HIA-Beta explained:

“It’s very difficult to evaluate the inherent risks and their corresponding controls, but you need to undertake this difficult task of judgment, a common sense analysis, or however you want to call it, in order to be able to draw conclusions on risks at the residual level”(HIA-Beta).

HIA-Beta further expressed his view:

“I personally think that by assessing residual risks, without having previously conducted any analysis at the inherent level, and without having evaluated the effectiveness of their controls, you ignore the most complex and most useful part of risk analysis” (HIA-Beta).

Both qualitative and quantitative measures are used. Qualitative evaluations are often applied to emerging or strategic risks where little specific information is available. Quantitative risk assessments express the potential monetary impact on Beta’s operating results and form the basis for evaluating potential deviations from business plans. Subsequently, risk responses and controls are deployed for particular risks. Internal audit periodically monitors the risk management system in terms of adequacy and effectiveness of the controls in place. As previously indicated, the findings of internal audits are reported to Beta’s board of directors, and to the group’s Audit and Compliance Commission. Additionally, risk owners are provided advice on potential areas for improvement of risk controls.

As evidenced through interviews with airline representatives, there are several parallel risk management processes taking place simultaneously across the airline in different functional departments, featuring different levels of formalisation. For example, and as previously mentioned, the Internal Audit department deals with risks related to financial reporting in addition to conducting reviews of risk controls and compiling enterprise-wide risk data; the legal department manages compliance risks; the financial department supervises financial exposures; the IT department manages IT risks; the broadly defined production departments manage operational and safety risks; simultaneously there are transversal processes for dealing with strategic or market risks. Although apart from the ICFR, safety, and financial risks there are no formal specifications regarding the frequency of updating risk portfolios, the majority of the interviewed representatives of different departments across the airline claimed performing risk reviews on a regular

basis; however, the timeframe for regular reviews was defined differently by the interviewees. By way of another example, the management team holds regular weekly “rollings” during which business projections are contrasted with reality, the strategy is adjusted, and new risks are considered. CFO-Beta pointed to the reviews of business and strategic plans being conducted at regular intervals:

“Since we update our business plans regularly every few weeks, we also consider the related risks and adjust our operations accordingly” (CFO-Beta).

CFO-Beta also noted:

“We are requested by the holding company to regularly review the strategic risks of the Group to see if they are applicable to us, and also strategic risks at the local level” (CFO-Beta).

The risk management team that oversees financial risks conducts risk and strategy reviews on a weekly basis; as explained by DTR-Beta:

“We [the Financial Committee] meet once a week to discuss the evolution of the market and adjust our hedging positions” (DTR-Beta).

IT risks are reviewed on a monthly basis; ITD-Beta explained:

“I meet with our Internal Auditors once a month to discuss flaws in IT controls and to report on what we have done with previously identified problems” (ITD-Beta).

Similarly, HSS-Beta, MM-Beta, IA/2-Beta, and FSM-Beta suggested that other functional departments also revise their relevant risks with relative consistency, either through periodical audits or implicitly through examining conformity with operational manuals developed for their respective functions. However, such reviews appear to be conducted as informal routines in the organisation. IA/2-Beta commented as follows regarding the risk management responsibilities of various employee groups across the organisation:

“Risk management is implicit in multiple operating manuals regulating our day-to-day operations... It is regarded as a responsibility of all our employees... It is implied in performance standards we have pre-defined at the operational level” (IA/2-Beta).

The implicit nature of risk management exercised through adherence to performance standards regulating airline operations was also acknowledged by MM-Beta:

“We have very detailed instructions on how to do our job [aircraft maintenance]; everything is explained in guidelines and also during work training sessions we are

advised on what the consequences may be if we do not conform to the instructions... So we know what the risks are, and we manage them by doing a good job and following the manuals” (MM-Beta).

This was also confirmed by the Flight Safety Manager (FSM-Beta):

“In the production part [departments] we move people from point A to B in the safest manner possible, so our operations are very regulated... There are many industry regulations, and also internal regulations that we need to comply with; everything is described in guidebooks and manuals... I think people are very much aware of the risks of not following, for example, maintenance manuals, although culture is a different thing; it really affects how much attention people pay to obeying the instructions” (FSM-Beta).

Thus, risk management can be considered an integral part of the responsibilities of airline members at the operational level; risk management, performance management, and compliance with operating standards and manuals seem to go hand in hand.

Although risks seem to be managed in silos at the operational level, according to HIA-Beta, they are later coordinated and integrated within the internal audit function. The internal audit conducts periodical reviews of risks, manages a central risk catalogue of both the risks relevant to reliability of financial reporting and other enterprise-wide risks, and generates risk maps gathering enterprise-wide exposures. During site visits the researcher reviewed the tools that operationally support risk management processes in Beta: the risk registers and risk maps. Separate risk registers are compiled in particular departments by using simple spread-sheets, from which the most plausible risks are later included in the general risk register managed by the internal audit department. The risk registers compile data on the identified risks, their controls and risk owners. Risk maps synthesise risks with the highest materiality levels, and are presented to the group’s Audit and Compliance Commission. The airline is planning to implement centralised software that would operationally support risk management processes by, for example, collecting more detailed data on the evolution of risks in the past and on the forecasted exposures.

As previously indicated, a discrepancy was noticed in the accounts of HIA-Beta regarding the reliance on risk maps as a tool facilitating an integrated view of risks and employed in the discussions of the airline’s senior management, and the accounts of the

latter. In the context of limited policies and procedures regulating risk reporting across the airline, the management team would emphasise rather integrating information on enterprise-wide exposures via informal routines. By way of an example, officers HIA-Beta, CFO-Beta, DTR-Beta, and DC-Beta reported on informal cooperation between departments in preparation of business plans and a joint review of risks. Furthermore, the empirical study evidenced that the ownership of risks, as specified in the risk registers, is formalised and executed in organisational routines solely in selected pillars of the risk management model, in particular with regard to the ICFR, safety, and financial risks. Review of the corporate risk maps compiled by internal audit and the posterior consultations with the management team led the researcher to conclude on a loose link between risk ownership assigned to selected types of risks, and a reflection of such ownership in organisational routines. By way of an example, despite assigning ownership for particular strategic risks to selected members of the management team, there seemed to be no formal follow-ups in this regard; strategic risks would be discussed, as previously explained, on a regular basis, yet the findings of such discussions would not be regularly documented in the risk registers.

Despite only a moderate level of formalisation of organisational risk management rules and routines, which also varies across departments, risk management was reported to be integrated within relevant managerial processes in Beta such as strategic and business planning. As stated above, such integration was reported possible owing to the cooperation of various functions within the airline and sharing of risk information. In the development of strategic and business plans, the management team considers potential changes in major macroeconomic variables or operational disruptions, and makes decisions based on its resilience to accommodate the possible negative implications of alternative scenarios. However, the managers do not use sophisticated risk modelling techniques or automated frameworks as described in the case of Alpha airlines in the previous chapter; the analyses are rather unstructured and CFO-Beta would describe them as “*a common sense approach*”. Strategic plans of Beta are reviewed on a quarterly basis, in order to consider changes in the airline’s wider operating environment. Risk management is implicit within the strategic reviews; strategic options are assessed with consideration of their related risks.

CFO-Beta exemplified the strategic network review process:

“In the airline industry we have the advantage of adjusting our strategic choices fairly easily. Our assets are mobile, so we can allocate them where we think there is major potential to generate revenue” (CFO-Beta).

CFO-Beta further explained:

“We tend to assume a three-year maturity period for new routes and if, after that period revenues from the routes do not match the projections, we consider moving the assets to serve different, more profitable routes... We analyse the options we have in terms of revenue generating potential connections, the cost structure, and the risks we may run into in general” (CFO-Beta).

Development of strategic and business plans is grounded in a risk analysis of alternative options considering, for example, volatile macroeconomic conditions, fluctuating demand, and the resultant capacity risks. Demand forecasts underlie the development of strategic and business plans and decisions on capacity requirements. FF-Beta highlighted the importance of making capacity-related decisions in a broader context, and classified fleet capacity risks among priority concerns of airline organisations:

“Many airlines have gone bankrupt because they failed to properly manage their capacity risks” (FF-Beta).

Beta manages the fleet capacity risks through combining asset acquisitions with medium-term leases, which provides the airline with the flexibility to temporarily downsize operations when demand falls.

In the development of business plans special attention is dedicated to fuel price and exchange rate fluctuations; business plan sensitivity analyses are conducted in order to assess the airline’s flexibility to pass cost increases onto customers or adjust the cost structure, and to suggest potential effects of particular scenarios, if materialised, on the airline’s cash flow results. CFO-Beta pointed out:

“Price elasticity of demand is limited, so we also need to be able to respond to unfavourable business conditions by adjusting our cost structure... We saw a source of our competitive advantage in introducing a high flexibility into our cost structure” (CFO-Beta).

In line with this rationale, certain positions in airline cost structure which are typically associated with fixed costs can be regarded as semi-fixed costs in the case of Beta. This has been possible due to contracting part of the cabin crew staff with temporary

contracts and, as previously indicated, opting for aircraft leases versus aircraft ownership; individual aircraft leases expire gradually year by year, which allows Beta to effectively manage the capacity risk and downsize its operations when necessary due to lower demand. CFO-Beta noted:

“It’s very easy to grow; on the contrary, managing downturns is a real challenge. You have to know how to pass costs to your customers and how to cut your costs. And this is what we evaluate in sensitivity analyses of our business plans” (CFO-Beta).

CFO-Beta continued:

“When you prepare business plans and consider possible future scenarios, it’s all about knowing the flexibility you have in your costs... So we cooperate with different departments to see how much cost we can pass on to customers, how much we can reduce our costs, but it’s all pretty informal. You just talk to the marketing people and say ‘[name], no more posters this month [laughter]... Luckily we haven’t had to face this kind of situation yet, but you have to be prepared for when it happens” (CFO-Beta).

Although management of certain types of corporate risks features a relatively low level of formalisation, versus, as previously discussed, formalised management of financial, safety, or ICFR risks as discussed in the following paragraphs, the risk management routines enacted in Beta support strategic and operational decision-making, while they are integrated within strategy and business planning processes. Therefore, despite moderate formalisation of risk management rules and routines, the risk management function in Beta is implicitly integrated within performance management.

Management of the ICFR risks

In terms of risks related to the reliability of financial reporting, as previously indicated, formal rules regulate their risk management processes. Six key processes were identified as having a high potential impact on Beta’s financial reports such as sales, payroll, fuel purchasing, IT controls, entity-level controls, and closure of the financial statements. Risks relevant to these processes are identified and reflected in a risk map which serves as a baseline for conducting regular audits.

As explained by HIA-Beta:

“By delegation of [the group’s] Audit and Compliance Commission, [Beta’s] internal audit department reviews the effectiveness of controls in processes which affect the quality of financial information” (HIA-Beta).

HIA-Beta further explained:

“For example, within the [relevant ICFR framework] sales processes are analysed for their related risks strictly from the financial control perspective. Ownership of the identified risks is not assigned to the Commercial Director, but rather to the Financial Director... There are also sub-owners assigned to particular processes or risks, such as Head of the Accounting Department, who is responsible for ensuring that sales are properly registered in the accounting systems. The Commercial Director would only be involved in this formal process if the controls ensuring reliability of sales data were to be designed and executed from his area... Then Internal Audit reviews the controls” (HIA-Beta).

In the context of the different possible modalities of coupling of organisational rules and routines previously indicated, officers IA/1-Beta and IA/2-Beta were both of the opinion that the risk management routines adhere to the formalised statements of procedures in management of the ICFR-related risks.

Financial Risk Management

The importance of managing financial risks was recognised in Beta through constitution of formal governance structures dedicated specifically to this function. The Treasury and Risk Management responsibilities are merged into one executive position of DTR-Beta, who reports directly to CFO-Beta and liaises with the Financial Risk Committees both at the subsidiary and at the holding company level. Beta’s local Financial Risk Committee meets on a weekly basis, and its members additionally periodically participate in meetings of an equivalent committee celebrated at the group level, where the overall financial policy for the group is designed. The group dictates guidelines for financial risk management policies to be implemented in Beta, regarding the hedging strategies, liquidity requirements, and counterparty ratings in financial transactions.

As illustrated by DTR-Beta:

“The management of financial risks is given a lot of attention, it’s very formalised... We have policies for hedging... I need to maintain cash levels according to what the policies say...” (DTR-Beta).

The group’s policies indicate the ratios of overall fuel and currency needs in different time horizons which need to be covered with hedges, and price targets which, when met by market conditions, allow for executing additional trades. Based on these guidelines, and with a pre-defined flexibility range expressed in percentage variations, Beta’s Financial Risk Committee executes the hedges. However, DTR-Beta noted:

“If we find it more beneficial to act contrary to the group policies, we explain our rationale to the [group’s] Financial Risk Committee, which have so far always been approved, and so we manage the financial risks according to what we think is best for [Beta]” (DTR-Beta).

On multiple occasions, in order to negotiate the most favourable conditions with hedging counterparties, the trades are executed jointly with other airlines from the group.

With reference to counterparty risks, group policies limit the maximum portion of cash Beta is authorised to invest with a single financial entity, for the objective is to significantly diversify short-term financial investments between various institutions and countries. Additionally, minimum rating requirements are established for Beta’s financial counterparties, which delimit the pool of admissible counterparties. Finally, considering Beta’s fleet structure with a significant ratio of leased assets and with a majority of leases closed on a fixed rate, interest rate risks are considered less relevant compared to other financial exposures.

Safety Risk Management

The safety risk management framework developed in Beta incorporates the ERM principles in a sense that it fosters a proactive risk management culture throughout the production departments of the airline. As indicated on multiple occasions throughout this thesis, airlines’ operations are delineated and coordinated by various regulative frameworks. Such frameworks obligate airlines to adopt organisational structures for safety management and development of safety management systems (SMS). However,

the formal requirement of developing SMS is interpreted diversely among airlines (Wittmer and Drax, 2014); different rules and routines are created in individual organisations. As explained by HSS-Beta:

“When the guidelines say that SMS should be integrated throughout the organisation, it doesn’t specify how... you interpret it the way it works for you” (HSS-Beta).

Beta incorporated the four pillars of the SMS framework (safety policy and objectives, safety risk management, safety assurance, and safety promotion, see Chapter 2, section 2.3.1 and 2.3.1.2) with the underlying aim of creating a closed-loop risk management system which reaches beyond the compliance function and promotes proactive safety risk management culture. HSS-Beta reflected on the evolutionary nature of the development of the SMS framework:

“SMS would focus on accident prevention and flight safety programmes... Safety investigators worked in a ‘bunker’; they were receiving data, analysing them, publishing documents, and nobody would care if they were ever used, it was an open loop. They [safety investigators] would find root causes for incidents and accidents, issue recommendations to post holders, and there would be no follow up, no mandatory implementation, no checks in the organisation. It was all very reactive, but we have been working hard over the years to change the approach towards safety management” (HSS-Beta).

The analysis of Beta’s SMS framework suggests the organisational safety structures were not developed ceremonially in pursuit of legitimacy. HSS-Beta reported on the rules and routines institutionalised in the airline which promote a proactive safety risk management culture:

“For every safety accident there tends to be several previous incidents that warn you. Of course there may be some black swan events which don’t give previous warnings, but they are rare. Normally you get many warnings that something is going on... So we encourage people to report on the incidents, because it allows us to trigger investigations. We promote rather than punish the reporting... If we implement changes based on a reported incident root cause or a trend, we notify the person who made it visible, we ask them to write about it in our bulletin, we follow up with that person... So the most important thing is to have people who are ready to

recognise the red flags and advise us on them. You need these people to keep you in the loop” (HSS-Beta).

The airline shifted from reactive to preventive risk assessment and safety barriers creation. Preventive risk analysis is performed prior to entering any new route by the airline. HSS-Beta reported:

“We don’t wait for something to happen to put safety barriers in place... We start our risk analysis before opening a new route. Before selling the tickets we know we are going to fly to [destination], so we start scanning the organisation – are we ready to start flying there? What are the possible hazards on the route? Maybe we need to reinforce the training because of certain factors, maybe not everybody can fly there?” (HSS-Beta).

HSS-Beta explained how different internal and external sources of data are fed to safety risk management processes:

“You cannot base your conclusions solely on one type of data. It may be biased, or it may lead to a reactive approach” (HSS-Beta).

The safety risk management system is fed with data from both the inside and the outside of the organisation; examples of internal data sources are past events, trends, or data on changes in the organisation in terms of technology, procedures, and training, while external data can be sourced from reports on safety accidents or incidents released from other airlines or regulative bodies. FSM-Beta additionally stressed the role of inter-departmental information sharing:

“You need to talk to people; you need to know what is going on in the organisation, what are the plans. You need to train people to detect changes in the organisation and assess them in terms of risks. And you need to train the directors so that they understand that your recommendations need to be taken seriously” (FSM-Beta).

Beta’s safety risk management framework is audited internally by the compliance function, which ensures its conformity with regulatory standards, and externally by auditors from regulative bodies. The framework is not revised by the Internal Audit department of Beta, while only major safety threats appear on corporate risk maps compiled by HIA-Beta. Beta’s safety risk management framework appears to operate with a high degree of independence from the remaining pillars of the airline’s risk management system. HSS-Beta reported that he found this division appropriate and that

he did not find it potentially beneficial to integrate safety risk management more closely with other corporate risk management processes. However, this rationale seems to be in contrast with the opinion of HIA-Beta, who insisted on the need for further alignment of different risk management processes across the airline, as expressed:

“When you use the same methodology for assessing and reporting different types of risks, it’s easier to compare their materiality... You know, you are comparing apples to apples and bananas to bananas, it’s easier to get a global view of the materiality of all your exposures - financial, safety, compliance, and all the others” (HIA-Beta).

Beta’s safety risk management framework differs from the frameworks incorporated in other airlines of the group. HSS-Beta stressed the need to align organisational safety management rules and routines to particular needs of the organisation, which seemed to be a premise against future standardisation of such frameworks across the group.

Furthermore, HSS-Beta viewed the safety risk management system as very advanced:

“I cooperated in a project with [names of airlines] and I compared our framework with what they had; I was surprised that big companies still work with open-loop systems... Our system is much more advanced” (HSS-Beta).

7.3.3 Functionality of Beta’s risk management system

The assessment of functionality of Beta’s risk management system, as reflected in the analysis of risk management rules, routines, and institutions conducted throughout this chapter, was based on selected criteria such as the comprehensiveness of the risk portfolio, the level of embeddedness of the risk management function across the organisation, the level of integration of risk management routines enacted across different departments and at different organisational levels, and the alignment of the risk management and strategic management functions. These assessment criteria were, as discussed in Chapter 5, inspired mainly by the work of Arena et al. (2011).

The portfolio of risks managed in Beta through both formal and informal routines can be regarded as comprehensive. By analysing the documentary evidence in the form of the risk maps and general risk register compiled at the corporate level, and the risk registers held at lower levels in the organisation, the researcher observed a wide range of risks being considered. The risks maps included both risks managed through formalised processes, such as risks related to reliability of the financial statements,

safety and financial risks, and a variety of corporate risks aggregated from risk registers held across different organisational departments. Additionally, the airline's representatives, especially from middle and lower management levels, emphasised that risks are informally and implicitly managed in Beta through adherence to operational manuals and standards, although some exposures may fail to be reflected in the risk registers.

The risk management function presents a moderately high level of embeddedness in the context of different organisational levels and functions in Beta embracing risk management through either formal or informal institutions. As has been explained throughout this chapter, risk governance structures have been established in Beta in order to support specific functions in the airline such as management of financial, safety, or ICFR risks. Management of other types of corporate exposures is conducted in a less structured manner, although supervised by the Internal Audit department. The aforementioned discussion on the alignment of strategic planning and risk management pointed to the involvement of Beta's top management in identification and management of strategic and emerging risks. At the operational level, risk management was argued to be embedded informally in organisational culture through adherence to operational manuals and performance standards, and through periodical audits of business processes.

An integrated view of risks is achieved at the corporate level in Beta mainly via inter-departmental collaboration in preparation of corporate and business strategies and the related risk analysis. Representatives of different functions, for example finance, network planning, or business development, liaise and share risk information which forms the grounds for risk-based decision making. Additionally, risk management is centralised under the Internal Audit department, which collects and integrates enterprise-wide data on the majority of risks for their further presentation mainly to the holding company. At the operational level, risks are managed in silos within different organisational functions; integration of enterprise-wide risk data is achieved only after it is escalated to the upper levels of the organisation. Additionally, as argued in section 7.3.2 of this chapter, the risk management and the strategic management functions are aligned in Beta through informal routines of periodical risk and strategy reviews which

integrate relevant data on Beta's risks; different strategic options are assessed, taking into account their related risks.

The risk management system was assessed positively by the majority of the interviewees, while at the same time, and in line with the researcher's opinion, the interviewees recognised that the risk management framework of Beta holds significant potential for improvement. CFO-Beta commented on the changes to be introduced in the airline's risk management model:

"We are moving towards a more sophisticated model, because for now what we have works well for us, but it's pretty informal... We do analyse risks in major strategic decisions, but it's all very casual right now, there is definitely room for improvement" (CFO-Beta).

HIA-Beta similarly emphasised the transitional character of Beta's risk management system:

"We are in the process of transition. What we have is not definite yet, we are constantly trying to improve our practices..." (HIA-Beta).

When explicitly asked about the future official adoption of ERM, CFO-Beta and HIA-Beta confirmed it should take place in the future. Based on interviewees' accounts the researcher concluded that the adoption decision is driven primarily by the pressures from Beta's respective group. In the discussion on the evolution of Beta's risk management system the interviewees focused on the flaws of the current risk management system and the changes to be introduced in the future, rather than suggesting legitimacy-driven adoption of ERM. HIA-Beta additionally commented on the validity of Beta's current risk management approach:

"Of course we are working on making our risk management function ever more comprehensive, especially now that we can talk to other companies [within the group] and see their solutions... but, for example, a highly formalised system is like a double-edged sword, it's not always good for you... You cannot just copy what other airlines have; you have to see what works for you. We are a smaller company, so we cannot just copy what [group airline] has" (HIA-Beta).

Evidence from officers ITD-Beta, DC-Beta, and IA/2-Beta suggests that, although generally considered as quite advanced and well fitted to the airline's needs, Beta's risk management system could be improved in several areas. ITD-Beta suggested that

specialised risk management software would support the routinisation and intra-institutionalisation of risk management practices:

“It would help us to better organise the risk management processes... It would be easier to collect, process and share information on risks” (ITD-Beta).

IA/2-Beta suggested extending the focus of the risk management system:

“We should focus more attention on other relevant types of risks, rather than just the hazard risks or safety risks... We don’t really have any incentives or any formal procedures for the managers to look at, let’s say, reputation risks. It doesn’t mean it’s not being done now, but it could be done in a better way” (IA/2-Beta).

However, interviews with the senior management of Beta suggested that important strategic and external risks are considered in the strategic planning process (see section 7.3.2), although there are no formal procedures regulating this area. Finally, DC-Beta, who previously worked for a different airline with a well-implemented risk management system, commented on the need to institutionalise new risk management routines in Beta:

“It would help us if we held more regular reviews specifically to review the risk maps, rather than having ad-hoc meetings whenever something big is about to come up” (DC-Beta).

Furthermore, as previously specified (7.3), DC-Beta advocated the need to re-define the roles of internal audit and risk management in the organisation, and to introduce dedicated governance structures to facilitate deployment of the risk management function in the airline.

7.4 Conclusions and lessons learnt

The analysis presented in this chapter complemented the findings from Chapters 5 and 6, and added to the previous discussion on the heterogeneity of risk management approaches in the airline industry. The integral components of Beta’s risk management model were analysed, reflecting their fitting with institutional and technical demands of the airline’s intra- and extra-organisational environments. The analysis explained how the roots of Beta’s risk management approach lie in the corporate culture, business model, overall structure of the organisation, and its position within a broader organisational field of airlines. In this empirical study of Beta’s risk management system the researcher investigated the underlying context and rationalities, the risk

management technologies in use, the risk governance structures, and the organisational logics of risk experts involved in enterprise-wide risk management processes. The case study of Beta allowed the researcher to verify and extend the findings from the field study (Chapter 5) and to provide valuable lessons which can advance the risk management practice in airlines.

The case study of Beta demonstrated how risk management in airlines can have different roles and uses. The risk management approach employed in Beta was evidenced to serve different organisational purposes, for it falls under both the audit-compliance domain and the performance management domain. The outputs of the risk management processes are used in order to demonstrate compliance with corporate governance requirements; they are incorporated in internal audit plans and are considered in the preparation and execution of strategic and business plans.

The case study demonstrated how organisations can incorporate some of the main principles of ERM, or may undertake initiatives to improve the risk management function, without labelling their systems as 'ERM' in pursuit of external legitimacy. Despite lacking a complex risk architecture, and despite only limited formalisation of the overall risk management approach of Beta, this study demonstrated how the routines institutionalised across the airline allow for the management of important strategic risks and aligning risk management with the performance management function, which are considered important tenets of ERM. The airline seems to prioritise effectiveness of organisational risk management processes over creating bureaucratic trails which externally evidence the quality of management processes.

The case study of Beta provided evidence of a risk management framework with a moderate level of formalisation. Varying opinions have been documented among organisation members regarding the extent to which further formalisation of risk management rules and routines would be beneficial to the airline. The calls for increased formalisation of risk management routines in Beta, especially regarding identification and management of some corporate-level risks, were grounded in expectations of improved consistency and repeatability of the risk management processes, clarity in risk appetite and risk tolerances, and enabling a more comprehensive and integrated view of risks. However, some representatives of the

management team perceived the risk management 'status quo' as properly aligned to the airline's needs. Despite the informal nature of many of the risk management routines, the risk management function was often regarded to be well embedded in the day-to-day activities of airline management. Furthermore, high formalisation of rules, policies, procedures, and other control mechanisms was perceived as potentially dysfunctional, restricting informal interactions across the airline and hindering organisational agility in decision-making processes.

The case study of Beta demonstrated the importance of proper institutionalisation of organisational principles as reflected in the system of rules, in the logics of actors in the organisation and, consequently, in their enacted routines. It has been demonstrated in Beta that development of formal structures and procedures does not guarantee that organisation members will conform to them. This has been exemplified in the write-up of this case study with reference to assigning risk ownership over selected strategic risks, and the failure of risk owners to formally document their management. As explained by Oliver (1991), organisational actors evaluate the potential utility of conformity with the rules, and if they perceive that the objectives of the rules are in conflict with their perceptions of organisational interests, they may fail to comply with the rules.

Finally, the case study raised the issue of separating internal audit and risk management functions in organisations. Some interviewees suggested that the airline could benefit from an independent, dedicated, and, at an executive level, centralised risk management unit, rather than the internal audit department being involved both in deployment of the risk management function and in the assessment of its functionality. Further discussion on the findings from the case study of Beta, and reflections on the lessons learnt from this case, which laid the grounds for development of the ERM framework in the airline industry, are presented in the following chapter (Chapter 8).

Chapter 8

Discussion

8.1 Introduction

This research aims to investigate structures and practices of airline risk management systems in order to develop an enterprise-wide risk management framework in the airline industry. In order to achieve this aim, the researcher conducted an empirical study based on a sample of ten international airlines. Firstly, a field study was conducted, aimed at exploring the different designs of airline risk management systems and their technical and institutional determinants. Additionally, the field study examined the developments and shortcomings of airline risk management systems, and the degree of assimilation of ERM principles in the airlines forming the sample. Secondly, two case studies were conducted in order to examine in more detail risk management systems of selected airlines and the alignment of such systems with airlines' respective business contexts. Findings from the empirical research were based on multiple types of evidence. The analysis relied principally on interviews carried out with airline representatives who have wide knowledge of the risk management systems of their respective organisations, internal documentation evidencing risk management rules and routines, a review of risk management tools employed in the airlines, and a review of publicly available data on the airlines and their risk management approaches in particular.

The discussion conducted in this chapter combines the field study findings with a cross-case analysis of findings from the case studies. Furthermore, the discussion of the empirical research findings reflects on the theoretical framework developed for this study (see Chapter 3). Additionally, the discussion of the empirical findings is positioned within the context of previous studies which are relevant to risk management systems in general and ERM systems in particular. Due to limited availability of literature on the investigated subjects specifically related to the airline industry, the findings are contrasted with studies considering risk management systems in other industries.

The rest of this chapter is structured as follows: the second section presents an ERM framework developed on the basis of the findings from this research. In the context of the framework the researcher reflects on the designs of airline risk management and ERM systems, concludes on drivers of effective enterprise-wide risk management in airlines and, finally, under the tenets of structural contingency theory, discusses the need to align airline risk management systems to the requirements of their respective task and institutional environments. The third section reviews the technical and institutional determinants of airline risk management structures and practices and shows how the determinants cause homogeneity or diversity within airline risk management systems. The fourth section assesses maturity, roles and uses of airline risk management systems. The fifth section summarises conclusions from this chapter.

8.2 ERM framework in the airline industry

Based on the findings from the empirical study of airline risk management and ERM systems this study developed an enterprise-wide risk management framework in the airline industry. Findings from the empirical study, which were presented in Chapters 5, 6, and 7, helped to conceptualise integral components of ERM and identify drivers of effective risk management in airlines. The ERM framework is presented in figure 8-1 and comprises five principal components that support and sustain risk management throughout airlines: ERM process, ERM governance structures, airline risk portfolio, ERM internal environment, and ERM architecture. These five structural components of the ERM framework in the airline industry mirror risk management best-practices of the airlines under study, whilst also drawing on the principles of effective risk management conveyed in the recognised risk management frameworks and standards (presented e.g. in COSO, 2004; ISO 31000, 2009; see Chapter 2, section 2.5), and on a range of academic studies of ERM, which are discussed as follows. The findings discussed in the context of the framework should support airline professionals in development or optimisation of the enterprise-wide risk management systems of their respective organisations.

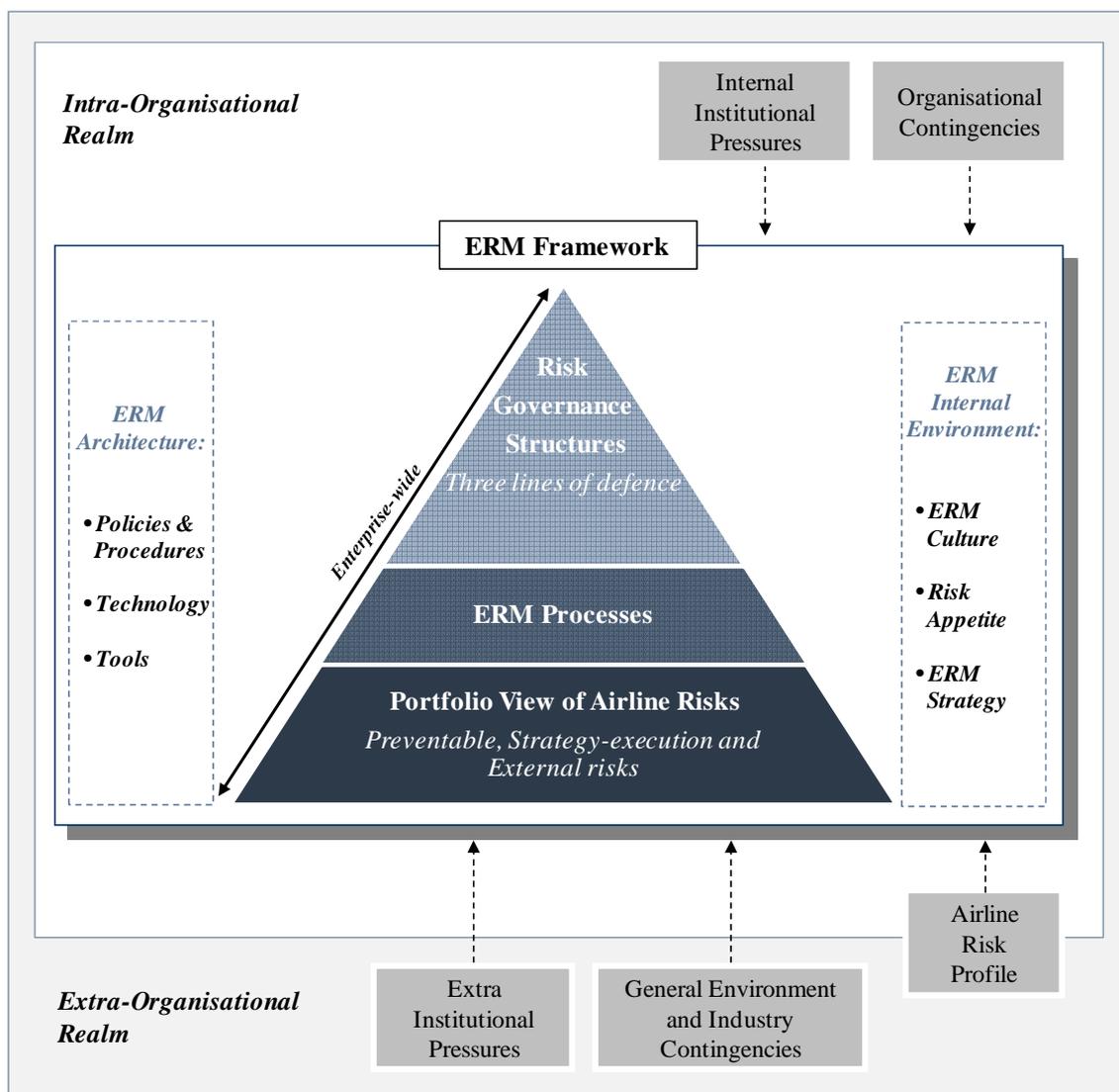


Figure 8-1: ERM framework in the airline industry

The conceptualisation of the findings from this research into the framework, in particular the findings related to the drivers of effective ERM, is conducted within the system approach of contingent fit (Drazin and Van de Ven, 1985; previously discussed in Chapter 3). Multiple aspects of ERM are mapped under several key elements and potential relationships between the elements are considered; the possible co-existence of multiple configurations of fit simultaneously is also considered. Therefore, the framework does not portray a universal risk management approach applicable to all organisations and circumstances, but rather acts as a guide to the selection of appropriate ERM system configurations for particular airlines, recognising the uniqueness of their task and institutional environments. Due to contextual differences

between airlines, no “universally appropriate” (Otley, 1980) ERM system can be recommended; however, through the discussion presented in the following sections the researcher emphasises the factors that need to be considered in designing or optimising airline ERM systems. As portrayed in figure 8-1, the components comprising ERM are influenced by demands stemming from both intra- and extra-organisational realms, denominated as different institutional pressures and contingency factors (see Chapters 3 and 5). Due to the influences of organisation-specific institutional pressures and contingency factors, following recommendations from the ERM framework by airlines should lead to varying couplings and uses of the ERM systems. The following table 8-1 summarises the major findings of this research, related to the drivers of effective, enterprise-wide risk management systems in airlines. These findings are further elaborated on in this chapter in the following sections 8.2.1 to 8.2.4, grouped under the components of the ERM framework, which also provide a discussion of the various risk management structures and practices of the airlines forming the sample.

Table 8-1: Drivers of effective risk management in airlines

Framework Components	Drivers of effective risk management
Risk Governance Structures	<p><i>Enterprise-wide integration and coordination of the risk management efforts achieved through:</i></p> <p>Three lines of defence in risk management - engaging multiple actors in risk management processes, across various functional and organisational levels (executive levels, local risk experts, internal and external auditors)</p> <p>Cascading risk management responsibilities and accountabilities throughout the organisational structure, beyond the ICFR, financial, or safety areas</p> <p>Strong, formalised commitment and endorsement of risk management programmes by airlines' boards and management teams</p> <p>Coordination of enterprise-wide risk management efforts by central, senior-level executive risk specialists dedicated solely to the risk management function, holding the positions of Chief Risk Officers (CRO) or their equivalents</p> <p>Delegation of responsibilities and accountabilities for management of key risks to centralised, dedicated committees joining the perspectives of interdisciplinary risk leaders at the executive levels in the organisations and engaging them in the risk and strategy review processes</p> <p>Independence of the internal audit function providing assurance on the design, adequacy, and effectiveness of internal controls across business areas</p>
Risk Management Process Airline Risk Profile	<p>Risk management identification, analysis, and management techniques, as well as risk experts involved in the process, should be properly matched with the typology of airline's risk portfolios: preventable, strategic, and external risks characterised by different degrees of controllability, probability of occurrence and impact</p> <p>Combination of top-down and bottom-up risk management processes</p> <p>Risk identification linked with the objectives of organisational strategies</p> <p>Feasibility of both qualitative and quantitative assessment techniques if properly matched with the types of risks assessed</p> <p>Risk assessment methodologies beyond the criteria of financial impact. considering inter-relation between risks, facilitating a comprehensive view of enterprise-wide exposures</p> <p>Linking risk reviews to the strategic planning and performance management processes</p>
ERM Architecture	<p>Deployment of effective risk management approaches requires the establishment of a series of facilitators enabling dissemination of the ERM function across the organisation: processes guided by policies and procedures, and tools and technology</p> <p>Formalised risk management policies and procedures facilitate regularity and diligence of risk identification and assessment processes, their timely escalation to decision-makers at adequate levels in airlines, as well as coordination of risk management efforts between departments</p> <p>ERM architecture needs to be aligned in terms of the level of formalisation and the selection of tools and technology for risk management to organisational needs and characteristics</p>
ERM Internal Environment	<p>Development of a formalised risk management strategy specifying the objectives of the risk management programme and appetites for particular types of risks</p> <p>Interconnected formulation and execution of airline ERM strategy and corporate and business strategies</p> <p>Importance of instilling positive risk cultures - effectiveness of risk management conditioned by the commitment of organisation members rather than existence of complex systems of formal rules</p>

8.2.1 Risk governance structures

This study detected differences between the airlines claiming ERM adoption and the airlines with more traditional risk management approaches in assignment and coordination of risk management responsibilities across organisational hierarchies. The

airlines involved in this study which did not claim ERM adoption were evidenced to lack centralised structures for coordination of risk management initiatives undertaken across different organisational functions and levels. Multiple actors from across operational, management, and executive levels manage different types of risks either formally or informally, yet without enterprise-wide integration and coordination of the risk management efforts. With regard to coordination of risk management initiatives, an exception was noticed in the case of one airline (Beta), who was among those that did not claim ERM adoption. Despite not having officially adopted ERM, the airline assigned responsibility for coordination and integration of enterprise-wide risk management processes to the internal audit function, and created multiple reporting lines to the management team and to the airline's respective holding company. However, the case study revealed concerns regarding independence and providing unbiased assurance of functionality of the risk management system by the internal audit function, if internal auditors are too involved in the risk management process. Consistent with these concerns, Fraser and Henry (2007) argue that the internal audit function should provide independent assurance on the design, adequacy, and effectiveness of internal controls within business areas, monitoring management of relevant risks beyond the areas of compliance with auditing and financial reporting standards.

Findings from the selected airlines that participated in the field study and adopted ERM reflected how engaging multiple actors in risk management processes, such as the Board, the risk committee, the position of CRO or its equivalents, local risk experts, or internal audit, creates multiple lines of defence. Furthermore, the concept of three lines of defence in risk management was discussed in more detail in the context of Alpha airlines, providing interesting insight into best practices of assigning accountabilities and responsibilities for risk management across organisational hierarchies. In Alpha airlines, under the concept of three lines of defence, risk management responsibilities and accountabilities are formally assigned across various organisational levels and functions, facilitating inclusion of enterprise-wide exposures in the corporate risk portfolio. The case study evidenced how the multi-dimensional risk governance structure in the Alpha airlines, engaging members from different organisational levels to take on responsibility for management of the risks corresponding to their respective business units, facilitates identification and management of a wide range of risks. Apart

from local risk experts performing day-to-day risk management activities and risk oversight functions designed at the executive levels, internal and external auditors additionally perform independent assessments of the two other levels of risk assurance. With reference to the previous discussion of the internal audit role of Beta, under the concept of three lines of defence the issue of independence of the internal audit function is of key importance. In Beta multiple actors were evidenced to be involved in the risk management processes performed across the organisation. However, the case study of the airline led the researcher to conclude that the airline could benefit from more formalised appointments of risk management responsibilities and accountabilities cascaded throughout the organisational structure, beyond the ICFR, financial, or safety areas where such appointments currently exist.

The case study of Alpha provided an example of how risk management responsibilities and accountabilities are formally integrated within the executive levels of the airlines and the Alpha holding company. In the Alpha organisations it is the Boards who are ultimately accountable for ERM and responsible for overseeing it; by setting the strategic direction for organisations they implicitly set organisational risk appetites which, in the cases of the Alpha airlines, are later documented within ERM strategy. The case study of the Alpha airlines demonstrated how strong commitment and endorsement of airlines' Boards and management teams promoted institutionalisation of ERM principles in organisational cultures. The importance of the Board's commitment to risk management has been widely discussed in literature (e.g. Baxter et al., 2013; Kimbrough and Compton, 2009; Daud et al., 2011).

This research demonstrated how similar organisational roles became involved in the conceptualisation and management of risks in airlines. In the airlines claiming adoption of the ERM approach, risk management efforts are coordinated by central, senior-level executive risk specialists dedicated solely to the risk management function, holding the positions of Chief Risk Officers (CRO) or their equivalents. Prior studies discussed the emergence of new positions (e.g. CRO) in organisations related to the adoption of ERM (e.g. Aabo et al., 2005; Gates, 2006; Lam, 2003; Liebenberg and Hoyt, 2003). The case study of Alpha demonstrated how the risk management function is facilitated by the CRO-Alpha operating at the holding company level, or by equivalents of this position in individual Alpha airlines, while these risk specialists coordinate group-wide or

enterprise-wide risk management initiatives, facilitating production and dissemination of risk-related data. The case study also evidenced how these professionals play an important role in the airlines by facilitating portfolio-views of risks.

The empirical study also demonstrated how the Boards may delegate responsibilities and accountabilities for management of key risks to specialised committees, such as the ERM Committee overseeing enterprise-wide risk management efforts, or specialised functional committees in charge of certain types of risks (e.g. Financial or Safety Risk Committees). In the cases of selected airlines claiming adoption of ERM (Alpha-1, Zeta, Eta, Theta, Iota), risk committees were created either in the airlines or in their respective holding companies to overview enterprise or group-wide risk management systems. In Alpha-1 a cross-functional Risk Committee was created, engaging interdisciplinary risk leaders from across the airline, which was believed to facilitate sharing of risk information and also the creation of an integrated view of enterprise-wide risks. In Alpha-2 and the Alpha holding company this function is assigned to their corresponding Management Committees, which engage executive members of different functional areas and which were reported to perform an equivalent function to the Risk Committee of Alpha-1; independently of the nomenclature assigned to these governance structures, their functionality seems to lie in joining the perspectives of interdisciplinary risk leaders at the executive levels in the organisations and engaging them in the risk and strategy review processes. The risk review routines of the Alpha airlines revealed the importance of creating organisational spaces for debate about risks at the executive levels, and linking risk reviews to the strategic planning and performance management processes. In Beta there is no formal, inter-disciplinary risk governance structure. Some interviewees argued that the enterprise-wide view of risks at the executive level is achieved through regular meetings of the management team where risks and strategies are reviewed simultaneously; however, there were also calls for increased formalisation of risk management responsibilities and processes at the executive levels, which were believed to improve the quality of risk management processes.

A high degree of resemblance was evidenced in risk governance structures of the airlines under study in that specialised functional committees were established in order to be in charge of certain types of exposures. All of the airlines participating in this study have Safety Committees overseeing the management of safety risks; in addition,

the majority of airlines (except Gamma and Delta) have Financial Committees for managing financial and market risks. The case studies of Alpha and Beta airlines demonstrated the mechanisms by which insight on management of safety and financial exposures is reported to centralised risk coordinating units, which allows for their assessment in the context of consolidated risk portfolios. Both case studies reflected on the importance of managing safety and financial exposures beyond the scope of their functional silos, which used to be typical of airline risk management practice in the past (Yilmaz, 2008a), and integrating their management with other types of corporate risks by using common assessment methodology and their reflection on corporate risk maps. Separate functional departments lack the capacity to perform comprehensive risk management single-handedly, without coordination with other departments. Therefore, this study suggests that the risk management function in airlines, which has traditionally been concentrated in functional departments (particularly in the aforementioned safety and financial departments), should be integrated at the enterprise-level.

8.2.2 Management of enterprise-wide risks: ERM process and airline risk profile

Findings from the case studies demonstrated how the different stages of risk management processes in airlines need to be properly matched with the typology of risks forming their risk portfolios. Some of the risks airlines face change hourly, such as flight-related safety and operational threats, while others change over longer intervals, such as those related to changes in demand for services or to regulations. Risk management routines, tailored to the typology of risks they are designed to address, should match the velocity of evolution of the different types of risks, allowing for a continuous scanning of airline business environments for changes in the risk portfolios that could affect organisational performance in any way, and their effective management. Apart from the different frequencies of risk identification, assessment, treatment, and monitoring, different types of risks call for different risk experts to be involved in their management processes.

Airline risk profile comprises a variety of preventable, strategic and external risks (typology introduced by Kaplan and Mikes, 2012, 2014), which are characterised by different degrees of controllability, probability of occurrence and impact. Taking on preventable, process-level risks, such as the above mentioned safety and operational

risks, brings no benefit to airlines and their occurrence should therefore be minimised. The case studies of Alpha and Beta demonstrated how the airlines control and mitigate these risks through extensive systems of internal control. Previous research stressed the importance of extending the scope of risks which airline risk management systems would traditionally concentrate on, such as insurable, safety, or financial risks (Yilmaz, 2008a; Otero, 2006), to also include important strategic and external risks. Airlines are exposed to multiple external risks beyond their ability of influence and control, and thus they design management processes aimed at reducing the impact of various external risks should they occur by, for example, preparing contingency plans. Furthermore, the third general type of risks (Kaplan and Mikes, 2012, 2014), the strategy-execution risks, are of particular relevance to this research. Previous studies demonstrated that declines in airlines' profitability are primarily due to external and strategic exposures, while being broadly related to the industry structure, and to inconsistent strategic choices of airlines, rather than to factors related to their operations (Wojahn, 2012; IATA, 2011, 2013). Therefore, it is of primary importance to airlines to extend the focus of their risk management programmes beyond the traditional functional siloes (Yilmaz, 2008a) and to develop risk management technologies (see definition Chapter 3) facilitating all stages of the strategic risk management process. The case studies provided evidence of the relevance of external and strategic risks in airlines' risk profiles (see also discussion in section 8.3.2 of this chapter and in Chapter 2).

The field study reported how the airlines claiming adoption of ERM have developed formal methodologies guiding enterprise-wide risk management processes and delineating procedures and protocols for identification, assessment, treatment, reporting, and monitoring of risks. The case studies of Alpha and Beta airlines further demonstrated how the airlines employ diverse risk identification techniques, both through top-down and bottom-up processes, conditioned by the types of risks they are aimed at; individual business units are involved in identification of risks at local levels, while identification of external and strategic risks with high potential impact on organisational performance involves airlines' top management levels. For example, the cases studies revealed how safety risks are detected both through investigation of past incidents and a forward-looking analysis of hazards; process mapping and auditing are employed for identification of operational risks; scenario analysis, SWOT analysis, and analysis of potential threats to the achievement of organisational strategies facilitate

focusing on important strategic and external risks. It was emphasised in the interviews with representatives of the Alpha airlines that the risks that have the strongest impact on organisation performance are those which are the most difficult to identify and assess. Therefore, as suggested by the interviewees, it is recommendable to undertake “an exercise of imagination” (DRC-Alpha) in order to factor important external exposures into risk portfolios. Although adopting different approaches in terms of formalisation, Alpha-1, Alpha-2, and Beta demonstrated linking, to some extent, risk identification with the objectives of organisational strategies. However, the researcher concluded on higher functionality of the approach adopted in the Alpha airlines as it ensured greater regularity and diligence of risk identification at different organisational levels. Furthermore, as previously debated, the formalised risk reporting and review routines institutionalised in Alpha also facilitate development of a portfolio view of enterprise-wide risks and their consolidated assessment.

The empirical study indicated that airlines embrace diverse logics of calculation (Power, 2007) and different calculative cultures (Mikes, 2009), ranging from high to low quantitative risk conceptualisation approaches. The case studies of Alpha and Beta airlines explained how the airlines assess risks by their levels of likelihood and significance, according to the risk appetites for particular types of exposures, while their reliance on qualitative and quantitative assessment techniques varies depending on the airline and on the types of risks assessed. Quantitative rating scales are believed to provide more precision and measurability in the assessment process (Hampton, 2009). However, as emphasised by Alpha’s representatives, nominal or ordinal assessment scales are better suited for assessment of certain types of exposures, such as emerging risks. An interesting point was also raised in the Alpha case study of the need to assess risks not merely by their financial impacts, but also factoring in “the human face” and the “ethical and moral considerations” (Abeyratne, 2001, p. 339) of the potential impact of some risks, such as safety risks.

Complex, interconnected systems such as airlines face a multiplicity of interconnected, counterintuitive vulnerabilities (IATA, 2013). Apart from the levels of risk impact and probability of occurrence, the interconnectedness with other risks and the combined effect of likelihood and consequences need to be considered in the assessment methodologies (Szabo, 2012). The case study of Alpha airlines provided an example of

an effective mechanism for assessing the interconnected effects of multiple hypothetical scenarios of materialisation of a wide range of risks, which was executed through the FRM framework. The combined effects of events involving changes in macroeconomic, operating, or financial conditions, are jointly assessed through the FRM framework in terms of their potential impact on airlines' financial performance measures and agency ratings. Findings from the Alpha case also emphasised the importance of gaining a comprehensive view of enterprise-wide exposures. Different types of exposures are managed within different management frameworks in airlines; for example, Safety Management System (SMS), Quality Management System (QMS), Security Management System (SeMS), Environmental Management System (EMS), Supplier Management System (SUMS), and others which, as argued through the Alpha case study, should be jointly considered under an integrated portfolio perspective. In the case study of Beta, although the global view of risks was achieved through an aggregated representation of individual risk assessments on risk maps and matrices, these assessments did not consider interconnections between risks. The top management of Beta believed the inter-relation between risks is tackled through informal routines of regular risk reviews at the occasions of preparations and adjustments of business and strategic plans; however, the approach adopted in Alpha seems to be more effective in this respect.

8.2.3 ERM architecture

Findings from this study demonstrated how deploying effective, enterprise-wide risk management in airlines requires the establishment of a series of facilitators, in terms of processes guided by policies and procedures, tools and technology. The enablers of the ERM function are jointly defined under this framework as the 'ERM architecture'. As evidenced in the case studies ERM architecture needs to be aligned in terms of the level of formalisation and the selection of tools for risk management to organisational needs and characteristics. The field study and the case studies indicated that risk management systems of airlines vary from highly structured approaches with detailed formalised procedures and hierarchies for managing multiple types of risks, to minimalist approaches where risk management is structured only to the extent required by relevant regulatory frameworks. Previous research often related formalisation of structures and practices of management control systems to organisational size and complexity

(Merchant, 1981; Bruns and Waterhouse, 1975; Woods, 2009). However, the field study and the case studies suggested that a high level of formalisation of risk management systems in the analysed airlines was related to proclaimed adoption of ERM by the airlines rather than to organisational size and complexity, as highly formalised risk management structures were observed in organisations with varying sizes and complexity. The rules and routines constituting the ERM systems of the airlines under study were heavily documented, specifying in addition the responsibilities and accountabilities in the risk management processes across organisational hierarchies. A variety of risk management guidelines had been developed, structuring different phases of risk management processes such as identification, recording, assessment, treatment, or monitoring of risks.

The Alpha airlines and the Beta airline, which were subjects of the case study research, demonstrated different approaches to formalisation of the risk management function. The case study of Alpha demonstrated how formalised procedures facilitated regularity of risk identification and assessment processes, their timely escalation to decision-makers at adequate levels in the airline, as well as coordination of risk management efforts between departments. The case study of Beta provided an example of formalisation of risk management processes restricted to selected types of risks. As argued by Kaplan and Mikes (2014), effectiveness of risk management systems is more dependent on their coupling by actors in organisations than on the formal rules guiding risk management approaches. Both of the case studies demonstrated how employee accountability was encouraged through the institutionalisation of a positive risk culture, either through formal policies and procedures or informally. Therefore, consistent with the arguments of Collier et al. (2006) or Mikes (2009), and based on the analysis of Beta's risk management system, a conclusion was drawn on the feasibility and functionality of less structured and less calculative risk management approaches. Although the highly formalised approach of Alpha was regarded by airlines' representatives as necessary in the context of the size and complexity of the airline's structure, the interviewees demonstrated awareness of the potential threat of over-formalisation to the agility of risk management processes. The case study of Beta provided an interesting observation that a highly formalised approach is not necessarily a pre-requisite for creating positive risk management cultures. Although Beta's risk management system was assessed as functional both by the airline's representatives and

by the researcher, the need for further formalisation of selected risk management processes, especially those related to identification and management of important external risks, was reported; however, despite the calls for increased formalisation in some areas, Beta demonstrated having created a positive risk culture. Therefore, organisations need to find a balance in terms of formalisation of the risk management function that best suits their organisational characteristics.

The field study and the case studies revealed that the tools engaged in the collection, processing, and reporting of risk-related data in the airlines under study range from simple, non-automated systems to sophisticated programs or intranet platforms. As per integrating, prioritising, and reporting of risks, risk matrices and maps providing a portfolio view of risks are commonly used tools; risk matrices and maps plot in a visual display the ratings of probability and the potential impact of risks on achieving business objectives, therefore allowing airlines to adopt a sharper focus on management of key risks. The Alpha case study provided an example of how custom-designed technological solutions can facilitate the extraction and processing of data which is relevant to organisational performance and risks. The Alpha airlines relied on proprietary software for risk management, arguing that in-house development of the risk tool allowed them to best tailor utility of the tool to organisational needs, facilitating incorporation of the risk management function into the ordinary business activities of individual departments. The tools employed in risk management processes across Beta were less sophisticated. The risk registers at different organisational levels are compiled using simple spread-sheets, from which data is later exported to risk maps and matrices. However, the case study raised concerns regarding the reliance of Beta's management team on the data compiled in the risk maps during periodical risk and strategy reviews, pointing to the need to better institutionalise the uses of risk management tools in organisational risk management routines or, alternatively, to improve the functionality of the tools themselves.

8.2.4 ERM internal environment

In the framework presented in figure 8-1 the component denominated as 'ERM internal environment' is related to 'risk rationalities' (see Arena et al., 2010) which influence the way airlines conceptualise uncertainty into risk when forming their portfolios and the

prevailing logics of organisational actors (see definition in Chapter 3). ERM internal environment, as portrayed in the framework, is considered in terms of ERM strategy, risk appetite, and ERM culture. Evidence from the empirical study revealed that the airlines claiming ERM adoption have relatively more clarity and consistency in the risk definition protocols and use more sophisticated tools for capture, storage, and analysis of risk data than the rest of the airlines forming the sample. The field study findings and the findings from the Alpha case study suggest that this can be attributed to the existence of formalised ERM strategies in airlines. By way of an example, the Alpha airlines' documented ERM strategies for management of multiple-types of risks specify risk appetites, risk governance structures and risk management architecture (see above 'ERM architecture') to be implemented across the organisations. Analysis of the risk management system within the Alpha group indicated the importance of aligning risk management strategies with corporate and business strategies; this was achieved in the Alpha airlines, for example, through testing the premises of organisational strategies using the FRM framework. Previous research argued the benefits of aligning corporate and business strategies with airline risk appetites, which allows for balancing organisational goals and objectives and their associated risks and opportunities (e.g. Althonayan et al., 2011a; Ben-Amar et al., 2014).

In the Alpha and Beta airlines, risk appetites for particular types of exposures were set by the Boards, indicating airlines' inclination toward risk taking in different business areas. In accordance with Power's (2009) critique of COSO's (2004) formulation of risk appetite, the case studies suggested the existence of multiple risk appetites in airlines for different types and levels of risks (e.g. aversion to safety risk, high appetite for market risks). Risk appetites are applied throughout the airlines in the risk management processes via tolerance thresholds established for particular groups of risks, which facilitate identification, mitigation, and monitoring of the evolution of particular exposures. However, Beta's risk approach was also found to be less formalised in this respect; risk appetites are documented only for selected types of exposures. Alpha's highly structured ERM system was found to be predicated by normative propositions of ERM frameworks, such as the COSO framework (2004), advocating adoption of a systematic approach to defining organisational risk appetite and its translation into quantified risk tolerances for objectives of organisational strategies.

The case studies of Alpha and Beta airlines suggested the importance of creating positive risk cultures. Risk cultures can be considered in terms of the extent to which the principles of risk management strategies are encoded in organisational risk management routines, and how the latter are embedded in or decoupled from formal rules. Institutionalisation of ERM principles is of particular importance to this research. Upon introduction of new risk management rules in organisations, resulting from the decisions of ERM adoption, new principles should become encoded in risk management routines. Introduction of new ERM rules in airlines is aimed at deinstitutionalisation of existing beliefs and routines and arrival of new ones encoding ERM principles (Scott, 2001). Previous research (e.g. Bowling and Rieger, 2005; Bruce, 2005; Martin and Power, 2007) discussed the mechanisms by which institutionalisation of ERM may be inhibited by the existence of established risk management practices, which may continue to be seen as legitimate managerial devices by actors, while ERM may be perceived merely as "an add-on for internal control and compliance to external regulations" (Arena et al., 2010, p. 9). This issue was also the subject of interest to Power (2009, p. 849), who criticised normative ERM guidance for following the "logic of audit and trail" and for placing emphasis on the processes of description and evidencing of risk management practices rather than fostering "a boundary challenging practice which confronts and addresses the complex realities of interconnectedness".

Inconclusive evidence was collected from the airlines which claimed the implementation of ERM and which participated in the case study (of the Alpha group) conducted in the course of this research. The study found that the level of awareness of ERM was lesser in the lower levels in the subject organisations, where it was perceived as a tool directed at statutory requirements. Some interviewees from these airlines signalled the need to strengthen the risk culture through training in order to permeate ERM in the actions of actors, to assure ERM rules are truly enacted by actors in risk management routines, and in order to change the perception of ERM as a burden and foster the perception of ERM as bringing value and streamlining organisational operations in the long term. Other interviewees were convinced of having appropriate risk cultures ingrained in the organisations and of ERM principles being properly institutionalised and encoded in organisational routines. This research, in line with the findings from previous studies investigating the embeddedness of ERM in organisations (e.g. Woods, 2011; Aabo et al., 2005; Mikes, 2009, 2011), argues the importance of

instilling positive risk cultures in organisations, as effective risk management is conditioned by the commitment of members across various levels of organisational hierarchies, rather than existence of complex systems of formal rules (Kimbrough and Compton, 2009; Coccia, 2005; Mikes, 2009).

8.2.5 Context-specific design of an ERM system

Similarity was reflected throughout this study in the major pillars constituting airline risk management systems, such as the structures and practices developed for management of safety, hazard, or financial risks. Institutional isomorphic forces detected in this study within the organisational field of airlines emphasise the logic of legitimacy in the processes of homogenisation of airline risk management systems. However, the analysis showed how certain levels of coherence coexist with systematic variations in airline risk management systems, which is noticeable in configurations of responsibilities and accountabilities in risk management processes and their constituent routines. By way of an example, although the Alpha and Beta airlines have developed safety management systems (SMS), the routines enacted in managing safety-related risks varied among organisations. Consistent with the findings of Granlund and Lukka (1998), this study demonstrated that divergence can be driven by both technical and institutional factors.

Considering the objectives of this research, the phenomena of homogeneity and diversity in the institutions, rules, and routines constituting ERM systems of airlines are of particular relevance to this study. This study expanded beyond the analysis of rules guiding risk management processes, and analysed the routines of organisational actors acting within organisational and cultural contexts, which were revealed to be the sources of variations in implementation of ERM among organisations. This was consistent with the approach proposed by Kaplan and Mikes (2014), who discussed how ERM drives development of new institutions, rules and routines for comprehensive management of risks, and emphasised that despite similarity of ERM rules in organisations their risk management routines should vary. This study demonstrated how the rules guiding airline risk management systems were modelled based on the provisions of various normative ERM frameworks or risk management standards such as the COSO framework (2004) or the ISO 31000 standard (2009). However, despite

being modelled on common frameworks and standards, airlines' risk management routines varied at the operational levels.

The field study and the case study evidence revealed how the variations in airline ERM systems are attributable to the differences in the contextual factors that exist within their respective task and institutional environments, which is discussed in more detail in section 8.3 of this chapter. Similar findings of systematic variations in ERM implementation were found in previous studies conducted in the contexts of different industries, and in organisations from the same industry; the studies also attributed variations in ERM systems to different institutional pressures and technical demands of business environments. For example, Arena et al. (2010), in a study of three Italian organisations from different sectors, demonstrated the fluid nature of ERM and reciprocal interactions of newly established ERM rules with pre-existing routines for controlling uncertainty, leading to variations in practices. Woods (2011) conducted four case studies in organisations from different industries and attributed the differences in their ERM systems to contextual factors specific to particular industries. Mikes (2009) conducted a study of ERM systems implemented in two banks, and argued the existence of systematic variations in organisational coupling of ERM. Woods (2009) and Jabbour (2013) demonstrated diversity in ERM practices within single organisations, from the public sector and the insurance industry respectively. Additionally, multiple studies based on survey methodologies explored organisational design choices of ERM systems and argued the existence of variations in implementation of ERM (e.g. Paape and Spakle, 2012; Beasley et al., 2005; Hoyt and Liebenberg 2011). However, as previously discussed (Chapter 2), these studies are criticised for analysing ERM based on a limited number of simplistic proxies and thus being unable to properly reflect complex phenomena and thoroughly capture implementation of ERM (Kaplan and Mikes, 2014).

Findings from this research, which revealed differences in risk management routines in airlines despite their risk management systems drawing on provisions of common risk management standards or ERM frameworks (e.g. COSO, 2004; ISO 31000, 2009), suggest that airline risk management systems are not designed in a vacuum (Woods, 2011), and that they convey the lack of a "universally appropriate" design of an ERM system applicable to all airlines in all circumstances (Otley, 1980). A similar argument was offered by previous studies of ERM systems conducted in a variety of industries,

which called for aligning ERM with contextual settings of organisations (e.g. Gordon et al., 2009; Kaplan and Mikes, 2014; Woods, 2009, 2011; Paape and Spakle, 2012; Mikes, 2009; Barton et al., 2010), and which were discussed in Chapter 2. Considering arguments from the previous studies on the relation between ERM system designs and organisational contexts, and based on the findings from the empirical study on airline risk management systems, under the multiple contingent perspective (Fisher, 1998) this study advocates the need to consider the requirements of task and institutional environments in the development of effective ERM approaches in airlines. Therefore, the question ‘how to design an effective ERM system in airlines’ extends beyond simply complying with regulatory requirements or choosing one of the multiple risk management standards or ERM frameworks to follow, into the realm of aligning ERM principles with airlines’ contextual requirements (Woods, 2011). The following section explains in more detail the different technical and institutional drivers which were evidenced to shape airlines’ risk management and ERM systems.

8.3 Determinants of airline risk management and ERM systems

As suggested in the previous sections, this study lends evidence of technical and institutional drivers of homogeneity and diversity of organisational designs of airline risk management and ERM systems. However, the major focus of this empirical study is that it demonstrated how institutional pressures and contingency factors drive deinstitutionalisation of the existing risk management rules and routines in airlines as well as adoption of ever more comprehensive approaches to risk management. The empirical study also suggested re-institutionalisation of risk management rules and routines, which was reflected in the adoption of ERM in several of the investigated airlines.

8.3.1 Institutional determinants of airline risk management systems

A wide spectrum of external and internal institutional pressures was shown to affect the risk management systems of the airlines under study. Institutional environment of airlines exerts legitimacy pressures which are the underlying causes of isomorphism observed within the organisational field of airlines (DiMaggio and Powell, 1983). However, as previously discussed (section 8.2.5) this study also provided examples of institutional pressures causing diversity among airline risk management systems.

External institutional pressures were evidenced to be relevant in determining the risk management approaches of the airlines under study. The findings of this study suggest the particularly high relevance of regulatory frameworks delineating and coordinating the structures and processes of airline risk management systems. The airline industry is heavily regulated with diverse stipulations affecting multiple areas of airline operations, and risk management structures and practices among them (Adler and Gelmann, 2012). Among others, governance structures over operational safety risks are imposed on airlines by regulatory bodies, affecting organisational designs of Safety Management Systems (SMS). Apart from the regulatory framework comprising both international conventions and national laws, air transport associations such as ICAO, IATA, or EASA prescribe both regulations and best practice standards and procedures for managing risks in diverse areas. In terms of risk management, the focus of regulators and industry normative bodies is primarily concentrated on operational, safety, and hazard concerns.

Additionally, coercive influence on airline risk management systems was evidenced in this study based on the observed relevance of corporate governance requirements for listed companies, and corporate governance best practices gaining momentum across publicly traded and privately held companies. Regulators and normative institutions exert pressures on organisations across industries in order to improve risk management and reporting systems; an increasing amount of responsibility is imposed on boards of directors in terms of creating strong corporate governance structures and communicating reliable data on company performance. By way of an example, institutions such as the US Securities and Exchange Commission (SEC) or The Toronto Stock Exchange require disclosures of organisational risk management efforts (Miccolis et al., 2001; Spira and Page, 2003, Kaplan and Mikes, 2014). Multiple regulatory requirements have been introduced internationally, such as the UK's Combined Code on Corporate Governance, NYSE Corporate Governance Rules and the Sarbanes Oxley Act in the USA, or the German Stock Corporation Act (AktG), which linked the risk management function to internal control and extended its focus beyond financial risks, compelling organisations to consider a broader spectrum of risks (Fraser and Henry, 2007; Spira and Page, 2003).

A variety of studies was conducted in the risk management and ERM area that linked organisational risk management design choices to regulatory pressures. In a study of Canadian non-banking organisations by Kleffner et al. (2003), they highlighted compliance with regulatory guidelines as an important driving force in ERM adoption. Collier et al. (2006) attributed the increasing popularity of ERM across industries to ever more extensive regulatory pressures. Studies from the related area of management control systems and the drivers of their organisational designs also report on the relevance of regulatory frameworks; by way of an example, Arena et al. (2006) argued the relevance of regulatory guidelines on development of Internal Audit departments in Italian organisations; Arnaboldi and Lapsley (2003) studied the adoption of new management accounting techniques in organisations as a reaction to coercive pressures from the UK's central government. However, previous studies also raised an interesting question related to the degree to which governance codes in fact enforce adoption of more comprehensive and embedded risk management approaches, and the extent to which following of best practice governance guidelines beyond mere legitimacy purposes is an individual choice for organisations.

Pagach and Warr (2011) acknowledged that regulated industries had been at the forefront of ERM development. They noted that implementation of ERM purely as a response to regulatory pressures should result primarily in development of ceremonial risk management systems, yet they observed that the adoption of ERM in the organisations forming the sample of their study was due rather to the economic benefits it had been expected to bring to the organisations. Additionally, the researchers noted that ERM had been implemented in a variety of organisations operating in industries with a lesser degree of regulation; as suggested by Paape and Spakle (2012), the intensity of enforcement of corporate governance codes varies significantly across industries. Woods (2011) also argued best governance practices can be implemented in organisations regardless of the intensity of regulatory pressures. In this context it should thus be noted that the airlines under study demonstrated increasing interest in adopting ever more comprehensive risk management systems, even though some of them had not been listed and therefore had not been bound by mandatory governance codes, but rather they followed risk management "best practices" gaining momentum across diverse industries. Finally, it should be highlighted that some studies investigating the driving forces of adoption and implementation of ERM did not lend

support to the supposed influence of governance codes. The study of Paape and Speklé (2012), based on 825 organisations with headquarters in the Netherlands, did not lend support to the supposed influence of governance codes on the adoption of ERM in organisations. Similarly, Muralidhar (2010) in a study of ERM adoption in GCC oil and gas industry organisations did not find evidence supporting the effects of regulatory frameworks on the risk management systems in the analysed cases.

The intention of demonstrating financial strength to rating agencies was revealed in this study to be another relevant type of coercive pressures affecting airline risk management system designs. Rating agencies such as Standard & Poor's have begun to consider the quality of organisational risk management processes in their rating algorithms, while considering ERM as a blueprint of sound governance systems (e.g. for the insurance industry - S&P, 2013). This study suggests that satisfactory credit ratings are believed to add credibility to airlines, something which, consequently, favours them in negotiations in the commodity markets. Additionally, since airlines tend to be highly leveraged, positive credit ratings reflecting organisational credit-worthiness are considered important as they lower the cost of capital. Studies from across industries confirm the relevance of rating agencies influences on organisational risk management approaches (e.g. Hoyt and Liebenberg, 2011; Kaplan and Mikes, 2014).

This study showed the evidence of occurrence of mimetic behaviors among airlines in the structuring of their risk management approaches. Environmental uncertainty encourages imitation of organisational structures and practices (DiMaggio and Powell, 1983); environmental uncertainty is significant in the airline industry (Engau and Hoffmann, 2011). Previous research into management control systems provided insights into mimetic practices of organisations from different industries. One example of this can be seen in the work of Lapsley and Pallot (2000), who reported on the adoption of similar management accounting structures among Scottish organisations, motivated both by the desires to achieve external legitimacy and to adopt secure, proven practices. Although the airline industry is characterised by high volatility and a high degree of uncertainty (Adler and Gellman, 2012), this study only lends evidence for airlines' modeling of risk management systems on the approaches adopted in other organisations from their respective groups; the empirical evidence collected throughout this study indicated multiple rationalities for airlines' mimetic behaviors, such as environmental

uncertainty, the need to conform with group-wide standards, or the expected synergy effects of adopting aligned risk management approaches across group organisations. Additionally, the field study provided evidence of the adoption, to varying extends, of best practices of organisations other than those forming the groups of the respective airlines.

Findings from this study point to the influences of normative pressures on airline risk management approaches. Institutional theorists relate normative pressures primarily to professionalisation of the fields (Zucker, 1987), and suggest, for example, university education, advisory influences, or operation of professional networks as the most significant normative influences (DiMaggio and Powell, 1983). The normative pressures manifested in this study are linked mainly to the professionalisation of the risk management field through an increasing popularity of landmark risk management frameworks. International risk management standards and frameworks such as COSO (2004) or ISO 31000 (2009) constitute important sources of normative guidance for organisations in designing risk management systems. Multiple studies in the risk management area reported on organisations from different industries modeling risk management approaches based on internationally recognised standards and frameworks (e.g. Beasley et al., 2005; Woods, 2009). A variety of air transport associations such as IATA or ICAO provide guidance on airline risk management approaches, promoting adoption of ever more comprehensive risk management systems (IATA, 2014; Salter, 2008) and contributing to professionalisation of the organisational field of airlines in terms of risk management.

Empirical evidence from this study indicates strong influence of normative risk management standards and frameworks on the organisational designs of airline risk management systems. Interestingly, evidence from the study suggested relevance of the recommendations of normative airline industry organisations regarding management of selected types of risks, yet it did not provide support for their influence on adoption of ERM approaches in airlines. Cooperation with professional advisors in developing or optimising risk management systems was also reported in several airlines under study, yet the usefulness and applicability of consulting advices was questioned in some cases, what was attributed principally to lack of consultants' understanding of the specificity of airline operations. This is consistent with Beasley et al. (2005) who reported on

consulting influences driving both ERM adoption and organisational designs of risk management systems. However, the study of Paape and Spekle (2012) is at odds with the findings of Beasley et al. (2005), as the researchers did not find supporting evidence for consulting effects on ERM development. In this empirical study involving airlines, consulting influence was evidenced rather as having driven the decision to adopt ever more comprehensive approaches than organisational designs of risk management systems.

This study provided additional evidence of other external institutional drivers of airline risk management approaches. In some airlines, gaining legitimacy in the eyes of shareholders or other capital providers was regarded as one of the drivers, although not of key importance, which motivated development of ever more comprehensive risk management systems. These drivers are also related to the previous discussion of credit ratings and increasing efforts of organisations to gain external legitimacy. Shareholder influence was discussed in previous literature as an important driver of ERM adoption (e.g. Liebenberg and Hoyt, 2003; Mikes, 2009; Nielson et al., 2005). Investors are believed to benefit from ERM as it drives risk-based decision-making in organisations and, consequently, increases their value (Meulbroek, 2002); yet the influences of shareholder pressures are less relevant in cases of dispersed ownership and more relevant in cases of institutional ownership (Kane and Velury, 2004). Interestingly, Paape and Spakle (2012) did not find evidence of the effects of institutional ownership on the adoption of ERM, and insinuated about the possibility of investors not valuing ERM adoption. With respect to signalling legitimacy to shareholders and other capital providers, Gordon et al. (2009) argued organisations may adopt ceremonial displays of ERM yet fail to institutionalise effective risk management in organisational routines.

The analysis of the empirical data revealed influence of internal institutional pressures such as impulses from the management team on airline risk management approaches or of organisational cultures. The finding of the management influence on organisational risk management institutions, rules, and routines, is broadly consistent with previous work in the risk management field. Baesley et al. (2005) concluded that the stage of ERM implementation in organisations is positively related to the advocating tone set by management and the presence of CRO. Similarly, Kleffner et al. (2003), Paape and Spekle (2012), Altuntas et al. (2011), Sobel and Reding (2004), and Gordon et al.

(2009) concluded on the influence of risk specialists and support from the executive teams to be associated with the stage of development of organisational risk management systems. Colquitt et al. (1999) discussed the tendency to integrate organisation-wide risk management processes and linked risk managers' professional and educational backgrounds to the way organisations structure their risk management approaches. Mikes (2009) argued that the influence of the institutional and professional backgrounds of risk specialists shapes organisational institutional logics, which consequently determine the configuration of risk management systems.

The analysis of the empirical data from this study suggested the determining power of organisational culture on airline risk management approaches. Although classified herein as a normative pressure, the effects of organisational culture on organisational designs can be considered both in terms of pressures stemming from institutional and task environments. The logics guiding the actions of actors in organisations are influenced by wider socio-cultural contexts, which suggests categorisation of cultural influences as an institutional pressure. Findings from this research point to the effects of national cultures on the values, norms, beliefs, and cultural models comprised in institutional logics, which determine how airline members perceive uncertainty and design responses to manage it in terms of, for example, required levels of formalisation of organisational practices, or the perceived importance of signalling to external shareholders compliance of risk management systems to standards institutionalised in the industry. On the other hand, other findings from this research, also related to organisational culture, imply that cultural influences should also be considered as contingency factors derived from organisational task environments. Findings from this study suggest the influence of ownership structure, and specifically public versus private ownership, on airline risk management systems. Publicly and privately held organisations are believed to be characterised by different working cultures (Uttley and Hooper, 1993), differing among others in terms of agility of work processes (Morgan, 1993), which was also pointed out by the interviewees in this study. Previous research considered the effects of corporate or national cultures on the design choices of management control systems (e.g. Nishimura, 1995; Chow et al., 1994; Granlund and Lukka, 1998; Ahrens, 1996; Merchant et al. 1995). Researchers would adopt interchangeably the institutional view of cultural characteristics (e.g. DiMaggio, 1988)

and the contingency theory perspective to analysing the influences of organisational task environments on culture (e.g. Cancel et al., 1999; Smircich, 1983).

8.3.2 Technical determinants of airline risk management systems

Multiple contingency factors were evidenced to affect the design choices of airline risk management and ERM systems. Under the structural contingency theory organisations adapt their structures to best fit with their technical, economic environments (task environments, Donaldson, 1996). According to the contingency perspective the primary imperative for airlines is to enhance the efficiency and effectiveness of their operations by adapting risk management structures to best fit with the requirements of task environments (Scott, 2003). Notwithstanding the above, categorisation of the drivers of organisational designs as institutional or technical may raise debate; by way of an example, the previous sub-section pointed to deinstitutionalisation and re-institutionalisation phenomena accompanying the decisions of ERM adoption in airlines, which according to Oliver (1991) apart from political and social pressures can be triggered by functional pressures resulting from perceived low utility of institutionalised routines. Although Oliver's (1991) analysis of functional pressures is conducted under the institutional perspective, this research ascribes the pressures related to utility and effectiveness to the contingency school of thought. Within this specification, the contingency factors evidenced in the empirical study of airline risk management and ERM systems fall into the three categories predefined in the theoretical model proposed for this study (see Chapter 3), namely environmental and industry-related contingency factors, organisation-specific contingency factors, and contingency factors related to the specificity of airline risk profiles.

Findings from this study provide strong evidence for the influence of factors related to airline external task environments. Multiple facets of environmental uncertainty were found to condition the structures of management control systems across industries; environmental uncertainty is broadly defined as “the change and variability in the organisation's external environment” (Gordon et al., 2009). Literature across industries emphasizes increasing importance of managing external uncertainty, especially in the context of ever-increasing integration across borders of markets, institutions, and politics (Soin and Collier, 2013). Environmental uncertainty is considered a

fundamental contingency factor in the MCS studies (Hartmann, 2000; Chapman, 1997). Environmental uncertainty was found to be relevant in this study in the aspects related to political, economic, and natural realms of airline operations. The competitive environment is becoming ever more turbulent and complex (Florice and Miller, 2001), with forces such as globalization, new technologies, or deregulation creating uncertainty for organisations (Barton et al., 2001). Macroeconomic volatility translates to changes in jet fuel prices, exchange and interest rates, in addition to demand for airline services linked to multiple market and commercial risks facing airlines. Political instability poses a risk to airline operations in unstable markets, ranging widely from temporary suspensions of operations to threats of terrorist attacks. Airline operations are also affected by natural hazards such as extreme weather conditions which pose numerous operational and safety risks. Changes in the competitive environment were also revealed in this study to be relevant to airline risk management approaches.

These findings are consistent with previous research on the drivers of change in management control systems related to diverse manifestations of environmental uncertainty. Craig and Douglas (1996) discussed adoption of new organisational forms providing administrative and organisational flexibility in response to the challenges of fast-changing world markets. Firth (1996) investigated the transformation of accounting systems of Chinese enterprises in response to introduction of competitive market dynamics. Granlund and Lukka (1998) conveyed that the technical drivers of management accounting practices are primarily related to fluctuations in global economics, increased competition, as well as advances in production and information technologies. Gordon et al. (2009) in a study of the effectiveness of ERM argued that the relationship between ERM and organisational performance is contingent upon appropriate matches between ERM and five groups of factors, among which appear environmental uncertainty and industry competition. Additional studies similarly confirmed the importance of the link between environmental uncertainty and the designs of management control systems (e.g. Evans et al., 1986; Mia and Chenhall, 1994; Gordon and Narayanan, 1984; and others). Studies from this area often consider external environment in the dimensions of uncertainty, hostility, and complexity (e.g. Tymond et al., 1998; Imoisili, 1985; Chapman, 1998; and others). Based on a review of MCS research in relation to environmental uncertainty, Chenhall (2003) concluded that increases in uncertainty of external environment are positively related to the openness

and external focus of management control systems. Similarly, it was argued that hostility and turbulence in external environments lead to greater reliance of management control systems upon formal controls. Although previous studies of MCS and external environment often discussed the influence of production and information technologies (e.g. Kogan et al., 1997; Cooper et al., 1995; Kawada and Johnson, 1993; Granlund and Lukka, 1998; and others), this research did not provide evidence of the relevance of technology-related factors to airline risk management approaches.

Evidence from this study lends support to the relevance of internal, organisation-specific contingency factors to the designs of airline risk management systems. Airline representatives participating in this study would explain the design choices of risk management systems of their respective organisations by linking them to the sizes and levels of complexity of organisational structures and operations. In cases of the airlines which have implemented structured risk management systems, the need for increased formality and control was reported to be related to organisational size and complexity. In the airlines which have adopted less formalised structures, their members argued that excessive formalism would have led to a lack of organisational agility and would have impaired the effectiveness of their risk management routines. This rationale is consistent with the work of Child and Mansfield (1972), who argued that increases in organisational sizes are associated with increasing needs for effective control of information which stimulates organisations to institute controls such as formal rules and procedures. Similarly, Chenhall (2003) related large organisations to more diversified operations, formalisation of procedures, specialisation of functions, more divided organisational structures and more sophisticated organisational controls. Previous studies also found organisational size and complexity related to the designs of risk management systems. Gordon et al. (2009) claimed that the relation between ERM and organisational performance is contingent on the match between ERM and size and complexity-related factors. Similarly, Beasley et al. (2005), Kleffner et al. (2003), Hoyt and Liebenberg (2011), Pagach and Warr (2011), and Colquitt et al. (1999) argued there is a positive relation between the adoption of ERM in organisations and their size. Hoyt and Liebenberg (2011) also argued this positive relationship with organisational complexity. Paape and Spakle (2012) hypothesised about possible economies of scale experienced by large organisations implementing ERM which, due to their size, can afford to develop truly comprehensive and functional approaches. Paape and Spakle

(2012, p. 540) also claimed formalisation to be typical of larger organisations that “may be conducive to ERM adoption”. Multiple studies additionally indicated the influence of organisational structure in its facets related to size and complexity on organisational designs of management control systems (e.g. Bruns and Waterhouse, 1975; Merchant, 1981; Haka et al., 1985).

According to Chenhall (2003) management control systems provide support to managers in the process of aligning organisational responses to environmental conditions, while assisting them in formulating strategies related to markets and products, required technologies and structures. Similarly Fisher (1998, p. 5) explained that “the firm uses the organisational control package in attempting to achieve firm objectives”, while the scholar pointed out the control package is determined by contingency factors. This rationale can be transferred to risk management systems which provide support to managers in managing risks related to the cost and benefit drivers of airline competitive advantages which determine adoption of particular business models (e.g. legacy, low-cost, hybrid business models) and development of competitive strategies. Findings from this research suggest airline risk management systems are conditioned by the objectives set out in organisational strategies, among which appears the risk management strategy. Airlines conceptualise risk according to different features of their business models, forming multi-dimensional risk portfolios; these features include network scope, pricing and branding of services, fleet type and scope, and others. The priorities set out in organisational strategies and risk tolerance levels assigned to risks which may threaten the achievement of their objectives are reflected in the emphasis that airlines place on management of particular types of risks. An example of this is the development of structures dedicated exclusively to manage particular types of exposures.

Researchers advocating the need for implementation of more comprehensive risk management systems in airlines (e.g. Adler and Gellman, 2012; Bisignani, 2011; Engau and Hoffman, 2011; Yilmaz, 2008a; Flouris and Yilmaz, 2011a,b,c) advocate redirecting their focus to important strategic and external risks which are believed to have the most significant impact on airline values (e.g. Zea, 2004; Bisignani, 2011; IATA 2011; Mikosz, 2011; Nomura, 2003). The airlines of this study which have adopted structured approaches to facilitate management of important strategic risks

have institutionalised rules and routines facilitating identification, assessment, management, and reporting of these risks. Representatives from five of the seven airlines in this study that claimed adoption of ERM argued the ERM adoption decision in their respective organisations was related to perceived potential benefits of developing increasingly structured and comprehensive risk management approaches which had been believed to lead to improved management of strategic risks, achievement of organisational objectives, and improved performance. The findings of Pagach and Warr (2011) are conclusive of this argument, as the researchers found that ERM adoption in organisations was due to expected maximization of shareholder wealth, rather than to ceremonial compliance purposes. Similarly, Barton et al. (2001) argued the adoption of ERM approaches in organisations is driven by the necessity to strategically manage risks and avoid organisational debacles. Additionally, previous research lent support for the relationship between organisational risk management system designs (Jabbour, 2013), management control system designs (Simons, 1987, 1991, 1994), and the drive for achievement of organisational strategies. This research further elaborates on the relation of organisational strategies and airline risk management approaches, in the discussion of airline risk profile characteristics.

The ownership structures of the airlines investigated in this study were evidenced to affect organisational risk management systems in multiple ways. Forming part of a larger group of organisations was found to affect the adoption of ERM in airlines in addition to determining organisational designs of risk management institutions, rules and routines. Mimicking by airlines of the risk management approaches of other organisations from airlines' respective groups was reported to be driven mainly by instrumental purposes, although sporadic evidence was also registered pointing to legitimacy-driven mimicking practices. As previously indicated, in some airlines ownership structures were evidenced to affect corporate cultures and, consequently, the designs of risk management institutions, rules and routines. In the analysis of empirical evidence an interesting notion was raised on the rationale behind aligning of the risk management system of one of the investigated airlines (Beta) with the ERM approach adopted in other airlines from the same group. The need to consider contextual specificity of particular organisations was emphasised by airline members, something which was discussed in more detail in the section (8.2.5). As previously noted, the link between ownership structures and organisational risk management approaches was

confirmed in prior research (e.g. Pagach and Warr 2011; Kane and Velury, 2004; and others). Liebenberg and Hoyt (2003) positively related the degree of institutional ownership to the effectiveness of shareholder pressures ultimately encouraging adoption of ERM. The findings of Paape and Spekle (2012) did not provide evidence of the effects of institutional ownership on ERM adoption, yet the researchers raised an interesting notion related to owner-managed organisations. They argued that owner-managed organisations are less inclined to recognise the need for ERM as there are no agency conflicts, and reliance on formal control systems is lower in these organisations (Lovata and Costigan, 2002). This rationale was observed in this study in the Gamma airline (see Chapter 5).

The theoretical model developed for this research conceptualises airline risk profiles as a separate category of determinants of airline risk management approaches. Risks facing airlines stem both from external and internal technical contexts. Exogenous events such as the security implications of September 11th 2001, the 2003 outbreak of the Severe Acute Respiratory Syndrome, the housing price bubble of 2007 in the United States and the recession affecting worldwide economies that followed, in addition to multiple other external events impacted demand for airline services in both short and medium terms (Adler and Gellman, 2012). These external risks, often of strategic importance, differ in their levels of impact and probability of occurrence from internal risks, particularly from those of operational nature. Additionally, airline risk profiles are conditioned by internal institutional environments, by institutional logics which shape the way organisation members conceptualise uncertainty into risks forming the risk portfolios, the way in which priority is assigned to management of particular risks (which is reflected in the development of dedicated structures for management of strategic, financial, safety risks), and the way in which the roles of risk management systems are perceived (e.g. performance-driven approaches versus compliance-driven approaches). Kaplan and Mikes (2014) argued that organisations need to develop risk management institutions, rules, and routines aligned with the specificity of risks constituting their risk profiles. The scholars distinguished between rule-based risk management models adequate for the control of operational risks yet unsuitable for managing risks inherent in organisational strategies, and more advanced approaches for management of relevant external and strategic risks. Consistent with the arguments of Kaplan and Mikes (2014),

this research provided evidence of airline-specific risk profiles driving the rules and routines institutionalised in organisations in order to manage uncertainty.

As reviewed in Chapter 2 of this thesis, previous literature broadly discussed the major exposures facing airlines and the rules and routines institutionalised in airlines for their management. Lin and Chang (2008) clearly summarised this notion by visualising in a form of a matrix the link between different types of airline risks and their corresponding risk management strategies. Airlines are exposed to multiple hazard risks which may cause accidental or incidental damages to aircrafts and multiple derives costs, such as liability claims related to passenger injuries or general liability to third-parties. Due to the relevance of hazard risks for airlines, the organisations under study proved to have developed extensive structures and processes aligned to the perceived levels of probability and impact of hazardous events, such as crisis management committees or procedures delineating roles, responsibilities and actions to be taken in cases of risk materialisation. These risks characterised by low probability and high severity levels are also transferred by airlines to external parties through insurance policies (Flouris et al., 2009; Lane, 2005). Other external types of risks of high severity and high probability of occurrence are not-insurable; airlines employ avoidance and controlled-loss strategies to deal with these risks. Multiple strategic exposures fall into this category, one example being the risks derived from competitors actions. Airline risks of high frequency and low severity, such as operational risks are managed in the airlines under study through establishment of safety management systems or operational manuals in the production departments; risk management and rule-compliance are believed to be inter-related strategies for promoting operational safety in hazardous industries (Hopkins, 2010). Risks of low severity and low frequency of occurrence are often retained by airlines due to their low impact on airline resources.

Furthermore, this research demonstrated how institutional logics determine assignment of priorities across airline risk profiles which consequently determine the institutions, rules, and routines comprising airline risk management approaches. As expressed by Mikes (2009, p. 22) “top management’s personal philosophies about the manageability of risks are shaped by their institutional backgrounds”. By way of an example, institutional logics of actors within the airlines under study conditioned their focus on performance versus compliance objectives and allocation of resources to management

of different types of risks, by means of developing structures and practices facilitating organisation-wise risk-based decision making versus merely fulfilling compliance requirements of regulatory frameworks and corporate governance best practice codes. Institutional logics of actors within the organisations under study were evidenced to determine the changing appetites for particular types of risks, priority assigned to managing selected types of exposures and consequently, the designs of risk management institutions, rules, and routines. This is consistent with the arguments of Power (2009) who postulated that organisations have different appetites for varying types of exposures that change over time reflecting changes in organisational contexts, and which are recognised in the logics of actors and reflected in periodical adjustments of organisational strategies. Power's argument was additionally reflected in the case studies of Alpha and Beta airlines, whose risk appetites varied depending on the types of exposures; by way of an example, the airlines have an extremely low appetite for safety risks, yet a higher appetite for strategic or market risks.

8.4 Maturity, roles and uses of airline risk management and ERM systems

In addition to documenting differences in the rules and routines comprising airline risk management and ERM systems, this research assessed the levels of maturity and advancement, and also to the roles and uses of such systems; adoption versus non-adoption of ERM was examined, as well as differences in the maturity of risk management systems among the airlines which claimed to have implemented ERM. Consistent with previous research conducted in various industries (e.g. Paape and Spakle, 2012; Arena et al., 2010, 2011; Mikes, 2009; Woods, 2011), this study demonstrated that the term 'ERM' is employed as an umbrella for diverse risk management approaches and is often externally reported for legitimacy purposes, whereas organisations vary in the extent to which they have adopted ERM principles.

In the assessment of airline risk management approaches this study recognised the multi-dimensional nature of their maturity and considered different factors indicative of maturity. Literature proposes different criteria for assessing the levels of maturity of risk management systems in organisations. Critics of risk management maturity often examined distribution of responsibilities and accountabilities for risk management, the scopes of risks taken under consideration, and the techniques and tools employed in risk management processes (e.g. Calderon and Pero, 2013; Muralidhar, 2010; Jabbour,

2013). This research referred to the maturity assessment criteria proposed in academic and industry-based literature and brought them down to four major themes; airline risk management systems were assessed as per the comprehensiveness of risk portfolios, the level of embeddedness of the risk management function across organisations, the level of integration of enterprise-wide risk management practices, and the roles and uses assigned to the risk management function. This research demonstrated how some airlines have developed mature and sophisticated risk management systems, while others rely on siloed approaches and manage risks in an ad hoc manner as they materialise. In the cases of airlines claiming adoption of ERM, employee perception of the maturity of the risk management systems in their respective organisations was contrasted with an independent maturity assessment conducted by the researcher. The level of coherence of these two assessments was significant; the airlines were placed high on the continuum of advancement of risk management approaches. Interestingly, this study also inferred that airlines may operate fairly advanced risk management systems without denominating them as 'ERM systems' (see Chapter 7); this implies the case of external legitimacy motivations related to developing risk management systems being offset by technical efficiency factors or, in other words, the offset of ceremonial uses of risk management systems by their instrumental uses.

However, the most interesting focus point of this study lies in the roles and uses of ERM in airlines, often questioned by both ERM scholars and practitioners. Previous empirical research identified multiple roles and uses of ERM in organisations, distinguishing primarily between the focus on compliance to corporate governance codes, building an external image of sound management control systems, development of risk management systems in support of internal audit and control functions and, finally, development of risk management systems in support of risk-based decision-making processes aimed at overall improvement of organisational performance (e.g. Arena et al., 2011; Tekathen and Dechow, 2013; McRae and Balthazor, 2000; Woods, 2009). Aside from recognising the multiple benefits of risk-based decision making at operational and strategic levels, ERM was often criticised in literature for being ceremonially adopted, serving primarily as an external accountability device (Bruce, 2005; Collier et al., 2006; Fraser and Henry, 2007), while legitimacy-driven risk management approaches have been institutionalised and globalised across organisations from different industries (Power, 2009). Previous researchers also recognised the

interdependent nature of risk management, management accounting, and corporate governance roles, as organisations adopt risk controls for instrumental purposes and as they strive to make such controls visible in order to engender legitimacy (Bhimani, 2009), while “risk functions as an organising category for management in general” (Hutter and Power, 2005, p. 9). Consistent with the findings of previous academic inquiries into organisational roles and uses of ERM, the analysis of risk management context and rationalities in the airlines forming part of this research also indicated “diverging organisational significance of risk management approaches” (Mikes, 2009, p. 35) and diverse couplings of ERM with other management control processes, serving different organisational purposes whose boundaries appear blurred.

As previously discussed (sections 8.3.1 and 8.3.2), the ERM systems of the investigated airlines have been developed in response to the requirements of relevant regulatory frameworks, as means of externally demonstrating adherence to corporate governance best practices, in support of organisational controlling processes or decision-making and planning, or in fulfilment of a combination of all of these roles to certain extents. However, considering the previously discussed features of airline ERM systems such as embeddedness, integration, and comprehensiveness of airline risk management systems in terms of the factors defined above, this study infers the ERM approaches of the airlines under study have been driven by performance rather than compliance objectives. Evidence from this study suggests airlines strive to portray themselves as accountable organisations adhering to regulative frameworks and corporate governance best practices; by establishing ERM rules and instituting dedicated risk management positions in the organisational structures, airlines create auditable representations of ERM. However, at the same time, in the Alpha case study ERM was evidenced to impact airline decision-making and planning processes; upon assimilation of ERM principles into business processes representatives of the Alpha airlines reported on improved understating of risks embedded in their strategies and in the external environment. An example of the alignment of the risk management function with strategic planning and management can be observed in the analyses performed under the FRM framework in the Alpha airlines. The case study of Beta, although the airline did not claim ERM adoption, provided examples of integration of risk management and planning and performance management functions through informal routines; however, the researcher perceives these routines as less effective than that of the Alpha airlines.

The advantages of developing performance-driven ERM approaches in organisations have been broadly discussed in literature, yet the studies provided inconsistent conclusions. Pagach and Warr (2011), Beasley et al. (2008), and Baxter et al. (2013), who discussed the effects of ERM implementation on organisational value in specific industries including financial, energy, and insurance industry, or Paape and Spakle (2012) who studied organisations from a variety of industries, did not suggest that ERM had the power to significantly affect long-term organisational values. Contrarily, the empirical studies of McShane et al. (2010), Ellul and Yeramilli (2012), or Hoyt and Liebenberg (2011) concluded that ERM added value to organisations. They, along with other academics (e.g. Barton et al., 2002; Lam, 2003; Nocco and Stulz, 2006; Miccolis et al., 2001; Kleffner et al., 2003; Stroh, 2005) discussed multiple other benefits of implementing ERM which may indirectly affect enterprise value, such as improved understanding of organisational risk profiles, improved operational and strategic decision-making, creating synergies between different risk management activities, reducing the cost of external financing, and decreasing earnings and stock price volatility. As suggested by these multiple potential benefits of ERM, organisational performance in relation to ERM implementation may be assessed in different dimensions. This study did not explicitly focus on examining the effects of implementing ERM in airlines or achieving appropriate matches between ERM systems and airline-specific contingency factors, yet in the course of the field research the interviewees reported their perceptions of the benefits which their respective organisations had derived from the performance-driven ERM approaches. On multiple occasions the interviewees emphasized gaining improved understanding of risks, which led to more informed strategy setting and decision-making processes. Furthermore, the interviewees believed that ERM improved the overall credibility of their respective organisations in financial and commodity markets, consequently affecting their negotiating powers in these markets. Finally, some interviewees pointed to ERM reducing volatility of the operating results and to overall improved performance of their respective organisations.

Relevant to the discussion of roles and uses of risk management and ERM systems are the instrumental versus ceremonial motivations driving the designs of such systems, while the latter have been often associated in literature with decoupling or loose coupling of risk management rules and routines. Previous research (e.g. Huber and

Rothstein, 2013; Arena et al., 2010) discussed the decoupling or loose coupling of formal ERM rules, often established in organisations in an attempt to gain external legitimacy, from routines enacted by organisation members in order to preserve technical efficiency. As previously discussed (section 8.3.1), airline risk management approaches are influenced by diverse regulative and normative institutions, which may suggest a certain degree of airlines' propensity to developing risk management systems in pursuit of external legitimacy. However, the data from this study suggests the legitimacy pressures in the cases of the airlines which claimed ERM adoption were lesser than organisational intentions for improved performance. Although the empirical data signalled varying degrees of encoding of ERM principles into the actions of airline employees, the researcher did not perceive the signals sufficiently potent as to suggest major discrepancies between ERM rules and routines which may imply ceremonial adoptions of ERM; thus, instrumental motivations appear to surpass ceremonial drivers of ERM adoption. Another factor which may have contributed to collection of limited evidence of decoupling and loose coupling between ERM rules and routines is the fact that, in the cases of airlines which claimed adoption of ERM, the researcher interviewed senior risk executives responsible for implementation or coordination of ERM in their respective organisations, who were unlikely to criticise the systems which they had been in charge of, or in the development of which they had participated. Extending the number of case studies on airlines forming the sample (versus applying the field study methodology) may have provided additional insights on the phenomenon of decoupling or loose coupling of risk management rules and routines.

8.5 Conclusions

This chapter reflected on the findings from the field study and two case studies of airline risk management and ERM systems presented in Chapters 5, 6, and 7, in the context of the theoretical model underpinning this study, and in the context of academic literature. Based on these findings the researcher developed an ERM framework in the airline industry which should support airline professionals in implementing or optimising ERM systems. Throughout the framework best practices of airline ERM and risk management systems were reflected on, pointing the reader's attention to the issues which need to be taken into consideration in designing ERM systems.

The discussion and analysis conducted herein demonstrated systematic variations of airline risk management routines despite airlines' risk management approaches being guided by common ERM frameworks or risk management standards. The varying and common features of airline risk management systems were explained in the discussion by the influences of institutional pressures and contingency factors; the configurations of airline risk management and ERM systems were evidenced to be context-specific, adhering to the demands of task and institutional environments of the particular airlines in question. The discussion also emphasised the need to align airline risk management systems to the requirements of airlines' task and institutional environments. Under the tenets of structural contingency theory the discussion argued lack of a "universally appropriate" design of an ERM system applicable to all airlines in all circumstances (Otley, 1980). Finally, this chapter discussed maturity and roles and uses of airline risk management systems, demonstrating the tendency for adoption of ever more comprehensive risk management approaches. Different roles and uses of airline risk management systems were evidenced, adhering to ceremonial and instrumental purposes: organisational responses to requirements of relevant regulatory frameworks, means of externally demonstrating adherence to corporate governance best practices, support of organisational controlling processes and decision-making and planning, or fulfilment of a combination of all of these roles to certain extents. The following table 8-2 resumes some of the major findings of this study.

Table 8-2: Review of key findings

Key Findings	
<i>This study evidenced:</i>	
<input checked="" type="checkbox"/>	Adoption of ERM in airlines drives development of NEW institutions, rules, routines for comprehensive management of risks
<input checked="" type="checkbox"/>	Systematic variations in airline risk management and ERM systems are conditioned by institutional as well as technical divers
<input checked="" type="checkbox"/>	Stronger influence of technical, efficiency and effectiveness criteria for adoption and implementation of ERM rather than legitimacy criteria
<input checked="" type="checkbox"/>	Varying configurations of risk management systems in airlines may lead to different, yet functional approaches if properly aligned with organisational contexts
<input checked="" type="checkbox"/>	Institutionalisation of new organisational rules and routines triggered by adoption of ERM
<input checked="" type="checkbox"/>	Fluidity in organisational designs of ERM; variations among airlines' ERM routines versus homogeneity of formal rules systems
<input checked="" type="checkbox"/>	Interdependent nature of airlines' ERM systems and other management control systems; different roles and uses of ERM systems in airlines: compliance to corporate governance codes, building an external image of sound management control systems, support in internal audit and control functions, as well as support in risk-based decision-making processes
<i>Additionally, findings from this study allowed to:</i>	
<input checked="" type="checkbox"/>	Conceptualise integral components of ERM systems in airlines (figure 8-1: ERM framework in the airline industry)
<input checked="" type="checkbox"/>	Identify drivers of effective risk management in airlines

Chapter 9

Conclusions

9.1. Introduction

This research aimed to investigate structures and practices of airline risk management systems in order to develop an enterprise-wide risk management framework in the airline industry. This research was founded on a critical review of literature indicating an under-explored field of ERM, in particular in the context of the airline industry, revealing shortcomings of airline risk management systems and suggesting the need for development of ever more comprehensive and integrated systems (see Chapter 2). This research also responded to the calls for organisational studies of risk management (Gephart et al., 2009; Power, 2009) adopting a more holistic approach to organisational practices, considering risk management within broader cultural frameworks (Lounsbury, 2008), investigating organisational coupling of risk management (Mikes, 2009), and conducting institutionally grounded studies of practices (Nicolini, 2009).

In order to fulfil the aim and objectives stated for this thesis (see Chapter 1), the researcher revised a wide spectrum of academic literature and industry publications relevant to risk management and airline management, and empirically investigated risk management systems in ten international airlines. Firstly, a field study was conducted in ten airlines exploring the diversity of configurations of airline risk management systems, the developments and shortcomings of such systems, the technical and institutional determinants of their design choices, and finally, the degree of assimilation of ERM principles in the airlines forming the sample (field study methodology as defined in Lillis and Mundy, 2005). Secondly, two case studies were conducted involving airlines from the field study sample; the case studies examined in more detail airlines' risk management systems and the alignments of the systems to airlines' respective business contexts. Based on the empirical research findings and the review of relevant academic and industry literature, an enterprise-wide risk management framework in the airline industry was developed (see Chapter 8).

This concluding chapter begins by revisiting the research questions guiding this study and resuming its major findings. Secondly, contributions of this study are reviewed in different dimensions, including contributions to theory, methodology applications, and knowledge and practice. This leads to a discussion on the limitations of this study, which is followed by suggesting directions for further research. This chapter concludes with a brief section of final remarks.

9.2 Research questions revisited

This research was driven by a set of research questions which are revisited in this section, where the main empirical findings are also synthesised to reflect how they contribute to answering the research questions.

9.2.1 Determinants of adoption and implementation of risk management systems in airlines

The first research question dealt with characteristics of airline business contexts, and the way in which they influence the risk management systems of airlines. Chapters 1 and 2 provided insight into airline operating environments. Chapter 5 presented empirical findings of the factors driving adoption and implementation of particular framings of risk management systems in airlines. A combined approach of contingency and institutional perspectives was applied in order to examine both technical and institutional determinants of the risk management structures and practices constituting such systems, stemming both from airlines' internal and external environments.

RQ1: How do different institutional and technical contextual factors determine the adoption and implementation of airline risk management systems?

Consistent with the propositions of structural contingency theory and findings resulting from studies of management control systems in general, and studies of risk management and ERM systems in particular conducted under this perspective, this study provided evidence of context-specific configurations of airline risk management systems that were attributed to differences in contextual factors within airlines' task and institutional environments. The study demonstrated that the dual context of task and institutional environments exerts efficiency and legitimacy pressures on airlines. Simultaneous tailoring of airline risk management systems to multiple institutional and technical

drivers was evidenced, documenting also how organisational institutional logics determine the necessary trade-offs between the conflicting drivers in designing risk management systems. The institutional environment of airlines was found in this study to exert legitimacy pressures which cause both isomorphism and divergence in organisational risk management systems. Airlines were also evidenced to adapt their risk management structures and practices to best fit with their technical environments under the imperative of enhanced efficiency and effectiveness of their performance. Similarly to the case of institutional influences, contingency factors stemming from the task environment were recognised to drive both homogeneity and diversity in airline risk management approaches. These findings are consistent with those of prior studies which documented intertwined influences of technical and institutional drivers of framings of management control systems in general, and risk management and ERM systems in particular.

Numerous institutional pressures and contingency factors were evidenced to affect the adoption of particular risk management approaches in airlines, including the adoption and implementation, or non-adoption decisions of ERM. In cases of ERM adoption which were of particular interest to this study, it documented how a combination of institutional pressures and contingency factors drive deinstitutionalisation and re-institutionalisation of risk management rules and routines. Research findings suggest influence of multiple external institutional pressures, such as coercive, mimetic, normative, among others, in addition to internal institutional pressures, on the framings of airline risk management systems. This study evidenced the particularly high relevance of regulatory frameworks and corporate governance best practice codes, both falling within the category of coercive pressures. Normative influence of professionalisation of the risk management field, affected by widespread popularity of international risk management standards and frameworks, was also proved to be remarkably relevant. This study also proved the relevance of contingency factors categorised as external factors related to the environment and the industry, internal, organisation-specific factors and, finally, factors related to the typology of risks that airline risk management systems aim to address. The third herein mentioned category of contingency factors, related to airline risk profiles, was evidenced in this study to be of particular relevance; this is mainly due to the fact that the risks facing airlines stem both from external and internal technical contexts, while they may be affected additionally

by institutional contexts, and thus this category of contingency factors conceptualises a synthesis of a variety of other influences. Consistent with the arguments of previous researchers (Kaplan and Mikes, 2014), this study provided evidence of airline-specific risk profiles driving the rules and routines institutionalised in organisations in order to manage uncertainty. Based on these findings, this study further advocated the need to develop appropriate mechanisms in airline risk management systems in order to identify a wide spectrum of all relevant risks and align risk assessment and management techniques to their typology.

9.2.2 Organisational structures and practices within airline risk management systems

The following research question deals with organisational structures, practices, and dynamics of airline risk management systems. In order to address this question, Chapters 5, 6, and 7 analysed risk management structures and practices with their intertwined dynamics constituting risk management systems of the airlines under study, in addition to the rationalities underlying particular configurations of such systems. The analysis was largely informed by the theoretical tenets of old institutional economics and new institutional sociology. The empirical study analysed the institutions, rules, and routines comprising airline risk management systems, demonstrating both their convergent and divergent features. The study also analysed isomorphic forces and institutionalisation processes occurring in the organisational fields of airlines, as well as the institutional logics of actors within these fields.

RQ2: How do airlines structure and perform risk management functions?

The analysis of empirical data of institutions, rules, and routines comprising airline risk management systems illustrated how the major pillars of such systems have traditionally been developed to facilitate management of safety, hazard, and financial risks, while new structures and practices are commonly being developed in airlines following organisations' decisions to expand their risk management agendas. Considering the aim underlying this study, the risk management structures and practices of the airlines which have adopted ERM approach have been of special interest.

Different levels of formalisation of airline risk management systems were evidenced in this study; the study suggested that high level of formalisation of risk management systems in the airlines analysed was related to the proclaimed adoption of ERM by airlines rather than to organisational size and complexity. ERM adoption is associated with development of formal methodologies guiding enterprise-wide risk management processes and delineating procedures and protocols for identification, assessment, treatment, and reporting of risks. Highly structured ERM systems of the airlines under study were found to be predicated by normative propositions of ERM frameworks which conceptualise risk management as a control mechanism facilitating achievement of organisational objectives. Structured ERM systems were found to be associated with more clarity and consistency in the risk definition protocols, and to use more sophisticated tools for capture, storage, and analysis of risk data. This study also evidenced a combination of qualitative and quantitative risk assessment approaches. The findings indicated potential feasibility and functionality of both high and low structured, as well as highly and low calculative approaches in airlines, provided that they are properly matched with the requirements of specific airline business contexts.

Consistent with prior research, this study suggested that the effectiveness of risk management systems is dependent on organisational risk cultures and the level of institutionalisation of risk management principles in organisational routines, rather than on the formal rules guiding risk management approaches. The study evidenced differences in assignment and coordination of risk management responsibilities across organisational hierarchies in the airlines which have and have not adopted ERM. Adoption of ERM in airlines was evidenced to drive development of new institutions, rules, and routines for comprehensive and integrated management of risks, which was exemplified by development of new organisational coordination structures such as risk committees or risk management positions of CRO or its equivalents, or the introduction of structured routines for enterprise-wide identification, assessment, and management of risks. Contrarily, in the cases of non-adoption of ERM this study evidenced less or lack of centralised structures for coordination of risk management initiatives undertaken across different organisational functions and levels. The phenomena of homogeneity and diversity of airline risk management structures and practices are further elaborated on as follows.

The study provided evidence of a certain degree of homogeneity of airline risk management systems, which can be observed principally in the formal rules underlying performance of the risk management functions; in particular, airline ERM rules demonstrate a high level of homogeneity in their fits with generic ERM models such as COSO (2004). It was also illustrated how certain levels of homogeneity in airline risk management systems coexist with variations in certain aspects of such systems. This was noticeable, for example, in the assignment of responsibilities and accountabilities for risk management processes and their constituent routines; despite the similarities of ERM rules among organisations, ERM routines are aligned to the requirements of organisational contexts, causing cross-case variations in performance of ERM especially at the operational and instrumental levels.

Evidence from this study attributes homogeneity of airline risk management systems mainly to the isomorphic forces acting within the organisational field of airlines; the isomorphic forces emphasise the logic of legitimacy in the processes of homogenisation. The phenomena of divergence in airline risk management system configurations, as previously discussed, can be attributed both to technical and institutional factors. In the institutional realm, enactment of risk management rules and routines through actions of actors in airlines is influenced by the existing institutions and institutional logics, which cause variations in routines and possibly in rules in the long term. In the technical realm, enactment of ERM can be affected by actors' perception of the effectiveness and efficiency of rules. Findings from this study are consistent with previous research indicating similarities in organisational modelling of risk management rules based on normative guidelines, and evidencing variations in implementation of ERM and other management control systems in organisations from different industries and even from the same industry.

9.2.3. Assessment of airline risk management systems

The third research question focused on assessment of airline risk management systems. Critical review of academic and industry literature (Chapter 2) provided initial insights into this subject. The empirical study (Chapters 5, 6, and 7) analysed airline risk management systems in the aspects related to risk management rationalities, technologies, and risk experts (as defined in Chapter 3), forming the bases for

evaluation of the state of advancement and maturity of the approaches in the airlines under study, in addition to identification of both the shortcomings and best practices of their risk management systems.

RQ3: Where are airlines placed on the continuum of maturity and advancement of risk management approaches, and what are the roles and uses of their risk management systems?

As discussed in section 8.4 of this thesis, this research assessed the maturity and advancement of risk management systems of the airlines under study according to four main factors. Airline risk management systems were assessed as per the comprehensiveness of risk portfolios, the level of embeddedness of the risk management function throughout organisational structures, the level of integration of enterprise-wide risk management practices, and the roles and uses assigned to the risk management systems. It was demonstrated how on the continuum of risk management systems' maturity and advancement some airlines ranked low with their siloed approaches and ad-hoc risk management initiatives, whilst others ranked high with their mature and sophisticated ERM systems. Apart from documenting differences in the levels of maturity and advancement of the risk management approaches of airlines, consistent with prior literature this study also evidenced a tendency for adoption of ever more comprehensive risk management approaches in airlines. Particularly in the cases of airlines claiming adoption of ERM, organisations were placed high on the continuum of maturity and advancement of risk management approaches. This study also showed how airlines may operate fairly advanced risk management systems without denominating them as 'ERM systems' (e.g. Beta).

Multiple rationalities drive risk management approaches of airlines, which were found to be aimed at addressing both ceremonial purposes, such as demonstrating external compliance and legitimacy, and instrumental purposes of improving organisational performance and gaining economic benefit. With specific regard to airline ERM systems, they were found to perform multiple roles and have numerous uses in organisations, ranging from compliance to corporate governance codes, building an external image of sound risk governance, development of ERM systems in support of internal audit and control functions, to development of ERM systems in support of risk-

based decision-making processes. Despite evidencing diverse organisational roles and uses of ERM, this study inferred that ERM approaches of the airlines under study had been driven by performance rather than by compliance objectives. This was also found to be true for the above-cited case of Beta, which exemplified how external legitimacy motivations related to developing risk management systems are offset by technical efficiency factors, or in other words the offset of ceremonial uses of risk management systems by their instrumental uses.

9.2.4. Recommendations for improvement of airline risk management systems

This fourth research question focused on developing propositions for improvement of airline risk management systems. In order to address this research question, Chapter 8 argued the need to align airline risk management systems to the requirements of their respective task and institutional environments and, based on findings from the empirical study and a review of relevant literature, an enterprise-wide risk management framework in the airline industry was developed.

RQ4: How can airlines improve and align their risk management systems with the requirements of their business contexts?

As explained above in the discussion of contextual determinants of airline risk management approaches, this research conveyed that both external and internal technical and institutional contextual factors need to be considered when configuring the risk management systems in airlines. The multiplicity of technical and institutional, sometimes conflicting requirements, needs to be balanced according to the priorities inherent in organisational strategies. Consistent with prior studies this research advocated lack of a universally applicable design of an ERM system which is applicable to all airlines in all circumstances, and suggests the need to consider numerous technical and institutional requirements of airline environments when developing customised ERM systems. Among these different requirements, the determinant role of airline risk profiles on the framing of risk management systems was emphasised; although portrayed as a separate category of contingency factors, airline risk profiles are conditioned by numerous requirements of institutional and task environments. Airline-specific risk profiles call for alignment of risk management structures and practices to the specificity of risks faced by airlines; airlines should employ different techniques for

management of preventable, strategy-execution, and external risks. Chapters 5, 6, 7, and 8 analysed and discussed employment of diverse risk management rules and routines in airlines, suited to target organisation-specific risk typologies.

From a sample of ten airlines this study analysed a variety of approaches distributed along the continuum of risk management maturity and advancement; the empirical findings formed the basis for identifying key drivers of effective risk management in airlines. In response to this research question, and combining the findings from the empirical research (Chapters 5, 6, and 7) with the findings from the review of a wide spectrum of academic and industry literature (Chapters 1, 2, and 8), this study developed the aforementioned enterprise-wide risk management framework in the airline industry. The framework (presented in Chapter 8, section 8.2) depicts an entanglement of institutions, rules, and routines of an airline ERM system through five structural components, namely ERM process, ERM governance structure, airline risk portfolio, ERM internal environment, and ERM architecture. Throughout the discussion of the research findings falling within the particular components of the framework the researcher indicated the key issues which airline professionals need to consider when developing or optimising the ERM systems. The framework advocates considering a wide spectrum of enterprise-wide risks, embedding the risk management function across all organisational levels and integrating risk management initiatives across organisational hierarchy, whilst also positing that configuration of the risk management function in airlines should be sensitive to the specificity of their contextual requirements. Considering the contingent nature of ERM on the specificity of airline business contexts, following the recommendations proposed throughout the framework should lead to varying couplings and uses of the risk management systems in airlines, which should be noticeable, for example, in variations of airline 'ERM mixes' (Mikes, 2009).

9.3 Contribution of the study

This study provided numerous contributions to the body of knowledge, which are discussed as follows in the theoretical, methodological, and empirical dimensions.

9.3.1 Contributions to theory

In order to conceptualise and later empirically assess the structures and practices constituting airline risk management systems and their determinants, a multi-theoretical framework was developed supporting and informing this research. The framework integrated structural contingency theory with selected strands of institutional theory, in particular new institutional sociology (NIS) and old institutional economics (OIE). This study extends the institutional and contingency theory literature in the field of management control systems, and specifically in the field of risk management, with several theoretical contributions.

This research recognised the limitations of investigating independently the influences of task and institutional environments on organisational structures and practices, and responded to the calls of previous researchers to consider jointly the technical and institutional pressures (e.g. Scott and Meyer, 1983; Carruthers, 1995; Baxter and Chua, 2003; Suddaby, 2010; Covalleski and Dirsmith, 1988). The limitations of adopting independently the theoretical perspectives was addressed through the conjoint application of the contingency and institutional theories; the theoretical framework developed for this research allows for recognising the effects of both task and institutional environments on the organisational risk management structures and practices, and exploring intra-organisational coupling of the risk management function; this general framework can be drawn on in future studies set in different industries.

Consistent with previous findings, this research concluded on the determining effects of both technical and institutional factors on configurations of management control systems in organisations, and allowed for understating how organisational risk management structures and processes acquire meaning in both technical and institutional dimensions. Within the studies of management control systems, in the under-researched field of risk management systems, the conjoint application of contingency theory and institutional theory in understanding the determinants of organisational structures and practices provides an extension to the existing theory. This research confirmed several categories of technical and institutional determinants of organisational structures and practices discussed previously in studies of management control systems in general, and of risk management systems in particular, and extended

the theory by evidencing new categories of technical and institutional pressures relevant specifically to airline risk management systems. Consistent with previous studies of management control systems adopting structural contingency theory perspective, this research argued the need to align organisational configurations of airline risk management systems to contingencies existing within their respective environments.

In the exploration of airline risk management structures and practices, this research referred to the tenets of new institutional sociology (NIS) and old institutional economics (OIE). Combination of these two strands of institutional theory allowed for conceptualising risk management structures and practices as organisational rules and routines influenced by intra- and extra-organisational institutions at micro- and macro-levels, and considering intra-organisational dynamics and the phenomenon of risk management in the organisational field of airlines. Both OIE and NIS have often been applied to studies of management control systems and risk management systems, yet the novelty of this research lies in applying this conjoint theoretical perspective to the study of the airline industry. Under this theoretical approach, this research responded to the calls for studies recognising organisational fluidity of management control systems in general, and risk management systems in particular, while considering the specificity of organisational contexts (Miller et al. 2008; Arena et al., 2010; Woods, 2011; Gephart et al., 2009; Mikes, 2009; Arena et al., 2010).

9.3.2 Contributions to methodology applications

The major contribution of this study to methodology applications resides in adopting an approach to collect and analyse empirical evidence which has not been often applied to organisational studies of risk management, yet which allows for drawing meaningful inferences on airline risk management systems and their contextual determinants. Previous studies of organisational risk management systems, and especially those related to implementation of ERM in organisations, often relied on surveys and were associated with several methodological limitations. In order to explore organisational coupling of risk management systems, in addition to verifying the existence of rules guiding risk management programmes it is necessary to investigate how routines are enacted by actors in organisations. The survey-based studies of risk management tend to rely on simple proxies to identify the components of organisational systems or indicate

their advancement and maturity; the proxies are often insufficient to explore the complexities of risk management and its organisational embeddedness. By way of an example, exploring adoption of ERM in organisations based on simple proxies, such as the appointment of CRO, is problematic as organisations may create ceremonial, auditable trails of ERM and fail to truly implement ERM principles in their risk management rules and routines. Conversely, organisations may implement comprehensive and integrated risk management approaches without denominating them as “ERM” or creating organisational structures commonly associated with ERM. Similarly, the survey-based assessments regarding the extent of ERM implementation often rely on employees’ opinions measured on simple scales, conditioned by respondents’ familiarity with the advancements in the risk management field. Due to the limitations of the survey-based evidence, many empirical studies only explore small fractions of organisational risk management systems in terms of their characteristics, variability, or maturity.

Recognising the methodological limitations of previous studies in the risk management field, this research adopted a qualitative approach, conducting a field study and analysing two case studies of selected airlines. The adopted approach considered the complexity and importance of contextual issues in exploring the risk management phenomenon in airlines, and allowed for better understanding of the structures and practices adopted in airlines, their nature and maturity, and their determinants. To the best of the researcher’s knowledge there has been very limited use of case studies and field studies in the studies of risk management, and especially studies of the adoption and implementation of ERM. Under the chosen theoretical approach this research responds to calls for exploring control systems in operation (Otley, 1999) and adopting a more holistic approach to organisational practices and considering risk within broader cultural frameworks (Lounsbury, 2008).

9.3.3 Contributions to knowledge and practice

This research addressed the gaps identified in the literature of risk management and ERM in particular, and in the literature of airline management. ERM has been gaining momentum in the research agendas of scholars from diverse fields (Bhimani, 2009). The majority of ERM studies, similarly to studies of other management control systems,

have been conducted to date in the context of financial and related industries, which have become pioneers in ERM implementation (Arena et al., 2010). As the practice of ERM has become more widespread, a number of academic studies have followed investigating ERM in the context of diverse industries. However, the phenomenon of ERM in airlines has attracted limited attention from researchers. This study contributed to the literature of ERM by providing new insight on organisational coupling of ERM, in addition to the drivers of its adoption and implementation, from the under-explored perspective of the airline industry.

There has been limited empirical research comprehensively assessing risk management structures and practices in airlines. Previous studies would mainly focus on risk management structures and practices targeting particular types of exposures, such as airline financial or safety risks, yet the literature lacked an empirical study exploring airline risk management systems in a more comprehensive manner. This study provided a useful and timely analysis of the airline industry from the perspective of risk management systems, adopting a multi-dimensional approach to the assessment of such systems.

As previously indicated, although ERM has been gaining ever-increasing interest among airlines, empirical research exploring the ERM concept in relation to airlines is scarce; particularly in terms of ERM adoption and implementation in the airline industry, there have been very few empirical studies carried out. To the best of the researcher's knowledge, this study is one of the pioneer investigations exploring ERM in the organisational contexts of airlines, assessing enactment and institutionalisation of ERM principles, cultural significance of ERM, maturity and advancement of ERM, its level of integration in managerial decisions, and distribution of responsibilities and accountabilities for risk management among actors in airlines.

Apart from responding to the 'how' questions related to organisational coupling of ERM in airlines, this study also addressed the 'why' questions behind the decision to adopt ERM or not, in addition to whether the risk management function in airlines should be configured in a particular manner. This study is one of the first studies to explore the determinants of organisational designs of the risk management systems in airlines. It contributed to the literature by explaining the drivers of airline risk

management approaches, as indicated above, from both technical and institutional perspectives. Findings from this study gain relevance in the context of relatively fewer studies being conducted through qualitative research methodologies than survey-based research. Previous prevalingly quantitative research investigating organisation-related characteristics related to ERM, would not allow for exploring ERM in cultural and organisational contexts; these studies also suffered from inherent limitations related to identifying organisations with truly embedded ERM based on simplistic proxies.

This study evidenced how ERM adoption in airlines drove development of new institutions, rules and routines for comprehensive management of risks, as exemplified by appointments of CROs or other equivalent positions, formalisation of risk management processes, or employment of diverse risk management and reporting tools. Findings from this study are consistent with previous research arguing context-specific configuration of ERM systems (e.g. Mikes, 2009; Woods, 2009, 2011; Arena et al., 2010, 2011; Beasley et al., 2005; Hoyt and Liebenberg 2011). Despite certain common elements in airline risk management systems which were noticeable, for example, in the structural components of ERM frameworks often modelled on the provisions of various normative standards or frameworks (e.g. COSO, ISO 31000), this study evidenced the existence of systematic variations in airline risk management systems. Variations were especially noticeable in configurations of responsibilities and accountabilities in risk management processes and their constituent routines. This is consistent with the findings of Paape and Spakle (2012), signalling variation in ERM systems especially at the operational and instrumental levels.

The findings of systematic variations of airline ERM systems (for example in the aspects related to calculative versus non-calculative cultures, or formalised versus informal approaches), are also related to conclusions on different drivers of the functionality of risk management systems. This study showed how varying configurations of ERM rules and routines may lead to different, yet still functional, approaches if they are properly aligned with organisational needs. On a related note, this research also showed how airlines may encode many of the ERM principles without denominating their systems as ERM, paying little interest in ceremonial displays of ERM; a similar argument was proposed by Woods (2011), based on an investigation of a case which lacked the commonly employed characteristics manifesting ERM, such as

the CRO position or a formalised, auditable risk management framework (the ‘Tesco’ case).

Findings from this study proved the importance of proper encoding of ERM principles into organisational cultures. Similarly to other researchers in this field (in particular, Kaplan and Mikes, 2014; Kimbrough and Compton, 2009; or Coccia, 2005), throughout this study the researcher argued that the effectiveness of risk management systems is more dependent on the commitment of organisation members at various levels than on the formal rules guiding risk management approaches.

Critical of the assessments of ERM maturity proposed in survey-based studies of ERM, which often relied solely on respondents’ understanding of the risk management systems of their respective organisations and on their perceptions of the maturity concept (e.g. Beasley et al. 2010), this study assessed the maturity and advancement of airlines’ risk management systems through multiple criteria; the criteria considered the extent of integration of enterprise-wide risk management routines, embeddedness of the risk management function across organisational hierarchies, and comprehensiveness of risk portfolios. Additionally, findings from this study pointed to the interdependent nature of risk management and other organisational management control systems (see Bhimani, 2009), and evidenced different roles and uses of ERM in airlines as also suggested by previous studies (e.g. Arena et al., 2011; Tekathen and Dechow, 2013; McRae and Balthazor, 2000; Woods, 2009); these varied between compliance to corporate governance codes, building an external image of sound management control systems, development of risk management systems in support of internal audit and control functions and, finally, development of risk management systems in support of risk-based decision-making processes aimed at overall improvement of organisational performance.

Prior studies pointed both to technical and institutional drivers of convergence or divergence of ERM system configurations (e.g. Gordon et al., 2009; Mikes, 2005; Pagach and Warr, 2011). Similarly, this empirical study of the driving forces of airline risk management systems demonstrated the influence of a variety of institutional pressures and contingency factors. In the context of previous studies suggesting ceremonial adoption of ERM, serving primarily as an external accountability device

(Bruce, 2005; Collier et al., 2006; Fraser and Henry, 2007), in many of the investigated airlines evidence suggested stronger influence of technical, efficiency and effectiveness criteria for adoption of particular risk management configurations, rather than the influences of legitimacy pressures.

Due to the methodological design of this study, it did not allow for a statistical generalisation of the findings. However, through purposefully employing variability in the sample, this study captured the varying characteristics of the risk management phenomenon in airlines and generated patterns and concepts. In this context, the findings and conceptual developments generated in a particular environment can be transferred to other environments (Norman, 1970), which suggests transferability of the recommendations and implications from this research to the organisational settings of other airlines. Furthermore, the enterprise-wide risk management framework in the airline industry developed throughout this study, which identified key drivers of effective risk management in airlines, advocated uniqueness of organisation-specific task and institutional environments and conveyed that implications from the framework should be aligned to organisations' contextual requirements.

9.4 Research limitations

This research provided multiple contributions in the theoretical, methodology application, conceptual and practical dimensions; however, each research design is associated with certain limitations. The limitations of this research are acknowledged and discussed as follows. The limitations axiomatically indicate avenues for further research in the investigated areas.

This research relied primarily on new institutional sociology and old institutional economics in the exploration of organisational coupling and significance of risk management systems in airlines. Other theoretical perspectives are also suitable to respond to the questions stated by this study; by way of an example, organisational theories such as the agency theory, the stakeholder theory, or the theory of the firm, might additionally broaden the perspective and enrich the interpretation of data collected throughout this research. However, following a review of the theoretical perspectives adopted in organisational studies of management control systems, the

researcher concluded that NIS and OIS were commonly used as they provide suitable bases for exploring the problem as stated for this research.

Considering the objectives stated for this study, the study investigated the technical and institutional determinants of the design choices of risk management systems in airlines with varying levels of maturity and advancement; hence, the rationales behind adoption and implementation of ERM, and non-adoption of ERM, were jointly investigated. Introducing a greater level of detail in future studies in terms of the distinction between the drivers of adoption and implementation of ERM might provide additional interesting contributions. However, since during the course of this study the driving forces of adoption and implementation of ERM were often reported to be similar, the researcher chose to analyse them collectively.

Previous studies of management control systems conducted under the contingency theory perspective and within the system approach of contingent fit have often analysed the effects of multiple contingency factors on organisational structural characteristics and on organisational performance. This study concentrated on analysing the technical and institutional determinants of organisational designs of airline risk management systems; however, the presented list of factors should not be considered exhaustive. Although this study, in a complementary manner, reported on interviewees' perception of improved organisational performance related to ERM adoption and implementation, analysis of the relations between particular configurations of risk management systems and organisational performance was beyond the scope of this study considering the objectives stated for this research.

The methodological limitations of this research also need to be acknowledged. Chapter 4 provides detailed accounts of the means undertaken throughout the research process by the researcher in order to mitigate the inherent limitations of the chosen methodological approach. This study explored a limited subset of the large population of airlines; the fieldwork was limited to ten international airlines. Extending the sample size for the investigated phenomena would improve validity of the findings from this study. In order to alleviate this limitation, field study data was complemented with rich, contextualised data collected through case studies.

As previously mentioned (section 9.3.3), this study does not allow for statistical generalisability of the findings, but rather for theoretical interference. This limitation is believed to have been partly outweighed by providing rich and contextualised data, which allowed for making conceptual developments related to organisational coupling of airline risk management systems, and to rationalities behind the selection of particular framings of such systems; the theoretical developments may be relevant to other organisational settings beyond the investigated spectrum of airlines.

Limitations to internal validity of this study have also been considered (see Chapter 4, section 4.4 for more details). The biases inherent in the data collection method are especially relevant. Data for this research was collected mainly from interviews with knowledgeable representatives of the airlines forming the core sample for this analysis. Although in the cases of three airlines (Alpha-1, Alpha-2, and Beta) data was collected across different organisational levels, including peripheral positions to the central risk management functions, in the remaining organisations involved in the field study evidence was collected from a limited number of professionals from each organisation. However, in the latter cases the selected professionals were in charge of organisational risk management functions; these individuals were chosen due to the strategic positions they held in their respective airlines and their expertise of organisational risk management processes, despite the high difficulty of involving them in this research; their accounts were therefore more informative than those that would have been provided by other organisation members. This research relied on cross-sectional and, for a substantial part, self-reported data which might have been influenced by interviewees' conditions at the time of data collection. Notwithstanding, in order to alleviate these biases, empirical evidence was collected from multiple sources.

Continuing with the method bias, the researcher conducted both face-to-face and remote interviews with airline representatives; the latter data collection technique allowed for airlines from diverse international locations to be included in the sample, in the context of time and funding limitations. The researcher acknowledges relatively better quality of data collected through the face-to-face interviews. However, due to the nature of this research, the value of collecting evidence from airline representatives in different geographical locations offset the inconvenience of using telecommunication tools.

9.5 Recommendations for further research

Avenues for further research can be derived from the findings and limitations of this study. Since adoption and implementation of ERM in airlines is a novel research area, there still remain numerous unresolved issues for further studies which could improve understanding and practice of risk management in airlines.

- As previously indicated, exploring the link between contingent fits of ERM in airlines and organisational performance was beyond the scope of this study. Further research exploring the relation of organisational performance, including both financial and non-financial performance measures, and the fit between airline ERM systems and contextual factors, could provide valuable contributions to literature.
- Interesting insights could be derived from further studies on the dominance of certain contingency and institutional factors over others, as well as the relationships of correlation, causality, or conflict between the factors, both in the context of the airline industry and other industries. Understanding in more detail how technical and institutional pressures are determined exogenously or through management decisions and how they evolve over time, would be a relevant extension to the knowledge of ERM. Exploring these issues with the aid of alternative, quantitative research methodologies could lead to interesting findings.
- ERM is intertwined with multiple other management functions in airlines. Further research could explore in more detail the relation of ERM and diverse management and control systems. Furthermore, more detailed studies of adoption of ERM principles in different organisational departments in airlines and at various organisational levels, such as financial risk management, safety risk management, operational risk management, and many others explored across organisational hierarchies, should be valuable additions to the body of knowledge; further case study research would be especially helpful in exploring these issues.
- This research provided a theoretical platform for exploring organisational coupling of risk management, and rationales behind employing particular configurations of the risk management functions in organisations. Considering the scarcity of research on ERM fluidity in organisations and multiple unresolved issues related to the determinants of ERM adoption and implementation, other studies can draw

from the theoretical framework underlying this research and apply it in the context of different industries.

- The empirical study was primarily conducted in a sample of ten international airlines, and it allowed for making conceptual developments related to, among others, best practices of airline risk management, as well as to organisational couplings of airline risk management systems and their determinants; the ERM framework in the airline industry was developed (Chapter 8, section 8.2). Further research, building on the findings from this study, could validate the propositions of the framework by applying it to a larger sample of organisations from the airline industry, as well as from other industries characterised by a similar risk profile. Particularly interesting findings could be delivered in the course of future research by validating the propositions of the framework in the organisational contexts of airlines with traditional, siloed risk management systems, which would adopt ERM by following the recommendations from this research.

9.6 Final remarks

This thesis recognised the changing paradigm of airline risk management practice, and explored multiple aspects of airline risk management systems, especially with regard to the latest developments from the corporate governance field, Enterprise Risk Management. Airline risk management approaches have evolved toward ever more comprehensive and integrated systems, which is believed to have improved understanding and treatment of the multiple challenges facing this industry. As the industry matures, based on current trends, it can be inferred that the adoption of ERM principles in airlines should increase. Research in this area, such as the one conducted herein, is supportive of configuring ERM in airlines in a way that best fits their contextual requirements.

Review of the findings of this investigation conducted throughout this chapter demonstrated that the aims and objectives stated for this study have been achieved. The significance of this research lies in contributing to the under-researched fields of coupling, dynamics, and determinants of ERM in wider organisational contexts, and of the risk management phenomena in airlines; airline risk management systems were comprehensively assessed in terms of their constituent institutions, rules, and routines,

in addition to the rationales behind the configurations of such systems. Finally, developing an enterprise-wide risk management framework in the airline industry supporting the implementation or optimisation of ERM systems in airlines contributed towards closing the gaps in ERM literature and practice.

References

- Aabo, T., Fraser, J. and Simkins, B. (2005) 'The Rise and Evolution of the Chief Risk Officer: Enterprise Risk Management at Hydro One', *Journal of Applied Corporate Finance*, 17 (3), pp. 62-75.
- Abdel-Kader, M. (2011) *Review of Management Accounting Research*. Hampshire: Palgrave Macmillan.
- Abeyratne, R. (2001) 'Ethical and moral considerations of airline management', *Journal of Air Transport Management*, 7, pp. 339–348.
- Abrams, C., von Känel, J., Müller, S., Pfitzmann, B. and Ruschka-Taylor, S. (2006) 'Optimized enterprise risk management', *IBM Systems Journal*, 46 (2), pp. 219-234.
- Adler, N. and Gellman, A. (2012) 'Strategies for managing risk in a changing aviation environment', *Journal of Air Transport Management*, 21, pp. 24-35.
- Ahmed, A. H. and Poojari, C. A. (2008) 'An overview of the issues in the airline industry and the role of optimization models and algorithms', *The Journal of the Operational Research Society*, 59 (3), pp.267-277.
- Ahrens, T. (1996) 'Styles of accountability', *Accounting, Organizations and Society*, 21 (2/3), pp. 139-173.
- Ahrens, T. and Dent, J. F. (1998) 'Accounting and organizations: Realizing the richness of field research', *Journal of Management Accounting Research*, 10, pp. 1-39.
- Ahrens, T. and Chapman, C. S. (2006) 'Doing Qualitative Field Research in Management Accounting: Positioning Data to Contribute to Theory', *Accounting, Organizations and Society*, 31 (8), pp. 819-841.
- Ahuja, M. K. and Carley, K. M. (1999) 'Network Structure in Virtual Organizations', *Organization Science*, 10 (6), pp. 741–757.
- Alexander, D. (2013) 'Volcanic ash in the atmosphere and risks for civil aviation: A study in European crisis management', *International Journal of Disaster Risk Science*, 4 (1), pp. 9 – 19.
- Alford, R. R. and Friedland, R. (1995) *Powers of theory: Capitalism, the state, and democracy*. Cambridge: Cambridge University Press.
- Al-Twaijry, A. A. M., Brierley, J. A. and Gwilliam, D. R. (2003) 'The development of internal audit in Saudi Arabia: an institutional theory perspective', *Critical Perspectives on Accounting*, 14 (5), pp. 507-31.
- Althonayan, A., Keith, J. and Misiura, A. (2011). Aligning enterprise risk management with business strategy and information systems, *European, Mediterranean & Middle Eastern Conference on Information Systems (EMCIS 2011)*, Athens, May.
- Alves, C. F. and Barbot, C. (2007) 'Do low cost carriers have different corporate governance models?', *Journal of Air Transport Management*, 13 (2), pp. 116-120.

- Alvesson, M. (2003) 'Beyond neopositivists, romantics and localists: A reflexive approach to interviews in organizational research', *Academy of Management Review*, 28, pp. 1-13.
- Arena, M., Arnaboldi, M. and Azzone, G. (2006) 'Internal audit in Italian Organizations - A multiple case study', *Managerial Auditing Journal*, 21 (3), pp. 275-292.
- Arena, M. and Azzone, G. (2007) 'Internal audit departments: Adoption and characteristics in Italian companies', *International Journal of Auditing*, 11 (2), pp. 91-114.
- Arena, M., Arnaboldi, M. and Azzone, G. (2010) 'The Organizational Dynamics of Enterprise Risk Management', *Accounting, Organizations and Society*, 35 (7), pp. 659- 675.
- Arena, M., Arnaboldi, M. and Azzone, G. (2011) 'Is Enterprise Risk Management real?', *Journal of Risk Research*, 17 (4), pp. 779-797.
- Argote, L. (1982) 'Input Uncertainty and Organizational Coordination in Hospital Emergency Units', *Administrative Science Quarterly*, 27 (3), pp. 420-434.
- Arnaboldi, M. and Lapsley, I. (2003) 'Activity Based Costing, and the transformation of Local Government', *Public Management Review*, 5 (3), pp. 345-375.
- Arnaiz, A., Ferreiro, S. and Buderath, M. (2010) 'New decision support system based on operational risk assessment to improve aircraft operability', *Journal of Risk and Reliability*, 224 (3), pp. 137-147.
- Arnold, D. O. (1970) 'Dimensional sampling: An approach for studying a small number of cases', *American Sociologist*, 5 (2), pp. 147-150.
- Babbie, E. R. (1990) *Survey research methods*. Belmont: Wadsworth.
- Barley, S. R. and Tolbert, P. S. (1997) 'Institutionalization and structuration: studying the links between action and institution' *Organizational Studies*, 18, pp. 93-117.
- Barton, T., Shenkir, W. and Walker, P. (2001) 'Managing risk: An enterprise-wide approach', *Financial Executive*, 17 (2), pp. 48-52.
- Barton, T. L., Shenkir, W. G. and Walker, P. L. (2002) *Making Enterprise Risk Management Pay Off: How Leading Companies Implement Risk Management*. NJ: Financial Times/Prentice Hall PTR.
- Baum, J. A. C. and Oliver, C. (1991) 'Institutional linkages and organizational mortality', *Administrative Science Quarterly*, 36, pp. 187-218.
- Baranoff, E. G. (2004) 'Risk Management: a Focus on a More Holistic Approach Three Years after September 11', *Journal of Insurance Regulation*, 22 (4), pp. 71-81.
- Baxter, J. and Chua, W. F. (2003) 'Alternative management accounting research - whence and whither', *Accounting, Organizations and Society*, 28, pp. 97-126.
- Baxter, J. and Chua, W. F. (2008) 'The field researcher as author-writer', *Qualitative research in accounting and management*, 5 (2), pp. 101-121.

- Baxter, R., Bedard, J.C., Hoitash, R. and Yezegel, A. (2013) 'Enterprise risk management program quality: Determinants, value relevance, and the financial crisis', *Contemporary Accounting Research*, 30 (4), pp. 1264-1295.
- Bazerman, M. H. and Watkins M. (2005) 'Airline Security, the Failure of 9/11, and Predictable Surprises', *International Public Management Journal*, 8 (3), pp. 365-377.
- Beasley, M. S., Clune, R. and Hermanson, D. R. (2005) 'Enterprise Risk Management: An Empirical Analysis of Factors Associated with the Extent of Implementation', *Journal of Accounting and Public Policy*, 24, pp. 521-531.
- Beasley, M. S., Clune, R. and Hermanson, D. R. (2005) 'ERM: a Status Report', *Internal Auditor*, 62 (1), pp. 67-72.
- Beasley, M., Chen, A., Nunez, K. and Wright, L. (2006) 'Working Hand in Hand: Balanced Scorecards and Enterprise Risk Management', *Strategic finance*, (March), pp. 49-55.
- Beasley, M. S., Pagach, D. and Warr, R. (2008) 'Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes', *Journal of Accounting, Auditing and Finance*, 23 (3), pp. 311-332.
- Beasley, M. and Frigo, M. (2007) 'Strategic risk management: Creating and protecting value', *Strategic Finance*, May, pp. 25-31.
- Beasley, M.S. and Frigo, M.L. (2010) 'ERM and Its Role in Strategic Planning and Strategy Execution', in Fraser, J. and Simkins, B.J. (eds.) *Enterprise risk management: today's leading research and best practices for tomorrow's executives*. Hoboken, New Jersey: JohnWiley & Sons, Inc.
- Beck, M. (2004) 'Obstacles to the Evolution of Risk Management as a Discipline: Some Tentative Thoughts', *Risk Management*, 6 (3), pp.13-21.
- Beck, T., Demircug-Kunt, A. and Levine, R. (2006) 'Bank concentration, competition, and crises: First results', *Journal of Banking and Finance*, 30 (5), pp. 1581-1603.
- Belobaba, P. (2009) 'Overview of airline economics, markets and demand', in Belobaba, P., Odoni, A. and Barnhart, C. (eds.) *The Global Airline Industry*. New York: Wiley Press.
- Bejou, A., Edvardsson, B. and Rakowski, J. (1996) 'A critical incident approach to examining the effects of service failures on customer relationships: The case of Swedish and U.S. Airlines', *Journal of Travel Research*, 35, pp. 35-40.
- Benders, J., Batenburg, R. and van der Blonk, H. (2005) 'Sticking to standards: technical and other isomorphic pressures in deploying ERP-systems', *Information and Management*, 46, pp. 194-203.
- Ben-Amar, W., Boujenoui, A. And Zéghal, D. (2014) 'The relationship between corporate strategy and enterprise risk management: Evidence from Canada', *Journal of Management and Strategy*, 5 (1), 1-n/a.

- Berghöfera, B. and Luceya B. (2014) 'Fuel hedging, operational hedging and risk exposure — Evidence from the global airline industry', *International Review of Financial Analysis*, 34, pp. 124-139.
- Berley, S. (2006) 'ERM: Time to catch the wave', *Risk Management*, 53 (4), pp.12-19.
- Bhimani, A. (2003) 'A study of the emergence of management accounting system ethos and its influence on perceived system success', *Accounting, Organizations and Society*, 28 (6), pp. 523–548.
- Bhimani, A. (2009) 'Risk management, corporate governance and management accounting: Emerging interdependencies', *Management Accounting Research*, 20 (1), pp. 2-5.
- Bisignani, G. (2011). *State of the Air Transport Industry*. IATA 67th Annual General Meeting [Online] Available at: <http://www.iata.org/pressroom/speeches/pages/2011-06-06-01.aspx>
- Blau, P. M. (1970) 'A Formal Theory of Differentiation in Organizations', *American Sociological Review*, 35 (2), pp. 201–218.
- Boland, R. J., Sharma, A. K. and Afonso, P. S. (2008) ' Designing management control in hybrid organizations: The role of path creation and morphogenesis', *Accounting, Organizations and Society*, 33 (7), pp. 899 – 914.
- Boksberger, P. (2011) 'Risk, Safety and Security', in Wittmer, A., Bieger T. and Moeller, R. (eds.) *Management of the Integrated Aviation Value Chain*. Berlin: Springer Texts in Business and Economics.
- Bowling, B. M. and Rieger, L. (2005) 'Success factors for implementing enterprise risk management', *Bank Accounting and Finance*, 18 (3), pp. 21–26.
- Branson, B., Concessi, P., Fraser, J. R. S., Hofmann, M., Kolb, R. and Perkins, T. (2010) 'Enterprise risk management: Current initiatives and issues - Journal of Applied Finance roundtable', *Journal of Applied Finance*, 18 (1), pp. 115-132.
- Brignall, S. (1997) 'A contingent rationale for cost system design in service', *Management Accounting Research*, 8, pp. 325-346.
- Brignall, S. and Modell, S. (2000) 'An Institutional Perspective on Performance Measurement and Management in the 'New Public Sector'', *Management Accounting Research*, 11, pp. 281–306.
- Broadbent, J. and Guthrie, J. (1992) 'Changes in the Public Sector: A Review of recent "Alternative" Accounting Research', *Accounting, Auditing & Accountability Journal*, 5 (2), pp. 3-31.
- Brons, M., Pels, E., Nijkamp, P. and Rietveld, P. (2002) 'Price elasticities of demand or passenger air travel: a meta-analysis', *Journal of Air Transport Management*, 8, pp. 165-175.
- Brooker, P. (2004) 'Why the Eurocontrol Safety Regulation Commission Policy on Safety Nets and Risk Assessment is Wrong', *The Journal of Navigation*, 57, pp. 231-243.

- Brooker, P. (2006) 'Air Traffic Management accident risk. Part 1: The limits of realistic modelling', *Safety Science*, 44 (2006), pp. 419–450.
- Bruce, R. (2005) 'Swift message on risk management', *Accountancy*, (April), pp. 22.
- Brueckner, J. K. and Van Dender, K. (2008) 'Atomistic congestion tolls at concentrated airports? Seeking a unified view in the internalization debate', *Journal of Urban Economics*, 64, pp. 288-295.
- Bruns, W. J., and McKinnon, S. M. (1993) 'Information and managers: A field study', *Journal of Management Accounting Research*, 5, pp. 84 - 108.
- Bruns Jr., W. J. and Waterhouse, J. H. (1975) 'Budgetary control and organizational structure', *Journal of Accounting Research*, Autumn, pp. 177–203.
- Buehler, K., Freeman, A., and Hulme, R. (2008) *The Risk Revolution - McKinsey Working Papers on Risk*. McKinsey & Company.
- Burchell, S., Clubb, C., Hopwood, A., Hugues, J. and Nahapiet, J. (1980) 'The Roles of Accounting in Organizations and Society', *Accounting, Organizations and Society*, 5 (1), pp. 5-27.
- Burns, T. and Stalker, G. M. (1961) 'The Management of Innovation', London: Tavistock.
- Burns, L. R. and Wholey, D. R. (1993) 'Adoption and abandonment of matrix management programs: Effects of organizational characteristics and interorganizational networks', *Academy of Management Journal*, 36, pp. 106-138.
- Burns, J. and Scapens, R. W. (2000) 'Conceptualizing Management Accounting Change: An Institutional Framework', *Management Accounting Research*, 11, pp. 3-25.
- Burns, J. (2000) 'The Dynamics of Accounting Change Inter-play between new Practices, Routines, Institutions, Power and Politics', *Accounting Auditing & Accountability Journal*, 13 (5), pp. 566-596.
- Burton, R. M., Lauridsen, J. and Obel, B. (2002) 'Return on Assets Loss from Situational and Contingency Misfits', *Management Science*, 48 (11), pp. 1461–1485.
- Burton, R. M., Lauridsen, J. and Obel, B. (2003) 'Erratum: Return on Assets Loss from Situational and Contingency Misfits', *Management Science*, 49 (8), pp. 1119.
- Cancel, A. E., Mitrook, M. A. and Cameron, G. T. (1999) 'Testing the contingency theory of accommodation in public relations', *Public Relations Review*, 25 (2), pp. 171-197.
- Cai, Y. and Yan, F. (2011) Organizational Diversity in Chinese Private Higher Education, *CHER 22nd Annual Conference*, Porto, 10-12 September 2009.
- Calderon, T. G. and Pero, K. (2013) 'Examining the Maturity of Enterprise Risk Management Initiatives in Colleges and Universities', *Internal Auditing*, 28.4 (Jul/Aug 2013), pp. 19-28.

- Cancel, A. E., Mitrook, M. A. and Cameron, G. T. (1999) 'Testing the contingency theory of accommodation in public relations', *Journal of Public Relations Research*, 25 (2), pp. 171-97.
- Carey, A. and Turnbull, N. (2001) 'The Boardroom Imperative on Internal Control', *Mastering Risk: Concepts*, (1), pp. 10-14.
- Carruthers, B. G. (1995) 'Accounting, Ambiguity, and the New Institutionalism', *Accounting, Organizations and Society*, 20, pp. 313-328.
- Carter, D. A. and Simkins, B. J. (2004) 'The Market's Reaction to Unexpected, Catastrophic Events: The Case of Airline Stock Returns and the September 11th Attacks', *Quarterly Review of Economics and Finance*, 44, pp. 539-558.
- Carter, D. A., Rogers, B. and Simkins, J. (2006) 'Does Hedging Affect Firm Value? Evidence from the US Airline Industry', *Financial Management*, 35 (1), pp. 53-86.
- Casadesus-Masanell, R. and Ricart, J. (2010) 'From strategy to business models and on to tactics', *Long Range Planning*, 43, pp. 195-215.
- Castel, P. and Friedberg, E. (2004). Institutional Change as an Interactive Process: the Modernization of the French Cancer Centers, *SCANCOR Institutions Conference*, Stanford University, 26-27 March.
- Casualty Actuarial Society (CAS) (2003). *Overview of Enterprise Risk Management*. CAS [Online]. Available at: <http://www.casact.org/area/erm/overview.pdf>
- Chalmers, A.F. (1996) *What is this thing called science?* 3rd edn. Indianapolis/Cambridge: Hackett Publishing Company Inc.
- Chandler, A. D., Jr. (1962) *Strategy and Structure: Chapters in the History of the Industrial Enterprise*. Cambridge: MIT Press.
- Chapman, C. S. (1997) 'Reflections on a contingent view of accounting', *Accounting, Organizations and Society*, 22 (2), pp. 189-205.
- Chapman, C. S. (1998) 'Accountants in organizational networks', *Accounting, Organizations and Society*, 23 (8), pp. 737-766.
- Chapman, C. B. and Ward, S. C. (2003) *Project Risk Management: Processes, Techniques and Insights*. 2nd edn. Chichester: John Wiley & Sons.
- Chatterjee, S., Wiseman, R. M., Fiegenbaum, A. and Devers, C. E. (2003) 'Integrating Behavioural and Economic Concepts of Risk into Strategic Management: the Twain Shall Meet', *Long range planning*, 36 (1), pp. 61-79.
- Chenhall, R. H. (2003) 'Management control systems design within its organizational context: Findings from contingency-based research and directions for the future', *Accounting, Organizations and Society*, 28 (2-3), pp. 127-168.
- Chenhall, R.H. (2006) 'Theorizing contingencies in management control systems research', in Chapman, C.S., Hopwood, A.G. and Shields, M.D. (eds.) *Handbooks of Management Accounting Research*. Oxford: Elsevier, pp. 163-205.

- Chenhall, R.H. and Chapman, C. (2006) 'Theorising and testing fit in contingency research on management control systems', in Hoque, Z. (ed.) *Methodological Issues in Accounting Research: Theories and Methods*. London: Spiramus Press Ltd, pp. 35-54.
- Chien-Tsung L., Wetmore, M. and Przetak, R. (2006) 'Another Approach to Enhance Airline Safety: Using Management Safety Tools', *Journal of Air Transportation*, 11 (2), pp. 113-139.
- Child, J. and Mansfield, R. (1972) 'Technology, size and organizational structure', *Sociology*, 6, pp. 369-393.
- Child, J. (1973) 'Predicting and Understanding Organization Structure', *Administrative Science Quarterly*, 18 (2), pp. 168-185.
- Chow, C. W., Kato, Y. and Shields, M. D. (1994) 'National culture and the preference for management controls: An exploratory study of the firm-labor market interface', *Accounting, Organizations and Society*, 19, pp. 381-400.
- Chua, W. F. (1986) 'Radical Developments in Accounting Thought', *The Accounting Review*, LXI (4), pp. 601-632.
- Coccia, R. (2005) 'Enterprise risk management must be part of companies' culture: Panel', *Business Insurance*, 39 (43), pp. 37-39.
- Colquitt, L. L. and Hoyt, R. E. (1997) 'Determinants of Corporate Hedging Behaviour: Evidence from the Life Insurance Industry', *Journal of risk and insurance*, 64, pp. 649-671.
- Colquitt, L. L., Hoyt, R. E. and Lee, R. B. (1999) 'Integrated risk management and the role of the risk manager', *Risk Management and Insurance Review*, 2 (3), pp. 43-61.
- Collier, P. and Agyei-Ampomah, S. (2005) *Management Accounting: Risk and Control Strategy*. London: CIMA.
- Collier, P.M., Berry, A. and Burke, G.T. (2006). *Risk and Management Accounting: Best Practice Guidelines for Enterprise - Wide Internal Control Procedures*. Research Executive Summaries Series, 2 (11), [Online]. Available at: http://www.cimaglobal.com/Documents/ImportedDocuments/tech_ressum_risk_and_management_accounting_best_practice_guidelines_for_enterprise-wide_internal_control_procedures_2006.pdf
- Collis, J. and Hussey, R. (2003) *Business Research a Practical Guide for Undergraduate and Postgraduate Students*. 2nd edn. London: Macmillan Press Ltd.
- Cooper, W., Sinha, K. and Sullivan, K. (1995) 'Accounting for complexity in costing high technology manufacturing', *European Journal of Operational Research*, 85 (2), pp. 316-326.
- COSO (The Committee of Sponsoring Organization of the Treadway Commission) (2003). *Enterprise Risk Management Framework*. New York: AICPA.

- COSO (The Committee of Sponsoring Organisations of the Treadway Commission) (2004). *Enterprise risk management - integrated framework, executive summary*. New York: AICPA.
- COSO (The Committee of Sponsoring Organisations of the Treadway Commission) (2004). *Enterprise risk management - integrated framework, application techniques*. New York: AICPA.
- Covaleski, M. A. and Dirsmith, M. W. (1988) 'An institutional perspective on the rise, social transformation, and fall of a university budget category', *Administrative Science Quarterly*, 33, pp. 562-587.
- Covaleski, M., Dirsmith, M. and Michelman, J. (1993) 'An Institutional Theory Perspective on The DRG Framework, Case-mix Accounting Systems and Health Care Organizations', *Accounting, Organizations and Society*, 18 (1), pp. 65-80.
- Covaleski, M. A., Dirsmith, M. W. and Samuel, S. (1996) 'Managerial accounting research: The contributions of organizational and sociological theories', *Journal of Management Accounting Research*, 8, pp. 1-35.
- Cowherd, J. L. and Manson, D. P. (2003) 'Enterprise/Operational risk management', *The CalPoly Pomona Journal of Interdisciplinary Studies*, (Fall), pp. 1-11.
- Craig, C. S. and Douglas, S. P. (1996) 'Responding to the challenges of global markets: Change, complexity, competition and conscience', *Columbia Journal of World Business*, 31 (4), pp. 6-18.
- Crawford, M. and Stein, W. (2004) 'Risk management in UK local authorities: the effect of current guidance and practice', *International Journal of Public Sector Management*, 17, pp. 498-512.
- Creswell, J. W. (2009) *Research design: Qualitative, quantitative, and mixed methods approaches*. 3rd edn. Thousand Oaks, CA: SAGE Publications, Inc.
- Cruz, I., Major, M. and Scapens, R.W. (2009) 'Institutionalization and practice variation in the management control of a global/local setting', *Accounting, Auditing & Accountability Journal*, 22 (1), pp. 91-117.
- Cumming, C. M. and Hirtle, B. J. (2001) 'The Challenges of Risk Management in Diversified Financial Companies', *FRBNY Economic Policy Review*, 7, pp. 1-17.
- Curran, R. and Fischer, L. (2012). Air Transport and Operations. Proceedings of the Third International Air Transport and Operations Symposium, Delft, the Netherlands, June.
- D'Arcy, S. P. and Brogan, J. C. (2001) 'Enterprise Risk Management', *Journal of Risk Management of Korea*, 12 (1), pp. 1.
- Daud, W. N. W., Haron, H. and Ibrahim, D. N. (2011) 'The role of quality board of directors in enterprise risk management (ERM) practices: Evidence from binary logistic regression', *International Journal of Business and Management*, 6 (12), pp. 205-211.

- Davidson, W. N., Chandy, P. R. and Cross, M. (1987) 'Large Losses, Risk Management and Stock Returns in the Airline Industry', *Journal of Risk and Insurance*, 54 (1), pp. 162-162.
- Dekker, S. (2002) *The Field Guide to Human Error Investigations*. Aldershot, UK: Ashgate Publishing Limited.
- Dekker, S. and Hollnagel, E. (1999) *Coping with Computers in the Cockpit*. Ashgate: Ashgate Publishing Ltd.
- DeLoach, J. (2000) *Enterprise-wide risk management*. England: Financial Times/Prentice Hall.
- Dent, J.F. (1987) 'Tensions in the design of formal control systems: a field study in a computer company' in Bruns, W.J. and Kaplan, R.S. (eds.) *Accounting and Management: Field Study Perspective*. Cambridge: Harvard Business School Press.
- Dent, J. F. (1990) 'Strategy, organization and control: Some possibilities for accounting research', *Accounting, Organizations and Society*, 15, pp. 3-25.
- Desender, K. A. (2007). Working paper. The Influence of Board Composition on Enterprise Risk Management Implementation. [Online] Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1025982 (accessed December 19, 2010).
- Dillon, R.L., Johnson, B.L. and Patè-Cornell, M.E. (1999) 'Risk Assessment Based on Financial Data: Market Response to Airline Accidents', *Risk Analysis*, 19 (3), pp. 473-486.
- DiMaggio, P. and Powell, W. (1983) 'The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields', *American Sociological Review*, 48, pp. 147-160.
- DiMaggio, P. J. (1988) 'Interest and Agency in Institutional Theory', in Zucker, L. G. (ed.) *Institutional Patterns and Organizations: Culture and Environment*. Cambridge, MA: Ballinger Publishing Company.
- Dionne, G., Gagne, R., Gagnon, F. and Vanasse C. (1997) 'Debt, moral hazard, and airline safety: an empirical evidence', *Journal of Econometrics*, 79, pp. 379-402.
- Dobbin, F. (1994) 'Cultural models of organization: The social construction of rational organizing principles', in Crane, D. (ed.) *Sociology of culture: Emerging theoretical perspectives*. Oxford, UK: Basil Blackwell, pp. 117-141.
- Donaldson, L. (1995) *American Anti-Management Theories of Organization: A Critique of Paradigm Proliferation*. Cambridge, UK: Cambridge University Press.
- Donaldson, L. (1996) 'The normal science of structural contingency theory', in Clegg, S. R., Hardy, S. R. and Nord, W. R. (eds.) *Handbook of Organization Studies*. London: Sage.
- Donaldson, L. (1999) *Performance-Driven Organizational Change: The Organizational Portfolio*. Thousand Oaks, CA: Sage.

- Donaldson, L. (2001) *The Contingency Theory of Organizations*. Thousand Oaks, CA: Sage.
- Drazin, R. and Van de Ven, A. H. (1985) 'Alternative Forms of Fit in Contingency Theory', *Administrative Science Quarterly*, 30 (4), pp. 514-539.
- Eisenhardt, K. M. (1989) 'Building Theories from Case Study Research', *Academy of management review*, 14 (4), pp. 532-551.
- Ellul, A. and Yerramilli, V. (2012) 'Stronger risk controls, lower risk: Evidence from U.S. bank holding companies', *Journal of Finance*, 68 (5), pp. 1757-1803.
- Emmanuel, C., Otley, D. and K. Merchant (1990) *Accounting for Management Control*. 2nd edn. Wokingham, UK: Van Nostrand Reinhold.
- Engau, Ch. and Hoffmann V. H. (2011) 'Strategizing in an Unpredictable Climate: Exploring Corporate Strategies to Cope with Regulatory Uncertainty', *Long Range Planning*, 44 (1), pp. 42-63.
- Esler, D. (2009) 'Safety Management Systems for Business Aviation', *Business & Commercial Aviation*, 104 (4), pp. 38.
- Evans, J., Lewis, B. and Patton, J. (1986) 'An economic approach to contingency theory and management control', *Accounting, Organizations and Society*, 11 (6), pp. 483-498.
- Ferreira, L. D. and Merchant, K. A. (1992) 'Field Research in Management Accounting and Control: A Review and Evaluation', *Accounting, auditing and accountability journal*, 5 (4), pp. 3-34.
- Fiedler, F. E. (1967) *A Theory of Leadership Effectiveness*. New York: McGraw-Hill.
- Financial Reporting Council (2010), *The UK Corporate Governance Code*. London: FRC.
- Firth, M. (1996) 'The diffusion of managerial accounting procedures in the People's Republic of China and the influence of foreign partnered joint ventures', *Accounting, Organizations and Society*, 21, pp. 629-654.
- Fisher, J. G. (1998) 'Contingency theory, management control systems and firm outcomes: Past results and future directions', *Behavioral Research In Accounting*, (10 Supplement), pp. 47-64.
- Fisher, J. G. and Govindarajan, V. (1993) 'Incentive compensation design, strategic business unit mission, and competitive strategy', *Journal of Management Accounting Research*, 5, pp. 129-144.
- Fiss, P. C. and Zajac, E. J. (2004) 'The diffusion of ideas over contested terrain: The (non)adoption of a shareholder value orientation among German firms', *Administrative Science Quarterly*, 49, pp. 501-534.
- Florian, J. and Markus, F. (2011) 'What comes next after recession?: airline industry scenarios and potential end games', *Journal of air transport management*, 17 (1), pp. 19 - 26.

- Florice, S. and Miller, R. (2001) 'Strategizing for anticipated risks and turbulence in large-scale engineering projects', *International Journal of Project Management*, 19, pp. 445-455.
- Flouris, T., Hayes, P., Pukthuanthong-Le, K., Thiengtham, D. and Walker, T. (2009) 'Recent Developments in the Aviation Insurance Industry', *Risk Management and Insurance Review*, 12.2 (Fall 2009), pp. 227-249.
- Flouris, T., Hayes, P., Pukthuanthong-Le, K., Thiengtham, D. and Walker, T. (2009) 'Recent Developments in the Aviation Insurance Industry', *Risk Management and Insurance Review*, 12 (2), pp. 227-249.
- Flouris, T. and Yilmaz, A. (2010a). Enterprise sustainability risk management modelling as a tool for airline strategy. *1st International Air Transport and Operations Symposium (ATOS 2010)* Delft, Netherlands.
- Flouris, T. and Yilmaz, A. (2010b). The management of reputation risk and airline sustainability. *12th World Conference on Transport Research (WCTR 2010)* Lisbon, Portugal.
- Flouris, T. and Yilmaz, A. (2010c). Strategic management in the airline business: the enterprise sustainability risk management model. *12th World Conference on Transport Research (WCTR 2010)* Lisbon, Portugal.
- Fossey, E., Harvey, C., McDermott, F. and Davidson, L. (2002) 'Understanding and evaluating qualitative research', *Australian and New Zealand Journal of Psychiatry*, 36, pp. 717-32.
- Forsyth, P. (2007) 'The impacts of emerging aviation trends on airport infrastructure', *Journal of Air Transport Management*, 13, pp. 45-52.
- Francis, S. and Richards, T. (2007) 'Why ERM Matters ... and How to Accelerate Progress', *Risk Management*, 10, pp. 28.
- Fraser, I. and Henry, W. (2007) 'Embedding Risk Management: Structures and Approaches', *Managerial Auditing Journal*, 22 (4), pp. 392-409.
- Fraser, J. and Simkns, B.J. (2010) 'Enterprise Risk Management: An Introduction and Overview', in Fraser, J. and Simkns, B.J. (eds.) *Enterprise Risk Management*. Hoboken. New Jersey: John Wiley & Sons, Inc.
- Fredrickson, J. W. (1984) 'The comprehensiveness of strategic decision processes: Extension, observations, future directions', *Academy of Management Journal*, 27, pp. 445-466.
- Friedland, R. and Alford, R. (1991) 'Bringing society back in: Symbols, practices and institutional contradictions', in Powell, W. W. and DiMaggio, P. J. (eds.) *The New Institutionalization in Organizational Analysis*. Chicago: University of Chicago Press, pp. 232-266.
- Friego, M. (2008) 'Return Driven: Lessons from High-Performance Companies', *Strategic Finance*, 90 (1), p. 25.

- Frigo, M. L and Anderson, R. J. (2011) 'Strategic risk management: A foundation for improving enterprise risk management and governance', *Journal of Corporate Accounting & Finance*, 22 (3), pp. 81 – 88.
- Frucot, V. and Shearon, W. (1991) 'Budgetary Participation, Locus of Control, and Mexican Managerial Performance and Job Satisfaction', *Accounting Review*, 66 (1), pp. 80-99.
- Gates, S. (2006) 'Incorporating strategic risk into enterprise risk management: A survey of current corporate practice', *Journal of Applied Corporate Finance*, 18 (4), pp. 81–90.
- Gates, S., Nicolas, J.L. and Walker, P.L. (2012) 'Enterprise Risk Management: A Process for Enhanced Management and Improved Performance', *Management Accounting Quarterly*, 13 (3), pp. 28-38.
- Gattringer, R., Hutterer, P. and Strehl F. (2014) 'Network-structured university-industry-collaboration: values for the stakeholders', *European Journal of Innovation Management*, 17 (3), pp. 272 – 291.
- Gephart, R. P., Van Maanen, J. and Oberlechner, T. (2009) 'Organizations and risk in late modernity', *Organization Studies*, 30 (02-03), pp. 141–155.
- Geertz, C. (1995) *After the fact: Two countries, four decades, one anthropologist*. Cambridge, MA: Harvard University Press.
- Geisel, R. W. (2008) 'Airline tackles board, management 'worries'', *Business Insurance*, 42 (14), pp.17-18.
- Gerdin, J. and Greve, J. (2008) 'The Appropriateness of Statistical Methods for Testing Contingency Hypotheses in Management Accounting Research', *Accounting, Organizations and Society*, 33 (7-8), pp. 683-1010.
- Giddens, A. (1979) *Central Problems in Social Theory*. Basingstoke, UK: Macmillan.
- Giddens, A. (1984) *The Constitution of Society*. Cambridge: Cambridge Polity Press.
- Ginieis, M., Sánchez-Rebull, M. and Campa-Planas, F. (2012) 'The academic journal literature on air transport: Analysis using systematic literature review methodology', *Journal of Air Transport Management*, 19, pp. 31-35.
- Gillen, D. (2006) 'Airline business models and networks: regulation, competition and evolution in aviation markets', *Review of Network Economics*, 5 (4), pp. 366-385.
- Gillen, D. and Gados, A. (2008) 'Airlines within airlines: Assessing the vulnerabilities of mixing business models', *Research in Transportation Economics*, 24 (2008), pp. 25–35.
- Gillen, G. and Morrison, W. (2007) 'Air travel demand elasticities: concepts, issues and measurement', in Lee, D. (ed.) *Advances in Airline Economics. The Economics of Airline Institutions, Operations and Marketing*, vol. 2. Amsterdam: Elsevier.
- Goetz, A. R. and Graham, B. (2004) 'Air transport globalization, liberalization and sustainability: Post-2001 policy dynamics in the United States and Europe', *Journal of Transport Geography*, 12, pp. 265-276.

- Golbe, D. L. (1986) 'Safety and profits in the airline industry', *Journal of Industrial Economics*, 34 (3), pp. 305–318.
- Golden-Biddle, K. and Locke, K. (1993) 'Appealing works: an investigation of how ethnographic texts convince', *Organization Science*, 4 (4), pp. 595-616.
- Goodrick, E. and Salancik, G. R. (1996) 'Organizational discretion in responding to institutional practices: Hospitals and caesarean births', *Administrative Science Quarterly*, 41 (1), pp. 1–28.
- Gordon, L. A. and Narayanan, V. K. (1984) 'Management accounting systems, perceived environmental uncertainty, and organization structure: An empirical investigation', *Accounting, Organizations and Society*, 9 (1), pp. 33–47.
- Gordon, L., Loeb, M. P and Tseng, C. Y. (2009) 'Enterprise risk management and firm performance: A contingency perspective', *Journal of Accounting and Public Policy*, 28 (4), pp. 301-327.
- Govindarajan, V. (1988) 'A Contingency Approach to Strategy Implementation at the Business-Unit Level: Integrating Administrative Mechanisms with Strategy', *The Academy of Management Journal* (December) 31 (4), pp. 828-853.
- Govindarajan, V. and Fisher, J. (1990) 'Impact of output versus behavior controls and resource sharing on performance: Strategy as a mediating variable', *Academy of Management Journal*, 33, pp. 259-285.
- Govindarajan, V. and Gupta, A. K. (1985) 'Linking control systems to business unit strategy: impact on performance', *Accounting, Organizations and Society*, 10, pp. 51–66.
- Graf, L. (2005) 'Incompatibilities of the low-cost and network carrier business models within the same airline group', *Journal of Air Transport Management*, 11 (5), pp. 313–327.
- Graham, M. E. and Bansal, P. (2007) 'Consumers' Willingness to Pay for Corporate Reputation: The Context of Airline Companies', *Corporate Reputation Review*, 10 (3), pp. 189-200.
- Granlund, M. and Lukka, K. (1998) 'It's a small world of management accounting practices', *Journal of Management Accounting Research*, 10, pp. 153–179.
- Granlund, M. (2001) 'Towards explaining stability in and around management accounting systems', *Management Accounting Research*, 12, pp. 141–166.
- Greene, J. C. and Caracelli, V. J. (1997) *Advances in Mixed-Method Evaluation: The Challenges and Benefits of Integrating Diverse Paradigms*. San Francisco: Jossey-Bass Publishers.
- Greenwood, R. and Hinings, C. R. (1993) 'Understanding strategic change: The contribution of archetypes', *Academy of Management Journal*, 36 (5), pp. 1052–1081.
- Greenwood, R. and Hinings, C. R. (1996) 'Understanding Radical Organisational Change: Bringing Together the Old and New Institutionalism', *The Academy of Management Review*, 21, pp. 1022-1054.

- Gresov, C. (1989) 'Exploring fit and misfit with multiple contingencies', *Administrative Science Quarterly*, 3 (4), pp. 431-452.
- Gupta, P. P., Dirsmith, M. W. and Fogarty, T. J. (1994) 'Coordination and Control in a Government Agency: Contingency and Institutional Theory', *Administrative Science Quarterly*, 39 (2), pp. 264-284.
- Haka, S., Gordon, L. A. and Pinches, G. E. (1985) 'Sophisticated capital budgeting selection techniques and firm performance', *The Accounting Review*, 60 (4), pp. 651-669.
- Hall, M., Mikes, A. and Millo, Y. (2013). How do risk managers become influential? A field study in two financial institutions. Harvard Business School Working Paper, November [Online]. Available at: http://www.hbs.edu/faculty/Publication%20Files/11-068_f1d5bd99-e47e-41a2-84ea-c4fd055e261d.pdf
- Hambrick, D. and Lei, D. (1985) 'Toward an empirical prioritization of contingency variables for business strategy', *Academy of Management Journal*, 28, pp. 763-788.
- Hamilton, W. H. (1932) 'Institution', in Seligman, E. R. A. and Johnson, A. (eds), *Encyclopaedia of Social Science*, 73 (4), pp. 560-595.
- Hampton, J. J. (2009) *Fundamentals of Enterprise Risk Management - How Top Companies Assess Risk, Manage Exposure, and Seize Opportunity*. New York: American Management Association.
- Hannabuss, S. (1996) 'Research interviews', *New Library World*, 97 (5), pp. 22 – 30.
- Hartmann, F. (2000) 'The appropriateness of RAPM: towards the further development of theory', *Accounting, Organizations and Society*, 25 (4-5), pp. 451-482.
- Haveman, H. A. (1993) 'Follow the leader: mimetic isomorphism and entry into new markets', *Administrative Science Quarterly*, 38 (4), pp. 593-627.
- Hawkins, F. H. (1993) *Human Factors in Flight*. 2nd edn. Aldershot, UK: Ashgate Publishing Company.
- Heinrich, H.W. (1931) *Industrial Accident Prevention*. New York, USA: McGraw Hill.
- Hickson, D. J., Hinigs, C. R., Lee, C. A., Schneck, R. S. and Pennings, J. M. (1971) 'A strategic contingencies theory of intra-organizational power', *Administrative Science Quarterly*, 16, pp. 216-229.
- Hickson, D. J. and McMillan, C. J. (1981) *Organization and Nation: The Aston Programme IV*. Farnborough, Hants, UK: Gower.
- Hinings, C., Hickson, D. J., Pennings, J. M. and Schneck, R. E. (1974) 'Structural conditions of intraorganizational power', *Administrative Science Quarterly*, 19, pp. 22-44.
- Hodgson, G. M. (1988) *Economics and institutions: A manifesto for a modern institutional economics*. Cambridge: Polity Press.

- Hofer, C. (1975) 'Toward A Contingency Theory of Business Strategy', *Academy of Management Journal*, 18, pp. 784-809.
- Hofmann, M. A. (2010) 'Businesses hone ERM plans: Survey', *Business Insurance*, 44 (3), p. 6.
- Holloway, S. (2008) *Straight and Level: Practical Airline Economics*. 3rd edn. Aldershot: Ashgate Publishing.
- Hopkins, A. (2010) 'Risk-management and rule-compliance: Decision-making in hazardous industries', *Safety Science*, 49 (2011), pp. 110–120.
- Hopwood, A. G. (1978) 'Towards an Organisational Perspective for the Study of Accounting and Information Systems', *Accounting, Organisations and Society*, 3 (1), pp. 3-13.
- Hoskisson R., Hitt, M. and Ireland, R. (1990) 'Mergers and acquisitions and managerial commitment to innovation in m-form firms', *Strategic Management Journal*, 1 (1), pp. 29-48.
- Hoyt, R. E. and Liebenberg, A. P. (2011) 'The Value of Enterprise Risk Management', *Journal of Risk and Insurance*, 78 (4), pp. 795-822.
- Huber, M. and Rothstein, H. (2013) 'The risk organisation: or how organisations reconcile themselves to failure', *Journal of Risk Research* 16 (6), pp. 651-675.
- Huettinger, M. (2014) 'What determines the business activities in the airline industry? A theoretical framework', *Baltic Journal of Management*, 9 (1), pp. 71 – 90.
- Hutter, B. and Power, M. (2005) *Organisational Encounters with Risk*, Cambridge, UK: Cambridge University Press, pp. 1–32.
- IATA (International Air Transport Association) (n.d). Integrated Risk Management Guidance Material. [Online]. Available at: <http://www.iata.org/publications/Pages/risk-management.aspx>
- IATA (International Air Transport Association) (2011). Vision 2050 [Online]. Available at: http://www.iata.org/pressroom/facts_figures/Documents/vision-2050.pdf
- IATA (International Air Transport Association) (2012), 2012 Annual Review. [Online]. Available at: <http://www.iata.org/about/Documents/annual-review-2012.pdf>
- IATA (International Air Transport Association) (2012) Special Report - Read the Small Print. [Online]. Available at: <http://airlines.iata.org/reports/special-report-read-the-small-print>
- IATA (International Air Transport Association) (2012) 'Operational Risk Management In Civil Aviation', IATA Training, [Online]. Available at: <http://www.iata.org/training/courses/pages/tcvg60.aspx> [Accessed 2nd February 2012].
- IATA (International Air Transport Association) (2013). Profitability and the air transport value chain, IATA Economics Briefing Nr 10 – An analysis of investor returns within the airline industry and its supply chain. [Online]. Available at:

<http://www.iata.org/whatwedo/Documents/economics/profitability-and-the-air-transport-value%20chain.pdf>

IATA (International Air Transport Association) (2014). Integrated Risk Management Guidance Material [Online]. Available at: <http://www.iata.org/publications/Pages/risk-management.aspx>

ICAO, 2012: Global Aviation and Our Sustainable Future. International Civil Aviation Organization Briefing for RIO+20. [Online]. Available at: http://www.icao.int/environmental-protection/Documents/RIO+20_booklet.pdf

ICAO, 2013: Safety Management Manual (SMM) Third Edition -2013. [Online]. Available at: <http://www.skybrary.aero/bookshelf/books/644.pdf>

IMA (Institute of Management Accountants) (2011). *Enterprise Risk Management Frameworks, Elements, and Integration* [Online]. Available at: http://www.stjohns.edu/sites/default/files/documents/academics/tobin/enterprise_risk_management_frameworks.pdf

Imoisili, O. A. (1985) *Task complexity, budget style of evaluating performance and managerial stress: an empirical investigation*. Ph.D. Graduate School of Business, University of Pittsburgh.

ISO (2009). *Risk Management -- Principles and Guidelines*. Switzerland: ISO.

ISO (2011) Global ISO 31000 survey 2011. [Online]. Available at: http://www.iso31000survey.com/Global_Survey_ISO_31000_English.pdf

Jabbour, M. (2013) *Investigation of Risk Management Changes in Insurance Companies*. Ph.D. Brunel Business School. Brunel University.

Janic, M. (2000) 'An assessment of risk and safety in civil aviation', *Journal of Air Transport Management*, 6, pp. 43-50.

Jenner, G. (2007) 'Premium Rate', *Airline Business*, 23 (6), pp. 74-76.

Kane, G. D. and Velury, U. (2004) 'The Role of Institutional Ownership in the Market for Auditing Services: an Empirical Investigation', *Journal of Business Research*, 57 (9), pp. 976 -983.

Kaplan, R. S. and Mikes, A. (2012) 'Managing Risks: A New Framework', *Harvard Business Review*, June, [Online]. Available at: <http://hbr.org/2012/06/managing-risks-a-new-framework/ar/1>

Kaplan, R. S. and Mikes, A. (2014) 'Towards a Contingency Theory of Enterprise RiskManagement', *Harvard Business Review*, January, [Online]. Available at: http://www.hbs.edu/faculty/Publication%20Files/13-063_5e67dffe-aa5e-4fac-a746-7b3c07902520.pdf

Kawada, M. and Johnson, D. F. (1993) 'Strategic management accounting, why and how', *Management Accounting (US)*, 75 (2), pp. 32-38.

Keller, R. T. (1994) 'Technology-Information Processing Fit and the Performance of R&D Project Groups: A Test of Contingency Theory', *Academy of Management Journal*, 37 (1), pp. 167–179.

- Kim, H. and Gu, Z. (2004) 'Impact of the 9/11 terrorist attacks on the return and risk of airline stocks', *Tourism & Hospitality Research*, 5 (2), pp. 150-163.
- Kimbrough, R. L. and Compton, P. J. (2009) 'The relationship between organizational culture and enterprise risk management', *Engineering Management Journal*, 21 (2), pp. 18-26.
- Kleffner, A. E., Lee, R. B. and McGannon, B. (2003) 'The Effect of Corporate Governance on the Use of Enterprise Risk Management: Evidence from Canada', *Risk Management and Insurance Review*, 6 (1), pp. 53-73.
- Klein, H. K. and Myers, M. D. (1999) 'A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems', *MIS Quarterly*, 23 (1), pp. 67-94.
- Kogan, A., Sudit, E. F. and Vasarhelyi, M. A. (1997) 'Management accounting: In the era of electronic commerce', *Management Accounting*, (September), pp. 26-30.
- KPMG (2010) Strategic performance management: Driving value from strategy [Online]. Available at: <http://www.kpmg.com/NZ/en/IssuesAndInsights/ArticlesPublications/Documents/POV-strategic-PM.pdf> pp. 1-4 [Accessed 13th of November, 2010]
- Kraft, K. L., Puia, G. M. and Hage, J. (1995) 'Structural Contingency Theory Revisited: Main Effects Versus Interactions in Child's National Study of Manufacturing and Service Sectors', *Canadian Journal of Administrative Sciences*, 12 (3), pp. 182-194.
- Yilmaz, A. K. (2009) 'Analyze to Importance of Enterprise Risk Management Implementation for Airline Business by Analytic Network Process', *Enterprise Risk Management*, 1 (1), pp. 1-13.
- Kuhn, T. S. (1962) *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Lam, J. (2001) 'The CRO Is Here to Stay', *Risk Management*, 48, pp. 16-20.
- Lam, J. (2003) *Enterprise risk management: From incentives to controls*. Hoboken, New Jersey: Wiley Press.
- Lam, J. (2006) 'Managing risk across the enterprise: Challenges and benefits', in Ong, M. (ed.) *Risk Management, A Modern Perspective*. 1st ed. Burlington, MA: Elsevier.
- Lane, M. N. (2005) 'Pricing issues in aviation insurance and reinsurance', *The Journal of Risk Finance*, 6 (3) pp. 192-207.
- Lapsley, I. and Pallot, J. (2000) 'Accounting, management and organizational change: a comparative study of local government', *Management Accounting Research*, 11 (2), pp. 213-229.
- Latour, B. (1987) *Science in action: How to follow scientists and engineers through society*. Cambridge, MA: Harvard University Press.

- Lawrence, P. R. and Lorsch, J. (1967) *Organizational and Environment*. Boston, MA: Harvard Business School, Division of Research.
- Lawrence, T. B. and Suddaby, R. (2006) 'Institutions and institutional work', *Handbook of Organization Studies*, pp. 215-254.
- Lawrence, G. A., Martin L. P. and Chih-Yang, T. (2009) 'Enterprise risk management and firm performance: A contingency perspective', *Journal of Accounting and Public Policy*, 28 (4), pp. 301-327.
- Leloudas, G. (2004) *Legal aspects of aviation risk management*. Ph.D. McGill University.
- Leloudas, G. (2010) *Risk and Liability in Air Law*. Informa
- Liebenberg, A. P. and Hoyt, R. E. (2003) 'The Determinants Of Enterprise Risk Management: Evidence From The Appointment Of Chief Risk Officers', *Risk Management and Insurance Review*, 6 (1), pp. 37-52.
- Lillis, A. M. and Mundy, J. (2005) 'Cross-Sectional Field Studies in Management Accounting Research—Closing the Gaps between Surveys and Case Studies', *Journal of management accounting research*, 17, pp. 119-141.
- Lin, Y. H. and Chang, Y. H. (2008) 'Significant factors of aviation insurance and risk management strategy: an empirical study of Taiwanese airline carriers', *Risk analysis*, 28 (2), pp. 453 – 461.
- Lin, Y. W., Ming, M. and Yu, J. (2012) 'Enterprise Risk Management: Strategic Antecedents, Risk Integration, And Performance', *North American Actuarial Journal*, 16 (1), pp. 1-28.
- Liou, J. J. H., Yen, L. and Tzeng, G. (2008) 'Building an effective safety management system for airlines', *Journal of Air Transport Management*, 14 (1), pp. 20-26.
- Linz, M. (2012) 'Scenarios for the aviation industry: A Delphi-based analysis for 2025', *Journal of Air Transport Management*, 22, pp. 28-35.
- Loudon, G. F. (2004) 'Financial Risk Exposures in the Airline Industry: Evidence from Australia and New Zealand', *Australian Journal of Management*, 29 (2), pp. 295-316.
- Lounsbury, M. (2001) 'Institutional Sources of Practice Variation: Staffing College and University Recycling Programs', *Administrative Science Quarterly*, 46, pp. 29-56.
- Lounsbury, M. (2007) 'A tale of two cities: Competing logics and practice variation in the professionalizing of mutual funds', *Academy of Management Journal*, 50, pp. 289–307.
- Lounsbury, M. (2008) 'Institutional rationality and practice variation: new directions in the institutional analysis of practice', *Accounting, Organizations and Society*, 33 (4/5), pp. 349-361.
- Lounsbury, M. and Crumley, E. T. (2007) 'New practice creation: an institutional perspective on innovation', *Organization Studies*, 28 (7), pp. 993-1012.

- Lounsbury, M. (2008) 'Institutional rationality and practice variation: New directions in the institutional analysis of practice', *Accounting, Organizations and Society*, 33 (2008), pp. 349-361.
- Lovata, L. M. and Costigan, M. L. (2002) 'Empirical analysis of adopters of economic value added', *Management Accounting Research*, 13, pp. 215-228.
- Luft, J. and Shields, M. D. (2003) 'Mapping Management Accounting: Graphics and Guidelines for Theory-consistent Empirical Research', *Accounting, Organizations and Society*, 28 (2-3), pp. 169-249.
- Lukka, K. and Modell, S. (2010) 'Validation in interpretive management accounting research', *Accounting, Organizations and Society*, 35 (4), pp. 462-477.
- Malina, M. and Selto, F. (2001) 'Communicating an d controlling strategy: An empirical study of the effectiveness of the balanced scorecard', *Journal of Management Accounting Research*, 13, pp. 48 - 90.
- Martin, D. and Power, M. (2007). The end of enterprise risk management. Aei Brookings Joint Center for Regulatory Studies. August.
- Mason, K. J. (2005) 'Observations of fundamental changes in the demand for aviation Services', *Journal of Air Transport Management*, 11, pp. 19-25.
- Massini, S., Lewin, A. Y., Numagami, T. and Pettigrew, A. M. (2002), 'The evolution of organisational routines among large western and Japanese firms', *Research Policy*, 31, pp. 1333-1348.
- Massini, S., Lewin, A. Y. and Greve, H. R. (2005) 'Innovators and imitators: organizational reference groups and adoption of organizational routines', *Research Policy*, 34 (10), pp. 1550-1569.
- McCreevy, C. (2008). Speech on corporate governance. Institute Chartered Secretaries and Administrators (ICSA) EU Corporate Governance Summit, October. Available at: http://europa.eu/rapid/press-release_SPEECH-08-518_en.htm?locale=en.
- McRae, M. and Balthazor, L. (2000) 'Integrating riskmanagement into corporate governance: the Turnbull guidance', *Risk Management: An International Journal*, 2, pp. 35-45.
- McShane, M. K., Nair, A. and Rustambekov, E. (2011) 'Does enterprise risk management increase firm value?', *Journal of Accounting, Auditing & Finance*, 26 (4), pp. 641-658.
- Merchant, K. (1981) 'The design of the corporate budgeting system: influences on managerial behavior and performance', *The Accounting Review*, 4, pp. 813-829.
- Merchant, K. A., Chow, C. W. and Wu, A. (1995) 'Measurement, evaluation and reward of profit center managers: A cross-cultural field study', *Accounting, Organizations and Society*, 20 (7 / 8), pp. 619-638.
- Merchant, K. A. and Manzoni, J. F. (1989) 'The Achievability of Budget Targets in Profit Centers: A field Study', *The Accounting Review*, 64 (3), pp. 539-558.

- Meulbroek, L. (2002) 'A Senior Manager's Guide to Integrated Risk Management', *Journal of Applied Corporate Finance*, 14 (4), pp. 56-70.
- Meulbroek, L. K. (2002) 'Integrated Risk Management for the Firm: A Senior Manager's Guide', *Journal of Applied Corporate Finance*, 14, pp. 56-70.
- Meyer, J. W. and Rowan, B. (1977) 'Institutionalized Organizations: Formal Structure as Myth and Ceremony', *American Journal of Sociology*, 83, pp. 340-363.
- Meyer, J., Scott, W. and Deal, T. (1983) 'Institutional and technical sources of organizational structure', in Meyer, J. and Scott, W. (eds.), *Organizational environments*. Beverly Hills, CA: Sage, pp. 45-67.
- Mia, L. and Chenhall, R. H. (1994) 'The usefulness of management accounting system, functional differential and managerial effectiveness', *Accounting, Organizations and Society*, 19 (1), pp. 1-13.
- Miccolis, J. and Shah, S. (2000) *Enterprise Risk Management: An Analytic Approach*. New York: Tillinghast-Towers Perrin Monograph.
- Miccolis, J. A., Hively, K., and Merkley, B. W. (2001). *Enterprise Risk Management: Trends and Emerging Practices*. USA: Tillinghast-Towers Perrin, the Institute of Internal Auditors Research Foundation.
- Mikes, A. (2005). *Enterprise Risk Management in Action*. ESRC Centre for Analysis of Risk and Regulation, Discussion paper, London No. 35, August.
- Mikes, A. (2009) 'Risk Management and Calculative Cultures', *Management Accounting Research*, 20 (1), pp.18-40.
- Mikes, A. (2011) 'From Counting Risk to Making Risk Count: Boundary-work in Risk Management', *Accounting, Organizations and Society in press*.
- Mikosz, S. (2011) *Leci z nami pilot. Kilka prawd o liniach lotniczych*. Warszawa: Abedik. S.A.
- Miles, R. E. and Snow, C. C. (1978) *Organizational Strategy, Structure, and Process*. Tokyo: McGraw-Hill Kogakusha.
- Miles, M.B. and Huberman, A.M. (1994). *Qualitative data analysis: an expanded sourcebook*. Sage Publications
- Miller, K. (1992) 'A framework for integrated risk management in international business', *Journal of International Business Studies*, Second Quarter, pp. 311-331.
- Miller, P. and O'Leary, T. (1990) 'Making Accounting Practical', *Accounting, Organisations and Society*, 15 (5), pp. 479- 498.
- Miller, P., Kurunmaki, L. and O'Leary, T. (2008) 'Accounting, hybrids, and the management of risk', *Accounting, Organizations and Society*, 33, pp. 942-967.
- Miller, P. (1994) 'Accounting as Social and Institutional Practice: An Introduction', in Hopwood, A. and Miller, P. (eds.) *Accounting as Social and Institutional Practice*. Cambridge: University of Cambridge Press, pp. 1-38.

- Miller, P., Kurunmaki, L. and O'Leary, T. (2008) 'Accounting, hybrids and the management of risk', *Accounting, Organizations and Society*, 33 (7–8), pp. 942–967.
- Modell, S. (2001) 'Performance Measurement and Institutional Processes: A Study of Managerial Responses to Public Sector Reform', *Management Accounting Research*, 12, pp. 437-464.
- Modell, S. (2003) 'Goals Versus Institutions: The Development of Performance Measurement in the Swedish University Sector', *Management Accounting Research*, 14 (3).
- Moeller, R. R. (2007) *COSO Enterprise Risk Management: Understanding The New Integrated ERM Framework*. New Jersey: John Wiley & Sons, Inc.
- Morell, P. and Swan, W. (2006) 'Airline Jet Fuel Hedging: Theory and Practice', *Transport Reviews*, 26 (6), pp. 713 – 730.
- Morgan, G. and Smircich, L. (1980) 'The Case of Qualitative Research', *The academy of management review*, 5 (4), pp. 491-500.
- Morgan, J. M. (1993) 'How corporate culture drives strategy. Long Range Planning', 26 (2), pp. 110-118.
- Morse, J. (1994) 'Emerging from the data: The cognitive processes of analysis in qualitative inquiry', in Morse, J. (ed.) *Critical issues in qualitative research methods*. Thousand Oaks CA: Sage, pp. 23-43.
- Moss, V. (1992) 'Aviation & Risk Management', *Risk Management*, 39 (7), pp. 10-10.
- Mouritsen, J. (1999) 'The flexible firm: Strategies for a subcontractor's management control', *Accounting, Organizations and Society*, 24 (1), pp. 31-55.
- Muralidhar, K. (2010) 'Enterprise risk management in the Middle East oil industry. An empirical investigation across GCC countries', *International Journal of Energy Sector Management*, 4 (1), pp. 59-86.
- Myers, M. D., Gordon, L. A. and Hamer, M. (1991) 'Postauditing capital assets and firm performance: an empirical investigation', *Managerial and Decision Economics*, 12 (4), pp. 317–327.
- Netjasov, F. and Janic, M. (2008) 'A review of research on risk and safety modelling in civil aviation', *Journal of Air Transport Management*, 14 (4), pp. 213-220.
- Nicolau J. L. and Santa-Maria, M. J. (2012) 'Effect of innovation on airlines' operating leverage: A Spanish case study', *Journal of Air Transport Management*, 25, pp. 44-46.
- Nicolini, D. (2009) 'Zooming in and out: Studying practices by switching theoretical lenses and trailing connections', *Organization Studies*, 30 (12), pp. 1391–1418.
- Nielson, N. L., Kleffner, A. E., Ryan B. and Lee, R. B. (2005) 'The Evolution of the Role of Risk Communication in Effective Risk Management', *Risk Management and Insurance Review*, 8 (2), pp. 279-289.

- Niemeier, H. M. and Tretheway, M. W. (2012) 'Introduction to the 2010 Hamburg Aviation Conference', *Journal of air transport management*, 21, pp. 1 – 2.
- Nigel, E. and Elphick, S. (2005) 'Models of crisis management: an evaluation of their value for strategic planning in the international travel industry', *The International Journal of Tourism Research*, 7 (3), pp. 135 – 150.
- Nishimura, A. (1995) 'Transplanting Japanese management accounting and cultural relevance', *The International Journal of Accounting*, 30, pp. 318-330.
- Nocera, J. (2009) 'Risk Management – What Led to Financial Meltdown', *The New York Times*. 4 January.
- Nocco, B. and Stulz, R. (2006) 'Enterprise Risk Management: Theory and Practice', *Journal of Applied Corporate Finance*, 18, pp. 8-20.
- Nomura, K. (2003) 'Managing risks in airline industry', *Japan and the World Economy*, 15 (4), pp. 469-479.
- Norman, R. (1970), *A Personal Quest for Methodology*. Stockholm: Scandinavian Institutes for Administrative Research.
- Noronha, G. and Singal, V. (2004) 'Financial Health and Airline Safety', *Managerial and Decision Economics*, 25 (1), pp. 1-16.
- North, D. C. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge, UK: Cambridge University Press.
- Nyce, C. (2002) 'Incorporating Enterprise Risk Management Into the Curriculum: The Delta Air Lines Case Study', *Risk Management and Insurance Review*, 5 (1), pp. 67-73.
- O'Connor, N. G. (1995) 'The influence of organizational culture on the usefulness of budget participation by Singaporean-Chinese managers', *Accounting, Organizations and Society*, 20 (5), pp. 383-403.
- Oliver, C. (1991) 'Strategic responses to institutional processes', *Academy of Management Review*, 16 (1), pp.145-79.
- Olson, D.L. and Dash Wu, D. (2008) *Financial Engineering and Risk Management Vol.1: Enterprise Risk Management*. Singapore: World Scientific Publishing Co. Pte. Ltd.
- Osterwalder, A., Pigneur, Y. and Tucci, C. L. (2005) 'Clarifying Business models: origins, present, and future of the concept', *Communications of the AIS*, 16, pp. 1-25.
- Otero, J. (2006) *Creación de valor, gestión de riesgos y flexibilidad en la industria de transporte aéreo*. Ph.D. Universidad Autónoma de Madrid y Universidad Complutense de Madrid.
- Otley, D. T. (1980) 'The contingency theory of management accounting: Achievement and prognosis', *Accounting, Organizations and Society*, 5 (4), pp. 413-428.

- Paape, L. and Speklé, R. F. (2012) 'The Adoption and Design of Enterprise Risk Management Practices: An Empirical Study', *European Accounting Review*, 21 (3), pp. 533-564.
- Pache, A. and Santos, F. (2010) 'When worlds collide: The internal dynamics of organizational responses to conflicting institutional demands', *Academy of Management Review*, 35 (3), pp. 455-476.
- Pagach, D. and Warr, R. (2011) 'The Characteristics of Firms That Hire Chief Risk Officers', *Journal of risk and insurance*, 78 (1), pp. 185-211.
- Pearce, B. (2012) 'The state of air transport markets and the airline industry after the great recession', *Journal of Air Transport Management*, 21, pp. 3-9.
- Pennings, J. M. (1987) 'Structural Contingency Theory: A Multivariate Test', *Organization Studies*, 8 (3), pp. 223-240.
- Perrow, C. (1967) 'A Framework for the Comparative Analysis of Organizations', *American Sociological Review*, 32 (2), pp. 194-208.
- Penzner, B. (2006) 'ERM and International Issues: Dominate Continental's Risk Exposures', *AFP Exchange*, 26 (10), pp. 44-46.
- Pfeffer, J. (1982) *Organizations and Organization Theory*. Boston: Pitman.
- Powell, T. C. (1992) 'Organizational Alignment as Competitive Advantage', *Strategic Management Journal*, 13 (2), pp. 119-134.
- Power, M. (2004) *The risk management of everything*. London: Demos.
- Power, M. (2007) *Organized Uncertainty: Designing a World of Risk Management*. Oxford, UK: Oxford University Press.
- Power, M. (2009) 'The Risk Management of Nothing', *Accounting, organizations and society*, 34, pp. 849-855.
- Pratt, J. and Beaulieu, P. (1992) 'Organizational culture in public accounting: Size, technology, rank, and functional area', *Accounting, Organizations and Society*, 17 (7), pp. 667-684.
- Protiviti (2007) 'Mitigating Risk in the Airline Industry with an ERM Approach'. [Online]. Available at: [http://www.knowledgeleader.com/KnowledgeLeader/Content.nsf/dce93ca8c1f384d6862571420036f06c/4d519504e944e2288825732b0077ab1b/\\$FILE/Mitigating%20Risk%20in%20the%20Airline%20Industry%20with%20an%20ERM%20Approach.pdf](http://www.knowledgeleader.com/KnowledgeLeader/Content.nsf/dce93ca8c1f384d6862571420036f06c/4d519504e944e2288825732b0077ab1b/$FILE/Mitigating%20Risk%20in%20the%20Airline%20Industry%20with%20an%20ERM%20Approach.pdf) [Accessed 17th November 2010].
- Pugh, D. S. and Hickson, D. J. (1976) *Organizational Structure in its Context: The Aston Programme I*. Farnborough, Hants, UK: Saxon House.
- Reason, J. (1997) *Managing the Risks of Organizational Accidents*. Ashgate, UK: Ashgate Publishing Limited.
- Richman, A. (2002) 'Safety Management Practices Vary Widely Among Airlines', *Air Safety Week*, 16 (4).

- Rose N. L. (1990) 'Profitability and product quality: economic determinants of airline safety performance', *Journal of Political Economy*, 98, pp. 944–964.
- Rose, N. L. (1992) 'Fear of Flying? Economic Analysis of Airline Safety', *Journal of Economic Perspectives*, Spring 1992, pp. 75-94.
- Ryan, B., Scapens, R. and Theoblad, M. (1992) *Research Method and Methodology in Finance and Accounting*. London: Academic Press.
- Sally J. R. (1999) *Strategic Communication in Crisis Management: Lessons from the Airline Industry*. Westport, Connecticut: Quorum Books.
- Salter, M. B. (2007) 'SeMS and sensibility: Security management systems and the management of risk in the Canadian Air Transport Security Authority', *Journal of Air Transport Management*, 13 (6), pp. 389-398.
- Salter, M.B. (2008), 'Imagining Numbers: Risk, Quantification, and Aviation Security', *Security Dialogue*, 39, pp. 243.
- Saunders, M., Lewis, P. and Thornhill, A. (2003) *Research Methods for Business Student*. Harlow, England: Prentice Hall.
- Scapens, R. W. and Roberts, J. (1993) 'Accounting and Control: A case study of resistance to accounting change', *Management Accounting Research*, 4, pp. 1-32.
- Scapens, R. W. (1994) 'Never Mind the Gap: towards an Institutional Perspective on Management Accounting Practice', *Management Accounting Research* (September), 5 (3-4), pp. 301-321.
- Scheytt, T., Soin, K., Sahlin-Andersson, K. and Power, M. (2006) 'Introduction: Organizations, Risk and Regulation', *Journal of Management Studies*, 43, pp. 1331–1337.
- Schoonhoven, C. (1981) 'Problems with contingency theory: testing assumptions hidden within the language of contingency "theory"', *Administrative science quarterly*, 26, pp. 349-377.
- Scott, W. R. (1987) 'The Adolescence of Institutional Theory', *Administrative Science Quarterly*, 32, pp. 493-511.
- Scott, W. R., and Meyer, J. W. (1991) 'The organization of societal sectors', in Powell, W. W. and DiMaggio, P. J. (eds.) *The new institutionalism in organizational analysis*. Chicago: University of Chicago Press, pp. 108-140.
- Scott, W. R. (1994) 'Conceptualizing organizational fields: linking organizations and societal systems', in Derlien, H.U., Gerhardt, U. and Scharpf, F. W. (eds.) *Systemrationalitat und partialinteresse*. Baden-Baden, Germany: Die Nomos Verlagsgesellschaft.
- Scott, W. R. (2001) *Institutions and Organizations*. 2nd edn. London: Sage Publications.
- Scott, W. R. (2003) *Organisations: Rational, Natural and Open Systems*. 5th edn. Upper Saddle River: NJ: Prentice-Hall.
- Scott, W. R. (2004) 'Reflections on a half century of organizational sociology', *Annual Review of Sociology*, 30 (21), pp. 1-21.

- Scott, W. R. (2010) 'Reflections: The Past and Future of Research on Institutions and Institutional Change', *Journal of Change Management*, 10 (1), pp. 5-21.
- Sellnow, T. L. and Cowden, K. (2002) 'Issues advertising as crisis communication: Northwest Airlines' use of image restoration strategies during the 1998 pilot's strike', *Journal of Business Communication*, 39 (2), pp. 193-219.
- Selznick, P. (1996) 'Institutionalism "old" and "new"', *Administrative Science Quarterly*, 41 (2,40th Anniversary Issue), pp. 270-277.
- Shaw, S. (2011) *Airline Marketing and Management*. Ashgate.
- Shortreed, J.; Hicks, J.; Craig, L. (2003), Basic Frameworks for Risk Management, Report prepared for The Ontario Ministry of the Environment. [Online]. Available at:
<http://www.sobanebrasil.org/adm/fotos/6bad672342f38b0776512b211433a994.pdf>
- Silverman, D. (1993) *Interpreting qualitative data- methods for analysing talk, text and interaction*. Thousand Oaks, CA: Sage Publications.
- Silverman, D. (2010) *Doing qualitative research: A Practical Handbook*. 3rd edn. London:Sage.
- Simkins, B. (2011) 'Total Risk Evaluation for Capital Budgeting', *Journal of Applied Finance*, 21 (1), pp. 30-38.
- Siomkos, G. J. (2000) 'Managing airline disasters:: the role of consumer safety perceptions and sense-making', *Journal of Air Transport Management*, 6 (2), pp. 101-108.
- Simons, R. (1987) 'Accounting control systems and business strategy: an empirical analysis', *Accounting, Organizations and Society*, 12, pp. 357-374.
- Simons, R. (1991) 'Strategic orientation and top management attention to control systems', *Strategic Management Journal*, 12, pp. 49-62.
- Simons, R. (1994) 'How new top managers use control systems as levers of strategic renewal', *Strategic Management Journal*, 15, pp. 169-189.
- Singh, J. V., Tucker, D. J. and House, R. J. (1986) 'Organizational legitimacy and the liability of newness', *Administrative Science Quarterly*, 31 (2), pp. 171-193.
- Siti-Nabiha, A. K. and Scapens, R. W. (2005) 'Stability and change: An institutionalist study of management accounting change', *Accounting Auditing and Accountability Journal*, 18, pp. 44-73.
- Slywotzky, A. J. (2008) 'Finding the Upside Advantage in Downside Risk', *Strategic Finance*, 90 (5), pp. 8.
- Smircich, L. (1983) 'Concepts of Culture and Organizational Analysis', *Administrative Science Quarterly*, 28 (3), pp. 339-358.
- Snook, S. A. (2000) *Friendly fire: the accidental shootdown of U.S Black Hawks over Northern Iraq*. Princeton, N.J: Princeton University Press.

- Sobel, P. J. and Reding, K. F. (2004) 'Aligning corporate governance with enterprise risk management', *Management Accounting Quarterly*, 5 (2), pp. 29-37.
- Soin, K., Seal, W. and Cullen, J. (2002) 'ABC and Organizational Change: an Institutional Perspective', *Management Accounting Research*, 13, pp. 249-271.
- Soin, K. and Collier, P. (2013) 'Editorial: Risk and risk management in management accounting and control', *Management Accounting Research*, 24 (2), pp. 82-87.
- Spinetta, L. (2006) 'Fuel hedging: lessons from the airlines', *Air Force Journal of Logistics*, 3.
- Spira, L. F. and Page, M. (2003) 'Risk management: The reinvention of internal control and the changing role of internal audit', *Accounting, Auditing & Accountability Journal*, 16 (4), pp. 640-661.
- Standard & Poor's Financial Services LLC. 2013. Ratings Direct: Criteria, insurance, general: Enterprise risk management. [Online]. Available at: http://www.standardandpoors.com/spf/upload/Ratings_US/Enterprise_Risk_Management_5_7_13.pdf
- Smircich, L. (1983) 'Concepts of Culture and Organizational Analysis', *Administrative Science Quarterly*, 28 (3), pp. 339-358.
- Squalli, J. and Saad, M. (2006) 'Accidents airline safety perceptions and consumer demand', *Journal of Economics and Finance*, 30 (3), pp. 297-305.
- Sobel, P. J. and Reding, K. F. (2004) 'Aligning corporate governance with enterprise risk management', *Management Accounting Quarterly*, 5, pp. 29-37.
- Spira, L. and Page, M. (2003) 'Risk Management: the Reinvention of Internal Control and the Changing Role of Internal Audit', *Accounting, Auditing and Accountability Journal*, 16 (4), pp. 640-661.
- Standards Australia and Standards New Zealand (2004) AS/NZS 4360:2004, Risk Management, Sydney.
- Standards Australia and Standards New Zealand (2004) HB 436:2004, Risk Management Guidelines: Companion to AS/NZS 4360:2004, Sydney.
- Standards Australia and Standards New Zealand (2009) AS/NZS ISO 31000:2009). Risk management – Principles and guidelines. Sydney.
- Stiles, W. B. (1993) 'Quality control in qualitative research', *Clinical Psychology Review*, 13, pp. 593-618.
- Strati, A. (2000) *Theory and Method in Organization Studies: Paradigms and Choices*. London: Sage Publications Ltd.
- Strauss, A. L. and Corbin, J. M. (1998) *Basics of qualitative research: Techniques and procedures for developing grounded theory*. London: Sage Publications.
- Stroh, P. J. (2005) 'Enterprise Risk Management at United Health Group', *Strategic Finance*, 87 (1), pp. 27-35.

- Suddaby, R. (2010) 'Challenges for Institutional Theory', *Journal of Management Inquiry*, 19 (1), pp. 14-20.
- Swelbar, W., Belobaba, P. (2009) 'Critical issues and prospects for the global airline Industry', in Belobaba, P., Odoni, A. and Barnhart, C. (eds.) *The Global Airline Industry*. New York: Wiley Press.
- Szabo, A. (2012) 'Risk management: An integrated approach to risk management and assessment', *Annals of the University of Oradea, Economic Science Series*, 21 (2).
- Tekathen, M. and Dechow, N. (2013) 'Enterprise risk management and continuous realignment in the pursuit of accountability: A German case', *Management Accounting Research*, 24 (2), pp. 100-121.
- Thompson, J. D. (1967) *Organizations in Action*. New York: McGraw-Hill.
- Thomson, J. C. (2007) 'SOX 404 and ERM: Perfect partners ? or not?', *Journal of Corporate Accounting & Finance*, 18 (3), pp. 29-36.
- Thornton, P. H., Jones, C., and Kury, K. (2005) 'Institutional logics and institutional change in organizations: Transformation in accounting, architecture, and publishing', *Research in the Sociology of Organizations*, 23, pp. 125-170.
- Thornton, P. and Ocasio, W. (1999) 'Institutional Logics and the Historical Contingency of Power in Organizations: Executive Succession in the Higher Education Publishing Industry, 1958–1990', *American Journal of Sociology*, 105 (3), pp. 801-843.
- Thornton, P. and Ocasio, W. (2008) 'Institutional logics', in Greenwood, R., Oliver, C., Suddaby, R. and Sahlin-Andersson, K. (eds.) *Handbook of organizational institutionalism*. London: Sage.
- Tjorhom, B. B. (2010) 'Risk governance within aviation', *Risk Management – an International Journal*, 12 (4), pp. 256-284.
- Tjorhom, B.B. (2010) *Exploring Risk Governance in a Global Transport System*. Ph.D. University of Stavanger.
- Tsamenyia, M., Cullena J. and González J. M. (2006) 'Changes in accounting and financial information system in a Spanish electricity company: A new institutional theory analysis', *Management Accounting Research*, 17 (4) pp. 409-432.
- Tsoukalas, G., Belobaba, P. and Swelbar, W. (2008) 'Cost convergence in the US airline industry: An analysis of unit costs 1995–2006', *Journal of Air Transport Management*, 14 (4), pp. 179 – 187.
- Tymond Jr., W. G., Stout, D. E. and Shaw, K. N. (1998) 'Critical analysis and recommendations regarding the role of perceived environmental uncertainty in behavioural accounting research', *Behavioural Research in Accounting*, 10, pp. 23–46.
- Uttley, M. and Hooper, N. (1993) 'Corporate Culture, Public Bureaucracy and Competitive Tendering', *International Journal of Public Sector Management*, 6 (1), pp. 40-47.

- Van de Ven, A. H. and Delbecq, A. L. (1974) 'A task contingent model of work-unit structure', *Administrative Science Quarterly*, 19, pp. 183-197.
- Van De Ven, A. H. and Ferry, D. L. (1980) *Measuring and assessing organizations*. New York: John Wiley & Sons.
- Van de Ven, A. H. and Drazin, R. (1985) 'The Concept of Fit in Contingency Theory', in Cummings, L.L. and Staw, B.M. (eds.) *Research in Organizational Behavior*, Greenwich, CT: JAI Press, pp. 333-366.
- Van Maanen, J. (1983) 'Qualitative methods reclaimed (Epilogue)', in Van Maanen, J. (ed.) *Qualitative Methods*. Beverly Hills, CA: Sage Publications, pp. 247-268.
- Van Maanen, J. (1998) 'Different strokes: Qualitative research in the Administrative Science Quarterly from 1956 to 1996', in Van Maanen, J. (ed.) *Qualitative studies of organizations*. Newbury Park, CA: Sage Publications, pp. 8-33.
- Verbanoa, C. and Venturini, K. (2011) 'Development paths of risk management: approaches, methods and fields of application', *Journal of Risk Research*, 14 (5), pp. 519-550.
- Walker, P. L., Shenkir, W. G. and Barton, T. L. (2003) 'ERM in Practice', *Internal Auditor*, 60 (4), pp. 51-55.
- Wang, S. and Faber, R. (2006) Enterprise Risk Management for Property-Casualty Insurance Companies. Research Project sponsored by the Casualty Actuarial Society, the ERM Institute International, Ltd., and the Joint SOA/CAS Risk Management Section. [Online]. Available at: <https://www.soa.org/Files/Research/Projects/erm-paper-080106.pdf>
- WatchTower Risk Consulting Ltd. (2010) 'The Case for Integrated Risk and Compliance Management Platforms in the Aviation Sector', *WatchTower International*.
- Waterhouse, J. H. and Tiessen, P. (1978) 'A contingency framework for management accounting systems research. Accounting', *Organizations and Society*, 3, pp. 65-76.
- Weber, M. (1947), *The Theory of Social and Economic Organization*. New York: Oxford.
- Weiss, D., Maher, M. W. (2009) 'Operational hedging against adverse circumstances', *Journal of Operations Management*, 27 (5), pp. 362-373.
- Wetmore, M., Przetak, R. (2006) 'Another Approach to Enhance Airline Safety: using Management Safety Tools', *Journal of Air Transportation*, 11 (2), pp. 113-139.
- Wharton, S. I. and Skinner, D. A. (2007) 'Reducing Earnings Volatility through Risk Management: The RMA/AFS Risk Analysis Service', *The RMA Journal*, 89 (6), pp.70.
- White, L. (2004) 'Management accountants and enterprise risk management', *Strategic Finance*, 86 (5), pp. 6-7.

- Williamson, D. (2007) 'The COSO ERM framework: a critique from systems theory of management control', *International Journal of Risk Assessment and Management*, 7 (8), pp. 1089-1119.
- Wojahn, O. W. (2012) 'Why does the airline industry over-invest?', *Journal of Air Transport Management*, 19, pp. 1-8.
- Woods, M. (2009) 'A contingency theory perspective on the risk management control system within Birmingham City Council', *Management Accounting Research*, 20 (1), 69–81.
- Woods, M. (2011) *Risk Management in Organizations: An Integrated Case Study Approach*. Abingdon: Routledge.
- Yang, M. and Hyland, M. (2012) 'Re-examining mimetic isomorphism', *Management Decision* 50 (6), pp. 1076-1095.
- Yilmaz, A. (2008a) *The best enterprise risk management practice for airline and airport business*. Saarbrücken: VDM Verlag.
- Yilmaz, A. (2008b) 'Importance of the Enterprise Risk Management. Practice for Airline Management: ANP-based Approach', *International Journal of Business and Management*, 3 (5).
- Yilmaz, A. (2008c) 'The Corporate Sustainability Model for Airline Business', *European Journal of Scientific Research*, 22 (3), pp. 304-317.
- Yin, R. K. (2009) *Case Study Research, Design and Methods*. 4th edn. London: Sage Publications.
- Young, M.S., Shorrock, S.T., Faulkner, J.P.E. and Braithwaite, G.R. (2004) 'Who moved my (Swiss) cheese? The (r)evolution of human factors in transport safety investigation', *Human Factors in Investigation*, 28 (3), pp. 10 - 13.
- Zea, M. (2004) 'Is Airline Industry Risk Unmanageable?' London: Mercer Management Consulting. [Online]. Available at: http://www.scribd.com/sumit_bhatia_7/d/59998503-38051671-4-is-Airline-Industry-Risk [Accessed 18th November 2010].
- Zolkos, R. (2008) 'Financial crisis shows real need for ERM', *Business Insurance*, 6, p.6.
- Zucker, L. (1987) 'Institutional theories of organization', *Annual Review of Sociology*, 13 (1987), pp. 443–464.

Appendix A: Theoretical Framework

Chapter 3 discusses the theoretical framework developed for this study. This appendix elaborates on the different theoretical perspectives underlying the study, and provides additional insights into previous scholarly work in the field of management control systems which relies on structural contingency theory, new institutional sociology (NIE), and old institutional economics (OIE).

A. Duality of technical and institutional environment

Previous research calls for consideration of the influences of both task and institutional environments on organisations' structures and practices. Scott and Meyer (1991) suggested that organisational analysis should benefit from considering the institutional and task environments as two interdependent dimensions. Technical pressures, often also referred to as rational or performance pressures, are regarded orthogonal to institutional forces by Scott and Meyer (1983). Carruthers (1995) discussed the dynamics between organisational structures and practices in use, and regards the relation between technical and institutional factors affecting such dynamics as an unsettled issue calling for more research in new institutionalism. Similarly, Baxter and Chua (2003) highlighted that the interaction of technical and institutional imperatives affects the designs of organisational management control systems. Organisational behaviours may conform to institutional pressures, yet such conformance may conflict with objectives of a technical nature; as expressed by Suddaby (2010, p. 15): "The empirical reality is that organisations often behave in ways that defy economic logic or norms of rational behaviour". However, it is also argued that conformance to institutional pressures is consciously assessed in organisations as per the degree to which it is aligned with achievement of technical objectives (Covaleski and Dirsmith, 1988). Extending organisational analysis beyond the technical aspects of environment and including the institutional aspects facilitates understanding of "how organisational structures and processes acquire meaning beyond their technical goals" (Suddaby, 2010, p. 14). Suddaby (2010) argues the boundary between technical and institutional influences is blurred, while he refers to constructivist arguments of the definition of technical objectives as being socially determined.

Contingency perspective has often been referred to in studies of organisational formal structures in general (e.g. Brignall, 1997; Hickson et al. 1971; Woodward, 1965), and

management control systems in particular (e.g. Dent, 1990; Chapman, 1997; Chenhall, 2003, 2006; Chenhall and Chapman, 2006). Donaldson (2001) advocates the contingency theory provides a major framework for organisational structural design by fitting the structure with organisational contingencies. Contingency theory conveys lack of a best, universally applicable organisational structure, since different environments in which organisations operate have important effects on the structures (Lawrence and Lorsch, 1967). The contingency view therefore considers the influence of organisational context upon the choice of management control system design (Chenhall, 2003; Woods, 2009). An essential implication of the contingency view is that contingency factors should be determined for particular designs of control systems, as opposed to proposing a single best solution for diverse types of organisations; appropriate matching of contingency factors with organisational designs can improve organisational effectiveness (Donaldson, 2001). The design and use of control systems is not static, as they are influenced by contingency factors which are internal (e.g. strategy) or external (e.g. environmental uncertainty) to organisations (Hinings et al., 1974; Burns and Stalker, 1961). Therefore, this study draws on the contingency perspective in order to examine the external and internal determinants of the structures and practices comprising airline risk management systems.

The institutional perspective extends the view of organisations as technical systems, and considers them as embedded in institutional environments. Under the (neo) institutional perspective, the environment is viewed as the location of a set of institutional rules delimiting social reality (Scott, 1987; Dobbin, 1994) that exert a deterministic influence on organisational structures and practices (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; DiMaggio, 1988). Organisations design their structures in order to conform to the institutional rules encoded in institutional environments, and that conformity generates legitimacy, secures support of society, and enhances survival chances (Baum and Oliver, 1991; Singh et al., 1986). Thus, framing this research within the institutional perspective allows for exploring adoption of particular risk management structures and practices in airlines as a desire to gain social legitimacy and improve survival chances, as well as examining the institutional determinants of risk management coordination and control mechanisms. Additionally, under the institutional perspective, this research studies the risk management phenomenon as shaping and simultaneously being influenced by institutions in airlines. Airline risk management

practices and structures are conceptualised as a system of rules and routines encoding the beliefs and values common to organisation members, namely organisational institutions.

B. Contingency theory perspective

Contingency theory was developed in response to the universalistic perspective, which posits that optimal control design is applicable to all settings and organisations. The universalistic view of organisational control evolved from the scientific management theory, which proposed the existence of a single best way to design operations in organisations which maximises performance. However, empirical evidence did not support the applicability of the universalistic perspective to management control system designs (Fisher, 1998). An opposite approach to the universalistic perspective is the situation-specific approach, which argues uniqueness of the factors affecting control systems and impossibility to apply general rules or frameworks to guide their designs. Fisher (1998) argues the contingency approach falls between these two extreme propositions; it recognises the need to align control systems to organisational contexts but it also allows for generalisations of control systems for major classes of organisational characteristics.

Contingency theorists analysed the impact of different contingency factors on organisational structure. Several seminal studies related to structural contingency theory emerged in the 1960s and 1970s. Initial studies in this field concentrated on the effects of environment uncertainty and technology on organisational design. Burns and Stalker (1961) argued the existence of a fit between environmental uncertainty and organic or mechanistic organisational structures; it was argued that high-uncertainty environment determines organic organisational structures, while low-uncertainty environment drives mechanistic structures. Lawrence and Lorsch (1967) discussed the effect of environmental uncertainty and, specifically, the differences between environments of organisational subsystems on differentiation of various parts of an organisation or integration between them. Woodward (1965) proposed that organisational structures depend on the complexity of technology in use, distinguishing between small-batch production, large-batch production, mass production, and process-production technologies. Perrow (1967) discussed the fit with technology contingency in terms of

non-routineness or occurrence of exceptions and problems in production processes. Thompson (1967) viewed task interdependence as a contingency that organisational structure needs to fit with, while he discussed increasingly complex levels of task interdependence. Strategy is another contingency factor discussed in the pioneer contingency theory studies. Chandler (1962) analysed diversified strategies and their fit with organisational structures; he argued the need for structural adaptation along the organisational growth processes. Miles and Snow (1978) empirically analysed relationships among organisational strategies, structures, and processes, and identified commonly occurring configurations denominated as defender, analyser, and prospector. Organisational structures were also associated with size and diversification, and structure-related contingency factors (Blau 1970, 1972; Child 1973; Pugh and Hickson, 1976; Hoskisson et al., 1990).

Research in the contingency field was developed in various disciplines of management, generating a multiplicity of studies on the above mentioned contingency factors and leading to identification of new contingencies. Contingency studies have evolved from examining single dimensions or plotting matrices of two contingencies, towards employing multiple dimensions of contingencies. Contingency research further elaborated on the main factors, such as strategy (e.g. Burton et al., 2002, 2003; Govindarajan, 1988; Govindarajan and Gupta, 1985), size and structure (e.g. Kraft et al., 1995; Powell, 1992), task and external environment uncertainty (e.g. Pennings, 1987; Argote, 1982; Drazin and Van de Ven 1985; Van de Ven and Ferry 1980; Van de Ven and Delbecq 1974), and technology (e.g. Keller 1994; Ahuja and Carley 1999; Waterhouse and Tiessen, 1978). New variables were considered such as national culture (e.g. Hickson and McMillan, 1981; Frucot and Shearon, 1991), organisational culture (Pratt and Beaulieu, 1992; O'Connor, 1995) and others (Donaldson 1996, 2001). Studies considered both the effects of single and multiple variables on organisational structures. For example, Mintzberg (1979) considers contingency factors such as organisational age and size, regulation of technical systems, environmental stability, complexity, or diversity, ownership, etc. Hofer (1975) identified 54 possible contingency factors and speculated that some factors have priority over others. The number of relevant contingency factors is extensive and the list presented herein is illustrative and not exhaustive.

Contingency-related literature in MCS

The following review of contingency-related literature in the management control area is selective and illustrative of the issues pertinent to development of the theoretical framework guiding this research of airline risk management systems, and is not intended to provide a comprehensive coverage of contingency theory research in management control systems.

Otley (1980), in research on management accounting, claimed a lack of a “universally appropriate” control system applicable to all organisations and in all circumstances. Evans et al. (1986) referred to the contingency approach while suggesting that optimal framing of management control systems should depend on particular features of organisational environment. Organisationally-grounded research in management control issues often explored contingency in terms of context-specific variations in management control in general, or risk management in particular, among organisations from different industries and even within the same industry (e.g. Colquitt et al., 1999; Bhimani, 2003; Chapman, 1997, 1998; Hopwood, 1987; Broadbent and Guthrie, 1992; Miller and O’Leary, 1990; Mikes, 2005, 2009; Mouritsen, 1999; Simons, 1991; Kaplan and Mikes, 2014). Research in management control systems in general, and later in risk management in particular, confirmed the major contingency factors (environment, technology, size, structure, strategy, and culture) as descriptors of fundamental, generic components of organisational context. Recent research considered relevance of additional contextual factors to the design of management control and risk management systems. Woods (2009) studied risk management systems of public sector organisations and concluded that although their general risk management structures were coherent with generic models, the operational controls were contingent upon three core factors – government policies, information and communication technologies, and organisational size. Additional factors such as leverage (Liebenberg and Hoyt, 2003; Pagach and Warr, 2011), presence of internal risks specialists (Kleffner et al., 2003; Beasley et al., 2005; Paape and Speklé, 2012), organisational and industry-related characteristics (Gordon et al., 2009; Lin et al., 2012), and others were also identified in management control literature as organisation-specific factors influencing the design of organisational control and coordination structures. Despite important contributions of the contingency studies on management control systems, it is argued their findings cannot be integrated

into a coherent framework; while management control systems are multidimensional, prior studies would concentrate only on specific subsets of such systems and would investigate one or a limited number of contingency factors at a time, ignoring possible correlations between the factors (Fisher, 1998).

C. Institutional theory perspective

There has been an increasing interest in recent years in institutional theory in management studies (Scott, 2001; Burns and Scapens, 2000). Institutional perspective has often been referred to, in the broad field of corporate governance, in studies of different aspects of management and control (e.g. Chenhall, 2003; Arena, 2010; Modell, 2003; Al-Twaijry et al. 2003; and others). Scholars recognised that internal and external institutions have an impact on different aspects of management control systems in organisations. Academic literature incorporating institutional theory in the field of risk management has emerged in several research streams. Diversity of risk management practices was investigated across organisations in different industries (e.g. Arena et al. 2010; Woods 2011), organisations in the same industry (e.g. Hall et al., 2013; Mikes, 2005, 2009, 2011), or even within the same organisation (e.g. Woods, 2009). Scholars analysed normative and regulatory influences, as well as mimetic pressures influencing the shaping of risk management programmes in organisations (Kleffner et al., 2003; Paape and Speklé; 2012; and others). Institutional theory provides a rich theoretical foundation which allows for conducting analysis on multiple organisational levels.

New Institutional Sociology

Organisational fields supporting various populations of organisations adhere to particular archetypes for organising by employing similar institutional logics and actions, while being controlled with coordinated governance structures (Scott et al., 2000). Institutional studies of organisational dynamics often focused on isomorphic forces driving convergent institutional change, promoting similarities in organisational structures and processes; isomorphic forces are the primary reason for organisations exhibiting a relatively high coherence within organisational fields, leading to convergence of organisational shapes, forms, and structures. DiMaggio and Powel (1983) introduced a typology of external institutional pressures - coercive, normative and mimetic, causing organisational isomorphism. According to these scholars,

organisations seek to become isomorphic within their contexts in order to gain legitimacy and increase their probability of survival.

Organisations strive to demonstrate conformity with institutionalised beliefs through their choices of organisational structures. Yet, it is believed organisations may ceremonially adopt elements of formal organisational structures, such as standardised coordination and control processes, in pursuit of legitimacy, overlooking the efficiency criteria and effects on actual performance (Meyer and Rowan, 1977; Meyer et al., 1983). Meyer and Rowan (1977) described this phenomenon as institutionalisation. DiMaggio and Powell (1983, p. 148) argued that through institutionalisation organisations “construct around themselves an environment that constrains their ability to change in future years”. Internal technical activities may become separated from externally directed symbolic display of rationality (Gupta, 1994). Decoupling or loose coupling may arise from discrepancies or conflicts between stated objectives and actual work practices and performance, when organisations formally implement rules in compliance with external legitimisation demands, yet without incorporating them in everyday business (Modell, 2001). Relating this concept to the study of risk management structures and practices suggests organisational designs of risk management systems can serve as ceremonial displays of organisations’ commitment to legitimised external expectations, rather than representing rational and objective reality (Covaleski et al., 1996); decoupling or loose coupling may occur between risk management rules and actual routines aimed at preserving technical efficiency. Previous research provided evidence of how risk management may fall into rule-based compliance function in organisations (e.g. Power, 2007, 2009).

Building on the neo-institutional perspective of organisations Scott (2001, p. 33) discussed organisational isomorphism as a means for ensuring legitimacy in regulative, normative and culturally-cognitive fields; the scholar developed a definition of institutions by combining different strands of institutional theory: “Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour. Institutions are transported by various carriers - cultures, structures, and routines - and they operate at multiple levels of jurisdiction”. Scott’s regulatory pillar of the institutional context discusses coercive pressures and posits compliance as its basis of expedience; legitimacy is driven by the presence of

rules, sanctions, and laws. The normative pillar draws from DiMaggio and Powell's (1983) tenet of normative pressures; under this pillar compliance is regarded as a social obligation in accordance with social norms and values, and certification and accreditation are used as a basis for legitimacy. The third cultural-cognitive pillar is an elaboration of the concept of mimetic pressures; common social beliefs and shared logic serve as a culturally supported basis of legitimacy. Under Scott's understanding of social reality, this research considers airline risk management systems in the broad context of airline regulative, normative, and culturally-cognitive fields. Existence of possibly conflicting institutional logics is also recognised in the social reality, as well as their potential to erode and create new institutions.

The research agenda in the stream of NIS was broadened beyond the phenomena of convergence to cover issues of institutional divergence (Scott, 2010). This strand of research showed how different institutional contexts and pre-existing or conflicting organisational logics (Alford and Friedland, 1985) can alter adoption of behaviours and practices (e.g. Townley, 2002; Fiss and Zajac, 2004; Goodrick and Salancik, 1996). The research of Lounsbury (2001, 2007, 2008) provided interesting findings on institutional diffusion of changes in organisational fields by exploring how the spread of new practices can be influenced by multiple forms of rationality, 'competing logics'. Lounsbury (2007) argues that a multiplicity of broader cultural beliefs and rules (jointly regarded as logics) affects cognition and decision making of actors in organisational fields. Competing logics may contribute to the process of deinstitutionalisation, which is defined by Scott (2001, p. 182) as a process "by which institutions weaken and disappear"; this may be associated with re-institutionalisation – "the weakening and disappearance of one set of beliefs and practices is likely to be associated with the arrival of new beliefs and practices" (Scott, 2001, p. 184). Oliver (1991) also discussed erosion of institutionalised practices and identified different ways in which organisations strategically respond to institutional pressures, as opposed to simple mimicking and acquiring of new practices spreading across an organisational field. Organisations may seek to compromise with multiple constituents, apply tactics of avoidance, manipulate the sources of institutional pressures, or partly ignore such pressures. Oliver (1991) argued that pressures for deinstitutionalisation stem from functional, political, and social sources; functional pressures are linked to technical aspects of institutionalised practices and their perceived utility; political pressures stem

from changes in distribution of political power supporting existing rules for legitimacy; social pressures are associated with changes in social expectations or varying social beliefs.

Greenwood and Hinings (1996) developed a framework resumming an interplay of contextual forces and intra-organisational dynamics, leading to variety in responses to organisational pressures. In the field of management control systems and ERM in particular, scholars discussed how ERM is challenged by values which are institutionalised in organisations and how new risk rationalities are confronted with pre-existing practices, resulting in heterogeneity of ERM systems. Arena et al. (2010) adopted an institutional perspective in the exploration of varying implementations of ERM across organisations. ERM is subject to a continuous process of translation (Latour, 1987), and entanglement between new and existing practices for controlling risks. The on-going reciprocal interactions between new and established risk management practices can lead to various degrees of assimilation of ERM principles, placing ERM on a continuum between decoupling (Meyer and Rowan, 1977) and embeddedness (Fraser and Henry, 2007). In the same line, findings of Mikes (2005, 2009) and Power (2007, 2009) demonstrate how ERM may vary across organisations in terms of actual practices, embeddedness levels, or cultural significance. Consideration of competing logics can be further used to explain potential variations in the framings of airline risk management systems, deinstitutionalisation of existing practices and institutionalisation of new ones.

Appendix B: Coding Scheme

Chapter 4 discusses techniques for organising and analysing empirical data collected in the course of this research. This appendix provides additional insights into the coding scheme.

Empirical data collected throughout this research was coded under the categories pre-defined in the theoretical framework and synthesised by drawing together of relevant themes and concepts, following the recommendations of Yin (2009), Miles and Huberman (1994), and Strauss and Corbin (1998). Besides the codes derived from the framework, “free” codes were further developed as suggested by additional topics which emerged from the data, permitting empirical flexibility and revision of the existing theory (Malina and Selto, 2001).

A. Institutional pressures

Coding rules: data indicating explicitly or implicitly institutional determinants of airline risk management systems was coded under the following codes:

- Coercive pressures
- Mimetic pressures
- Normative pressures
- Other external institutional pressures
- Internal institutional pressures

B. Contingency factors

Coding rules: data indicating explicitly or implicitly technical determinants of airline risk management systems was coded under the following codes:

- Environmental and industry-related contingency factors
- Organisation-specific contingency factors
- Contingency factors of airline risk profiles

C. Characteristics of airline risk management systems: risk management institutions, rules, routines

Coding rules: data indicating explicitly or implicitly characteristics of airline risk management systems was coded under the following codes:

- Evolution of organisational risk management systems
- Perceived status of risk management development
- Formalisation of risk management systems
- Risk management strategies

- Division of roles and responsibilities in different phases of risk management processes
- Methodologies guiding risk management processes
- Mechanisms for reporting and integration of enterprise-wide risk data
- Risk management tools and technologies
- Risk portfolio
- Risk culture
- Risk appetites
- Links between risk management processes and other management and control processes
- Best practices and shortcomings of risk management systems
- Institutionalisation of risk management rules and routines; decoupling and loose coupling
- Perceived maturity and functionality of risk management

Appendix C: Analysis of Field Study Findings

Chapter 5 reports on the major findings from the field study. This appendix elaborates on the field study findings, and complements the findings with relevant quotes from the interviews conducted with airline representatives.

A. Determinants of airline risk management approaches

Institutional coercive pressures

Regulatory framework governing airline operations

Interviewees from all ten airlines pointed out the importance of the regulatory framework governing numerous areas of airline operations. By way of an example, SCRO-Theta stated:

“Operations of airlines are extremely regulated in many fields. It all comes indicated, I mean formalised, by the civil aviation associations of each country. It’s [name of the corresponding association] in our case; we have to follow their protocols” (SCRO-Theta).

The interviewees pointed out that the regulatory framework has an impact on organisational structures and practices of airlines in general (in multiple areas), and also specifically the risk management rules and routines. HSS-Beta elaborated on this notion by emphasising the complexity of the legislations governing management of safety risks:

“We have protocols for ground operations and flight operations... You need to comply with them... This is a form of risk management” (HSS-Beta).

HSS-Beta further commented on the safety management area:

“There are mandatory technical requirements and administrative procedures, so you have to adapt if you want to be certified” (HSS-Beta).

DRC-Alpha, although not directly involved in the safety risk management function, also explained:

“Management of operational safety risks is another pillar... Operational processes are highly regulated by the [geographical indication] law, which specifies the risk management positions that all airlines need to have, and the functions they need to perform... So the risk management structure in this area is defined by law” (DRC-Alpha).

However, although the regulatory frameworks relevant to particular airlines impose standards and requirements for multiple areas of business operations, it is the air transport associations (for example, IATA), rather than the regulators, who advocate best practices in the area of centralised management of corporate risks, in addition to issuing recommendations and requirements for management of operational, safety, or hazard risks.

Regulatory requirements for listed companies

Evidence supporting the influence of regulatory requirements applicable to listed companies on airline risk management structures and practices was found in the airlines Alpha-1, Alpha-2, Beta, Gamma, and Zeta. Notably, this cluster of airlines comprises both publicly traded and privately held organisations; however, in the interviewees' responses, they would refer in some cases to the present situation of their respective airlines, and in other cases to airlines' past situation or that of other airlines. CRO-Alpha provided a clear example of the influence of regulatory demands for listed organisations, while explaining the triggers for adopting ERM:

“I think it was probably the [name of the country-specific regulation setting out standards for listed companies], which recommends that risk management should be considered at the Board level” (CRO-Alpha).

Similarly, DRC-Alpha affirmed: *“Bear in mind that the [name of the country-specific regulation setting out standards for listed companies] affects how companies manage risks” (DRC-Alpha).*

By way of another example, RMD-Zeta stated:

“One of the reasons for all listed companies, not only [Zeta], for developing risk management functions is the new law, or development of the existing law, we call it [name]. According to that, listed companies have to take care that the risk management is effective...” (RMD-Zeta).

CFO-Gamma also provided evidence for the influence of regulatory frameworks for listed organisations on risk management rules and routines; CFO-Gamma also indirectly provided evidence for the influence of regulatory frameworks for listed organisations on risk management rules and routines:

"We are not quoted; we are a small company, so the regulations [national corporate governance codes for listed companies] don't apply here... We have more flexibility" (CFO-Gamma).

In further discussion CFO-Gamma also expressed a sceptical view of compliance-driven risk management structures often created in organisations, which, as reported, may pose more of a burden than a benefit to organisations.

Rating agencies' assessment methodologies

The representatives of Zeta and the Alpha group devoted significant attention in their discourses to the influence of rating agencies' assessment methodologies, although, in the case of the latter, different members of the group attributed different levels of importance to this coercive pressure. RMD-Zeta reported on the importance of credit ratings for organisations which trade on the commodity markets:

"If we are rated highly we can negotiate more favourable conditions in the market, we are a credible counterparty... We raise capital at a lower cost" (RMD-Zeta).

RMD-Zeta further continued:

"[Name] is our rating agency. They come here and have discussions with our management, and they get information about our risk management processes and systems. So I assume that it is also a relevant topic" (RMD-Zeta).

RMD-Zeta went on to explain how financial risks are managed and financial decisions are taken in function of their potential effects on Zeta's credit rating. Additionally, CFO-Gamma indirectly confirmed the significance of credit ratings:

"We only use banks for raising capital... We don't have official ratings because we are a privately-owned company, but in another case of course we would pay a lot of attention to the ratings" (CFO-Gamma).

TRM-Alpha referred to the utility and uses of the risk management model operated in the Alpha holding company (Financial Risk Management Framework, further discussed in Chapter 6). TRM-Alpha stated:

"What we are most interested in is testing business plans and contrasting their potential consequences with the rating matrix of [credit rating agency]" (TRM-Alpha).

However, although CRO-Alpha acknowledged the relation between financial risk management and credit agency ratings, the interviewee was of the opinion that credit

agency ratings had not affected the development of the ERM approach in Alpha airlines:

“[With regard to credit rating agencies] they are rather interested in financial risk management, they would say they are interested in ERM, but I don’t really think they are. I imagine they have a tick box for financial performance measures. They might say ‘yes, we say you have ERM because we saw it in your annual report’, but that’s it. So they would rather concentrate on financial risk management. I don’t think they are really interested in how we implement ERM” (CRO-Alpha).

Institutional mimetic pressures

Influence of the approach adopted in group organisations

With regard to mimetic behaviours within Alpha, DRC-Alpha referred during the interview to the incorporation of the Alpha-2 airline to the Alpha group:

“Our risk map has evolved; we have come closer to the systems that [Alpha airlines] have. We have introduced new risks to our risk management system, and there were some risks which we stopped worrying about at the operating company level because they are now managed by the holding company” (DRC-Alpha).

DRC-Alpha regarded the adjustments of the risk management system of Alpha-2 to the overall risk management approach of the Alpha group as positive in terms of bringing benefits to Alpha-2, while interviewee’s perception was shared by other members of the Alpha group. On the contrary, HIA-Beta expressed concern regarding unification of risk management approaches among Beta and its respective group, emphasising the need to consider the uniqueness of organisational circumstances, a view which was also shared by CFO-Beta.

The risk management system of Gamma is aligned with that of other organisations from its respective group. CFO Gamma considered it in terms of a necessity and means for achieving a global view of group-wide risks; CFO-Gamma explained:

“[Group name] allies also tour operators, travel agencies, and hotels, so risks are not analysed only in terms of their effects on airline operations; they are considered with respect to the whole group. Sometimes the risk of creating a new route, a flight to a new destination, may be very different and have different implications for the airline and for the rest of the companies in the group” (CFO-Gamma).

Similarly, HRC-Epsilon demonstrated how Epsilon's affiliation with a multi-enterprise group triggered adoption of the ERM approach, and explained the rationality for a group-wide alignment of risk management approaches.

HRC-Epsilon stated:

"It [ERM] was introduced after the merger, and our approach was aligned to what [group name] had or was trying to develop" (HRC-Epsilon).

The interviewee further endorsed the adopted approach:

"We have tried to standardise our approach across the group... The methodology is consistent across the group, even in terms of risk assessments, risk criteria, risk matrixes. It makes it easier to compile and compare all risks at the group level" (HRC-Epsilon).

The arguments of RMD-Zeta confirm, in a similar manner, partial unification of risk management approaches within Zeta's respective group, and the related benefits:

"Risk management processes, development of standards, for example methodologies, implementation and running of IT systems for risk management, it's all coordinated group-wide... It's easier to coordinate the systems implemented in all the airlines, and combine information on risks" (RMD-Zeta).

Alignment of group-wide approaches was suggested in the interviews conducted with RCM-Eta, SCRO-Theta, and RMC-Iota. RCM-Eta explained:

"Two or three years ago in [Group name] we started a project aimed at implementing risk management guidelines across the group, including the smaller airlines... We had an example of what should be developed, and how the system works" (RCM-Eta).

RMC-Iota recalled on the project of ERM implementation across the group, whilst the interviewee also emphasised context-sensitive implementation of the risk management systems:

"From the very beginning of that project all main players of the group, the big airlines and the regional players, were involved... So now I would say we have a common framework, all of the airlines are following a similar approach. But it is not exactly the same system in [Iota] and in [group airline], because our risks are different" (RMC-Iota).

According to SCRO-Theta, the airline implemented risk management practices which it had observed in another group company, and which it had considered potentially beneficial:

“It is a learning process... We were encouraged to introduce a more structured approach [to risk management], but we also saw it as something favourable, something that could help us understand better our risks” (SCRO-Theta).

Interestingly, RCM-Eta referred to the complex and volatile nature of the airline industry and justified mimicking the approach adopted in airlines from the respective group as a form of reassurance, by saying:

“It’s a difficult industry, very risky, but some of us do just fine... If you look at [airline name], it’s a much bigger airline, they have more resources. Some of their [risk management] solutions are interesting, but we don’t have these resources here, and we don’t have the need, I think, to make it overly complex” (RCM-Eta).

Adoption of best practices of other organisations

With regard to following risk management best practices of other organisations, HSS-Beta reported on cooperation and sharing of best practices among airlines in the development of Safety Management Systems (SMS):

“When ICAO first published guidance on constructing SMS in airlines, there was no practical reference. Everyone started to create systems the way they wanted to, so they were very different... But we know each other, the safety people, we talk when there are investigations... So I could see what [airline name] or other airlines had, and they took ideas from our system as well” (HSS-Beta).

MCM-Alpha discussed the evolution of the risk management approach of Alpha-2, and provided evidence of adopting best practices from another industry:

“When I realised I needed to better understand our risks, I didn’t have the people, I didn’t have the means in the company to build the [risk management] system. So I said ‘Well, I’m going to hire people who can do that, some advisors’. And I hired advisors from [an investment bank]. I couldn’t pay them a lot of money, so I said ‘Well, if you help me to frame this, then you can participate in the business that will follow’ [hedging opportunities]” (MCM-Alpha).

The notion of following industry best practices was also raised in the interview with CRO-Alpha, who discarded the influence of competitors' practices on the current shape of the risk management system of the group:

"I don't think our competitors really mattered. I guess we started doing ERM mainly because it was a requirement and not because everyone else started doing it" (CRO-Alpha).

CRO-Alpha also added:

"I have no relationship with risk managers in [name of a competitor company] or [name of a competitor company]. I would maybe have a look at what they put in their annual reports, but that would be it. I wouldn't benchmark myself against them. We have to be very careful about talking to other airlines" (CRO-Alpha).

Institutional normative pressures

Professionalisation of the risk management field

Representatives of five airlines, Alpha-1, Alpha-2, Zeta, Theta, and Iota, reported on the influence of the international risk management standards and frameworks such as COSO or ISO31000 in framing of the risk management systems of their organisations. RMD-Zeta and RMC-Iota emphasised that although the risk management models of their respective organisations incorporate general principles of such standards and frameworks, more importantly they have been designed to fit with the particular risk management approaches the airlines aimed to adopt. RMD-Zeta explained:

"Of course I am aware of COSO or ISO [31000] and I learned from there... But we developed it [the risk management system] from scratch; the focus was to build a risk management framework which is able to be integrated into steering processes such as management accounting or decision making. Because, for us, an important side of risk management is to calculate the upside and the downside of our management accounting budgets" (RMD-Zeta).

RMC-Iota presented a similar notion:

"We looked at the framework [as above], but our concern was also to build risk management which is very much and very closely integrated with controlling" (RMC-Iota).

Recommendations from consulting companies

HRC-Epsilon informed that Epsilon relied on external consultants when implementation of ERM had commenced in the airline, yet the airline draws currently from in-house resources in execution of the ERM approach:

“We attained training and now we have in-house expertise... Now our level of expertise is more mature than that of external providers, because we not only understand the methodology, but we also have the advantage of understanding the business and knowing exactly what the business needs. It’s crucial because this is a very special industry” (HRC-Epsilon).

Similarly, CRO-Alpha, MCM-Alpha, RMD-Zeta, and RCM-Eta agreed that consulting advice had influenced the decision to adopt ERM and, in some organisations, it had also added value to their businesses. However, DRC-Alpha raised an interesting point, partly aligned with the view of HRC-Epsilon regarding specificity of the airline industry and the understanding of organisational needs:

“Consultants don’t understand the particularity of this business. I think the general opinion here is that we can deliver better results when we design solutions in-house... When we had just started ERM, a consulting company came to set the bases. But later on, when we wanted to take the system further, they were not of too much help; they didn’t know the business. Also, it isn’t only about knowing the industry, each company is different” (DRC-Alpha).

A similar view was expressed by CFO-Gamma:

“Since I’ve worked here consultants from [name of a consulting company] have come twice to help us with risk management, but honestly I didn’t like what they offered. They don’t add value, or at least they didn’t add any the two times they came here. In the end they just put in a power point whatever you explain to them, and this isn’t the kind of help you expect when you hire someone from the outside” (CFO-Gamma).

Other external institutional pressures

Representatives of the Alpha group indicated meeting shareholder expectations as an additional institutional driver of airline risk management efforts. DRC-Alpha reported:

“We report on our risk management system in annual reports not only because of regulatory requirements, but also because we want to send a message to our

shareholders, let them know we take risk management seriously, and that we take good care of their money. That's why we also talk about risk management in the corporate social responsibility reports" (DRC-Alpha).

DRC-Alpha also stated:

"The Board has a fiduciary duty; they were entrusted to manage investors' funds. We want to show the investors that, through effective governance systems, we are able to produce benefits for them" (DRC-Alpha).

CRO-Alpha added:

"This is how we communicate with our shareholders. They can read about ERM in our accounts" (CRO-Alpha).

Additionally, CFO-Gamma and CFO-Beta suggested risk management practices in their respective organisations had been targeted at gaining credibility in the eyes of capital providers, banks in both cases. CFO-Gamma explained:

"[Through financial risk management] we are trying to maintain stable and reasonable financial results because it grants us access to bank financing" (CFO-Gamma).

CFO-Beta presented a similar rationale:

"Until now we've been financing our operations with bank loans... Banks see our results, it means we must be doing something right, there isn't much volatility in year-end results, we've managed well our growth. This gives them confidence" (CFO-Beta).

Internal institutional pressures

Impulses from the management team

Although representatives of all the airlines from the sample claiming adoption of ERM (Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta, and Iota) mentioned in the interviews in general terms the role of 'tone from the top', advocating enterprise-wide implementation of ERM, the representatives of the Alpha airlines and the Epsilon, Zeta, and Iota airlines elaborated on the involvement of the management teams in ERM adoption decisions of ERM implementation processes. By way of an example, CRO-Alpha reported on a continuous evolution of the ERM system, and that the tone suggesting changes in the system tends to come from the management team. The interviewee further clarified:

“When the directors say something new should be done [in terms of risk management], or that we should do things differently, it’s usually because they have seen it done elsewhere” (CRO-Alpha).

Yet, CRO-Alpha underlined the importance of aligning risk management practices from other industries to the specificity of the airline business.

CRO-Alpha continued:

“But sometimes it wouldn’t necessarily work well in the airline business, because this business is very specific, and because our resources are limited, so sometimes the return isn’t worth the effort” (CRO-Alpha).

HRC-Epsilon attributed the perceived success of the risk management of Epsilon to the approach proposed by his predecessor in the position of Head of Risk and Compliance (see Chapter 4, section 4.5.1 for additional comments on the nomenclature of interviewees’ positions), who advocated using common denominators for diverse risks which, according to him, facilitates enterprise-wide aggregation of risk effects and their joint evaluation, which in his opinion is not a common practice in the industry. RMD-Zeta and RMC-Iota reported on prior experiences of executive managers from their respective organisations, which were believed to be translated into their risk management approaches.

Organisational culture

CRO-Alpha, while referring to the Alpha holding company, provided clear evidence of the effects of national cultures on organisational cultures:

“You have to remember that this is the [country adjective] working culture, which really affects how we work and the level of formality of our processes” (CRO-Alpha).

Similarly, HSS-Beta reported on the influence of the culture of Beta’s country of origin on its organisational culture, and later on the airline’s risk management routines. HSS-Beta referred to the implementation of the ICAO’s recommendations regarding safety risk management:

“In the [country adjective] culture we don’t follow recommendations until they are mandatory; so in [Beta] we had to create mechanisms to assign responsibility for implementing recommendations [as per management of particular types of safety

risks]. If you were in the [country], recommendations would always be followed. Nobody questions whether they are suggestions or obligations” (HSS-Beta).

RMD-Zeta and RMC-Iota reported on having integrated the ERM frameworks of their respective organisations with the management accounting and controlling functions. These interviewees further indicated the cultural influences of their respective countries and organisations on the adoption of particular risk management approaches. RMD-Zeta also underlined the integration of the airline’s ERM with the decision-making function, and stated:

”I have to underline this point because in the [language adjective]-speaking countries you often find risk management systems which are mainly focused on just fulfilling governmental rules” (RMC-Iota).

Similarly, RMC-Iota reported: *“In [country], internal control is mostly focused on regulatory compliance” (RMC-Iota).*

Cultural influences on airline risk management systems can also be considered in relation to organisational ownership structures. CRO-Alpha also provided an interesting notion on cultural issues related to institutional versus private ownership, and implementation of ERM in Alpha-2:

“[Alpha-2] has a different culture, which is definitely related to the fact that it used to operate for a long time as a public company. It had the DNA of a public company, so introducing changes in risk management was slower, I think” (CRO-Alpha).

CRO-Alpha described the current risk management system of Alpha-2 *“as more informal”, “with less structure”, and “less agile”,* attributing these features to the organisational culture of Alpha-2. Similarly, CCO-Delta directed the researcher’s attention to the airline’s ownership structure, and specifically to the effect of partial state-ownership which, according to the interviewee, is the reason for *“old school”* management style, also in the area of risk management.

Environmental and industry-related contingency factors

The high volatility and uncertainty characteristic of the airline industry was commonly recognised in the field study to drive development of airline risk management systems, as summarised by RMD-Zeta:

“Other drivers are definitely the dynamics and the volatility of the airline industry, which makes it more and more important to have emergency cases and to have reaction plans in place” (RMD-Zeta).

The accounts of MCM-Alpha emphasise the relevance of changing macroeconomic paradigms to airline business, while the interviewee referred specifically to historical events that made him realise the need to embrace a different approach to risk management in Alpha-2:

“I remember I used to read ‘Financial Times’ to understand how the economic environment could affect my company. I still have the article that talked about the new paradigm of jet fuel.... where it said the jet fuel could go to a new paradigm, where the new low is USD 60, and the maximum is USD 100... I thought ‘if this happens, we are dead’” (MCM-Alpha).

With regard to cyclicity of airline business, CFO-Beta stressed the importance of including flexibility margins in business plans and of agility in response to risks:

“All companies face the risk of fluctuating demand, but the airline industry is more affected than others by the economic cycles; airline travel is often discretionary... Our demand changes in summer and winter months... It is crucial to consider the demand risks and have a certain degree of flexibility in your business plans” (CFO-Beta).

CFO-Beta further continued: *“You may have aircrafts coming [orders from aircraft manufacturers]... You will have to make fixed payments on your orders and empty planes... It is a short way from when your aircrafts are on the ground to bankruptcy, especially if you have them in ownership” (CFO-Beta).*

Airline businesses are susceptible to uncertainty and hazards related to the natural environment; as exemplified by CCO-Delta:

“We need to be prepared for the unexpected. You don’t know what it will be, but you know something unexpected can happen; a volcano may erupt, there may be a snow storm or a hurricane collapsing our operating schedules. You need to have protocols in place, an immediate response” (CCO-Delta).

Field study findings from five airlines underlined the importance of responding to risks embedded in political or social contexts, which required maintaining flexibility in airline operational and business planning. Geopolitical instability in various areas of the world was reported to have a major impact on airlines’ operations. For example, CFO-Beta commented on political and social issues affecting the demand for airline services:

“Events such as the Arab Spring, they affected our demand; we may not be able to fly to places where conflicts occur... Or epidemics such as SARS, you need to take these risks into account” (CFO-Beta).

MCM-Alpha also recalled an event which changed the way airlines conceptualise risk, with consequent changes in airline risk management structures and practices:

“...But something happened – the terrorist attacks of September 11th [2001]. That day changed everything in our sector” (MCM-Alpha).

TRM-Alpha explained the need for aligning strategic planning with risk management processes in the context of dynamic changes in the airline market structure:

“Your strategic planning has to be dynamic, because the market structure is so; you are not a sole player in the market... With the ‘Open Skies’ policy airlines are much more susceptible to the actions of their competitors... New players are now entering the [geographical indication] market, offering huge supply at dumping prices. We have processes in place to monitor strategic risks, and adjust our strategic plans, and our network accordingly” (TRM-Alpha).

RGD-Delta and ORM-Delta also commented on the airline market structure, yet from a different perspective. RGD-Delta, in a discussion on managing competitor risks, compared the European and the American market structure in terms of airline transport service providers and availability of complementary means of transport; RGD-Delta emphasised the importance of choosing appropriate methods and tools (software) for simulating competitor’s moves, customer demand, and managing commercial risks, as different types of software may serve some markets better than others. Additionally, with reference to managing commercial or competitor risks, ORM-Delta noted that in no industry other than the airline industry had the market structure been so precisely parameterised, and especially on the demand side; ORM-Delta added:

“The [airline] market is highly parameterised and mathematically analysed when it comes to managing commercial risks. You can better plan your network and optimise the revenue management system” (ORM-Delta).

Organisation-specific contingency factors

The effects of size and complexity of organisational structures on airline risk management systems were especially noticeable in the airlines Alpha-1, Alpha-2, Beta, Gamma, Epsilon, Zeta, and Eta. By way of an example, CFO-Gamma linked the level

of formalisation of the airline's risk management approach with organisational size and complexity:

"We don't have formal procedures, sophisticated risk maps; we know what our risks are. After all this is a relatively small airline, we all work very closely together. If we introduce too many formal processes, it might make us lose our agility. There have been discussions on creating a risk committee, but such committee might later constrict us... Our size is still very manageable, so if a new threat comes up, I just go to the office next door and talk about it" (CFO-Gamma).

However, CFO-Gamma also admitted a certain level of clarity and formalisation of the airline's risk management practices might be beneficial. Similarly, in discussions on the risk management systems of their respective airlines, RMD-Zeta and CFO-Beta related the designs of such systems to airlines' sizes; RMD-Zeta clearly stated:

"We are a big airline, so we adopted a structured, formalised approach" (RMD-Zeta).

CFO Beta explained:

"In [Beta] we don't have an Audit Committee; it's a small company, so the Head of Internal Audit holds the ultimate responsibility" (CFO-Beta).

Under the same rationale, RCM-Eta and HRC-Epsilon related the design choices of risk management systems of their respective airlines, and of other airlines from their groups, to organisational complexities. Finally, HSS-Beta emphasised the need to adopt risk management systems according to the uniqueness of organisational structure and needs; HSS-Beta was sceptical about standardising the safety risk management function across the group that the airline forms part of:

"We are different airlines, with different sizes, structures and needs, so integration at the level of safety... I'm not sure up to what point it would make sense" (HSS-Beta).

With reference to another group of internal contingency factors, which can be broadly defined as related to organisational strategies and the objectives they are driven with, representatives of Alpha-1, Alpha-2, Beta, Epsilon, Zeta, and Theta reported on numerous achieved or perceived potential benefits of developing ever more structured and comprehensive risk management approaches, which were generally believed to enhance achievement of organisational objectives, just as reflected in the examples listed below. HRC-Epsilon perceived the adoption of ERM as a means towards achieving airline objectives:

“We implemented ERM because we wanted to be able to better identify both the risks and opportunities facing our business. So since we were constantly trying to improve, we thought ‘why not do it right?’ In this industry you can achieve huge commercial gains if you manage your risks correctly” (HRC-Epsilon).

HRC-Epsilon further added:

“It’s also about our reputation; this applies to compliance and to meeting company objectives” (HRC-Epsilon).

Similarly, RMD-Zeta reported on the perceived benefits of ERM which drove the adoption of ERM in the airline:

“I would say one of the most important ones [ERM drivers], and related to the need of top management to have functions like risk management, is giving them good information and transparency of risks for the upcoming month and year” (RMD-Zeta).

SCRO-Theta, in a discussion on the ERM approach adopted in his organisation, explained how risk management facilitates achievement of airline objectives:

“If you analyse the strategy and define your risks from there, it makes it easier to achieve what you have planned” (SCRO-Theta).

MCM-Alpha reflected on how the need for an improved understanding of airline risks drove advancements in the risk management system of Alpha-2:

“When I understood how much of our revenue was at risk, I realised we either needed to earn more money to have a cushion, or the other alternative was to reduce the level of risk, in order to have a more comprehensive programme of hedging... We needed to smoothen out our risk profile” (MCM-Alpha).

CRO-Alpha also explained how the perceived benefits of ERM drove ERM adoption in Alpha-1:

“We needed to control operations more efficiently, and centrally manage all risk information... Because I think the main value of ERM is that it flashes out bad news from the operation, and brings it out to the management committee. So it’s a way of highlighting what’s going on” (CRO-Alpha).

The case studies of the Alpha airlines and the Beta airline, presented respectively in Chapter 6 and Chapter 7 of this thesis, provide further evidence of how the airlines developed their risk management approaches in order to improve organisational performance or achieve organisational objectives.

As discussed in the section 5.2.1 of Chapter 5, related to mimetic behaviours of airlines forming part of airline or multi-enterprise groups, evidence was found for the ownership structures affecting the risk management solutions adopted in airlines. Since ownership effects can be considered both in terms of their institutional and technical pressures on organisations, related, as evidenced in this study, to ceremonial or instrumental alignments of airlines' risk management systems to the systems of their respective groups, for the sake of completeness table 5-2 (Chapter 5) repeats the data included in table 5-1 (Chapter 5) regarding mimetic pressures linked to group affiliations.

Contingency factors related to airline risk profile

With reference to the deterministic influence of airline risk profile, MCM-Alpha explained how the risk management model of Alpha-2 was adjusted to better respond to the changing risk landscape, especially in terms of external risks:

“We had to adapt the model over time, because the one we did with [advisor’s name] was before the big events affecting our industry took place, terrorist attacks, fuel spikes...; so we had to adjust the model to make it less conservative in terms of what can happen in the economy” (MCM-Alpha).

Evidence supporting the role of risk profiles as contingency factors for organisational designs of airline risk management systems was most clearly exemplified in the interviews in which airline representatives emphasised the need to adapt risk management systems to the specificity of their risk landscapes. As an illustration, RMD-Zeta laid out the following argument in his discourse on introducing group-wide risk management standards:

“In fact there are differences in the risk landscape [of particular airlines of Zeta’s respective group], that’s for certain. Using the same standards and methodology doesn’t mean that we all have to manage and report exactly the same risks” (RMD-Zeta).

HIA-Beta explained how Beta’s risk management approach draws from that of its respective group, yet it is aligned to fit Beta’s specific risk landscape:

“We are requested to analyse the risks applicable to other subsidiaries or to the holding company, and assess their plausibility... Aircraft financing is important to the group, yet due to our fleet structure we don’t consider it a key risk...” (HIA-Beta).

Since the fleet structure of Beta relies more on asset leases than asset purchases, yearly cash outflows are not as significant as in the cases of other group airlines; the leases tend to be closed at fixed rates, and thus the interest rate risk, often considered one of the most relevant airline financial risks, is not significant to Beta, which is reflected in the lack of formalised practices for the management of such a risk. Contrarily, the airline considers relevant risks related to the volatility of fuel prices and exchange rates, and thus there are formalised protocols and procedures in place for the management of these risks. A more detailed analysis of Beta's risk profile, and of the corresponding risk management structures and practices, is available in Chapter 7.

B. Review of airline risk management systems

Characteristics of airline risk management systems

Perceived status of risk management development

The interviewees from the airlines claiming ERM adoption, despite an overall satisfaction with the ERM frameworks in place, recognised the need for continuous efforts to embed the ERM culture throughout the airlines, and to periodically update the risk management systems. By way of an example, HRC-Epsilon stated:

“It [ERM] is mature; it does what we need it to do... Of course it's a continuous process; we have to keep training new people, maintain the topic fresh to create the desired risk culture... We are constantly updating our risk registers... If you implement it once and leave it, it [the ERM system] will easily become obsolete”
(HRC-Epsilon).

The majority of representatives of the airlines claiming adoption of ERM recognised the need to adopt a forward-looking perspective to identifying new risks versus relying on historical records of exposures summarised in organisational risk registers. In some airlines, such as the Alpha airlines, this responsibility was formalised and explained in detail in organisational policies, which reflects airlines' view of the evolving nature of ERM. The airlines also tended to express awareness of the flaws of their present frameworks. This provides signs of criticality in airlines' perceptions of their ERM frameworks. However, organisations viewed their future trajectories towards improving ERM differently; some planned to advance significantly their risk management technologies (technologies as defined in Chapter 3, section 3.3), while others recognised

the need for continuous evolution of ERM, but also expressed concern that ERM is becoming overly bureaucratized.

Representatives of Beta reported that the risk management system is currently in transition; the following statement of CFO-Beta accurately describes the general opinion of several interviewees regarding the status and the character of Beta's risk management approach:

“We are moving toward a more sophisticated model, because for now what we have works well for us, but it's pretty informal... We do analyse risks in major strategic decisions, but it's all very casual right now, there's definitely room for improvement” (CFO-Beta).

Although the above statement points to casualty in risk management processes of strategic exposures, the airline has introduced a structured approach to the management of selected types of exposures. Regarding the transition stage of Beta's risk management system, Beta forms part of a larger group of airlines in which ERM was implemented, and in the future Beta's risk management system will be integrated with the approach of the group. However, at the time of conducting this research Beta's representatives were not aware of the date of the planned integration. As explained in Chapter 7, despite the recognised need to further develop Beta's risk management system, contrary opinions were evidenced in Beta with regard to the perceived usefulness of integration of Beta's system with the ERM systems of other group organisations, which is later discussed in terms of the need to align risk management approaches with the requirements stemming both from airlines' intra- and extra-organisational environment.

As per the maturity of Gamma's risk management system, airlines' representatives acknowledged the shortcomings of the current approach; according to CFO-Gamma further developments are not probable in the near future. Discussions were held in Gamma's Board on creating a Risk Committee, yet the idea was not favoured by some executive members of the airline, and was later dropped due to lack of consensus.

With reference to Delta's risk management system, it is generally regarded as simple yet functional. Some of Delta's representatives (ORM-Delta, RGD-Delta) insisted that the system needs to be further developed, especially in terms of managing important commercial and strategic risks; other interviewees (such as CCO-Delta) reported on the system's functionality despite recognising the need to introduce a more structured

approach. Discussions are held at the Board level with regard to advancing Delta's risk management approach. Shortly before the interviews with Delta representatives took place (April 2014), the airline had celebrated its first official Board meeting dedicated exclusively to risk management.

Formalisation of risk management systems

With regard to highly formalised risk management systems, HRC-Epsilon explained the airline's formalised approach:

“Now there is no room for doubt in our [risk management] programme. We have manuals, procedures, and formally assigned functions across the company for managing different types of risks” (HRC-Epsilon).

In five out of seven airlines claiming adoption of ERM, formalisation was reported to be related to regulatory pressures such as governance codes, or regulatory and reporting requirements, which posed demands for auditable trails of comprehensive risk management systems. At the same time concerns were raised in the airlines regarding a focus on demonstrating to external stakeholders the existence of formalised systems for managing risks, rather than on effective management of risks. RMD-Zeta explained:

“Yes, every year we report on our risk management programme... And we show auditors our policies, all our systems, but you have to be careful just like in any other case, where there is too much bureaucracy it's discouraging, it becomes a burden to log into the system every two months and write about risks” (RMD-Zeta).

The interviewee further added:

“It's more about the culture you have in place than about the procedures... It's all about how people see this responsibility” (RMD-Zeta).

Based on the critical views of the interviewees regarding the formalisation of ERM programmes, propensity towards decoupling of risk management rules and routines may be expected. However, evidence collected through the field study regarding possible decoupling or loose coupling was too limited and therefore inconclusive, except for signals of non-adherence to risk management manuals at the operational levels.

The risk management approach of Beta is less formalised. There are formal structures in place for management of selected types of risks, such as risks related to financial reporting, safety risks or financial and market risks, yet management of a variety of other types of risks is conducted in a non-formalised manner. A more in-depth

investigation of Beta's risk management system, presented in Chapter 7 of this thesis, provided evidence of well-developed, informal routines institutionalised among risk-aware employees of Beta and enacted on a regular basis, which by many of them were believed to have an equivalent capacity to a formal system of rules, offsetting the pressures for major changes exerted by the group to which the airline pertains. Gamma and Delta airlines have adopted minimally formalised risk management structures in compliance with relevant regulatory frameworks. By way of an example, the organisations developed safety management structures and crisis prevention and management systems imperative for airlines. However, management of other risk types is conducted through informal routines. As previously indicated, CFO-Gamma related the low formalisation of the risk management function to the size of the organisation, and argued that the introduction of a more structured approach might constrict organisational agility in decision-making processes. However, when asked about suggestions for improvements in the current risk management system, CFO-Gamma stated:

“I would ask for clearer policies in terms of decision making, better delineated roles and decision-making power in management of financial risks. This is the most important thing we should improve, having better defined hedging levels and better divided responsibilities for who does what” (CFO-Gamma).

The above statement suggests a more formal risk management structure might prove beneficial for Gamma, despite its possible threat to organisational agility, as expressed by CFO-Gamma. CCO-Delta recognised the need for a more structured approach to risk management in Delta, and reported on changes which were to be introduced to Delta's system in this regard in the future. CCO-Delta explained:

“During the Board meetings we discuss strategy and risks, and minutes are taken so that we can follow up later, but we don't have any formal procedure for that... There is no official regulation for that, approved by the Board... We are now working on a more complex risk management system, but it hasn't been launched yet, it's currently under construction” (CCO-Delta).

Division of roles and responsibilities

The airlines Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta have dedicated risk management positions at the executive levels which coordinate and bear responsibilities

for proper functioning of ERM, denominated as chief risk officers, heads of risk management, risk directors, and others. As described by the interviewees, their functions aim to, for example, “*coordinate risk management*” and “*make sure ERM is implemented in all the divisions*” (RMD-Zeta), “*integrate [risk] information*” (TRM-Alpha), or “*prioritise risks*” (DRC-Alpha). Pyramid-like risk ownership structures in which the boards were specifically assigned responsibility for risk management, and risk management responsibilities and accountabilities are cascaded throughout their hierarchies. By way of an example, CRO-Alpha commented on delegating responsibility for risk management from the Alpha holding company to Alpha-1 and Alpha-2:

“We are a small holding company, so risks need to be actually managed in particular airlines, so lots of responsibility is delegated to them... However, we are constantly exchanging information between the boards and the risk committee” (CRO-Alpha).

Beta’s risk management approach was described as being “*in transition*” (HIA-Beta); it was pointed out that in the future the risk management and internal audit roles may be separated. HIA-Beta commented on its role:

“Internal control has a lot in common with risk management... We provide assurance on controls and on risk management to the board” (HIA-Beta).

HIA-Beta justified the double role of internal audit in Beta, pointing to the lack of dedicated, centralised risk management function; however, the issue of independence of the internal audit function did not seem to pose a concern.

Risk management process

The accounts of the interviewees representing the airlines claiming adoption of the ERM approach indicated conducting the different stages of the risk management process according to group-wide standards and methodologies, as per the processes of the Alpha airlines and Zeta, Eta, Theta, and Iota airlines.

The methodologies of Alpha-1 and Alpha-2 have been separately developed in the two airlines, yet they were later aligned in terms of integrating and reporting of risks through risk maps, which feed to the risk registers and risk maps of the Alpha holding company, therefore facilitating the generation of a portfolio-view of risks at the group level.

According to HRC-Epsilon, the risk management methodology introduced in Epsilon allows for integration of the airline's risk map with those of other companies from its respective group, whilst additionally being consistent across the airline for the management of different types of risks.

HRC-Epsilon reported:

“We have a common methodology... Even in terms of using the same risk criteria, common risk matrices, assessment methodologies; we use a common denominator for risks, so we can effectively compare business risks with, for example, safety risks... So we don't have separate systems for safety exposures and corporate risks, which is often the case [in other airlines]” (HRC-Epsilon).

The airlines which did not claim ERM adoption, use less sophisticated tools to support their risk management processes. By way of an example, CFO-Gamma explained:

“We talk about risks, but we don't use any specific programmes, as you see it's all pretty informal... Sure, safety directors need to report to the authorities, so I guess it's a more structured process, but when here we discuss finance, network, or competition, it's a whole different style” (CFO-Gamma).

By way of another example, CCO-Delta reported:

“We discuss risks during Board meetings, and minutes from the meetings are later distributed and archived, but we don't have other mechanisms so far, but, as I said, this should change once we formalise this process” (CCO-Delta).

Maturity and advancement of airline risk management approaches

Comprehensiveness

Airline risk portfolios vary as they are determined by organisation-specific constellations of institutional pressures and contingency factors, while, additionally, organisational logics affect how airlines prioritise some types of risks over others. The interviewees underlined the role of top executive levels in identification of strategic risks. As explained by RMC-Iota:

“In the corporate planning process considering strategic risks is a must. We cannot quantify them as they are extremely difficult to quantify, but you need to keep in mind many ‘what if’ scenarios... It sounds very obvious, thinking of risks when you define strategies, but it helps to have it on paper. Then we can track the evolution of these

risks and, depending on the risk, if they materialise, we can see how close we were in our predictions” (RMC-Iota).

The assessment of comprehensiveness of airline risk portfolios in the cases of airlines claiming adoption of ERM is, in the cases of five organisations, based solely on the opinions of sole interviewees, which leaves room for bias. However, Chapter 6 provides additional insight, based on multiple interviews, into the mechanisms of forming risk portfolios of Alpha-1 and Alpha-2 airlines.

Embeddedness of risk management

The airlines Alpha-1, Alpha-2, Epsilon, Zeta, Eta, Theta, and Iota demonstrate high levels of embeddedness of the risk management function across their organisational structures; SCRO-Theta explained how risk champions are assigned throughout Theta, overseeing identification and escalation of risks in their respective areas; SCRO-Theta stated:

“We encourage the ‘bottom up approach’... You need the right culture for that, you need to make people feel responsible for risks, so that it’s not only somewhere in regulations, but they also understand the value of risk management and have the right tools to act upon the risks” (SCRO-Theta).

The interviewees stressed the importance of institutionalisation of risk management being among the priorities of line managers. However, RMD-Zeta pointed out the challenge of effectively involving organisation members in the process beyond complying with internal regulations, and doubted whether this has been achieved in Zeta. RMD-Zeta also commented on the enterprise-wide division of risk management responsibilities, while explaining the assignment of the ownership for risks:

“Risks are identified at different levels, and we are trying now to make sure that this takes place regularly... Risk ownership is assigned at the line manager level and above” (RMD-Zeta).

RMC-Iota reported on a comparable mechanism of involving employees in the risk management function and selecting risk owners:

“Lower management is involved in identifying and evaluating risks and the risk owners are responsible for reporting risks in their scope of responsibility, which might be a project or a process, or a business unit. Nevertheless, we define that the

risk owner is at least our management member. It cannot be delegated to employees that work in the standard line” (RMC-Iota).

Similarly, RCM-Eta indicated delegation of risk management responsibilities across different organisational levels and functions in the airline. RCM-Eta claimed:

“Local risk managers report on the high-rated risks [ratings of probability and occurrence] to upper levels, and so we get the global view, we get feedback on risks from managers of different lines” (RCM-Eta).

In the cases of Alpha-1 and Alpha-2, evidence of high embeddedness of risk management responsibilities across their organisational structures is presented in Chapter 6.

The discourse of HRC-Epsilon, although suggesting assignment of risk ownership across the organisation, does not allow for clearly concluding on the extent to which employees from lower organisational levels are involved in identification of risks. HRC-Epsilon stated:

“All risks have identified owners and action owners; as for who is assigned this function, it depends on the risks, which level risk it is, from which area...” (HRC-Epsilon).

The researcher recognises the need to further clarify this issue with the interviewee before reaching a final conclusion on this regard.

Integration of risk management

In the airlines claiming ERM adoption, the central risk management units, such as enterprise-wide risk committees and not committees dedicated only to selected types of risks, or risk management coordinators such as CROs or their equivalents, compile risk-related data from across the organisations and report on an integrated view of risks to organisational boards. By way of an example, SCRO-Theta explained how aggregate reports on different exposures are considered at the executive level in the airline:

“We [dedicated risk officers] deliver reports and show the risk panorama to management, and they [risks] are regularly discussed during management meetings” (SCRO-Theta).

Regarding the ranges of risks compiled by these units in particular airlines, in Epsilon, risk maps compiled by HRC-Epsilon for review of the risk management committee consider a wide variety of risks including different types of safety and hazard exposures,

whereas in Iota centralised risk maps are focused on risks related to compliance and financial reporting, whilst excluding hazard and safety exposures. Similarly, although in Eta the risk maps presented by RCM-Eta to the airline's management include a comprehensive range of risks, the corporate and safety risk management systems operate independently. RMD-Zeta explained how mechanisms exist across Zeta by which risks from different departments beyond particular rating levels are escalated to upper levels, facilitating development of an integrated view of enterprise-wide exposures. Similar mechanisms were evidenced in Alpha-1 and Alpha-2, which are also elaborated on in Chapter 6.

Despite having assigned the roles of integrators and coordinators of enterprise-wide risk management initiatives to cross-discipline risk committees or executive risk management positions, some representatives of the above cited airlines mentioned the difficulty that is posed by the need to assess interdependencies between risks. DRC-Alpha used the expression "*exercise of imagination*" to describe the practice of assessing multi-dimensional effects that particular risks may have if they materialise. RMC-Iota, in justification of the airline's strong reliance on qualitative risk assessment techniques, stated:

"After having spent many years in this business, we know the mechanisms by which, for example, a new train line can affect our demand, or the effects oil crises can have on many areas of our business. But quantifying them is a different thing... When you know the industry, when you've been around for a long time, you know what can happen and you design business plans prudently, but you can never correlate all the scenarios..." (RMC-Iota).

With regard to integrating risk-information, in Beta it constitutes an unstructured process; the management does not hold meetings specifically dedicated to assessing the airline's risk panorama. Aggregation and integration of risks is additionally conducted by the Head of Internal Audit (HIA-Beta), who compiles them on risk maps and formally presents to Beta's holding company and management. However, interviews with Beta's managers did not provide evidence of considering this tool (risk maps and matrices) in decision-making processes; the interviews suggested that management conducted risk reviews in an unstructured manner.

With regard to integration of risk management practices in Gamma and Delta, the airlines engage multiple actors in the management of different types of exposures while

lacking centralised units coordinating risk management practices. Fieldwork evidence suggests the existence of disparate risk management practices in these airlines for dealing with diverse risks, and the existence of various independent, non-correlated risk management systems such as, for example, for managing safety risks, financial risks, or hazard risks. Integrated view of risks in these airlines was only suggested by interviewees' accounts of regular, informal reviews of business plans conducted by management, during which unexpected occurrences are analysed, risks are implicitly considered, and business plans and strategies are adjusted accordingly. CCO-Delta explained:

“During our weekly committees we discuss incidents, deviations from business plans, whether there were delays, strikes, or anything else that might have affected operations, and we talk about what may happen next week, so yes, we look at risks... So we have opinions from different directors, fleet managers, operational safety, network planning, everyone” (CCO-Delta).

As was previously discussed, integration of commercial and financial strategies and risk management strategies was reported by CFO-Gamma at the group level, although through informal risk management routines.

Roles and uses of risk management

The airlines Epsilon, Eta and Theta demonstrated alignment of risk management processes with strategic and business planning, which was reported to facilitate risk-based decision making. RCM-Eta explained:

“We are trying to integrate risk management with the forecast processes” (RCM-Eta).

Similarly, HRC-Epsilon emphasised the link between risk management and strategic management processes:

“It [ERM] goes way beyond compliance; it's oriented towards strategy setting” (HRC-Epsilon).

SCRO-Theta commented on the phenomena of ERM often being used ceremonially in organisations, or operating as an independent system which does not bring real value to organisations; SCRO-Theta insisted on the role ERM plays in Theta:

“You will only get into the decision rooms if you have implemented risk management that is adding value... We are concerned to have risk management in place which is integrated in decision making processes” (SCRO-Theta).

With regard to the alignment of Zeta’s risk management process with strategic and business planning processes, RMD-Zeta noted:

“We check route profitability or fleet profitability, we have many indicators for performance, and you can also check risk against them if they [values of indicators] fall below certain levels” (RMD-Zeta).

Appendix D: Extension of Findings from Alpha Case Study

Chapter 6 reports on the findings from the Alpha case study. This appendix elaborates on the case study findings, and provides a complementary discussion of several characteristics of Alpha's risk management system, including quotes from interviews with airlines' representatives. This appendix presents information on the evolution of Alpha's risk management system, formalisation and the levels of maturity and advancement of the system.

Evolution towards ERM in Alpha airlines

The analysis presented in the field study provided an introductory insight into the context and rationalities for adoption and implementation of ERM in Alpha-1 and Alpha-2. The analysis of the institutional and technical drivers and of organisational logics and rationales of the Alpha airlines is further extended in this section, elaborating on the evolutionary versus revolutionary nature of embracing ERM principles in these organisations. Evidence from the interviews with Alpha representatives suggested that, in the majority of the cases, the risk management approaches of these organisations evolved gradually over many years in an evolutionary manner, from basic, siloed practices to a comprehensive, enterprise-wide approach. Evolution of the risk management systems would occur non-linearly, at a different pace in Alpha-1 and Alpha-2. Although, as outlined below in the records of interviewees' accounts, evolution was triggered by similar contingency factors and institutional pressures, Alpha-1 formalised ERM prior to Alpha-2, while it also advised the latter in introducing particular elements of the risk management programme. Following the association of Alpha-2 with Alpha-1 under the Alpha holding company, the development of ERM in Alpha-2 adopted a revolutionary character in some facets. The evolutionary and revolutionary changes in the risk management approaches of Alpha airlines, in addition to their underlying rationales, are outlined as follows.

Similar trends in the evolution of risk management approaches were reported in Alpha-1 and Alpha-2. It could be inferred that the risk management function would traditionally concentrate on financial exposures, in addition to hazard, safety and security issues, while each of these risk groups would be managed independently by their corresponding functional departments.

As indicated by the Chief Risk Officer (CRO-Alpha), pertaining to the Alpha holding company, while referring to Alpha-1 for which he had worked before:

“We used to have financial risk management, which used to be reported to the Management Committee and the Board, but there was no structured overview of all the relevant non-financial risks” (CRO-Alpha).

A member of the Management Committee of the Alpha holding company (MCM-Alpha) commented in a similar manner on the risk management routines employed in the past in one of the Alpha airlines:

“[Name of the airline] did not have any integrated view of different types of risk. Even within the financial and market risks, the analyses were conducted separately. If the USD goes up then I will lose that, so I need to hedge that, and if the jet fuel goes up, I need to hedge that, and it was all analysed in silos, but there was no joint holistic view of all financial risks in the development of hedging policies, let alone of other related risks” (MCM-Alpha).

Safety and security risks have long constituted important pillars of airline risk management systems of the Alpha airlines. Airlines have been required to develop mitigation systems targeting safety and security exposures (according to e.g. EASA, ICAO requirements). Under the influence of regulatory requirements and normative recommendations of air transport associations such systems have evolved, which is exemplified by, for example, the development of increasingly advanced Safety Management System (SMS) frameworks. The Safety Risk Manager of one of the Alpha airlines (SRM/1-Alpha) explained:

“After ICAO required airlines to adopt SMS, we formalized and expanded our procedures” (SRM-Alpha).

Financial risk management has long been practiced in the Alpha airlines, while the scope and sophistication of the rules and routines employed have become ever more complex, following the approaches and techniques developed in the financial industry. As explained by MCM-Alpha, who moved from the financial industry to the airline industry, where he first held the position of Director of Finance in Alpha-2:

“Thanks to my previous banking experience I had a holistic view of [financial] risks; while in the bank I had been helping to manage risks in big corporations, so I kind of knew how to translate the banking perspective to other businesses” (MCM-Alpha).

Financial risk management techniques have become ever more complex as airlines gained a better understanding of the scope of their exposures and the values at risk. The Treasury and Risk Manager of the Alpha holding company (TRM-Alpha) reported:

“We started analysing in more detail the risks embedded in our financial and commodity operations – basically interest rate, foreign exchange, and fuel, and we began to wonder how to better adjust the risk management products to the structure of our cash flow – in terms of where do you fly, what are the currencies you receive, what are the currencies in which you get loans, buy fuel and aircrafts. We wanted to understand well what our risks were and how they could impact our cash flow” (TRM-Alpha).

MCM-Alpha further explained:

“When I understood how much of our revenue was at risk, I realised we either needed to earn more money to have a cushion, or the other alternative was to reduce the level of risk, in order to have a more comprehensive hedging programme... We needed to smoothen out our risk profile ” (MCM-Alpha).

He further added:

“Apart from hedging on the commodity market we also understood that we needed to have more cash. So instead of buying aircrafts we introduced more leasing, using aircrafts to cushion the money, so we started to hold cash instead of spending it” (MCM-Alpha).

Apart from hedging and holding cash, diversification of financing sources was also consequent of the changing risk management approaches. One of the Alpha airlines reported on issuing bonds in order to become less dependent on bilateral lending by banks. The airline would also initiate cooperation with multiple banks from different countries in order to mitigate counterparty and country risks.

Risk management practices which are siloed and limited in scope, just as reflected in the cases of Alpha-1 and Alpha-2, used to be common in the past in organisations across industries (Fraser and Simkins, 2010). Airlines’ focus on the limited scope of risks comprising mainly, as reflected above in the interviewees’ accounts, financial, hazard, safety and security risks, has been criticised in literature in the context of insufficient attention devoted to management of important strategic and emerging exposures (Mikosz, 2011). The majority of the interviewees who reflected on the evolution of ERM in the Alpha airlines expressed criticism regarding their functionality, pointing,

for example, to historical and not forward-looking risk identification techniques in the case of safety-related risks, or to inadequate limits of hedging operations in cases of financial risks. The pool of interviewees also included individuals whose trajectory in the Alpha airlines was relatively short, and who have not witnessed the changes in risk management approaches in the aforementioned areas; these interviewees were unable to assess the evolution in risk management rules and routines and judge their changing functionality.

The risk management approaches of the Alpha airlines further developed as the airline industry faced unprecedented challenges such as a sudden increase in fuel prices to above USD 100 per barrel, or the terrorist attacks of September 11th 2001. MCM-Alpha referred to these events as ‘black swans’, concluding:

“Black swans happen, they happen and they change our business environment, causing a change in paradigm and forcing you to manage challenges you have not considered before” (MCM-Alpha).

The risk management models used in the Alpha airlines had to be adjusted to fit with the new operating paradigms, making the models less conservative in terms of projecting volatility of business scenarios and macroeconomic conditions, and considering occurrence of the ‘unknown unknowns’ affecting the operational environment of airlines. MCM-Alpha concluded that even though the risk management model of one of the Alpha airlines he would work for at that time did not prepare the airline for the events which changed the operating paradigms of the airline industry and the scale of challenges they posed, nevertheless:

“It was still a good thing we at least tried to model the risks, because it made us change our economic policy and financial policy... One of the lessons of risk management is that you do not need to be accurate, what you need is to be able to guess which is going to be the direction of changes in the market” (MCM-Alpha).

Gradually the Alpha airlines have expanded the scope of the risk portfolios they managed and the risk management rules and routines have become ever more advanced, while interviewees’ accounts suggested an evolutionary character of the changes; Alpha-1 was the first to officially adopt the ERM approach. Following the formal affiliation of Alpha-2 under the Alpha holding company structure, the risk management system of Alpha-2 was aligned with the ERM approach developed in Alpha-1. When

asked about the nature of this alignment, the interviewees expressed mixed opinions. SRM/2-Alpha claimed that Alpha-2 had been operating a complex and comprehensive risk management system, although without actually referring to it as “ERM”. Contrarily, DRC-Alpha considered the change to have a rather revolutionary character; DRC-Alpha noticed, while referring to the advances of the risk management approach of Alpha-2:

“Before our risk map and risk management procedures were much simpler; now they consider a wide range of risks and their interrelations” (DRC-Alpha).

The discrepancy between the opinions of SRM/2 and DRC-Alpha may be due to the fact that SRM/2-Alpha has been involved with the safety management function, which, despite an increasing integration with the corporate risk management system, has been operating as a fairly independent pillar of the overall risk management approach; thus, SRM/2 may not have been directly involved in the transition. Currently Alpha operates a mature ERM system, in which the systems of both airlines have been consolidated to fit with the ERM approach. As defined by DRC-Alpha, the group has adopted a “structured corporate governance approach to managing risks in the organisation”, in which management of enterprise-wide risks is coordinated under the ERM model, analysed in Chapter 6.

Formalisation of Alpha’s risk management system

The level of formalisation of the risk management function is high in all Alpha entities, which on one hand can be considered in terms of increased corporate governance requirements of complex organisations, and on the other hand in terms of the perceived level of utility of the myriad of rules and level of coherence between formal rules and enacted routines. When discussing the rules comprising Alpha’s risk management framework, CRO-Alpha linked the highly formalised approach with organisational complexity of Alpha-1 and Alpha-2, and with cultural influences (see sections 5.2.1 and 5.2.2 of Chapter 5; Appendix C). CRO-Alpha was aware of the threat of ERM becoming overly bureaucratised, which might have counterproductive effects considering ERM objectives, and emphasised the importance of institutionalising a positive risk culture across Alpha:

“We are trying to convince people that risk management should not be seen as an administrative burden, as something that they are required to do, as something that is unproductive, and takes a lot of time... We want them to start seeing risk

management as something that is done every day and that forms an integrated part of their responsibilities, so we are trying to foster this philosophy” (CRO-Alpha).

Inconclusive evidence was found in terms of interviewees’ perceptions of the complex system of formal institutions and rules. While some interviewees, for example ISM-Alpha and MSF3-Alpha, reported their views of excessive formalisation of the risk management function, others have not found it appropriate. By way of an example of the latter, MSF/1-Alpha, who works in the Alpha holding company, noted with regard specifically to financial risk management rules:

“Financial risk management is formalised in detailed policies and procedures, but I still think we work in a very flexible manner; if we want to trade above the levels specified in the policies, we present the rationale to the Committee [Financial Risk Committee in the Alpha holding company], so there is a lot of common sense in the overall approach” (MSF/1-Alpha).

Maturity and advancement of the ERM system of the Alpha Airlines

In Chapter 5, based on the field study findings the researcher evaluated the maturity and advancement of the risk management systems of Alpha-1 and Alpha-2, according to the criteria of comprehensiveness, integration, embeddedness, and organisational roles and uses assigned to the systems. Additionally, throughout Chapter 6 the researcher analysed in broader terms the rules and routines comprising the risk management systems of the Alpha airlines in the context of their affiliation within Alpha, providing a valuable perspective of organisations’ members on the rules and routines in their various aspects, which allows for a more critical assessment of maturity and the state of advancement of the risk management systems.

The high level of maturity and advancement of the risk management system adopted in Alpha is manifested through several aspects. These include, among others, having a formalised framework of policies and procedures in place with an enterprise-wide scope, assignment of responsibilities and accountabilities for risk management throughout the organisational hierarchies of Alpha-1, Alpha-2, and the Alpha holding company, having created organisational mechanisms for enterprise-wide coordination and integration of risks, and finally, having aligned the risk management function with strategic planning and decision making. In addition to the afore-presented analysis of Alpha’s risk management rules and routines paired with relevant interviewees’

perception of them, this section additionally extends the analysis with a selection of the interviewees' views, specifically regarding the issues of maturity and advancement of ERM.

Of all the semi-structured and informal interviews conducted with members of the Alpha airlines and the Alpha holding company, in the conversations with organisations' members from top organisational levels who were most knowledgeable about Alpha's risk management approach, the researcher inquired about their personal assessments of the maturity and functionality of the ERM approach. The interviewees shared the view that the ERM system is comprehensive and mature. By way of an example, MCM-Alpha stated:

"We are very happy with the ERM model. It gives you lots of information so that you can make more informed decisions, understanding the levels of risk related to particular scenarios" (MCM-Alpha).

However, in relation to the claims praising the ERM approach, as is exemplified above, it is important to keep in mind that the interviewed professionals with the most extensive vision of the ERM model were also those that have been closely related to development of the overall approach or of its constituent solutions. Therefore, their views may be biased in the sense that they may be less critical of the ERM system that they have helped to create.

CRO-Alpha commented on the maturity of Alpha's ERM in the context of directions for future development:

"My personal view is that it is very mature. I think it does what it needs to do. I think taking it further in our case may quickly cease to add value, as you always have to verify whether the benefits the changes would deliver would compensate for the effort and the resources you put into it" (CRO-Alpha).

CRO-Alpha also reflected on the basic functions of the ERM approach:

"What we do now is we identify the potential challenges, we look at the bad side of the business while we cooperate with the strategy department that looks at the same events in terms of opportunities. The risk team, however, we identify and assess the challenges and we make sure they are properly addressed and that they are properly escalated to upper levels in the company... So that is useful risk management" (CRO-Alpha).

CRO-Alpha concluded:

“I don’t think taking the risk management system much further would bring real value to the business” (CRO-Alpha).

With regard to the latter comment, CRO-Alpha was especially concerned about the potentially adverse effects of over-bureaucratisation of ERM, for in his opinion further development of ERM would be inevitably associated with the creation of additional formal rules. From the interviewee’s point of view, the real challenge consisted in institutionalising ERM principles in organisational culture, which is manifested in the coherence between the rules and routines enacted by the organisation members.

In the discussion on the perceived maturity and advancement levels of the ERM approach adopted in Alpha, MCM-Alpha and TRM-Alpha pointed to the broad scope of business scenario analyses conducted on a regular basis in the development of corporate and business strategies by using the outputs of the FRM model. These interviewees argued that the advanced risk management systems in use across the Alpha entities provide significant support in preparation for the ‘black swan’ events, despite not knowing exactly what they would consist of. As expressed by TRM-Alpha:

“In our analyses we do not assume we operate in a Gaussian reality [normal or Gaussian distribution defined in probability theory], because black swans happen. So in our analyses we consider abnormal values of financial vectors such as jet fuel prices, foreign exchange rates, or interest rates, which may be caused by geo-and-macro political events... So we do not only perform analyses in the operating paradigm as we know it. We know paradigms can change, just as they changed in the past when fuel prices increased over a very short period of time from USD 45 to USD 110” (TRM-Alpha).

TRM-Alpha also stated:

“There isn’t really any crisis manual to perfectly prepare an airline for something that is unprecedented. However, in this industry unprecedented risks and unknown unknowns happen, so you can prepare for a crisis even though you don’t know what kind of crisis it will be” (TRM-Alpha).

TRM-Alpha further argued the ability of the FRM model to consider a great variety of scenarios and their potential effects on the business plans of the Alpha organisations, which allows for correlating cause-effect relationships. MCM-Alpha explained:

“When we consider abnormal values of particular inputs to the [FRM] model, we consider them in a context. For example, if you test the effects of jet fuel prices reaching USD 200, you also have to think about whether it’s the effect of an unprecedented expansion of economies which would also affect your passenger numbers, or whether it’s due to a geo-political conflict, or to a shortage of supply... So we think of black swans and their interrelated effects on our business” (MCM-Alpha).

The interviewees argued the maturity and advancement of the ERM system of Alpha by emphasising, among other things, its capacity to identify and determine important strategic and emerging risks. As previously explained, in Alpha this function is partly covered through the analyses conducted by use of the FRM model. However, it was also pointed out by the interviewees that identification of emerging risks forms part of the Management Committee’s and the Board’s agenda. MCM-Alpha provided an example:

“In the case of big, emerging risks such as, for example, the break-up of the European Union, they are really thoroughly assessed, discussed [at executive levels], and analysed in terms of whether any action needs to be taken or not” (MCM-Alpha).

Thus, MCM-Alpha described the ERM system of Alpha as:

“Holistic, for it considers all the important risks that can happen to an airline, strikes, loss of rating, a terrorist attack, or similar events” (MCM-Alpha).

Appendix E: Interview Agenda Designed for the Field Study

Interviewees: CRO-Alpha, DRC-Alpha, HRC-Epsilon, RMD-Zeta, RCM-Eta, SCRO-Theta, RMC-Iota

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<h3>Interview Reference Number:</h3>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your airline. I have planned this interview to last no longer than 40 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of the airline will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?
2. How long have you worked for the airline?
3. Could you please describe how you are involved in the risk management function?

ERM System

1. How would you describe the level of advancement of the risk management system of the airline? Why do you think so?
2. Does the airline follow recommendations of any of the risk management frameworks or standards such as COSO or ISO 31000?
3. Could you please describe how the responsibilities for risk management are assigned throughout the airline?
4. How are the board and the management team involved in risk management?
5. Is the risk management function concentrated in any particular department or business unit?
6. Is there any unit or position in the airline overseeing and coordinating the management of different types of risks altogether?
7. How is internal audit involved in the risk management process?
8. How do employees from lower levels in the airline participate in identification and assessment of risks relevant to their business units?
9. Is there a documented risk management strategy?
10. Which groups of risks are managed within formal programmes, with established policies and procedures?
11. To what extent are the methodologies for conducting the different stages of the risk management process formalised?
12. Do you think that the ERM system allows for identifying relevant exposures from all across the airline's business units? Please explain.
13. Could you please describe the mechanisms by which risk data from all across the airline's business units is integrated?
14. What kind of tools does the airline use to record and present information on risks?
15. Is there any specialised risk management software in use?
16. How do you think the ERM system of the airline could be improved?
17. What in your opinion are the major shortcomings of your ERM system?

Determinants of Risk Management Approach

1. Could you please describe the factors that influenced the airline to adopt ERM?
2. How does the regulatory framework influence the way the airline manages risks?
3. How has the risk management system of the airline been influenced by recommendations of consulting companies?
4. How did the best practices of your competitors influence the airline's risk management approach?
5. What was the influence of other companies from your group on the risk management system of the airline?
6. Could you please describe the influence that the different industry associations (e.g. IATA, ICAO, etc.) had on the way the airline manages risks?
7. How was the ERM adoption decision influenced by the credit rating agencies?
8. In your opinion, was the ERM adoption decision influenced more by external factors, such as demonstrating sound governance over risks, or by internal motives, such as improved performance?
9. How does the nature of the airline business influence the way your company manages risk?
10. Which types of risks is the airline most concerned about, and how did they influence the way the airline manages risks?

Appendix E: Interview Agenda Designed for the Field Study - *continued*

Interviewees: CFO-Beta, CFO-Gamma, RGD-Delta, CCO-Delta, ORM-Delta

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 40 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?
2. How long have you worked for the airline?
3. Could you please describe how you are involved in the risk management function?

Risk Management System

1. How would you describe the level of advancement of the risk management system of the airline? Why do you think so?
2. Is the airline planning to implement ERM? If so, what are the reasons for that? Please explain.
3. Could you please describe how the responsibilities for risk management are assigned throughout the airline?
4. How are the board and the management team involved in risk management?
5. Is the risk management function concentrated in any particular department or business unit?
6. Is there any unit or position in the airline overseeing and coordinating the management of different types of risks altogether?
7. How is internal audit involved in the risk management process?
8. How do employees from lower levels in the airline participate in identification and assessment of risks relevant to their business units?
9. Is there a documented risk management strategy?
10. Which groups of risks are managed within formal programmes, with established policies and procedures?
11. To what extent are the methodologies for conducting the different stages of the risk management process formalised?
12. Do you think that the risk management system of the airline allows for identifying relevant exposures from all across the different business units? Please explain.
13. Could you please describe the mechanisms by which risk data from all across the airline is integrated?
14. What kind of tools does the airline use to record and present information on risks?
15. Is there any specialised risk management software in use?
16. How do you think the risk management system of the airline could be improved?
17. What in your opinion are the major shortcomings of your risk management system?

Determinants of Risk Management Approach

18. How does the regulatory framework influence the way the airline manages risks?
19. How has the risk management system of the airline been influenced by recommendations of consulting companies?
20. How did the best practices of your competitors influence the airline's risk management approach?
21. What was the influence of other companies from your group on the risk management system of the airline? (*optional question*)
22. Could you please describe the influence that the different industry associations (e.g. IATA, ICAO, etc.) had on the way the airline manages risks?
23. Has your risk management system been influenced by the pressures from credit rating agencies? (*optional question*)
24. How does the nature of the airline business influence the way the airline manages risk?
25. Which types of risks is the airline most concerned about, and how did they influence the way it manages risks?

Appendix F: Interview Agenda Designed for the Case Studies

Interviewees: MCM-Alpha, CRO-Alpha **(complementary interview)*, DRC-Alpha **(complementary interview)*, TRM-Alpha, DRC-Alpha, IA-Alpha

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<h3>Interview Reference Number:</h3>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 40 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the holding company (hereinafter referred to as 'company') / airline?
2. How long have you worked for the company / airline?
3. Could you please describe how you are involved in the risk management function?

ERM System

1. Could you please describe the transition of the risk management system toward adopting ERM?
2. How would you describe the level of advancement of ERM? Why do you think so?
3. Could you please describe how the responsibilities for risk management are assigned throughout the company/airline?
4. How are the board and the management team involved in risk management?
5. Is the risk management function concentrated in any particular department or business unit?
6. Is there any unit or position in your company/airline overseeing and coordinating the management of different types of risks altogether?
7. How is internal audit involved in the risk management process?
8. How do employees from lower levels in the organisation participate in identification and assessment of risks relevant to their business units?
9. Is there a documented risk management strategy?
10. Which groups of risks are managed within formal programmes, with established policies and procedures?
11. To what extent are the methodologies for conducting the different stages of the risk management process formalised?
12. Could you please explain how risks are identified throughout the company/airline?
13. Do you think that the ERM system of your company allows for identifying relevant exposures from all across the company/airline? Please explain.
14. Could you please explain how risks are assessed, prioritised, and escalated throughout the company/airline?
15. Could you please describe the mechanisms by which risk data from all across the company is integrated?
16. What kind of tools does your company/airline use to record and present information on risks?
17. Does your company/airline use any specialised risk management software?
18. How do you think the ERM system of your company/airline could be improved?

19. What in your opinion are the major shortcomings of the ERM system of your company/airline?
20. How did the risk management structures and practices change in the company/airline after introducing ERM?

Determinants of Risk Management Approach

21. Could you please describe the factors that influenced your company/airline to adopt ERM?
22. How does the regulatory framework influence the way your company/airline manages risks?
23. How has the ERM system of your company been influenced by recommendations of consulting companies?
24. How did the best practices of your competitors influence your company's/airline's risk management approach?
25. What was the influence of other companies from the group on the risk management system of the airline?
26. Could you please describe the influence that the different industry associations (e.g. IATA, ICAO, etc.) had on the way the company/airline manages risks?
27. How was the ERM adoption decision influenced by the credit rating agencies?
28. In your opinion, was the ERM adoption decision influenced more by external factors, such as demonstrating sound governance over risks, or by internal motives, such as improved performance?
29. How does the nature of the airline business influence the way your company/airline manages risk?
30. Which types of risks is your company/airline most concerned about, and how does it influence the way your company/airline manages risks?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: SRM/1-Alpha, SRM/2-Alpha

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 30 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?
2. Could you please describe how you are involved in the risk management function?

ERM System

1. What are the major risks your department is concerned about?
2. How do regulatory framework and guidance from industry associations influence the management of safety and operational risks?
3. Could you please describe how responsibility for risk management is assigned throughout the production departments?
4. What is the role of the Safety Committee?
5. Could you please describe how the risk management is performed under the airline's Safety Management Framework?
6. To what extent are risk management structures and practices formalised within the production departments? Please explain.
7. How do you perceive the risk culture in the production departments?
8. Could you please explain how SMS is integrated within airlines'/group's ERM system?
9. How are safety and operational risks escalated within the airline's structure?
10. How are employees from the production departments involved in the identification and assessment of risks relevant to their areas of responsibility?
11. What kind of tools and software does your department use to record and present information on risks?
12. How do you think the risk management processes relevant to safety and operational risks could be improved?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: TRM-Alpha **(complementary interview)*, MSF/1-Alpha, MSF/2-Alpha, MSF/3-Alpha

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 30 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?
2. Could you please describe how you are involved in the risk management function?

ERM System

1. What are the major risks your department is concerned about?
2. Could you please describe how responsibility for risk management is assigned throughout the financial departments?
3. Could you please describe the risk management process of financial risks?
4. To what extent are risk management structures and practices formalised within the financial department? Please explain.
5. Could you please explain how the management of financial risks is integrated within airlines'/group's ERM system?
6. How are financial risks escalated within the airline's structure?
7. What is the role of Financial Risk Committee?
8. Could you please describe the mechanism of the Financial Risk Management framework? (*TRM-Alpha*)
9. What kind of tools and software do financial departments use to record and present information on risks?
10. How do you think the risk management processes relevant to financial risks could be improved?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: SDA-Alpha, TS-Alpha, ISM-Alpha, GOO-Alpha

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 30 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?

ERM System

1. Are there established policies and procedures guiding and regulating management of risks relevant to your business area?
2. Are there communication protocols in place to escalate information on risks to upper levels in the airline?
3. What types of risks is your department most concerned about?
4. Are risks identified regularly in your department?
5. Are members of your department clear about the risk management tasks they are expected to perform?
6. How is participation of employees from your department encouraged in the risk management process?
7. Please describe how risks are identified, assessed, managed and reported in your business area.
8. How do you think the management of risks could be improved in your department?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: CFO-Beta **(complementary interview)*, HIA-Beta, DC-Beta, DTR-Beta, IA/1-Beta, IA/2-Beta

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 40 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the holding company (hereinafter referred to as 'company') / airline?
2. How long have you worked for the company / airline?
3. Could you please describe how you are involved in the risk management function?

Risk Management System

1. How would you describe the level of advancement of airline's risk management system? Why do you think so?
2. Do you consider introducing ERM in the future? If so, what are the reasons for that?
3. Could you please describe how the responsibilities for risk management are assigned throughout the airline?
4. How are the board and the management team involved in risk management?
5. Is the risk management function concentrated in any particular department or business unit?
6. Is there any unit or position in your airline overseeing and coordinating the management of different types of risks altogether?
7. How is internal audit involved in the risk management process?
8. How do employees from lower levels in the organisation participate in identification and assessment of risks relevant to their business units?
9. Is there a documented risk management strategy?
10. Which groups of risks are managed within formal programmes, with established policies and procedures?
11. To what extent are the methodologies for conducting the different stages of the risk management process formalised?
12. Could you please explain how risks are identified throughout the company/airline? Do you your current risk management system allows for identifying relevant exposures from all across the airline? Please explain.
13. Could you please explain how risks are assessed, prioritised, and escalated throughout the airline?
14. Could you please describe the mechanisms by which risk data from all across the airline is integrated?
15. What kind of tools and software are used at different organisational levels to record and present information on risks?
16. How do you think the risk management system of your airline could be improved?

17. What in your opinion are the major shortcomings of the risk management system of your airline?

Determinants of Risk Management Approach

18. How does the regulatory framework influence the way your airline manages risks?
19. How has the risk management system of your airline been influenced by recommendations of consulting companies?
20. How did the best practices of your competitors influence the airline's risk management approach?
21. What has been the influence of other companies from the group on the risk management system of the airline?
22. Could you please describe the influence that the different industry associations (e.g. IATA, ICAO, etc.) had on the way the airline manages risks?
23. In your opinion, what are the most significant pressures from airline's stakeholders which influence the way the airline manages risks? *(followed by an explanation)*
24. How does the nature of the airline business influence the way the airline manages risk?
25. Which types of risks is the airline most concerned about, and how does it influence the way risks are managed in the airline?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: HSS-Beta

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 30 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?
2. Could you please describe how you are involved in the risk management function?

Risk Management System

1. What are the major risks your department is concerned about?
2. How do regulatory framework and guidance from industry associations influence the management of safety and operational risks?
3. Could you please describe how responsibility for risk management is assigned throughout the production departments?
4. What is the role of the Safety Committee?
5. Could you please describe how the risk management is performed under the airline's Safety Management Framework?
6. To what extent are risk management structures and practices formalised within the production departments? Please explain.
7. How do you perceive the risk culture in the production departments?
8. Could you please explain how SMS is integrated within the airlines' risk management system?
9. How are safety and operational risks escalated within the airline's structure?
10. How are employees from the production departments involved in the identification and assessment of risks relevant to their areas of responsibility?
11. What kind of tools and software does your department use to record and present information on risks?
12. How do you think the risk management processes relevant to safety and operational risks could be improved?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: DTR-Beta *(*complementary interview*), FF-Beta, SF-Beta

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 30 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?
2. Could you please describe how you are involved in the risk management function?

Risk Management System

1. What are the major risks your department is concerned about?
2. Could you please describe how responsibility for risk management is assigned throughout the financial departments?
3. Could you please describe the risk management process of financial risks?
4. To what extent are risk management structures and practices formalised within the financial department? Please explain.
5. Could you please explain how the management of financial risks is integrated within airlines'/group's risk management system?
6. How are financial risks escalated to airline's management?
7. What is the role of the Financial Risk Committee?
8. What kind of tools and software do financial departments use to record and present information on risks?
9. How do you think the risk management processes relevant to financial risks could be improved?

Appendix F: Interview Agenda Designed for the Case Studies - *continued*

Interviewees: ITD-Beta, MM-Beta, FSM-Beta

The interview agenda includes the main issues of interest to the researcher which guided semi-structured interviews, and which were complemented with additional questions varying depending on the flow of the conversation.

<p>Interview Reference Number:</p>

Date:.....

Time:

Location:

Name of the interviewee:

Code of the interviewee:

Organization:

Code of the Organization:

Good Morning/Afternoon/Evening MR, MRS, MISS:

Thank you for agreeing to participate in this research.

This research project focuses on risk management systems of airlines. In this interview I would like to learn about the risk management structures and practices adopted in your company. I have planned this interview to last no longer than 30 minutes.

As a researcher, I follow an ethical code and I would like to assure you that all the information will be treated with complete confidentiality; neither your name nor the name of your company will be published.

I hope you do not mind this conversation being recorded.

Background Information

1. What is your position and the scope of responsibilities in the airline?

Risk Management System

1. Are there established policies and procedures guiding and regulating management of risks relevant to your business area?
2. What types of risks is your department most concerned about?
3. Are risks identified regularly in your department?
4. Are there communication protocols in place to escalate information on risks to upper levels in the airline?
5. Are members of your department clear about the risk management tasks they are expected to perform?
6. How is participation of employees from your department encouraged in the risk management process?
7. Please describe how risks are identified, assessed, managed and reported in your business area.
8. How do you think the management of risks could be improved in your department?