

**Risk-Taking Behavior as a Hidden Factor
for Sustainable Business Models' Performance
of European Banks**

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Katharina Werk

Approved on the application of

Prof. Dr. Christoph J. Börner

and

Prof. Dr. Guido Förster

Eidesstattliche Versicherung

Ich, Frau Katharina Werk, versichere an Eides statt, dass die vorliegende Dissertation von mir selbstständig und ohne unzulässige fremde Hilfe unter Beachtung der „Grundsätze zur Sicherung guter wissenschaftlicher Praxis an der Heinrich-Heine-Universität Düsseldorf“ erstellt worden ist.

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Unterschrift

This dissertation is dedicated to my beloved mother, father, sister and Michael.

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I like to compare the research expedition to complete my dissertation with mountaineering. In addition to basic physical requirements, mountaineering also requires mental strength, making it possible to face nature's forces and master unforeseen situations. The summit is the goal, but on the way there, despite good planning, occasionally you get off the path and into situations that can bring you to the abyss of despair and failure, raising doubts and putting everything in question. In these situations, where the path is rocky, one sometimes loses sight of the summit. Then it is necessary to take a step back to make sure of the goal and recognize taking the right path.

Mountaineering motivates you to go beyond yourself. It leads you to leave your comfort zone behind, face the challenges that nature has in store for you, keep a cool head in unpredictable situations, and stay focused on avoiding losing sight of the summit. So, if you want to storm a peak, it takes a specific basic endurance, a strong will, great respect, a confrontation with your abilities, recognizing your limits, and having the courage to set new limits and then reach them by becoming a border crosser.

Then, once you have mastered the summit, enjoyed the view and freedom up there and begun the descent back to the valley, you look up at the summit from further down and find it hard to believe you were up there. The freedom felt on mountains straightens relations and provides access to entirely new perspectives as meaningful experiences for life. Mountaineering leaves one awestruck and humbled and leads to a great sense of gratitude to all the companions who made the research expedition possible and helped reach the summit. It is difficult to thank all the people who have accompanied the research expedition along the way, but I would like to attempt to thank the companions who have made a significant contribution in the completion of this dissertation and ensured that I have been able to grow both personally and professionally during the challenging time of the dissertation. Your efforts were not a matter of course, so I

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ABSTRACT

The dissertation aims to obtain a fundamental understanding of the critical determinants of the relationships between business models, risk-taking behavior, and performance. Furthermore, it achieves foundation work for empirical research in the still relatively young field of business model research by being one of the first to operationalize individual elements of the Business Model Canvas (BMC) guideline structure for business model analysis (very popular in practice) and to use it for business models' description along various dimensions.

Based on the insights of resource-based theory and prospect theory with upper echelons theory as an overarching approach to decision-making in a top management team (TMT) as the central decision-making body, whose subjective cognitive endowments influence strategic decisions differently, this dissertation proposes the risk-taking-behavior-performance business model (RBPB model). This model combines the business model, risk-taking behavior, and performance concepts into one conceptual model for the first time and addresses the hidden factor of risk-taking behavior in business model design as a significant mediator in the relationship between business models and performance.

In detail, this analysis examines business models along the dimensions of infrastructure traits and diversity degree characteristics as essential components to describe business models. Negotiated decisions on the orientation of organizational resource endowment correspond to dynamic management capabilities in TMT. They express the individual perception of the decision situation through subjective processing of alternatives based on cognitive endowment by factors such as experience, norms, habits, and knowledge of decision-makers in decision situations under uncertainty and risk. This individual processing and simplification of the decision situation as an antecedent influences the TMT's actual risk-taking behavior in interplay with firm performance and is central to our analysis. The moderating role of contextual factors of the decision situation in the form of ownership structure, geographical orientation, resource surplus, and entrepreneurial value proposition is also considered.

The empirical study of the theoretically derived hypotheses rests on a panel data set of European banks in the eurozone and Switzerland from 2010 to 2019. The methodological approach involves hypothesis testing within three separate empirical studies focusing on different aspects of the conceptual framework. Based on the thesis' results, we particularly emphasize the relationships between the components of the infrastructure traits element of business models, risk-taking behavior, and performance of our RBPB model. Specifically, for equity capital endowment as a critical component of the infrastructure traits of business models, the dissertation highlights an inverted U-shaped relationship with performance and a positive relationship with risk-taking behavior. At the same time, we show a positive and linear relationship between human capital endowment and performance while a negative relationship with risk-taking behavior. Moreover, we extend the ambivalent literature on the relationship

between risk and performance within a behavioral science perspective, highlighting a negative relationship between risk-taking behavior and performance. Moderating effects for ownership structure, geographical orientation, resource surplus, and entrepreneurial value proposition that influence relationships with organizational outcomes are determined.

This dissertation adds new empirical insights to the business model research literature, which has mainly focused on the theoretical derivation of individual components of business models. It provides a first step in the in-depth quantitative analysis of the business model concept, and points to the need not to consider the relationship between business modeling and performance without regarding risk-taking behavior. Thus, the RBPB model is groundbreaking because, in addition to the direct influences of infrastructure traits and diversity degree characteristics on performance, it highlights the mediating factor of the TMT's actual risk behavior, expressed in organizational risk-taking behavior, as an explanatory link in the relationship between infrastructure traits and performance. Accordingly, the infrastructure traits of business models influence performance directly on the one hand and indirectly via actual risk-taking behavior on the other. Moreover, the thesis provides an extended understanding of the influences of contextual factors of entrepreneurial orientation that characterize decision-making situations as framework conditions. Concerning the managerial contribution of this dissertation, we refer to the recommendations regarding business modeling as a concrete entrepreneurial implementation of a strategy to generate sustainable competitive advantage and long-term performance, as well as to the relevance of considering risk-taking behavior as a hidden factor mediating the relationship between business model alignment and performance.

Overall, this dissertation combines contemporary issues and research areas, provides meaningful results complementing the resource-based theory, prospect theory, and upper echelons theory as an overarching approach, and gains a deeper and expanded view of the relationships between business models, risk-taking behavior, and performance within the RBPB model. Limitations of this thesis result from the study design and context.

ZUSAMMENFASSUNG

Die Dissertation zielt darauf ab, ein grundlegendes Verständnis über die entscheidenden Determinanten der Beziehungen zwischen Geschäftsmodellen, Risikoverhalten und Performance zu erlangen. Außerdem leistet sie Grundlagenarbeit bei der empirischen Erforschung des noch recht jungen Forschungsgebiets der Geschäftsmodellforschung, indem sie als eine der ersten Arbeiten einzelne Elemente der in der Praxis sehr populären Leitfadenstruktur des Business Model Canvas (BMC) zur Geschäftsmodellanalyse operationalisiert und zur Beschreibung von Geschäftsmodellen entlang verschiedener Dimensionen nutzt.

Auf Basis der Erkenntnisse der Ressourcenbasierten Theorie und der Prospect Theorie mit der Upper Echelons Theorie als übergreifendem Ansatz für die Entscheidungsfindung im Top-Management-Team (TMT) als zentralem Entscheidungsgremium, deren subjektive kognitive Ausstattungen strategische Entscheidungen unterschiedlich beeinflussen, schlägt diese Dissertation das Risikoverhalten-Performance Business Modell (Risk-taking-behavior-performance business model, RBPB model) vor. Dieses Modell fasst die Konzepte Geschäftsmodell, Risikoverhalten und Leistung erstmals in einem konzeptionellen Modell zusammen und adressiert den versteckten Faktor der Risikobereitschaft in der Gestaltung des Geschäftsmodells als bedeutsamen Mediator im Zusammenhang zwischen Geschäftsmodellen und Performance.

Diese Arbeit untersucht im Einzelnen Geschäftsmodelle entlang der Dimensionen von Infrastruktureigenschaften und Diversitätsgradmerkmalen als wesentliche Komponenten zur Beschreibung von Geschäftsmodellen. Die ausgehandelten Entscheidungen über die Ausrichtung der organisatorischen Ressourcenausstattung entspricht den dynamischen Managementfähigkeiten im TMT. Sie sind Ausdruck der individuellen Wahrnehmung der Entscheidungssituation durch die subjektive Bearbeitung von Alternativen auf der Grundlage der kognitiven Ausstattung durch Faktoren wie Erfahrung, Normen, Gewohnheiten und Wissen der Entscheidungsträger in Entscheidungssituationen unter Unsicherheit und Risiko. Diese individuelle Verarbeitung und Vereinfachung der Entscheidungssituation als Antezedenz beeinflusst das tatsächliche Risikoverhalten des TMTs im Zusammenspiel mit der Unternehmensperformance und ist zentraler Bestandteil unserer Analyse. Ebenfalls wird die moderierende Rolle von Kontextfaktoren der Entscheidungssituation in Form der Eigentümerstruktur, der geographischen Orientierung, der Ressourcenüberschüsse und des unternehmerischen Nutzenversprechens berücksichtigt.

Die empirische Untersuchung der theoretisch abgeleiteten Hypothesen stützt sich auf einen Paneldatensatz europäischer Banken in der Eurozone und der Schweiz in einem Zeitraum von 2010 bis 2019. Das methodische Vorgehen beinhaltet die Hypothesenprüfung innerhalb drei separater empirischer Studien, die sich auf verschiedene Aspekte des konzeptionellen Rahmens

konzentrieren. Auf der Grundlage der Ergebnisse der Arbeit sind insbesondere die Beziehungen zwischen den Komponenten des Elements der Infrastruktureigenschaften von Geschäftsmodellen, dem Risikoverhalten und der Performance unseres RBPB Modells zu betonen. Konkret stellt die Dissertation für die Ausstattung mit Eigenkapital als eine wesentliche Komponente der Infrastruktureigenschaften von Geschäftsmodellen eine invertierte U-förmige Beziehung zur Performance und eine positive Beziehung zum Risikoverhalten heraus. Gleichzeitig zeigen wir einen positiven und linearen Zusammenhang zwischen Humankapitalausstattung und Performance, während ein negativer Zusammenhang zum Risikoverhalten besteht. Darüber hinaus erweitern wir die ambivalente Literatur über den Zusammenhang zwischen Risiko und Performance im Rahmen der verhaltenswissenschaftlichen Perspektive, die einen negativen Zusammenhang zwischen Risikoverhalten und Performance unterstreicht. Moderierende Effekte für die Eigentümerstruktur, die geographische Orientierung, Ressourcenüberschüsse und das unternehmerische Nutzenversprechen, die die Beziehungen zu den Organisationsergebnissen beeinflussen, werden bestimmt.

Durch die Dissertation werden der Literatur zur Geschäftsmodellforschung, die sich bisher schwerpunktmäßig auf die theoretische Ableitung einzelner Komponenten von Geschäftsmodellen konzentriert hat, neue empirische Erkenntnisse hinzugefügt, indem sie einen ersten Schritt in der vertieften quantitativen Analyse des Geschäftsmodellkonzepts darstellt und auf die Notwendigkeit hinweist, die Beziehung zwischen der Geschäftsmodellierung und Leistung nicht ohne die Berücksichtigung des Risikoverhaltens zu betrachten. Damit ist das RBPB Modell wegweisend, da es neben den direkten Einflüssen der Infrastruktureigenschaften und Diversitätsgradmerkmale auf die Performance den vermittelnden Faktor des tatsächlichen Risikoverhaltens des TMTs, das sich in der organisatorischen Risikobereitschaft ausdrückt, als erklärendes Bindeglied in der Beziehung zwischen Infrastruktureigenschaften und Performance herausstellt. Demnach beeinflussen die Infrastruktureigenschaften von Geschäftsmodellen einerseits direkt die Performance und andererseits indirekt über das tatsächliche Risikoverhalten. Zusätzlich liefert die Arbeit ein erweitertes Verständnis über die Einflüsse von kontextuellen Faktoren der unternehmerischen Ausrichtung, die die Entscheidungssituationen als Rahmenbedingungen charakterisieren. Mit Blick auf den praktischen Beitrag dieser Dissertation verweisen wir auf die Empfehlungen hinsichtlich der Geschäftsmodellierung als konkrete unternehmerische Umsetzung der Strategie zur Generierung nachhaltiger Wettbewerbsvorteile und langfristiger Performance sowie auf die Relevanz der Berücksichtigung des Risikoverhaltens als versteckten Faktor, der die Beziehung zwischen Geschäftsmodellausrichtung und Performance mediiert.

Insgesamt kombiniert die Dissertation zeitgenössische Fragestellungen und Forschungsgebiete, liefert aussagekräftige Ergebnisse zur Ergänzung der Ressourcenbasierten Theorie, der Prospect Theorie und der Upper Echelons Theorie als übergreifendem Ansatz und stellt mit dem RBPB Modell eine tierfergehende und erweiterte Sichtweise auf die Beziehungen zwischen Geschäftsmodellen, Risikoverhalten und Performance zur Verfügung. Limitationen dieser Arbeit sind auf den Studienaufbau und den -kontext zurückzuführen.

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LIST OF ABBREVIATIONS

BIS	Bank of International Settlements
BMC	Business Model Canvas
RBPB	Risk-taking-behavior-performance business (model)
CCV	Core competency view
CEO	Chief Executive Officer
CPT	Cumulative prospect theory
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
DCV	Dynamic capability view
ECB	European Central Bank
(Rev.) ed.	(Revised) edition
Ed.	Editor
Eds.	Editors
e.g.	Exempli gratia (for example)
ESCB	European System of Central Banks
et al.	Et alii (and others)
Eurostat	Statistical Office of the European Union
EUT	Expected utility theory
FE	Fixed effects (model)
FINMA	Swiss Financial Market Supervisory Authority
FTE	Full-time equivalent
GDP	Gross domestic product
H	Hypothesis
i.e.	id est (that is (to say))

LIST OF ABBREVIATIONS

i.i.d.	independent and identically distributed
IO	Industrial organization
IQV	Index of Qualitative Variation
GTOC	General Theory of Crime
KBV	Knowledge-based view
LLR	Loan loss reserves
LM	Lagrange Multiplier
NIE	New institutional economics
NRBV	Natural resource-based view
OLS	Ordinary Least Squares
p. / pp.	Folio (following page / pages)
PCSE	Panel-corrected standard errors
PTGB	Pays-to-be-green (literature)
RBT	Resource-based theory
RBV	Resource-based view
RE	Random effects (model)
ROA	Return on assets
ROE	Return on equity
ROAE	Return on average equity
RQ	Research question
RWAs	Risk-weighted assets
SCA	Sustainable competitive advantage
S.D.	Standard deviation
SEU	Subjective Expected Utility Theory
SCP	Structure-conduct-performance (paradigm)
SNB	Swiss National Bank
SSM	Single Supervisory Mechanism
S&P MI	S&P Global Market Intelligence (S&P MI, formerly SNL Financial)
TMT	Top management team
VIF	Variance Inflation Factor
VP	Value proposition
VRIN	Valuable, rare, inimitable, and not-substitutable resources

CHAPTER 1

INTRODUCTION

“It was to end tragically but this does not mean that our decision to descend into the unknown was an unreasonable one to make. In the circumstances it was the only possible way out of the very serious situation we were in.”

(Messner, 2003, p. 204)

The Rupal Face! Imagine this: the East Face of Monte Rosa with the Eigerwand above and the Matterhorn perched on top. In fact, the Rupal Face is impossible for anyone to imagine unless they have actually seen it. From the earliest days, this huge flank has impressed all those who have passed beneath it. Now it is our turn. We are consumed by the thought of climbing it, caught up in a mixture of hope and fear. This face is the greatest mountaineering challenge of my life! (Messner, 2003, p. 104) In the spring of 1970, a team with a total of 18 members and several tons of equipment set out for the expedition to Nanga Parbat in the Himalaya Mountains. With a height of 8,125 meters and the steepest slope of over 60 degrees, the mountain is the ninth highest peak in the world. In Urdu, Nanga Parbat means the “Naked Mountain”, and the locals also refer to it as Diamir, which means the “King of the Mountains” (Messner, 2003).

The goal was to climb the summit via its south face – its Rupal Face – with 4,500 vertical meters, the highest mountain face in the world. “The holy grail, too, for a young generation of mountaineers” (Messner, 2003, p. 32) – a mountain face so steep that snow does not stick to the slippery rock in winter (House, 2009). Messner himself depicted this climate of departure into uncertainty “climate of madness” (Messner, 2003, p. 32) driven by the goal to make the ascent described by many as impossible.

On June 27, 1970, Reinhold Messner reached the summit of Nanga Parbat via the mountain's south side with his brother, making the impossible possible. They were forced to make the descent via the west side of the mountain – the Diamir Face – and were thereby the first to realize a traverse of the mountain (Messner, 2014). But during the descent, it came to the tragic death of Messner's brother Günther, and he also managed the descent only with great hardship and frostbite on the body.

In light of this formative and tragic event, Messner did not give up. Instead, he made the decisions that had to be made at that time and did not bow to the fear of failure to have any chance of survival. In retrospect, he described

whether or not we made the right decisions is no longer relevant. [...] After the summit we were forced to make a series of crucial decisions. We could either stay put and die, or risk the impossible. The lower down the mountain we got, the more risks we had to take. It was only our survival instinct that stopped us from giving up. (Messner, 2014, Chapter II)

Reinhold Messner succeeded in constantly reinventing himself. In this way, he defied the massive criticism he faced and the setbacks he suffered again and again. Instead, Messner was not satisfied with certainty and rather faced the uncertainty and thus the challenges that nature had in store for him and survived – what he now calls his greatest achievement (Messner, 2014).

Similarly, companies are also facing major challenges with steadily growing dynamics and a rapid shortening of expiration times for competitive advantages as characteristics of today's economic environment. These characteristics are visible through market entering of new technologies, changing customers' wishes and needs, upcoming changes in work forms, fast-moving trends, and external influences such as climate change and climate protection, regulation, or geopolitical developments. Typically, in such an economic environment, the need to adapt through structural changes is omnipresent – no matter which industry you look at.

Considering the displacement of old structures and the creation of new impulses in such a market environment, thus, Joseph Alois Schumpeter's theory of economic development is more relevant today than ever. The theory contains the eroding of contemporary settings and the creation of new economic structures through innovation and economic dynamism. Schumpeter (1943, p. 83) described this process as "Creative Destruction". Transferred to

today's market environment, digitization, complexity, pressure on earnings and costs, and regulatory requirements lead to complexity and uncertainty and force companies to rethink and further develop their business models. In addition, geopolitical uncertainties and risks associated with climate change that are difficult to assess and quantify are also changing the environment in which companies operate, requiring adjustments to business models to remain successful in the long term.

The decision-making process in the top management team must be geared constantly towards recognizing, seizing and implementing the trends of the time. One example of a company that has mastered this triple challenge is the startup DeepL. DeepL recognized a gap, seized the chance and implemented an independent translation engine that replaced (digital) dictionaries and now competes with tech giants like Google. Nevertheless, DeepL also challenges remaining a market player because sustainable competitive advantage and superior performance are characterized by consistently writing good stories and not just one story. Examples of companies in which management decisions have led to trends such as digitization being missed and displacement by the market entry of new competitors are Quelle (mail-order company) or Nokia (cellphone manufacturer). On the other hand, others have managed to reinvent themselves as part of a continuous feedback process and rethink and change what makes their business tick, just as Apple advanced from a pure computer manufacturer to a multi-product technology group by expanding its product range.

The market environment challenges described above affect strategic decision-making at all companies, albeit in different ways depending on their role in the market. For this reason, individual factors may be more or less prominent as risks or threats to business activity long-term success as a function of company and industry. The strategic decision-making of banks, for example, is affected by the dynamic changes and challenges of the environment characterized by complexity and uncertainty in two ways at once. On the one hand, as ordinary companies, banks are directly exposed to market developments and challenges. On the other, however, because of their central role as financial intermediaries and task of financing the economy, they must indirectly consider when the requirements profile of their customers changes because of these challenges.

In this dynamic economic environment, although the direct influence of the banking sector on the real economy is debatable, special attention is paid to the banking sector due to its indirect influence resulting from its economic transformational functions. Herring and Santomero (2000) also found that the direct influence of financial institutions on the real

economy appears to be minor, with a small share of tangible assets on balance sheets. However, several transmission channels exist between the financial sector and the real economy (Basel Committee on Banking Supervision, 2011), suggesting an indirect influence. Entrusted to provide the real sector with the classic economic transformation functions, the banks provide the infrastructure and products that real sector actors (households and firms) need to cope with the complexity and uncertainty of a dynamic environment.

Despite banks' actual or perceived peculiarities, it is the similar and overriding goals of strategic management to create a sustainable competitive advantage and long-term performance to ensure survival that make banks a suitable unit of analysis against the backdrop of enormous and manifold challenges. Numerous analyses in literature highlight banks' actual and perceived peculiarities, due to their service character as financial intermediaries bringing together the supply and demand sides of financial capital by solving various problems, such as information asymmetry (Allen & Carletti, 2010). Nevertheless, these unique features should not be overestimated, but represent the unique selling propositions common to other industries. Frequently, these usual peculiarities are countered by not examining several industries simultaneously in one study to avoid bias in the conclusions. Moreover, there are clear commonalities, especially in the strategic management of banks and other companies, that suggest comparability since all share fundamental determinants of competitive advantage and superior success (Börner, 2005). This fact, and the enormous challenges and changes banks face in a twofold manner, make them a suitable unit of analysis for studying the impact of different elements of business models as an operationalization of a firm's strategy on performance and for deriving generally applicable conclusions.

Various trends and developments in the market of considerable strategic importance are the drivers for the increasing change of the industry's face, and the reason to rethink their assumptions about the environment and current positioning in recent years. These trends and developments include a decline in revenues due to a low-interest-rate environment, significant cost pressures, new competition from neobanks and fintechs, artificial intelligence, Big Data, Robo-advisory, blockchain, and other disruptive technologies that call for expanding banks' multifunctional capabilities for an optimal customer experience. In addition, regulatory pressure, which has been driving the realignment of the financial sector since the economic and financial crisis of 2007-2008, is exacerbating the situation. Results are a significant increase in the competitive situation, a clouding of profitability, low-cost efficiency, and an increased likelihood of an increase in risk appetite through the tapping of loans with higher probabilities

of default, but which at the same time hold out the prospect of higher returns. Yet, despite these trends and developments, banks are given only a subordinate role in the strategy and management literature.

With the economic and financial crisis of 2007-2008, the world has already felt the tremendous consequences and impact of a risky and – due to complexity – opaque business orientation in the banking sector. The consequences were the failure of too-big-to-fail banks, substantial losses, and government-imposed rescue packages. Even a transnational spillover of the crisis from the financial sector to the real economy could no longer be averted, given the close interconnection of the financial system and the state. Short-term state rescue measures to safeguard the existence of the sector were followed by a reorganization of regulation aiming to create the conditions for renewed confidence in the banking sector and not to jeopardize its overall economic function. Their effects impact banking supervision today and in the future. With the latest Basel recommendations, set out in the “Basel III” and “Basel IV” reform packages and their ongoing implementation at the European and national levels, numerous new regulations under the guise of updating requirements that the industry was previously unaware of are further fueling the question of banks’ business models (Neisen & Schulte-Mattler, 2020).

It is becoming clear that the banks’ playing field is changing, questioning their present business models, sources of generating profitability, and jeopardizing their existence as players. For this reason, banks are called upon to question their status quo and adjust their business models to mold the playing field as long-term players. However, as a definition of the characteristics of the entire firm through logical structures, the question of what the business is often eludes an obvious answer. Therefore, it is up to the top management team in the quest for profitability as a measure of entrepreneurial activity to address and agree on this question (Drucker, 1986) to secure their continued existence. And even if everyone has a business model, knowledge about it is often very limited. Therefore, dealing with banks’ business models is a first step and an opportunity to start the expedition into uncertainty and face the challenges in order not to be exposed to certain death.

1.1 Problem Setting

Even though banks – like all other companies – have the goal of surviving in the market for many generations and enduring forever, empiricism shows differences in the survivability of companies and distinguishes between performers and underperformers. Performers are those

long-lived companies capable of renewing themselves repeatedly over many generations despite unforeseen events or ordinary environmental developments. Such companies manage to adapt and overcome current challenges like, sometimes, the unforeseen events, the statistical outliers as the economic and financial crisis of 2007-2008, or ordinary, very present developments of a rapidly changing and complex world. In contrast, the underperformers disappear from the market. Thus, the different developments of organizational design have always been a research subject blessed with constant topicality and a long tradition in the strategy and management literature.

Different strategy and management theories try to clarify the development of companies, whereby the assumptions and explanations vary depending on the approach. One approach of relatively new research direction in strategy and management research, for example, considers this issue against a biological evolutionary component of organizations (Weick, 1969; 1995). The Darwinian-influenced research tradition propagates the need for organizations to drive processes of change and transformation in interaction with a dynamically changing environment. Against this background, Sanchez and Heene (1997) described “a model of organizations as goal-seeking open systems composed of various tangible and intangible assets” (p. 22). They placed the cognitive processes and capabilities of the top management team as the decision-making body of an organization at the center of organizational development and change processes.

The previously presented perspective considers the need for firms to respond to a constantly changing environment by taking a holistic view and understanding how the company functions within the business model concept as core logic. The holistic view of the firm and its organizational development recognizes that everything is interrelated (Freedman, 1992). However, for a holistic response, companies must have a clear idea of what they stand for and see themselves as a living organization (Geus, 1997). Unfortunately, “understanding ‘what we stand for’ can cause a great deal of pain” (Freeman, 2010, p. 241). But this fact is precisely where the business model concept comes in, as it focuses on statically presenting the core logic of business operations based on which changes are made possible in a dynamic way at the same time. As a conceptual tool, it thus on the one hand helps to classify and on the other focuses on the question of how companies can master the challenges of the present and future in a stable manner.

However, despite the apparent advantages of the concept, research on business models in the strategy and management literature is still in its infancy for lack of a shared

understanding, as is basic research on this concept and the role of the firms' top management team as a primary decision-making body. Albeit the emergence and importance of the "new economy" through the proliferation of the Internet and technologization has boosted the business model concept (Mahadevan, 2000) and the debates around it, to date many questions remain unanswered. For this reason, it requires sifting through inventory and assessing converging views on the concept to take stock and create a shared understanding (Wirtz et al., 2016). Furthermore, despite the steadily increasing debates on the business model concept in strategy and management research, there is a significant need for basic research on this concept and the role of top management team in this area due to its recent manifestation for a better understanding.

In general, the usefulness of the business model concept is proving to be widely recognized, as evidenced by the interest in previous research efforts. Consequently, these prior efforts have essentially defined and narrowed the concept into definitional terms (e.g., Teece, 2010; Osterwalder & Pigneur, 2010; Casadesus-Masanell & Ricart, 2010; Richard J Arend, 2013). Others focused on deriving the individual components of business models (e.g., Mahadevan, 2000; Osterwalder, 2004; Johnson et al., 2008), while another strand of research concentrated more on business model innovation (e.g., Demil & Lecocq, 2010 or Cavalcante et al., 2011). However, there are significant research gaps to fully understand how and in what ways the business model affects the relationship with organizational outcomes.

Our empirical study aims to contribute to a deeper understanding of previous approaches to business models, using the banking industry as a use case example and extending the latter with valuable insights. In addition, we look at the risk-taking behavior of management, a hidden factor on the organizations' outcomes that has not yet been considered in the context of business models. Furthermore, our longitudinal research design ensures that the concept is considered from the time perspective, which has been largely neglected in the few empirical studies available. According to our understanding of business models, a cross-sectional analysis would risk drawing incorrect conclusions. Thus, our approach is intended to provide added value in considering the business model concept over time.

1.2 Problem Relevance

This research's contribution consists of empirically expanding the literature on business model analysis, linking it to the primary theoretical conceptualizations to date, and introducing the

consideration of additional variables. With our empirical research, we answer the call for future research from various former research papers that demand a quantitative examination of the business model concept and interface work, and pointed out gaps in the shared understanding (Malone et al., 2006; Richardson, 2008; Teece, 2010; Wirtz et al., 2016). Furthermore, additional insights will be generated by combining the business model concept with the concept of risk-taking behaviors to add new ideas to previous conceptualizations considering an additional factor in explaining business model performance. Finally, the study introduces moderating effects of ownership structure, geographical orientation, slack, and value proposition that represent firm characteristics, influence the TMT's decision-making situation, and deepens business models and risk-taking behavior research.

In this context, the relevance of this research is twofold: a theoretical perspective while offering practical approaches. First, the banking industry is in particular required to analyze and further develop its business models from a systematic perspective to generate a competitive advantage and ensure its long-term survival from a theoretical point of view. Second, there are no studies that we know of that consider banks' business models. Since business model research is still beginning and the strategy and management literature does not consider banks' business models in a focused way, the banking industry often calls for new business models without knowing much about existing differences stemming from the numerous challenges. Therefore, by providing fundamental analysis in business model research of banks and developing new perspectives on relevant business model dimensions, this research is of great importance for practitioners – especially managers, shareholders, and members of the supervisory board. This is because it provides them with a facilitated basis for analyzing and further developing their organization's competitiveness.

The insights gained consisting of theoretical and practical findings concerns at both the general industry-independent level as well as the specific banking sector level with banks headquartered in the eurozone and Switzerland as our research' use case. The challenges of the dynamic, uncertain, and complex (economic) environment affect all industries, among which the banking sector, however, is particularly affected, as shown. The focus of the European banking sector, mainly the focus on banks headquartered in the eurozone and Switzerland, results from the profitability problems of European banks compared to banks in North America, which have been ongoing for years and which gives cause to review the business models. With an average industry return on average equity (ROAE) for the period 2010 to 2019 for the European banking sector of 4.42 percent and an average value of 8.77 percent for the banks

located in the U.S. and Canada, these profitability problems are also evident in a direct comparison using the SNL Bank Index. Against this backdrop, banks in the eurozone and Switzerland are a suitable unit of business model analysis, even due to the comparable regulatory frameworks, where the cross-industry common strategic goals and determinants of success ensure transferability to other industries. Furthermore, the subordinate role of banks in the strategy and management literature motivates us to counteract the status quo by considering the banking sector as a use case for our research.

1.3 Research Questions and Objective

This dissertation aims to empirically study business models and the crucial determinants of the relationships between business models, risk-taking behavior, and performance. In this regard, the role of the top management team as the central decision-making body and their perception of the decision-making situation influencing actual risk-taking behavior on the company's overall performance will be examined. Furthermore, the research will help to clarify the impact of the moderating factors of ownership structure, geographical orientation, slack, and value proposition.

The combination of strategic management and finance as two key research areas in business administration characterize this dissertation with an interdisciplinary orientation that also incorporates insights from psychology and the social sciences in the context of behavioral science. Accordingly, the thesis is motivated on the one hand by generically answering the research questions to derive critical theoretical and practical insights in the field of strategic management. On the other hand, our thesis rests on the banking sector's use case with banks headquartered in the eurozone and Switzerland. Hence, it focuses on a fundamental unit of analysis at the heart of finance because banks. The economic and financial crisis of 2007-2008 has already raised the question of banks' business models – a question that remains highly topical in the context of very recent disruptive changes in a rapidly changing and complex world and of banks being affected twice over. Banks pursue the overarching goals of strategic management and consequently share the determinants of competitive advantage and superior success, making them a suitable unit of analysis for answering our generic research questions and ensuring generalizability.

Specifically, we use resource-based and prospect theory insights and rely on arguments from upper echelons theory as an overarching approach for decision-making in top

management teams as the central decision-making body. Our research expedition considers the following central research questions (RQ):

RQ 1: How do infrastructure traits and diversity degree characteristics of a business model relate to performance?

RQ 2: How does ownership structure influence the infrastructure traits and performance relationship?

RQ 3: How do infrastructure traits and diversity degree characteristics of a business model relate to risk-taking behavior?

RQ 4: How does the geographical orientation influence the diversity degree characteristics and performance relationship?

RQ 5: How does risk-taking behavior relate to performance?

RQ 6: How do slack and value proposition as contextual factors of decision situations influence the risk-performance relationship?

1.4 Structure of the Dissertation

The following part of this dissertation divides into five further chapters. These chapters include the theoretical background, the conceptual framework, the research design and the methodology, the discussion of the results, and finally, the conclusion.

Chapter 2 summarizes the underlying theories as the foundation of our research expedition. First, a general overview of the timeline of the development of strategic management theories serves to identify and classify the evolution of different research streams in the field of strategic management. This part is followed by introducing our two main approaches – the resource-based theory and the prospect theory – for understanding bounded rationality and cognitive biases as a basis for the subjective perceptions of the decision-making situations under risk and uncertainty. We also integrated the upper echelons theory as an overarching theory that introduces the top management team as the central decision-making body of the firm, deciding on the firm’s resources and itself representing a critical firm resource responsible for top-level decision-making, and hence firm heterogeneity. Although this thesis

analyzes banks' business models as use cases, this chapter's approaches are intentionally outlined generically.

Chapter 3 presents the conceptual framework of the dissertation. This framework defines and explains the central notions referred to in our research. This context includes classification and discussion of the critical elements of the concepts presented. On this basis, we derive the hypotheses of the study. The end of the chapter provides an overview of the measurement approaches of concepts and variables used for our research.

Chapter 4 deals with the research design and methodology, explicitly referring to the banking industry's use case example underlying our research. First, it provides an overview of the data sample used in our empirical studies to test our hypotheses. Then, the general research methodology is described. Finally, the actual hypothesis testing follows in three separate empirical studies, focusing on different aspects of our conceptual framework.

Chapter 5 combines the results of the three separate studies and conducts an overall discussion. In addition, the research questions formulated in Chapter 1 are addressed and answered. This forms the basis for determining the theoretical and practical contributions of the dissertation. The chapter concludes by outlining the limitations of our research and suggesting future research opportunities.

Finally, Chapter 6 comprises the conclusion to the dissertation project. This chapter summarizes the findings from the preceding chapters and points out their practical application, and concludes with an outlook of future challenges and developments. The research expedition begins in the next chapter with the presentation of the theoretical foundations of this dissertation.

CHAPTER 2

THEORETICAL FOUNDATION

In a society where doubtless believed principles are eroding, unambiguous patterns of action are blurring and a permanent increase in non-knowledge proceeds, all action involves uncertainty. Thus, our environment is characterized by an increasing lack of knowledge, ambiguity and insufficient clarity, leading to an uncertain basis for decision-making (U. Beck & Lau, 2005). Consequently, to remain capable of acting, there is a compulsion to make decisions under uncertainty (U. Beck et al., 2003). Therefore, it is impossible not to decide, because inherent in a non-decision is the decision not to decide. In fact, as a decider, one has to continuously choose from a range of different alternatives to shape the present in this way (Peterson, 2017). Hence Clinton (1999) noticed

the nice thing about your life story is you get to get up and write a page every day, and you have to decide; no matter how bad things are, no matter what bad has happened to you, no matter what mistakes you've made, you still get to get up and write a new page every day.

Constant change and permanent decision-making constraints characterize the dynamic business environment requiring recourse to the individual cognitive abilities. The uncertainty, complexity, and time pressure featuring today's dynamic business environment forces resorting to habits, experiences, or rules of thumb in decision-making since environmental plainness, complete knowledge, and objectively rational decisions do not correspond to reality (Serman, 2000). In rapidly changing and competitive markets with hypercompetition (D'Aveni, 1994) in the form of intense competition with quickly created and lost competitive advantages as part of the dynamic business environment, the permanent real-time decision-making constraints require continuous decision-making precisely when it is needed (Brehmer, 1992). The constant situation-specific pressure to make decisions under complexity and

uncertainty results from an environment characterized by rapid and discontinuous changes, such as competitors, technologies, or regulations. In so-called high-velocity markets (Bourgeois & Eisenhardt, 1988), “the greatest constant of modern times is change” (Sterman, 2000, p. 3).

The natural lifecycle in the business economy teaches that stagnant companies disappear from the market in a dynamic environment while innovative companies assert themselves. Already at the beginning of the last century, Schumpeter (1911) stated that for companies’ assertion in a dynamic economic environment, it is necessary to drive forward economic developments through innovations and generate their profit opportunities out of it. Stagnant companies that stick to the status quo will not survive the innovation cycles. In this dynamic environment, it is in line with the natural lifecycle that some companies assert themselves in the market and remain in existence, while others waste opportunities to become reoriented and disappear from the market (Nelson, 1991).

2.1 Rise and Shine of Strategic Management

The emergence of the New Institutional Economics (NIE) replaced the focus from a self-regulating market through supply and demand by considering institutional conditions. For a long time, guiding principles such as the metaphor of the “invisible hand” (A. Smith, 1976, p. 456) and the notion of a self-regulating market through supply and demand, in which individuals unintentionally contribute to the common good by pursuing their interests and needs while striving to maximize their profits were the focus. However, as a complex unit of analysis, institutional conditions and their interactions and influences on individuals as active market players have long been neglected as research objects. Then, with the emergence of New Institutional Economics (NIE) and its emphasis on the importance of institutions in economics, institutions came into focus as a research subject and created links to other disciplines (Matthews, 1986). In this context, Sanders and Kianty (2006) present a good overview of the different approaches to organizational research within the development of strategic management, which served as a basis for the following section.

The research field of NIE encompasses diverse but complementary approaches to explain the origins of institutions, their reason for existence, and their various manifestations, howbeit a general theory of the firm does not characterize it. As Williamson (2000) declared, above all, questions about firms’ origins, why they exist, and how they operate guided the

unwillingness to view the firm as a black box form this research field. Ménard and Shirley (2008) further noted that the different but complementary approaches of organizational research unite the rejection of the basic principle of complete information, rational decisions, and free and instantaneous transactions. In contrast, they emphasize the assumption of incomplete information, limited mental capabilities, uncertainty about future events, and costly, time-delayed transactions. In addition, it recognized the assumptions about competition and scarcity of resources as postulated by the neoclassical economic theory. By these approaches, the origins and existence of firms are no longer taken as given. Instead, the emergence of organizations, the parallel existence of the market and the firm, their modes of operation, and their different manifestations and effects are examined with different perspectives expressing the recognized basic principles.

As a pioneer and classical representative of the transaction cost theory, Coase (1937) answered the emergence of firms and the parallel existence of markets and firms by the costs produced within the price mechanism through the uncertainty existing in the market. As roots for the existence of firms, he recognized uncertainty in the market, e.g., by incomplete information. The uncertainty leads to costs for negotiating and concluding separate contracts within the price mechanism, as a market principle in which supply, demand, and price mutually interact in each transaction. Considering the market environment, this includes costs for searching for a suitable contractual partner, obtaining relevant information, negotiating a price, or arising from the impossibility of specifying every detail of long-term contracts. Thus, the classical transaction cost theory answers the emergence of firms and the parallel existence of markets and firms through saving costs and reducing contracts by establishing companies as organizations.

With a rationale for the emergence of various forms of organizations as a response to multifaceted transaction problems caused by different factors, Williamson (1975), as a further classical scholar of the transaction cost theory, took up the thoughts of Coase (1937) and presented an extension of the transaction cost theory. These factors include human and situation-specific aspects, like limited rationality or self-interested behavior of the actors, the complexity of the situations, incomplete information, and the uncertainty of the environmental conditions. This asymmetry gives rise to various transaction problems, which can be addressed depending on their corresponding efficiency in handling the appropriate problems with different organizational forms. According to these findings, organizations result from the requirement to reduce transaction costs by institutionalization.

Similarly, approaches explaining and justifying the *raison d'être* of banks as a “subset of financial intermediaries” (Klein, 1971, p. 206) and our study’s use case as theories of the banking firm also focus on problems in the efficient allocation of resources in financial markets, such as transaction costs that can be mitigated by offering specialized financial goods. Summarized as theories of intermediation (Allen & Santomero, 1998), banks play a central role in the efficient transformation and distribution of assets by taking deposits and making loans (Klein, 1971). The imperfect divisibility of assets conditions the presence of banks in their role as intermediaries that have an economic incentive to transform by pooling smaller units of financial resources into large units, thus resolving constraints on other agents (Klein, 1973). In this context, Benston and Smith (1976) considered the *raison d'être* of banks to minimize transaction costs through the production of new specialized financial goods by banks exploiting comparative advantages and offering products at scales demanded by the market.

Another reason for the existence of financial intermediaries in general and banks is the reduction of information asymmetries by collecting specialized information as a basis for additional banking products and services. Accordingly, due to the presence of information asymmetries symptomatic of imperfect capital markets, banks act as intermediaries by assessing credit risk for the numerous individual depositors (Santomero, 1984). Thus, Leland and Pyle (1977) considered the role of financial intermediaries in gathering specialized information for buying and holding assets that are of a particular grade. Furthermore, Campbell and Kracaw (1980) underscored the information production by financial intermediaries supplementing the information relevance for providing other valuable products and services to investors to generate profits, justifying the costly information gathering by intermediaries. Thus, financial intermediaries reduce information asymmetries between investors and capital borrowers by providing monitoring and, at the same time, providing a financing function as an additional product that reduces the cost of monitoring (Diamond, 1984).

The functional consideration of the financial sector for highlighting the tasks that condition financial intermediation and thereby explaining the existence of financial intermediaries also emphasizes the risk management task by creating synthetic assets mitigating customers’ participation costs in the financial market through indirect participation via financial intermediaries. In this context, Allen and Santomero (1998) underlined that “risk management has become a key area of intermediary activity” (p. 1462). Financial intermediaries, by definition, trade and manage risk when dealing with financial assets as part of business activity (Allen & Santomero, 1998). Furthermore, they perform a risk

transformation function by bundling and unbundling risks through distribution across various participants to a large extent by transforming the accepted risk level of actors in varying degrees of hedging and complexity through the creation of synthetic products (Merton, 1989). In this way, financial intermediaries create stable distributions for their customers and enable their market participation by reducing participation costs in the effective use of markets through converting their possibilities of direct participation into indirect participation via financial intermediaries (Allen & Santomero, 1998).

By returning to generic approaches explaining the existence of organizations, another approach constitutes the existence of firms in the ownership or control of assets by considering acquiring ownership or control rights as a more cost-effective alternative for determining how assets are used than negotiating use by contract. Building on prior analysis for the existence of firms, Grossman and Hart (1986) as well as O. D. Hart and Moore (1990) referred to the fact that not every environmental condition or all contingencies can be regulated in contracts, mainly due to the economic environment's complexity and uncertainty. Therefore, they regarded the less costly alternative for determining the use of assets in acquiring ownership rights to an asset, meaning control rights that cannot be settled in contracts. It implies the right to determine how the assets are used and create framework conditions. Precisely, Grossman and Hart (1986) defined "a firm to consist of those assets that it owns or over which it has control" (p. 693). Previously, already H. Demsetz (1967) underlined in earlier work that property rights enable owners to control property by negotiating the use or non-use with others.

The principal-agent approach deals with the problems that can arise through a contractually fixed delegation of decision-making authority, i.e., whenever a contractor acts on behalf of a principal and the costs for avoidance. As prominent representatives of this approach, M. C. Jensen and Meckling (1976) emphasized an asymmetry in a contractual relationship causing problems within the contractually fixed delegation of decision authority. Accordingly, it can happen that in a relationship of contractual cooperation with diverging interests, the contractor, the agent, e.g., the (top)manager, does not act exclusively in the interest of the principal, e.g., the owner of a company. In such a contractual relationship, as a result, both sides incur costs to avoid a specific behavior: the principal, by monitoring the agent's behavior or setting appropriate incentives to avoid deviating behavior, and the agent, among other things, if they refrain from specific actions to the principal's detriment.

With M. C. Jensen and Meckling (1976), the perspective shifted noticeably to an inside look of the firm regarding the individual and his actions within the organization. Moreover,

other scholars also showed a growing interest in the importance of the individual and whose interaction within organizations. Significantly, the scholars underlined the behavior of the firm's employees, their interaction, conflicting goals within the firm, and its interplay with the firm's development. Finally, the recognition that the firm is not an actual individual but rather a "legal fiction" (M. C. Jensen & Meckling, 1976, p. 311) or mere "an artificial person" (Friedman, 1970, p. 33) supported the increasing focus on the inside view of the firm.

In explaining the emergence, functioning, and behavior of companies as a dynamic interaction process between the management and the resources available in the company, the capabilities of management came more clearly into the focus of scholars. Penrose (2009, p. 4) explained that the growth of companies is a dynamic interaction process that depends on the interaction of management with the company's available resources. Furthermore, Penrose (2009, pp. 75–76) referred to the close relationship between managerial capabilities and various internal company resources. Management's ability to develop ideas, experience, and knowledge decisively influences the company's capabilities and organizational routines in terms of innovation, expansion, or competitive advantage.

The contractually fixed delegation of decision-making authority to management leads to divergent interests between shareholders and managers, discretionary power in using firm resources, and incentives to maximize managers' benefit. For example, as a representative of modern management science, Baumol (1962) pointed to incentives for managers to maximize sales rather than profit for their benefit after achieving a minimum profit for shareholders. Similarly, Williamson (1963) highlighted the discretionary power available to managers using firm resources after securing a minimum profit for shareholders. This discretion can also be used for individual benefit maximization outside of financial salary compensation, for example, in the form of expenses, investments in office space, investments in employee training, or other expenditures. Marris (1963) considered separating owners and managers and their different objectives and developed a growth model. This model reconciles the diverging interests of shareholders seeking profits and high market share just like managers interested in high salary, power, status, and job security, through balanced growth of profits, sales, and assets. Moreover, H. Demsetz (1983) underlined that "management exercises more freedom in the use of the firm's resources than would exist if the firm were managed by its owner(s), or at least, if ownership interests were more concentrated" (p. 376).

Companies as economic organizations have enormous significance as explanandum in an interdisciplinary perspective because they shape human interaction as a work organization

and form a substantial part of the everyday life of employees, while contributing to developments in the economy and society. North (1992) pointed out that “institutions are the rules of the game in a society; more formally, they are the humanly devised constraints that shape human interaction” (p. 5). Thus, their relevance as a work organization in which people spend much of their time, their diverse manifestations, interaction with the economy, society, and politics, plus their significance for the future development of the economy and society, bring the corporation into focus as an analysis’ object from the perspective of various disciplines.

The approaches of the 1960s to explain the “inner life of companies” and their correlation with companies’ performance within the framework of various disciplines, also from interdisciplinary perspectives, continuously focused on internal resources critical for success and replaced the explanation attempts focused exclusively on exogenous factors (market, competition). Like Geus (1998) showed, the emphasis increasingly shifted to people as critical internal resources and determinants for companies’ performance, whereas scholars had previously focused on the efficient use of capital as a critical external factor of production. For many years, capital was a scarce commodity critical to success in industrial production. However, developments around the emergence of modern corporations and banks assuming financial intermediaries meant that supply exceeded demand. As a result, capital, now omnipresent, gave way to the internal resource of knowledge as a scarce and central factor of production and success.

These approaches emphasizing the individual are consistent with the progressive developments regarding knowledge and information society and the accompanying centering knowledge and appreciation of the man as explanatory factors and replaced the industrial society emphasizing capital as a production factor. Thus, knowledge and the individual’s ability to absorb, process, and use it replaced capital as the decisive production and critical resource factor. As Geus (1998) noted, this has significant consequences for society: “Those who have access to knowledge and know how to use it will be the New Rich, and those who have not will be the New Poor” (p. 199). Aggravating knowledge, unlike capital, cannot merely be accumulated or redistributed. The distribution of knowledge depends on the ability to absorb and process it.

A strong emphasis on the individual, information, and theoretically acquired knowledge characterizes the “knowledgeable society” (Lane, 1966, p. 649) in the post-industrial age. With the finding that the economic and social system has progressively evolved into a

knowledgeable society, Lane (1966) drew attention to the fact that the skills and abilities characterizing the industrial age have been replaced by changing ways of thinking, growth in theoretically acquired knowledge, and information, application of scientific criteria, and, in particular, by a greater emphasis on the individual together with changed decision-making processes oriented to objective standards. The post-industrial society centers on the individual, and information represents the critical resource. Theoretical knowledge occupies the position of pure muscle power, and education becomes the primary currency for social and economic advancement (Bell, 1976).

The various approaches to general management and organizational theories reflect the different stages of scientific orientation expressed by the view of man as a workforce and the image of the business organization valid at that time influenced by social structures. Distinguishingly, the prevailing understanding of society, economy, politics, and science shaped the respective perspective on business organizations and employees. First, the bureaucracy approach of Weber (1922) laid the foundation for general management and organizational theories. For example, this approach reflects the industrial image of society, which was still rigidly hierarchical and military. Thus, the behavior was primarily oriented to rules and regulations, and was characterized by discipline and obedience influencing the scientific orientation.

The democratic awareness replacing the traditional personal rule form of the monarchy plus the industrial production oriented toward efficiency at the beginning of the 20th-century shaped the focus of early general management and organizational theories by emphasizing legally established and structured orders and systematic organization forms. For example, in this context, Weber (1922, pp. 124–130) defined various forms of rule and described the legal rule as the only rational form within bureaucratic organization forms, primarily within administrations. Moreover, he characterized this organization form by a systematic and structured regulatory framework with fixed responsibilities, instruction, and control mechanisms based on laws and orders without arbitrariness.

Technological change and the breakthrough to high industrialization with emerging mass production structures fueled the scientific analysis of a productive work organization considering a functional division of labor and separation of work steps as a solution for rationalizing work processes. As a pioneer of the scientific management approach, F. W. Taylor (1914) highlighted different findings on optimizing work processes for an efficient industrial organizational structure. He used the scientific method of experimentation to obtain insights

into the work process. His goal was to reorganize work in a functional division of labor and standardization and separate work planning from work execution to achieve a more productive work organization through scientific management and control of the work steps. This principle acquired wider recognition in a practical application through the automobile manufacturer Henry Ford, who structured the corporate organization of his automobile plants entirely within the framework of standardization, small-scale work steps, and rationalized work processes geared to mass production (Ford, 1922).

The main criticisms of the classics of the organization and management literature referred to the propagated rigid work organization based on rules and regulations forming an alternative direction within the organizational theory that increasingly oriented toward the human factor. Criticism of the rigid organizational structure focused primarily on the monotony of work organization, its predictability through reduction to small-scale work steps, and the loss of importance of human labor, which numerous critics, particularly in Taylor's work, saw as rooted in an equalization of humans and machines (Frey, 1913; Derksen, 2014). The alternative direction, in contrast, emphasized the human factor with its rights, duties, intelligence, and feelings (Derksen, 2014). These efforts were already expressed in criticism of Frey (1913), who formulated that "the human factor cannot be ignored in the industries" (p. 408).

Human relations research rests on the findings that working conditions influence the employees' work performance which changed the research focus to organizational members as a counter to the dehumanization of the Taylorian work organization. For example, Mayo (1930) emphasized "an 'atrophied individual' and an 'overdisciplined community'" (p. 156) as a consequence of Taylorian mechanical work organization characterized by exhaustion and monotony. As a result of the scientific studies conducted over several years, also known as the Hawthorne studies, Mayo (1930) appealed for the need to pay as much attention to organizational members and their needs as to industrial-organizational structure and related material research. He used the perception that working conditions significantly impact employee work performance to justify shifting the research focus.

The findings of the Hawthorne studies, as a pioneering research and trailblazer of human relations management theory, helped to create a view of the organization as a social system through interpersonal relationships and informal operational groups within the work organization. Based on the research findings, Roethlisberger and Dickson (1939) particularly accentuated the informal groups of employees and their interpersonal relationships as

interrelated actions of its members forming the organization as a social system. Thereby, they emphasized the importance of the informal operational organization within the formal for organizational performance and drew attention to non-monetary incentives shifting the emphasis field of general management and organizational theories on optimizing organizational structure to a concentration on organizational employees' needs.

In a time of social change and modifications in working life from predominantly mechanical work to office and administrative activities and services, the humanistic perspective emphasized the need for satisfied employees for the organization's performance by considering the personality structure and its perception and consideration by management. Thus, the organization's perspective as a community of people and management's commitment to this community of people with their ideas and interests became significant (Geus, 1997). In this context, Mayo (1949) emphasized the positive effects of dynamic group processes and social relationships on employee motivation and satisfaction and pointed to the relevance of good communication between employees and managers for job satisfaction and performance at the same time. Likewise, Argyris (1957) referred to the close relationship between the individual's personality structure and management behavior for work performance. In doing so, he placed the responsibility of an organization's management in the foreground to pay special attention to the employee's motives, needs and skills they learned over time, on which employee satisfaction and thereby the quality of the organization's performance relies.

Depending on emphasizing the individual with the desire for self-realization, the various management leadership styles – ranging from an authoritarian-controlling to participative management philosophy – differently influence employee's motivation and the resulting quality of work performance. McGregor (1960) developed the X-Y theories of management leadership styles highlighting the need to consider employees' self-realization desires. On the one hand, "Theory X" includes the traditional authoritarian controlling management philosophy prevalent at the time, which does not recognize the employee's needs and instead views the employee in a passive role as a recipient of instructions shying away from responsibility. On the other, the correct participative management philosophy of "Theory Y" responds to the desire for self-realization by giving responsibility to the individual. In his opinion, the correct participative management style focuses on the individual's motivation to participate in the organization to create a working atmosphere that supports the striving to achieve one's own goals and promotes the further development of employee's potential for the

company's benefit. In this way, active and motivated employees promote the effectiveness and success of the company.

If a leader's participative behavior generates commitment at the individual level according to the participative leadership style, this benefits positive feedback at the higher levels of workgroup or organization by creating an interacting organizational form. In an empirical approach, Likert (1961) further developed McGregor's approach and included characteristics of workgroups and organizations resulting from individual employees' commitment as a function of specific leadership behavior into his analysis. Like McGregor, Likert (1961) also rejected the prevailing traditional management philosophy and understanding of human behavior in work organizations and emphasized the relevance of participative management philosophy and the need for an interacting organizational form consisting of individuals with mutually supportive relationships. Another achievement is his development of the Likert scale, named after him, to measure attitudes.

Differential survivability of companies on the market as a result of the Great Depression and its implications in the form of numerous company bankruptcies, a decline in industrial production, rising unemployment, banking crises, and an increase in economic hardship and social and political crises in the late 1930s led to the development of the first approaches of behavioral decision theories in the field of general management and organizational theories with the view of companies as open action systems existing through the cooperation of their members as individuals with limited abilities and capacities as well as different motives. As a milestone of the behavioral science research perspective and as one of the most successful works of management literature in the 20th century (Bedeian & Wren, 2001), the pioneering work of Barnard (1938) understood organizations as a system of actions and interactions of different individuals. Accordingly, the cooperation within this system offers individuals the opportunity to overcome their limitations against the background of recognizing a common group goal. Through the cooperation of individuals, non-personal organizational goals can be achieved, providing the outcomes and incentives that satisfy the individual needs of organizational members by striving to fulfill the joint organization goal.

Managers' decisions thus play a crucial role in the functioning and survival of an organization, as their task is to build bridges between organizational goals and the individual needs of organizational members. In line with Barnard (1938), the management decisions made within the organization are primarily aimed at its long-term preservation. Therefore, they are guided by contributing to organizational goals and seek to incentivize individuals through

satisfying their needs when supporting collective action to contribute to goals. In contrast to individual action, cooperative action is considered more effective, where organizational members are interested in achieving organizational goals due to specific incentives.

The decision-theoretical approach of Barnard (1938) focused on the decision processes to improve rationality despite the background of limited cognitive and informational capacities and served as the basis for developments in the behavioral theories of organization in subsequent years. H. A. Simon (1947), March and Simon (1958), and Cyert and March (1963) took up this decision-theoretical approach and extended it to a comprehensive general behavioral, organizational theory. By focusing on organizational decision processes as primary units of analysis, these theories are composed of incomplete information about all consequences of alternative actions, the inability to evaluate future events fully, and ignorance of all available alternatives. With limited cognitive and informational capacities and abilities of the human being as a basic assumption of this behavioral science research perspective, individuals, even if an optimal decision cannot be achieved, nevertheless strive to improve rationality within their decision process. Among other things, this goal shall be reached by selecting and reducing information in the context of conscious attention guidance and a habitual, standardized routine-like decision-making in repetitive decision situations.

Organizations simplify the decision-making situation by presenting a framework for how information can be processed, thus helping to reduce uncertainty and complexity. With the leitmotifs of bounded rationality and decisions under uncertainty, H. A. Simon (1957a) and March and Simon (1958) saw organizations as an instrument for simplifying the decision situation for individuals and groups because they improve rationality in the decision process. Organizations as information-processing systems achieve this by providing the framework for channeling, filtering, and centering information through, for example, division of labor, the definition of subgoals, establishment of routines, hierarchies, and communication reconciling the formation of expertise and individual action. Thus, the characteristics of the organization influence decisions and help make uncertain and complex decisions more manageable.

The process view of organizations regards organizations as consistent decision-making processes that achieve a jointly preferred decision-making state through interaction and negotiation, enabling routine decision-making and reducing uncertainty. On this basis, Cyert and March (1963), with their behavioral theory of the firm, developed an approach that describes organizations through continuous decision processes. However, this processual view of an organization consists of various individuals (like owners, managers, employees) with

diverse and sometimes divergent goals with conflict potential. Compensatory arrangements, such as monetary compensation or social recognition, can induce individual single groups to forgo individual goals to resolve conflicts, work out common coalition goals, and achieve a jointly preferred decision-making state through interaction and negotiation in this way. The two scholars understood the jointly preferred decision state to facilitate routinized decision-making as processing information and observing the environment taking place in templates based on experience and avoiding uncertainty. Nevertheless, in a complex, dynamic, and uncertain environment, this preferred organizational decision state is unstable but must constantly adapt to changing circumstances and be negotiated continuously.

The transformation of uncertainty into provisional certainty as a feature of the decision-making process resembles the view of other disciplines, which recognizes the bounded rationality of individuals and considers decisions as a possibility to concretize the organizational environment reducing uncertainty. Thus, social systems communicate through decisions and, as a consequence of the decision-making process, construct their own organization's world in this way, following the sociologist Luhmann (2000). In his view, one decides in favor of something and decides against something else, thereby mitigating uncertainty by concretely defining the organization's reality.

With the recognition of the paradigm of bounded rationality, a processual, biological-evolutionary understanding of organizations developed, focusing organizations on the level of its individuals and the activity-oriented, dynamically driven processes of adaptation and change of organizations in interaction with the environment for the formation of new properties and structures. A well-known representative of this direction is Weick (1969, 1995), who focused on micro-processes in the organization and described organizations in an activity-oriented manner as a dynamic sequence of the three central processes "design", "selection", and "retention", which go back to Darwin (1859). In a continuous stream of events of processual action in organizations, actions are analyzed in retrospect, given meaning, and subsequently stored as knowledge of the organization. This generation of meaning by decomposing experiences into cognitive units, enriching them with shared understanding through interaction, and focusing on establishing the certainty of expectations takes place ceaselessly as an organizational process in a dynamic environment forming new properties and structures. Thus, this perspective forms the basis for explaining the need for flexible and regular strategy adjustments in a dynamic (competitive) environment (Abatecola et al., 2016) and is only just

beginning to emerge as a modern Darwinian orientation in management and organizational research with the resulting research questions and findings (Hodgson, 2013).

An incessant emergence of new technologies coupled with an unprecedented flood of information through modern communication technologies, among other things, characterized the age of the information and knowledge society by a constantly changing, demanding, uncertain, and unpredictable environment with complex interrelationships exposing the persistent organizations' existence and the related management activity to the need for adapting flexibly. In this complex and volatile environment, companies are subject to the perpetual compulsion to change and adapt for the sake of survival (Geus, 1997). Against this background, critics of the organizational and management literature claim that existing approaches are ineffective because they create rigid and inflexible organizations that cannot meet the demands imposed by the environment (Freedman, 1992).

There is a normative requirement for a learning organization to ensure the continuity of the organization through a processual character focused on constantly acquiring, expanding, and enhancing competencies. Thus, a flexible and responsive organizational structure must enable the organization to keep pace with constant change through organization-wide knowledge as a management task and behavior, thereby ensuring the organization's continuity (Senge, 1997). The processual nature of a learning organization puts the company in a better position to survive and evolve in a world that cannot be controlled. The constant goal of optimizing one's organization through the acquisition and enhancement of competencies describes an understanding of an organization that favors and drives change and advancement by viewing the organization as a "flow" (Geus, 1997).

In a complex, rapidly changing, and interactive environment with contradictory requirements, a systemic view of organizations, is needed for long-term existence on the market, which holistically understands the company consisting of many units and does not analyze details in a circular understanding. Senge et al. (1994) saw systemic thinking as the solution to effectively manage the information overload and the complexity and uncertainty in the age of constant change. Similarly, Savory and Butterfield (1999) also postulated for taking a systemic view of the organization by managers, since the underlying holistic goal orientation of the organization involves numerous variables, any single component of which cannot be ignored by taking a reductionist view of a subset of the organization. In this context, Senge (1997) also spoke of the need for a circular understanding of business reality that does not view the influence of actions in an egocentric and linear way but rather understands it in a

transboundary manner as a product of reciprocal relationships and processes, including place and time. For this purpose, a holistic view rather than the composition of individual subsystems is crucial.

Recognizing the inadequacies of a traditionally inert and rigid understanding of organization and management in a world characterized by complexity and change, effective management requires a holistic view instead of considering individual organization's parts for capturing the complexity of systems. Accordingly, the system's dynamics as a whole and the order created by the interaction of its parts form the basis of the holistic view, as opposed to the reductionist view of individual system components and their analysis (Bertalanffy, 1968). Therefore, the holistic organization's view as an open system is an alternative concept to the traditional understanding of organizations and management by building on the understanding that the unpredictable behavior of natural systems cannot be described in a simple linear cause-effect relationship (Freedman, 1992).

The systems approach of organizations accepts the interaction of everything and conceives the organization "as a kind of living organism" (Freedman, 1992) that organizes itself through feedback and is in constant dynamic exchange with its environment. Within this dynamic exchange-dependence relationship, an environment and the systems' reactions interact through feedback effects (Bertalanffy, 1968). Thus, based on open systems theory, Katz and Kahn (1966) formulated an organizational model that contemplates the organization as self-organizing, unpredictable, and endowed with the capacity to generate new characteristics and elements to maintain the organism in a constant dynamic adaptation process to changing environmental conditions. As a result, Bertalanffy (1968) stated that systems thinking follows the legalities of an interacting environment being in a permanent dynamic exchange with the systems.

Organizations characterized by successful survival strategies are "complex adaptive systems" (Waldrop, 1992) and stand in the tradition of an understanding of science that propagates the findings of Darwinian evolutionary theory in terms of survival of the fittest, in which the organism that can best flexibly adapt to a dynamically changing habitat survives (Darwin, 1859). The starting point of this approach is the acknowledgment of dynamically complex structures and adaptation processes of the physical world in the context of delayed cause-effect and feedback relationships as characteristics of open systems aiming at the design of improved organizational forms as well as control and steering mechanisms in companies in the form of strategic change concepts. For the survival of organizations, open systems theory

fundamentally emphasizes the need to respond appropriately to dynamic change and the complex and uncertain environment of the organization with dynamic capabilities through focused strategic management (Sanchez & Heene, 1997). This response requires that the organization as a flexible system respond appropriately to the changes in environmental states (Ashby, 1956).

Adapting to changes features effective and efficient organizations, drawing on a particular set of resources and competencies to achieve strategic transformation. Thus, creating effective and efficient organizations depends on adapting quickly to change, refining and developing their internal resources (Teece et al., 1997). Therefore, resource endowments and competencies of an organization significantly influence the likelihood and extent of adaptability to a turbulent environment in the context of strategic change and its impact on performance (Kraatz & Zajac, 2001). Insofar, resource differences of organizations are crucial for the entrepreneurial capacity for strategic change and the change's performance impact due to strategic transformation (Zajac et al., 2000).

The diversity of strategic change outcomes as an ongoing process of organizations adapting to their environment in form, quality, and condition (van de Ven et al., 1995, p. 512) is due to the different nature of the firm's internal resources and the accompanying active role in the transformation of resources. For the ongoing adaptation to the rapidly changing environment, each organization requires "a bundle of linked and idiosyncratic resources and resource conversion activities" (Rumelt, 1984, p. 561). Organizations have an active role in that sense, enabling them to influence their orientation through changes in the current and planned use of resources to interact with the environment to achieve their goals (Hofer & Schendel, 1978).

Building on the approaches to the origin and function of the firm, industrial organization (IO) or industrial economics has emerged as a field of research in microeconomics that considers firm performance and the way firms compete in the market, particularly in light of the observable structural characteristics of industries. The starting point is the concentration on the functioning of markets by looking at the structural characteristics of industries and the corresponding competitive position of firms under the assumption of imperfect competition (Cabral, 2000). The pioneering analysis of Chamberlin (1933) and Robinson (1933) locating the reasons for imperfect competition in product differentiation and the associated individual demand curve, as well as Mason (1939), considering the influence of firm size on competition, served as the basis for the further development and concretization of the structure-conduct-

performance (SCP) paradigm by Bain (1956). The latter established a direct link between an industry's observable structural characteristics that influence (strategic) behavior, determining companies' measurable performance in that industry (Börner, 2005).

The early phase of strategic management, taking up IO concepts, focused mainly on external determinants of industry structure and its linked consequences for strategy formulation. As a fundamental paradigm of industrial organization (Barney & Clark, 2007), Porter (1980a) took up the external industrial structural characteristics of the SCP paradigm as a premise for his five-forces framework of competitive analysis in the context of corporate governance and transferred them to the field of strategic management. In this way, he developed a closed conceptual framework for competitive analysis and strategy formulation (Börner, 2005).

The market-based view emphasized the feedback of industry structure determinants and the firm's strategic behavior in using IO concepts as the basis for the firm's market positioning toward competitive forces to explain different firm competitiveness and performance. Thus, fundamental to the framework is the assumption of feedback effects of firms' strategic behavior on industry structure, for instance, in the form of firm innovation raising or lowering entry and mobility barriers (Porter, 1981, p. 616). Consequently, Porter (1981) pointed out "it should be clear that there is gold to mine in applying IO concepts to strategy formulation" (p. 617). Whereas the early phase of strategic management essentially focused on external determinants, the development of the resource-based view as a countermovement, which will be discussed in more detail in the further course of the dissertation, focuses on internal factors as reasons for the different success of companies.

The relatively young discipline of modern strategic management as a field of research emerged in the 1960s through pioneering work aimed at explaining sustainable competitive advantages in the context of competitive structure analysis resulting from the interplay of a particular market and industry structures as external factors and the firm's internal strategic decision-making behavior, including its organizational design (Rumelt et al., 1991). Increasingly, there was a growing pioneering interest in science and practice in the systematic identification of the competitive structure in the industry and the related analysis of the relevant decisions and actions to position firms in their respective industries to create sustainable competitive advantage (SCA). In particular, the works of Chandler (1962) demonstrating that structure and strategy linked inextricably in a company, Ansoff (1965) developing concepts and instructions for strategic decision-making and recognizing competitive advantage as an

essential element of strategic management, and Learned et al. (1965) emphasizing the need to regard environmental changes and the resulting opportunities and risks on the one hand, and the analysis of a firm's internal strengths and weaknesses on the other, are considered as landmark works of strategic management and business planning.

Different perspectives, approaches, and the resulting emphasis on different focal points characterize the research discipline of strategic management reflected in a broad and diverse understanding of content and methodology (G. R. Carroll, 1987), which nevertheless rest on a common basic understanding. Notably, for instance, a lack of a unified definition of strategy expresses the diversity in the management literature. For example, Chandler (1962) defined strategy "as the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals" (p. 13). On the other hand, Mintzberg (1978) understood strategy as "a pattern in a stream of decisions" (p. 934). Likewise, Porter (1980a) highlighted competition by defining strategy as "a broad formula for how a business is going to compete, what its goals should be, and what policies will be needed to carry out those goals" (p. xxiv). By prioritizing organization behavior in turn, Ansoff et al. (2019) defined strategy as "a set of decision-making rules for the guidance of organizational behavior" (p. 17). However, it should be noted that inherent in this diversity is a common basic understanding of strategy as the fundamental orientation of an organization that guides its decisions and actions, significantly influences its development, and is intended to ensure its resilience and success.

The heart of strategic management aims at aligning the company to adapt to external and internal changes of conditions to create and maintain a sustainable competitive advantage (Helfat & Peteraf, 2009; Teece et al., 1997; Teece, 2007) in order to be financially successful and ensure the long-term company's survival by learning from the experiences of the past. Various conceptualizations have emerged, all of which address how strategic management can achieve superior performance. For example, one of them is the profit-maximization theory, which focuses on maximizing a firm's long-term financial profits to gain a competitive advantage over rivals as the main objective of strategic management. Accordingly, Friedman (1970) stated:

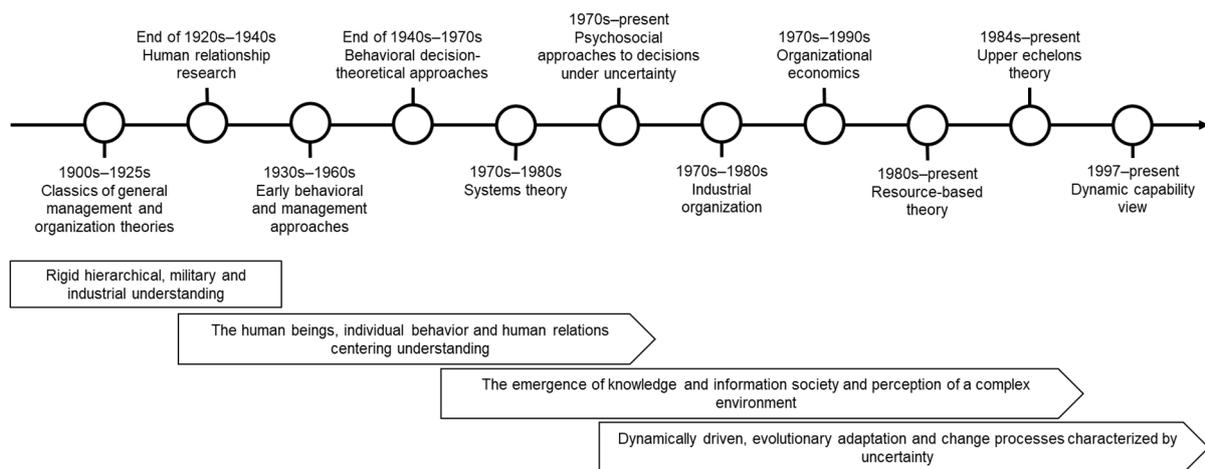
'There is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception fraud'. (p. 126)

Another concept refers to the survival-based theory, which links the ability of companies to survive to their adaptability in a permanently changing environment, and considers the survival of the company in competition as the primary determinant of strategy (Rumelt et al., 1991). In contrast, the learning-based theory emphasizes knowledge enhancement and learning progress based on feedback loops with the reality of a complex world. Within this perspective, strategic management aims to derive knowledge from past actions, assess it in terms of performance, and use it subsequently in terms of possible adjustment of business strategy (Anderson et al., 2009).

The historical development phases of the research discipline of strategic management on the time axis rest on different substantive emphases of the approaches and research topics introduced to explain a competitive advantage and firm performance. As a precursor, the central pioneering work of classical management theory on cooperation and management function in the organization of Barnard (1938) at the end of the 1930s, on which the subsequent work of strategic management is based (Hoskisson et al., 1999), prepared the foundation phase. In the foundational phase of strategic management in the 1960s and 1970s, researchers were mainly concerned with the practical elaboration of best practice approaches (Guerras-Martín et al., 2014) and how strategic management could best adapt to a changing environment by leveraging the internal competencies of the organization (Porter, 1983). Emphasis was placed on balancing internal strengths and weaknesses with external opportunities and threats. The subsequent phase in the late 1970s and early 1980s, through the representations of Porter (1980a), focused substantially on structural conditions such as market and industry membership as factors affecting firm performance (Guerras-Martín et al., 2014).

By recognizing the need for a processual perspective in a dynamic environment and extensive growth of researchers, the 1980s contributed with significant developments to the emergence of strategic management as an independent research discipline with different research streams. Accordingly, the publication of Schendel and Hofer (1979) criticized the previously emphasized business policy perspective of management as too restrictive against the background of a dynamic business environment, introduced a processual perspective into the research field with the description of an ongoing strategic management process. In addition, the first publication of the world's leading journal in strategic management in 1980, the *Strategic Management Journal* (SMJ) by the Strategic Management Society, gave an enormous boost to the development as independent research discipline as the powerful medium for the ideas exchange of many researchers. At the same time, the groundbreaking publications of

Figure 2.1: Timeline of Strategic Management’s Development



Note: The figure illustrates major milestones and tendencies in the development of strategic management as a research discipline. In this context, the tendencies shown are not considered separately and conclusively but complementary and ongoing. Furthermore, the developmental streams reflect the prevailing understanding of society, business, politics, and science, emphasizing its interaction as an object of analysis with its environment.
 Source: Own illustration.

Wernerfelt (1984) and Barney (1991) drove the development of a new research stream of strategic management, the resource-based view (RBV), based on the assumption that firms possess a distinctive bundle of resources to achieve sustainable competitive advantage.

Strategic management, previously focused on external characteristics of industry structure in achieving competitive advantage as a line of research colored by industrial economics, evolved with the RBV and its sub-concepts back to a perspective that emphasizes internal firm factors in achieving and explaining competitive advantage and different strategic positioning. As RBV’s sub-streams and enhancements, the concepts of strategic leadership, strategic decision theory, and the knowledge-based view of the company arose in close connection with the RBV (Hoskisson et al., 1999). In this context, the view on internal factors explaining competitive advantages unites the sub-streams with the RBV, for example, by viewing strategic managers as the company’s resources and defining companies as heterogeneous knowledge units. Thus, heterogeneous internal resources mean that companies can pursue different positioning strategies to achieve sustainable competitive advantage. Later in this chapter, we will discuss this view in more detail. For a detailed and helpful overview of the historical development, the disciplinary roots, and the different schools of thought of strategic management that constitute the discipline, see Mintzberg et al. (1998) or Furrer et al. (2008). Figure 2.1 provides a summary overview of the milestones and trends in the development of strategic management.

Overall, the historical development of the research discipline of strategic management took place through ongoing advances and further developments along with three different main perspectives and the interplay of emphasizing various factors for gaining a competitive advantage. According to Hoskisson et al. (1999), the historical development can be described very vividly with the metaphor of a swinging pendulum. With each swing of the pendulum, progress and further development in the research field of strategic management were achieved. The perspective of the internal-external pendulum emphasizes internal and external success factors to generate a sustainable competitive advantage. This approach was extended by Guerras-Martín et al. (2014), adding with the macro-micro-pendulum the second perspective of consideration of the diverse approaches to this pendulum. By considering the company with regard to its environment and analyzing individual behavior and relationships of groups in the company, this second level illustrates that the success factors in competition can be on both the macro and micro levels. Finally, with the static-dynamic-pendulum, Schulte-Mattler (2019) introduced a third perspective on strategic management approaches. The static approaches intend to improve the company's status quo through adjustments to products, processes, or capabilities, aiming to improve the company's current circumstances. Dynamic management approaches, in contrast, target determinants that enable a company to respond to a constantly changing environment and adapt to new circumstances as quickly as possible by developing new products and services.

The different substantive focus of strategic management research, symbolized by the three separate and continuously moving pendulums, visualized the complexity of this research discipline resulting from the multidimensionality of strategic management and the corresponding strategy process considering different dimensions and their simultaneous interaction. Thus, strategic management is not one-dimensional but has to deal in a systemic perspective with the organization as a complex system at the center. According to that multidimensionality, the strategy process regards the influence of the firm's resource profile as the initial dimension. Therefore, the achievement of goals is determined and constrained by the firm's resource profile and is dependent on it (Collis, 1991). At the same time, the strategy process always takes place in interaction with the dynamic, complex, and uncertain characteristics of the organizational environment, which necessitate changing resources and developing new capabilities to adapt to changing circumstances (Teece et al., 1997; Eisenhardt & Martin, 2000). Helfat et al. (2007) describe this as the "capacity of an organization to purposefully create, extend, or modify its resource base" (p. 4).

At its core, the construct of the strategy involves the permanent compulsion to adapt and change to achieve a (sustainable) competitive advantage and thus ensure the organization's long-term survival in a constantly changing environment. In a globalized business environment with intensified competition, fast-moving technological, political, and economic environments, and a continuous increase in complexity due to interdependencies, Geus (1997) concretized that long-lived organizations are characterized by continuously renewing themselves over many generations and adapting quickly to fundamental changes in the environment. Thus, as identified by Mintzberg (1978, p. 942), strategy formation results from an interplay of three fundamental forces: first, a continuously but irregularly changing environment; second, an organization that attempts to stabilize its actions in this environment; and third, management that must mediate between these two opposing forces in order to maintain organizational stability on the one hand and to respond to environmental change by adapting on the other.

Present strategic management theories are essentially concerned with finding determinants that lead to sustainable competitive advantage and distinguish it from superior performance based on differentiating concepts' characteristics. Since research on competitive advantage is the core of strategic management research and is central to this discipline (M. A. Peteraf, 1993; Ghemawat, 1986), a clear distinction from the related concept of superior performance is necessary to draw unambiguous conclusions. Accordingly, the construct of competitive advantage is a relational concept that requires a reference point, which is why a company must always be viewed compared to its competitors to make robust assessments (Fiegenbaum et al., 1996). In contrast to the relational construct of competitive advantage, performance as an absolute measure of a company's success does not require a reference point (Ma, 2000). Instead, sustainable performance can result from competitive advantage – but it is not a necessary inference.

As the figure above illustrates, there are numerous approaches for analyzing the determinants of superior performance and outstanding competitive advantage, mainly characterized by different perspectives and emphases. However, the remainder of this chapter uses selected strategic management theories to examine a perspective that focuses on competitive advantage and performance and the influence of management, including its efforts to differentiate itself from the competition. In particular, the role of management in its formative and creative function as a decision-maker in strategy definition, including the resulting fundamental order for attainment in the form of business models geared toward the

generation of competitive advantages and the influencing of company's performance, will be considered.

This dissertation reflects the interdisciplinary and pragmatic nature of strategic management research by, on the one hand, discussing the complexity and multidimensionality of the research area while presenting the historical development and the associated emergence of approaches of different tendencies and schools of thought. Otherwise, the approaches presented serve to answer the posed research questions and clarify the associated phenomena based on the theoretical concepts. The introduction of the discussed approaches, including the classical contributions as antecedents of research discipline, contributes to understanding the research field and its development that functions as the theoretical basis of this thesis. Notably, they raise awareness that strategic management research involves wide diversity and complexity with perspectives and insights from different academic disciplines. The research field uses economics, psychology, and sociology knowledge across disciplines to answer questions about creating a sustainable competitive advantage and superior performance.

By recognizing the interdisciplinary nature of the research field, this thesis focuses in the following on how firms use their internal resources to attempt to generate sustainable competitive advantage and superior performance and the influence of the business model as an operationalization of the strategy and basic order for the use of internal resources. To this end, the resource-based view and its further recent developments are used to explore how organizational resources can affect competitive advantage and firm performance during value creation. Within the framework of resource-based theory (RBT) "as a key perspective guiding inquiry into the determinants of organizational performance" (Crook et al., 2008, p. 1141), reference is made explicitly to the natural and contingent resource-based view as well as the core competency, knowledge-based and dynamic capability view. Furthermore, the specific role of top management in business model design and organizational performance spawned by the previously presented approaches is examined in more detail. Finally, the influence of management's capabilities and attributes, human bounded rationality, and associated cognitive biases are key aspects of business models' strategic positioning and design and the resulting outcome.

2.2 The Resource-Based Theory: Heterogeneity of Firms

The resource-based theory (RBT) is a dominant and widely accepted perspective in strategic management research (Priem & Butler, 2001a; Newbert, 2007), with antecedents dating back to the early days of strategic management, developed emphasizing a firm's internal resource-based view for performance and competitive advantage in the 1980s. It goes back to the firm's ideas as an accumulation of productive resources that ultimately limit growth and its speed formulated in work, as outlined in "The Theory of the Growth of the Firm" by Edith Penrose (1959). Similarly, P. H. Rubin (1973) viewed firms assuming that specific resource endowments characterize them. In the 1980s, Wernerfelt (1984) took these antecedents of the resource-based view and formalized them into a modern approach within strategic management. Wernerfelt (1984) emphasized that "resources and products are two sides of the same coin" (Wernerfelt, 1984, p. 171) and, in this way, drew attention to the indirect influence of resources on firm performance through products. Thus, he related a company's resources to its performance. He also pointed out the importance of so-called "resource position barriers" (Wernerfelt, 1984, p. 173). Possessing a specific resource gives its owner a competitive advantage over competitors who first need to acquire it. In the same year, Rumelt (1984), pointed to asymmetries in the resource endowment of firms and their impact on competitive differentiation, which gives certain firms a strategically sustainable competitive advantage through difficult imitability, in his paper "Towards a Strategic Theory of the Firm" paper.

Other essential contributions that quickly followed further developed the resource-based view and documented the growing interest in this perspective to explain the competitive advantage and superior performance due to unique firm resources as a distinction from competitive analyses. For example, the contribution of Barney (1986) highlighted the need to consider a firm's unique capabilities and skills, as opposed to competitive environment analysis, in strategic decision-making. Alternatively, R. Reed and DeFillippi (1990) pointed to the emergence of competitive advantage through causal ambiguity based on a lack of understanding of the cause-effect interactions between resources and competitive advantage. Furthermore, they underlined that those competitive advantages are hard or impossible for competitors to imitate due to tacitness, complexity, and specificity of resources. Thus, the resource-based view transformed the traditional market-based explanation of competitive advantage and superior performance of firms due to entry barriers and competitive constraints

to a view that attributes superior performance and competitive advantage to unique and resources difficult or impossible to imitate.

The first steps toward transforming the resource-based view into a full-fledged theory proceeded with the definition of resources and compilation of critical categories by Barney (1991), clarifying with the VRIN framework that not all firm's resources form the basis for sustainable competitive advantage (Mintzberg et al., 1998, p. 277). Barney (1991) defined a firm's resources as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm" (p. 101) that enable the firm to design and pursue effective strategies. With physical capital resources, human capital resources, and organizational capital resources, he distinguished three categories of resources, demonstrating that companies are a bundle of resources, including tangible and intangible capabilities. Barney (1991, pp. 105–112) identified a total of four characteristics that a resource must contain to offer the potential of a sustainable advantage – the so-called VRIN framework. Accordingly, resources are strategic if they enable an improvement in efficiency and effectiveness and are valuable (V) if they are rare (R) or unique and in demand, if they are imperfectly imitable (I) due to unique historical conditions, causal ambiguity, or social complexity, and if they are non-substitutable (N).

Internal consistency, deductive inference, and law-like generalizations are the three crucial characteristics of a theory. Following Hunt (1971, p. 66), it is internal consistency and deductive inference, as well as law-like generalizations in the context of specifying the relationship between variables, through which predictions can be made about the (non)occurrence of the relationships. At the same time, a derivation of hypotheses and ensuring empirical testability in operationalizable terms is feasible due to the lawful generalizations. In this way, the goal of a theory is "to increase scientific understanding through a systematized structure capable of both explaining and predicting phenomena" (Hunt, 1991, p. 149). Accordingly, with his remarks, Barney (1991) created "a systematically related set of statements, including some lawlike generalizations, that is empirically testable" (Rudner, 1966, p. 10) as the hallmark of a theory.

In addition to Barney (1991), the seminal work of other researchers in the same year also contributed to outlining the basic tenets of RBT by emphasizing different types of resources and the relevance of a resources' wide diversity. Among them, J. S. Harrison et al. (1991) emphasized the importance of different rather than similar resources between acquisition and target companies to produce valuable synergy effects in corporate acquisitions.

Alternatively, Castanias and Helfat (1991) highlighted top management expertise and Fiol (1991) a shared and meaningful organizational identity as critical resources that can constitute the basis for competitive advantage. Thus, the year 1991 with these seminal contributions “appears to have marked a shift from the introduction phase to the growth phase of the RBT” (Barney et al., 2011, p. 1300).

In the context of the growth phase, the subsequent years of 1992 and 1993 sharpened the long controversial and incoherent profile of RBT through further development, including the exploitation of synergies with other research areas and the description of key concepts. Mahoney and Pandian (1992) further developed the approach by suggesting using some value-added areas for research from organizational economics and industrial organization. Moreover, they pointed to the RBT’s potential to bring together the various research streams into a comprehensive theory of the strategic firm by understanding competitive advantage as “a function of industry analysis, organizational governance and firm effects (in the form of resource advantages and strategies)” (Mahoney & Pandian, 1992, p. 375). Likewise, later Oliver (1997) linked RBT to institutional theory, suggesting that resources and an institutional context, promoting the optimal use of superior resources like targeted training programs, management development programs, or interdisciplinary alliances for knowledge sharing are essential as complementary sources of sustainable competitive advantage. Kogut and Zander (1992) cited the concept of combinative capabilities as the goal-oriented generation and exploitation of knowledge to capture future market opportunities. They highlighted the relevance of knowledge as a resource for the company’s development.

The introductory phase of RBT did not distinguish between resources, capabilities, and competencies because it was not until its growth phase that a mutual and differentiated understanding of resources developed as a critical concept in theory to create sustainable competitive advantage and superior performance. Amit and Schoemaker (1993) were the first to distinguish between the overall construct of resources and capabilities and contribute to a further concretization of RBT. Accordingly, they differentiate resources “as stocks of available factors that are owned or controlled by the firm” (p. 35), whereas “*Capabilities*, in contrast, refer to a firm’s capacity to deploy *Resources*, usually in combination, using organizational processes, to effect a desired end” (p. 35, emphasis in original). Moreover, Hall (1993, p. 608) added to the concept by defining intangible resources as “‘assets’ or ‘competencies’” (p. 608). Thus, the key principle of RBT and any approach to strategy formulation lies in the “understanding the relationships between resources, capabilities, competitive advantage, and

profitability—in particular, an understanding of the mechanisms through which competitive advantage can be sustained over time” (R. M. Grant, 1991, p. 133).

Resources that form the starting point for formulating a value-creating strategy and differentiating from competitors to generate (sustainable) competitive advantage are diverse. As determined by R. M. Grant (1991)

the resources and capabilities of a firm are the central considerations in formulating its strategy: they are the primary constants upon which a firm can establish its identity and frame its strategy, and they are the primary sources of the firm’s profitability. (p. 133)

According to Barney (1991, p. 102), a company always has a competitive advantage if it implements a value-creating strategy based on its specific resources not introduced simultaneously by other potential competitors and thus differentiates itself from them. If, in addition, it succeeds in implementing a value-creating strategy in which current and potential competitors are also unable to copy the advantages of this strategy, this is a sustainable competitive advantage. The diverse spectrum of strategically valuable resources is evident in a possible human, physical, intangible, or financial nature (Amit & Schoemaker, 1993, p. 35; Hall, 1993, p. 609), whereby four interrelated conditions must be met for sustainable competitive advantage and associated higher profits (M. A. Peteraf, 1993).

The search for the firm’s internal factors that explain the diversity of firms and their varying performance due to heterogeneous resource endowments builds the core of RBT. Specifically, RBT dealt with finding firm-level determinants of organizational performance (Crook et al., 2008) to explain differences between organizations within similar markets (Hitt et al., 2016). Ultimately, any consideration of strategic management can be traced back to this goal of RBT: Heterogeneous resource endowment of firms leads to some firms creating more value than others (M. A. Peteraf & Barney, 2003, p. 317). Thus, firms with specific and scarce resources better suited for value creation possess a competitive advantage as an antecedent to financial performance (Foss & Stieglitz, 2012).

The usual empirical operationalization of competitive advantage reflects the close relationship between a firm’s competitive advantage and its (superior) performance by measuring competitive advantage using key performance indicators resulting from the firm’s internal resources and their use in a value-creating strategy. Competitive advantage is measured in terms of superior performance, e.g., high relative profitability (L. G. Thomas, 1986), superior

financial returns (Ghemawat & Rivkin, 1999), or positive differential profit above opportunity costs (M. A. Peteraf, 1993) as examples for key performance indicators. From the RBT perspective, competitive advantage arises whenever a firm exhibits superiority relative to its competitors because of a particular resource or bundle of resources that it has acquired or developed, thereby outperforming competitors.

A more general understanding of competitive advantage based on the critical importance of possessing internal strategic resources necessary for outperforming competitors comprises standard measures of competitive advantage not only limited to a pure profitability advantage. Standard measures of competitive advantage often rest on a firm's published accounting information (Barney & Hesterly, p. 33) as market share proportions (C. Wiseman, 1988) or sales measures (D. Miller & Shamsie, 1996), next to the classical profitability ratios. Therefore, the assumed general understanding of competitive advantage in the robust resource-performance relationship is composed of the decisive importance of the firm's resources as the potential of a company to outperform its competitors "in terms of rents, profitability, market share, and other outcomes of interest" (M. A. Peteraf & Barney, 2003, p. 313). The results of a meta-analysis of 125 studies of RBT support this assumption that organizations can increase their performance when possessing strategic resources (Crook et al., 2008), with Crook et al. (2008) additionally pointing to certain moderating factors that can strengthen or weaken this relationship.

As a theory of strategic management viewing idiosyncratic resources as a source of competitive advantage, RBT is not a theory of the firm, as some researchers like Conner (1991), state, but rather a theory of competitive advantage (R. M. Grant, 1991) and a theory of sustainable rents (Mahoney, 2001). RBT would have to answer questions about the firm's existence, tasks, and scope as a theory of the firm, but it does not (Priem & Butler, 2001a, p. 25). However, in terms of a theory of competitive advantage, RBT does contain generalized concepts and conditions for distinguishing when a firm's resources are, by their nature, a source of competitive advantage and when they form the basis for strategy design and implementation (Barney, 1991, p. 101). Defined in terms of a starting point for developing or expanding a competitive advantage by Amit and Schoemaker (1993) as "strategic assets" (p. 36) or by K. A. Smith et al. (1996) as "strategic resources" (p. 44), these resources are the "key determinants of firm profitability in an industry" (Amit & Schoemaker, 1993, Table 1, p. 36) according to a theory of sustainable rents. Thus, with the resource-based view of sustainable competitive advantage and superior performance, RBT complements the structure-conduct-performance

paradigm by providing an internal firm view as a source of sustainability of rents in the context of barriers to imitation (Mahoney & Pandian, 1992, p. 371).

As a dominant perspective in strategic management research, after the introductory and growth phase, RBT now has a large fundus of work with the widespread use of the theory term based on unambiguous concepts and the creation of various further developments so that “RBT has reached maturity as a theory” (Barney et al., 2011, p. 1303). Barney et al. (2011) confirmed the increasing acceptance and use of the term theory in the academic literature to indicate RBT’s transition into the maturity stage. Moreover, Foss (1998) pointed to the presence of clear and unambiguous concepts to which end the RBT’s central theoretical assumptions and law-based generalizations have been further refined, extended, and empirically tested over time. Furthermore, the well-known further developments of RBT with the natural resource-based view (S. L. Hart, 1995), the contingent resource-based view (Brush & Artz, 1999), core competency view (Prahalad & Hamel, 1990), knowledge-based view (R. M. Grant, 1996b), and dynamic-capability view (Teece et al., 1997), which we will present later in the chapter, as well as the integration of RBT into other research perspectives, explicitly into institutional theory through the publication of Oliver (1997), also plead for a particular scientific maturity of RBT.

The research interest of RBT initially focused on the relationship between a company’s specific resources and the creation of competitive advantage, now shifting to the exploration of explicit processes within theory like the reasons for the emergence of strategic resources and heterogeneous resource positions. However, this means that the development of RBT is not yet complete with the entry into the maturity phase. There are still certain sub-aspects of RBT that are less researched and not yet fully developed (Maritan & Peteraf, 2011), so efforts to specify further and define the specific criteria and processes for the existence of a sustainable competitive advantage are ongoing. For example, more explicit processes around the acquisition or expansion of strategic resources that will increase firm heterogeneity (Wernerfelt, 2011) or the fundamental emergence of firms’ heterogeneous resource positions comes to the fore as research focus as the core of RBT (Maritan & Peteraf, 2011).

Another measure of a theory’s maturity is the interest of critics, as well as addressing the criticisms by compiling and weighing them and resulting approaches for further research and concretization. For example, Priem and Butler (2001a) and Priem and Butler (2001b) did not see RBT as a theory of competitive advantage because of the imprecise definition of its core constructs. Therefore, they limited it to a theory of sustainability and called for a further

conceptualization of competitive advantage as an essential element of strategic management. Over the years, other authors also criticized the limited explanatory power of crucial constructs of RBT, including methodology and empirical evidence (e.g., Godfrey & Hill, 1995; Lockett et al., 2009). Of particular note is the article by Kraaijenbrink et al. (2010), which compiled the most prominent criticisms of RBT and concluded with a subjective consideration and evaluation of the issues. The review presents counterarguments to most of the criticisms. However, it supports the vagueness criticism of the basic concepts of resources and value and the restrictive nature of the concept of competitive advantage. Therefore, they suggested that RBT should be developed into a truly dynamic theory of competitive advantage that meets practice demands. Furthermore, Wu (2010) highlighted the importance of VRIN resources as the key to competitive advantage in a highly volatile environment.

The further central criticism of the RBT is mainly directed at the VRIN concept of resources, which, against the background of a lack of a clear description and empirical research on the differentiation of companies, underlines, in particular, the difficulty of operationalizing and the associated limited validity of the measurement concepts as a quality criterion. Hoopes and Madsen (2008) confirmed the lack of a clear description based on empirical research of how companies differ and demanded an unambiguous, empirically-based definition of resources, capabilities, and their influence on competitive advantage. Arend (2006) also deprecated the inherent difficulty in defining the VRIN concept to operationalize the explanatory variables in the shape of the VRIN resource for empirical testing. He argued that VRIN resources could only be identified ex-post and not ex-ante, which would compromise scientific validity in the context of empirical testing and possible falsification of hypotheses. Following the criticism, Molloy et al. (2011) presented a theory-driven multidisciplinary assessment process (MAP) for measuring intangibles that combine economics approaches with psychology to explain why a particular intangible serves a firm's performance. As an innovative measurement approach, the MAP includes measurement and validation steps designed to increase credibility in measuring intangible resources and empirical results.

Contributions that deal with a retrospective assessment and evaluation of the current state of RBT, e.g., Barney (2001) or Crook et al. (2008), as well as its possibilities for further development and trends, characterize the maturity phase of a theory. For example, Williamson (1999) emphasized the need for diverse and mutually enriching perspectives on the move toward a "science of organization" (p. 1106), highlighting the importance of an interdisciplinary trend to understand complex economic phenomena. Alternatively, the

analysis of Phelan and Lewin (2000) suggested the integration of strategic and economic perspectives within an institutional framework as a way to further develop RBT in the face of criticism. Finally, Armstrong and Shimizu (2007) reviewed the status quo of empirical research on RBT and found little support for its main assumptions. Thus, they suggested a refinement of the conceptualizations of the key assumptions, for example, on the value and sustainability of resources, and referred to moderating effects of the industry and temporal dimensions. At the same time, the researchers emphasized the quality of the analyzed work and saw first progress in refining and developing the empirical research of RBT.

Contrary to the above-listed criticisms, the analysis of empirical research on RBT contains much evidence for the operationalizability of RBT, often researching on the relationship between a firm's internal resources and firm performance by pointing to when and how resources lead to financial performance, as already suggested by the meta-analysis by Crook et al. (2008). In the range of primary analyses, D. Miller and Shamsie (1996) operationalized the resource-based view and found when and how resources affect financial performance in their systematic study of major movie studios from 1936 to 1965. Their results showed the performance impact of both property-based and hard-to-imitate knowledge-based resources and the vital influence of the environmental context. For example, property-based resources in exclusive contracts with stars and theaters positively affected financial performance during stable and predictable periods from 1936 to 1950, whereas knowledge-based resources in production and coordination talent in the uncertain post-television environment of 1951 to 1965 favored financial performance. Chmielewski and Paladino (2007) demonstrated the empirical operationalizability of RBT and showed a significant positive relationship between performance and resource orientation and the dynamic of skills. Acquah and Chi (2007) used a dynamic panel data model to examine the relationship between firm-specific resources (managerial skills, employee value added (productivity), and technical competence) and firm-specific performance. They found that firm-specific resources significantly improved accounting measures (return on assets and return on sales) and market-based measures (Tobin's q).

Scientific discourse and criticism support the search for knowledge and help uncover errors and mistakes. They are essential in identifying weaknesses and suggesting solutions that can advance a discipline – which is also part of a certain maturity of a theory. This circumstance supports the assumption of this thesis that RBT is relevant to business administration and can explain firm heterogeneity and its impact on performance. Therefore, further scientific scrutiny

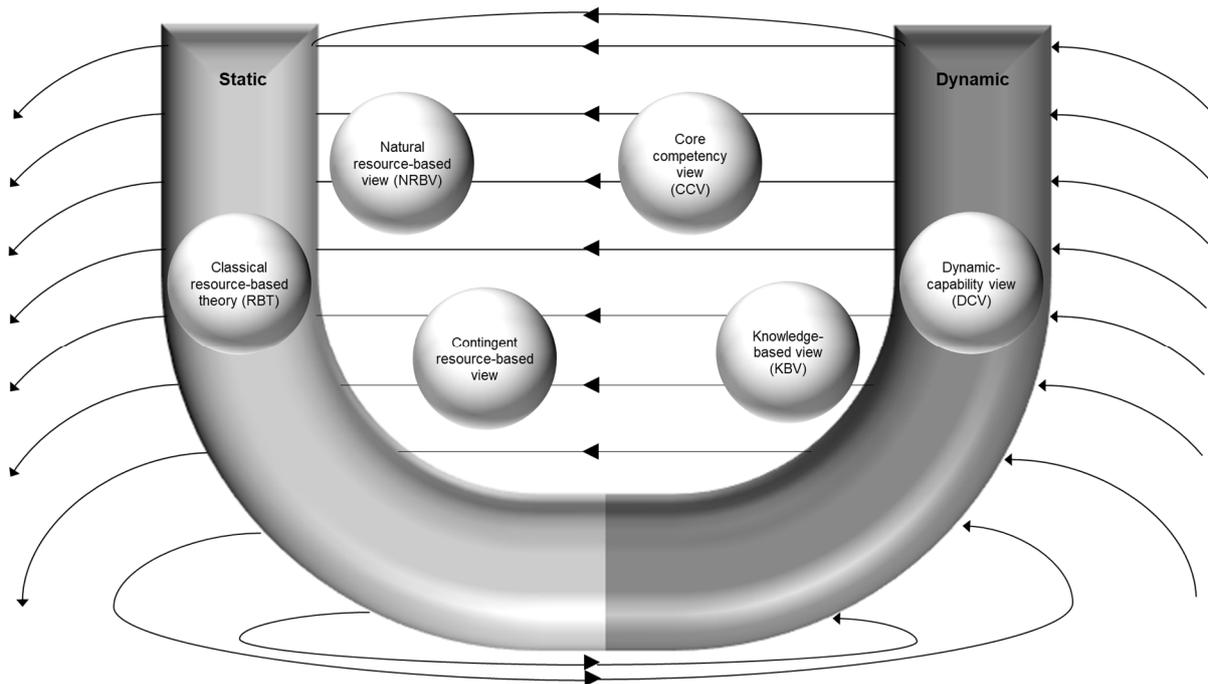
can be justified in light of the research questions underlying this thesis. In the understanding that “a firm has a *competitive advantage* when it creates more economic value than its rivals” (Barney & Hesterly, p. 33, emphasis in original), the business model of a company as an implementation of strategy reflects the totality of activities, how critical resources are used to create a sustainable competitive advantage and economic value. Moreover, it can help explain the heterogeneous nature of companies.

2.3 Enhancements of RBT: From a Static to a Processual Perspective

The VRIN framework of RBT is the basis of several analyses that further developed the approach and essentially differed in taking a static or dynamic perspective of strategic resources reflected by two opposite poles of argumentation within stable or process-oriented approaches regarding the generation of competitive advantage. Thus, the argumentation regarding the generation of competitive advantage differs into a more equilibrium-oriented, structural listing of conditions of strategic resources and the evolution-theoretical process perspective, which emphasizes capabilities to realize the potential of resources (Newbert, 2007, p. 124) as criteria for distinguishing between the two opposite poles. Moldaschl and Fischer (2004) specified that equilibrium-oriented approaches are inherent in assuming a relatively stable equilibrium. In this equilibrium, imbalances are the exception and are quickly transformed into a new equilibrium once they occur. In contrast, process-oriented approaches consider the effects of a dynamic environment and the active ability of management to exploit the existing resource combinations more efficiently than others.

In the different perspectives, competitive advantages arise from the structural perspective, as presented in research by Dierickx and Cool (1989) or Barney (1991) from the mere presence of VRIN resources and from the dynamic perspective from the ability to combine or coordinate resources as well as from the development of new capabilities, as raised from the publications of Teece et al. (1997) or Winter (2003). The different perspectives, presented here as opposites, have their reason for existence in explaining competitive advantage and firm performance, involving either structural or process variables. This principle is similar to the law of magnetism as one of the three elemental physical forces, in which opposite poles attract and equal poles repel. If opposing forces move toward each other, and energy is created between the two objects, that is greater than the energy in the magnetic object.

Figure 2.2: Different Lines of Argument of Main Enhancements Within RBT



Note: The figure illustrates significant further enhancements of the RBT (not an exhaustive overview), including their classification according to their argumentative emphasis. The emphases move between the classical perspective of a static and equilibrium-oriented listing of conditions as one pole and the more recent evolutionary, process- and dynamic-oriented pole of argumentation.

Source: Own illustration.

With this in mind, the energy created by the different lines of argument within RBT should also attract and complement each other to further explore its underlying issues. Figure 2.2 contains the classification of the following presented enhancements within RBT between the poles of a static and dynamic perspective. The overview given by Barney et al. (2011) of various key papers in developing the RBT and the research of Schulte-Mattler (2019) guided the presentation of the various enhancements of RBT in the following sections.

2.3.1 Natural Resource-Based View

The natural resource-based view (NRBV) of the firm as a structural resource-based perspective in RBT focuses on generating competitive advantage and improving financial performance against the background of constraining physical characteristics of the natural environment affecting the ability of resources and capabilities to contribute to a sustainable interaction of firms and their environment. The NRBV dates back to S. L. Hart (1995) and rests on the basic assumptions of the resource-based perspective as a “theory of competitive advantage based upon the firm’s relationship to the natural environment” (p. 986). He criticized that previous work ignored the impact of the natural environment on resources and capabilities to generate

competitive advantage (S. L. Hart, 1995; S. L. Hart & Dowell, 2011). According to his assumption, the natural environment can lead to constraints that significantly affect the firm's ability to create a competitive advantage. Thus, this approach is prevalent in the literature on the sustainable organization of firms (e.g., Johnsen et al., 2014 or Marshall et al., 2015).

S. L. Hart (1995, p. 992) developed a framework of environmentally sustainable economic activity based on three interrelated capabilities (strategies) with three critical and interconnected underlying key resources as sources of sustainable competitive advantage. As indispensable to environmentally sustainable economic activity, the capabilities and critical resources determine whether a competitive advantage will materialize. Explicitly, these are the capabilities of pollution prevention, product stewardship, and sustainable stewardship. The three are strategies for companies to add the three critical resources of continuous improvement, stakeholder integration, and a shared vision. As sources of sustainable competitive advantage, they achieve competitive advantage relating to cost reduction, getting ahead of competitors, and establishing a future position.

“Does it pay to be green?” (S. L. Hart & Ahuja, 1996, p. 30). This question is of critical importance in empirical research on the natural resource-based view, also known as the “‘pays-to-be-green’ (PTGB) literature” (Berchicci & King, 2007, p. 514), which concentrates on the motives for engaging in environmental protection by examining whether firm performance and competitive advantage are positively impacted. Berchicci and King (2007) studied the merit of environmental protection as a source of competitive advantage. They used environmental and business information disclosure to analyze contemporaneous changes in competitive advantage. In their study reinforced by industry growth, Russo and Fouts (1997) highlighted a positive relationship between environmental protection and economic performance. Clarkson et al. (2011) analyzed the motives for active commitment to environmental protection as part of a panel study. They showed that a “green” corporate strategy pays off in terms of improved performance.

Despite the appeal in the mid-1990s to consider the physical constraints imposed by the environment in achieving competitive advantage, consideration of exogenous factors interacting with firms' internal resources remains regularly absent in RBT (Aragón-Correa & Sharma, 2003, p. 72) and thereby in strategic management research. This fact is astonishing in light of the finding that environmental, economic and social challenges have only multiplied in the years following the formulation of the RBT, and in particular, that well-known threats such as climate change have only been peripherally considered in competitive advantage

research (S. L. Hart & Dowell, 2011, p. 1476). However, companies' interaction with the environment cannot be neglected in strategic management research but instead should be studied more. Only in this way is it possible to shed more light on the connection between a "green" firm strategy, e.g., concerning environmental protection and the creation of competitive advantages. As a result, companies, management, and owners get valid results that incentivize developing and pursuing a sustainable strategy and business orientation.

2.3.2 Contingent Resource-Based View

The contingent resource-based view, going back to Brush and Artz (1999), originates from the contingency theory of organizations, which is essentially concerned with the deliberate design of organizations against the backdrop of varying environmental demands to cope appropriately with changing economic and market conditions. Based on their research, P. R. Lawrence and Lorsch (1967b) stated that there is no one best organization. However, the conscious design of organizations must consider the ability to adapt more effectively to turbulent environments and cope with the environment's needs. According to P. R. Lawrence and Lorsch (1967a), modern organizations are increasingly expected to cope with heterogeneous environmental conditions, with high dynamic and relatively stable and standardized domains. They stated that the organization must combine these environmental requirements in a complex organizational system. Following this school of thought, competitive advantage and performance result from appropriate alignment of internal organizational factors in response to external conditions (Thompson, 1967).

The value of resources and capabilities is contingent on external factors as an additional dimension of VRIN resources that determine the ability to achieve a competitive advantage, considered by the contingent resource-based view. Brush and Artz (1999) assumed that the value of VRIN resources and capabilities depends on the environment in which they are used, so existing information asymmetries about external factors in the relevant market influence and determine the value of a resource. Thus, contingency resource-based enhancement with emphasis on the relevance of environmental factors in generating a competitive advantage introduces an additional dimension to VRIN resources not previously considered by classical RBT and the use of internally controlled resources to generate a competitive advantage.

Empirical studies considering the contingent argument in RBT confirmed the need to consider external environmental conditions and their changes in the form of dynamic

adjustments within the framework of a firm's active and forward-looking strategic positioning. Among them, Brandon-Jones et al. (2014) showed that external contextual factors have an essential role in the relationship between specific resources and capabilities and the resulting disruption-free performance in terms of supply chain resilience. In addition, Zajac et al. (2000) designed a model of dynamic strategic adaptation and tested it using a panel data set of 4,000 U.S. savings and loan institutions during a defined period. The results support their assumption that firms need to adjust their strategic orientation dynamically to changes in their external environment to avoid adverse performance losses. Similarly, Aragón-Correa and Sharma (2003) emphasized the need to consider the business environment in the context of a proactive environmental strategy for building and maintaining dynamic resources and capabilities on this basis. In doing so, the contingency resource-based view with the inclusion of environmental factors and their interaction with internal company resources moves away from a largely stable and structural existence of VRIN resources doing the first steps toward a process-oriented understanding.

2.3.3 Core Competency View

In a processual understanding of competitive advantage, the core competency view (CCV) links resources to a firm's specific competencies and distances itself from the classic and original understanding of RBT that the mere possession of unique, rare, and poorly imitable resources already leads to a competitive advantage often criticized in assessments of RBT. By picking up on this prominent criticism of classical RBT (Kraaijenbrink et al., 2010, p. 351), Prahalad and Hamel (1990) formed the CCV as another perspective of RBT, with a view of firm's capabilities critical to pool a firm's resources and to generate a competitive advantage resulting from the resources controlled by the company. Entirely in the sense of a process-oriented understanding, Prahalad and Hamel (1990) stated that top executives in the 1990s "be judged on their ability to identify, cultivate, and exploit the core competencies that make growth possible" (p. 79) compared to their working in the 1980s. Thus, assuming two companies with perfectly equal resource endowments, the specific capabilities of companies make the difference and are the source of competitive advantage and superior performance, enabling the company to perform an activity better than the competition.

The "chain of causality" (Freiling, 2004, p. 31) constitutes the difference between the classic and the core competency view in RBT by determining the interaction of heterogeneous resources, competitive advantage, and core competencies differently. Referring to behavioral

science and evolutionary and learning theory elements, the CCV highlights heterogeneous resources only as a starting point for competitive advantages and superior performance with the need to use them in a target- and market-oriented manner through core competencies to assert themselves against competitors. Consequently, the CCV emphasizes using resources in the context of action-related competencies to develop core products as “physical embodiments of one or more competencies” from which, in turn, end products are produced (Prahalad & Hamel, 1990, p. 85). Thus, core competencies “enable the organization to develop, choose, and implement value-enhancing strategies” (Lado & Wilson, 1994, p. 702), leading to competitive advantage and result in superior performance.

There is no universally accepted definition of core competencies in the literature, as indicated by the varying use of alternative terms for the concept of core competencies, ranging from a very concrete and narrow understanding to a general, broader understanding of core competencies. However, core competencies as valuable resources and capabilities of organizations, referred to by Selznick (1957) as “distinctive competence” (p. 42), are to a large extent critical to competitive advantage. Selznick (1957), a sociologist, was the first to tie the connection between core competencies and overall management capabilities by describing leadership as a responsibility and creative task that serves the organization’s self-positioning and goal achievement. Similarly, in a concrete and narrow understanding, Snow and Hrebiniak (1980) identified the distinctive competence of top management as critical to superior organizational performance. Other researchers speak more generally of organizational competencies (Hayes et al., 1988; Lado & Wilson, 1994), resource deployments (Hofer & Schendel, 1978), or firm-specific competence (Pavitt, 1991) as broader definitions of core competencies.

Core competencies are the integrated portfolio of interconnected skills, activities, and resources determined the uniqueness of a firm and unique customer benefit through difficult imitability, value-adding advantages, and differentiation and diversifying ability for ensuring exclusive access to a variety of markets and making a significant contribution to (perceived) customer value and value creation (Prahalad & Hamel, 1990; Hamel & Heene, 1994). For example, R. Reed and Defillippi (1990) understood core competencies as “particular skills and resources a firm possesses, and the superior way in which they are used” (p. 90). Furthermore, they are “the pool of experience, knowledge and systems, etc. that exist elsewhere in the same corporation and can be deployed to reduce the cost or time required either to create a new strategic asset or expand the stock of an existing one” (Markides & Williamson, 1994, p. 150)

as “potential *catalysts* to the process of accumulating strategic assets” (Markides & Williamson, 1994, p. 153, emphasis in original). Thus, core competence is an “organizational, repeatable, learning-based and therefore non-random ability to sustain the coordinated deployment of assets and resources enabling the firm to reach and defend the state of competitiveness and to achieve the goals” (Freiling, 2004, p. 30). Other scholars, like Hamel and Heene (1994), Prahalad and Hamel (1994), and Zhang and Lado (2001), also contributed to the understanding of core competencies with management, employee, and organizational approach of core competencies.

Competencies for achieving competitive advantage and superior performance are subject to constant dynamics and, contrary to a static state, contain a learning-based component based on efficient use of the core competencies available in the company as a harmonized combination of the use of a bundle of resources and capabilities. It is not deterministic that especially harmonized resources and competencies that led to a competitive advantage in the past will do so in the future (Barney, 1991, p. 103). In fact, the competency patterns required for competitive advantage are subject to continuous dynamics and change over time, so for efficient use of core competencies, constant monitoring and evaluation of relevant competencies is necessary (Lado & Wilson, 1994, p. 720). Hence, a continuous improvement process summarizes using, adjustments, and further developments of the available resource bundle for a company’s persisting advantage in the competition. Thus, “core competencies are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies” (Prahalad & Hamel, 1990, p. 81).

Core competencies persist in the advantageous use of available firm’s resources consisting of a wide range of human, physical, financial, and intangible characters and contribute to a firm’s strategic differentiation from competitors (Leonard-Barton, 1992). Advantageous use of physical resources, such as rare materials or equipment, lie, among other things, in an efficient, flexible, and customer-benefit enhancing mode of operation, or – in the case of financial resources – in excellent financial and investment activity. Core competencies involving the use of human resources rest, for instance, in the advantageous use of a wealth of experience gained over the years, the further development of skills through education and training, or in motivating and helping employees to interact with one another (Hafeez et al., 2002). Teamwork, perception of quality standards and customer service, and innovativeness are again functional skills that use intangible resources (Hall, 1993, p. 609).

Only a few empirical studies with a competency-based orientation can be found in the literature, but most existing studies emphasize the importance of (core) competencies in explaining the positive influence of competitive advantages and superior performance. Jeffers et al. (2008) showed that IT resources combined with other resources rely on unique competencies to generate a competitive advantage and superior performance. Ordanini and Rubera (2008) explained that exceptional procurement capabilities in process integration and efficiency contribute to performance and are further enhanced by using the Internet. Srivastava et al. (2001) connected the marketing aspect and core competencies in delivering competitive advantage and superior customer value. Using 159 acute care hospitals, Subramanian et al. (2009) found that specific organizational competencies contribute to market orientation, translating into superior performance. Leonard-Barton (1992) highlighted core competencies as a cause of strategic heterogeneity of firms in a market and drew attention to the fact that the uniqueness of firms compared to competitors can be traced back to core competencies. Marcus and Nichols (1999) emphasized the management's (learning) ability as the interface between the company and the environment to find sustainable solutions to environmental problems.

2.3.4 Knowledge-Based View

The knowledge-based view (KBV) in RBT emerged according to the two different theoretical argumentation chains of the founding approaches of R. M. Grant (1996b) and Spender (1996). Both emphasized the power of knowledge as the most crucial resource for the firm's strategy and are concerned with the central question of how company-specific knowledge can contribute to a competitive advantage by being integrated into the company. On the contrary, the differences in the argumentation chains of the two founders of KBV result from the different scientific backgrounds of the researchers (R. M. Grant, 1996b, p. 112). John Christopher Spender has a background in philosophy, psychology, and engineering, and Robert M. Grant defined knowledge as the most significant resource against his background in economics (Acedo et al., 2006, p. 629).

The approach of Spender (1989) mainly focused on the organization's collective knowledge and its acquisition and creation. He defined the organization as a "body of knowledge about the organization's circumstances, resources, causal mechanisms, objectives, attitudes, policies and so forth" (Spender, 1989, p. 171). Consequently, employees' activities manifest the organizations that themselves have no substance (Spender, 1989). So the acquired knowledge of the individuals of the organization is the core of a company's collective

knowledge (Spender, 1996), which exists in the company regarded as “distributed knowledge systems” (Tsoukas, 1996, p. 11).

The approach of R. M. Grant (1996b) mainly focused on individual knowledge integrated by the organization as a decisive input factor to generate a competitive advantage based on the production of products or services. The starting point is the individual because knowledge and learning take place in people’s minds, and organizations either learn only through the learning of their members, or new members come into the organization with new knowledge, which was not previously present in the organization (H. A. Simon, 1991, p. 125). The organization uses coordination mechanisms such as rules, work instructions, or routines to embed and integrate person-specific expertise into the organization (R. M. Grant, 1996b). In strategizing an organization to generate sustainable competitive advantage and superior performance, different knowledge bases and divergent capabilities in developing and accessing knowledge are the starting point for explaining competitive advantage and performance differences among organizations (DeCarolis & Deeds, 1999, p. 954). Therefore, knowledge is the primary source of an appropriate strategy (R. M. Grant, 1996b).

As an increasingly process-oriented perspective in RBT, KBV understands knowledge management as knowledge creation at the organizational level through the transmission and inclusion of knowledge and learning from the individual to organizational level, which can then be drawn upon as a critical resource for strategic positioning and competitive success as knowledge of the organization. Thus, underlying KBV is an understanding of “strategy formation as an *emergent* process” (Mintzberg et al., 1998, p. 3, emphasis in original) that views organizational knowledge creation through permanent generation, accumulation, adaptation, and application of knowledge as critical to superior performance (Nonaka, 1994). Therefore, knowledge management in transferring and integrating individual knowledge into the organization is an adaptive change process (Nonaka & Takeuchi, 1995). Compiling the organization’s knowledge is the firm’s primary task, for which architectural competencies (R. Henderson & Cockburn, 1994) are needed. Explicitly, the knowledge that exists in specialized form among individual and organizational members must be integrated via organizational capability at the collective level to generate competitive advantage and superior performance (R. M. Grant, 1996a). Thus, this organizational knowledge is the firm-specific collective intelligence (Pemberton & Stonehouse, 2000).

In general, various definitions in different disciplines characterize the knowledge concept that, specifically from the strategic management discipline perspective, views

knowledge as an essential and valuable intangible resource, not imitable by competitors, for achieving differentiation and uniqueness of the firm. Against the background of a multitude of definitions, the strategic management discipline perspective considers knowledge as “a shared collection of principles, facts, skills, and rules” (Stonehouse & Pemberton, 1999, p. 132). As a “system of knowing activity” (Spender, 1996, p. 55), an organization must be able to embed knowledge into the organization to be available to it in a non-personal and permanent way. Then, after knowledge integration, the knowledge is observable, for example, through routines or work instructions. Contrary to the classical static perspective of the VRIN framework (Barney, 1991) emphasized in the early days of RBT with the coexistence of tangible and intangible resources, empirical research quickly crystallized the emphasis on intangible rather than tangible resources as roots for sustainable competitive advantage and superior performance (Hall, 1992).

Knowledge exists in explicit and tacit (implicit) forms, differing essentially in their degree of codification. Different authors describe (e.g., Nonaka, 1994; Nonaka & Takeuchi, 1995; Spender, 1996) explicit knowledge as “knowledge about” as a rational, systematic, and formal component of knowledge. Against, implicit or tacit knowledge is closely related to experience and is intuitive, cognitive, and subjective. While the codification of explicit knowledge makes it accessible and reproducible in a structured form, the challenges of codifying tacit knowledge lie in the difficulties in communicating the knowledge; thus, it is usually only conveyed through training and experience. Tsoukas (1996) distinguished explicit knowledge as conscious and implicit knowledge as often unconscious and automatically retrieved knowledge at the individual level. At the organizational level, he further differentiated explicit knowledge as objectified knowledge of the organization and implicit knowledge as highly context-dependent manifested in practice as collective knowledge through organizational learning. Examples of explicit knowledge in organizations include policies and work or process documentation and customer databases. Implicit knowledge consists, among other things, of practical skills for dealing with a problem situation, intuitive approaches to solutions, or specific knowledge.

The underlying understanding of knowledge in strategic management makes a clear distinction between knowledge and information, which ties to divergent characteristics of the concept of information and leads to various types and levels of organizational knowledge. Knowledge is gained from information, and we can learn from information (Dretske, 1981). While information flows, knowledge emerges as an act of human action from this information

flow and must be organized (Nonaka, 1994). Against this background, several authors differentiated various types and levels of organizational knowledge as an intangible resource with the potential for sustainable competitive advantage. A good typology of organizational knowledge is that of Whitehill (1997, p. 623), who distinguished six different types of knowledge with habitual knowledge (know how?), scientific knowledge (know why?), coded knowledge (know what?), process knowledge (know when and where?), collaboration knowledge (know who?), and communal knowledge (care why?).

The studies presented as examples for the numerous empirical studies on the knowledge factor as an internal intangible resource or capability in organizations underline that an organization's knowledge as a strategic resource is of enormous importance in achieving competitive advantage and superior performance. For example, Hall (1992) conducted interviews in the early 1990s with executives of English industrial companies, underscoring that know-how and reputation as intangible resources were considered most important for organizational success. The findings of D. Miller and Shamsie (1996), mentioned earlier, also emphasized a positive impact of knowledge-based resources on financial performance by establishing a direct link between knowledge-based resources and competitive advantage in an environment characterized by uncertainty. McEvily and Chakravarthy (2002) showed that the complexity, specificity, and tacitness of a firm's technological knowledge lead to competitive advantage and success. DeCarolis and Deeds (1999) demonstrated a significant positive relationship between geographic location as a concept of existing knowledge and knowledge flows in a location and firm performance. Based on studies of companies in the pharmaceutical industry, R. Henderson and Cockburn (1994) highlighted the integration of knowledge as an essential source of strategic advantage, and Pisano (1994) pointed out the contextuality of knowledge, such that different knowledge bases are relevant for success depending on the environment. In particular, the effective and efficient creation and management of tacit knowledge have been displayed as a critical factor for competitive advantage and performance (Muthuveloo et al., 2017; Zaim et al., 2015).

The aphorism "knowledge is power" vividly contains what today's knowledge age is all about. Knowledge is an essential and valuable intangible resource for the individual and the company, constantly concerned with ensuring its survival in rapidly changing conditions. Therefore, some researchers argue that KBV is a new knowledge-based theory of the firm (Nickerson & Zenger, 2004), whereas others regard no separate theory but an empirically-based extension of RBT. From the author's perspective of this dissertation, the argument of a

new knowledge-based theory of the firm would overshadow the actual merits of KBV. Contrary to the opinion of a separate theory, KBV instead offers an empirically supported extension of RBT as an explanatory approach to heterogeneity among firms, providing a pluralistic view of organizations as complex adaptive systems whose basis for existence is knowledge (Eisenhardt & Santos, 2002). Thus, reasons for firms' existence include optimizing knowledge transfer (Conner & Prahalad, 1996), facilitating knowledge transfer (Kogut & Zander, 1992), or specific managerial control methods supporting knowledge creation (Nickerson & Zenger, 2004).

Finally, we believe that KBV is a practical approach to explain diversity in business organizations and trends in organizational innovation. While KBV is not a theory of the firm, it does provide approaches that contribute to the understanding of value creation as the core of business models consisting of explicit and tacit knowledge and the strategic boundaries of firms (Phelan & Lewin, 2000). Unlike classical RBT, KBV treats knowledge as a resource for a unique selling proposition as a basis on which capabilities and core competencies are developed and strategy is formed (Pemberton & Stonehouse, 2000). As critical and strategic resources, knowledge bases influence the generation of sustainable competitive advantage and superior performance.

2.3.5 Dynamic Capability View

As further development of RBT, the dynamic capability view (DCV) focuses on intangible resources and addresses issues surrounding the modification of resources to create and sustain competitive advantages in a dynamic environment. Coupled with the relevance of intangible resources in competitive advantage (DeCarolis & Deeds, 1999), the DCV is an overarching, process-oriented view. It emphasizes learning theory approaches, building, accumulation, and integration of resources and competencies, and innovation as expressions of the essentially dynamic nature of capabilities that can generate sustainable competitive advantage. As illustrated, the further developments – especially the KBV – shifted the focus from mere maintenance to creating a sustainable competitive advantage and favored the development of the DCV in this way (Lockett, 2005). They bridge the gap between the firm's internal resources as a baseline and a dynamic, continuously changing environment with the challenge of sustaining a competitive advantage in an unpredictable environment (Eisenhardt & Martin, 2000).

The emphasis on dynamic components containing the adequate use of available resources through specific capabilities for addressing a continuously changing environment was driven from the realization that a particular composition of a firm's resources leading to a competitive advantage earlier does not simultaneously lead to an advantageous competitive position in the future and may even do the opposite (Barney, 1991, p. 103). In her pioneering efforts from 1959, Edith Tilton Penrose already highlighted the need to use resources wisely (Penrose, 2009, p. 22). In particular, CCV echoed this view by highlighting that only specific capabilities enable a company to exploit the resources it controls fully (Barney & Hesterly, p. 86). Furthermore, Teece et al. (1997) underscored in a subsequent step "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (p. 516). In summary, the DCV aims to answer how companies can maintain a competitive advantage by responding and adapting to continuous and unpredictable environmental changes (Helfat & Peteraf, 2009).

The DCV adopts the RBT and extends it theoretically within the framework of an integrative approach that takes classical time- and content-related assessment of the firm's internal resources and combines it with external market characteristics by considering critical capabilities within a dynamic environment. To this end, Teece et al. (1997) underlined the need for dynamic capabilities as critical sources of sustainable competitive advantage as a prerequisite for enduring performance. Thus, their seminal work simultaneously considered external market characteristics by including a dynamic environment and internal uniquely available and controlled firm resources as the firm's initial situation and part of the inward-looking approach linked by the critical capabilities to adapt to continuously changing external conditions. For this reason, the dynamic capabilities perspective can be understood as an "umbrella framework" (Teece, 2007, p. 1322) that identifies a management's critical capabilities as determinants of sustaining a high-performing, resilient, and far-evolving firm.

Dynamic capabilities enable organizations to leverage a firm's internal resources in flexible strategic responses to a changing environment as a prerequisite for generating sustainable competitive advantage. However, dynamic capabilities alone do not constitute a sustainable competitive advantage (Eisenhardt & Martin, 2000). Instead, dynamic capabilities are a prerequisite for generating a sustainable competitive advantage, combined with the classical resource approach as a basis for firms' heterogeneity (R. Henderson & Cockburn, 1994). The dynamic capabilities facilitate companies "to be flexible and adapt its resources to changing conditions" (Chmielewski & Paladino, 2007, p. 466) as the key to success. They are

the foundation for continuously adapting, changing, transforming, and integrating resources or resource bundles as a flexible strategic response to a constantly changing environment (Eisenhardt & Martin, 2000; Chmielewski & Paladino, 2007). Therefore, they should be understood as a firm's coordination mechanisms that enable the most efficient and competitive use of its resources (S. Sharma & Vredenburg, 1998, p. 735).

The DCV rests on a common theoretical foundation composed of evolutionary economics, behavioral sciences, psychology, and sociology insights reflecting the complexity of the underlying issues. However, despite the theoretical foundation of various scientific disciplines, the DCV is not understood as a theory but as an approach to understanding strategic change (Helfat & Peteraf, 2009). Against this background, evolutionary economics (Nelson & Winter, 1982), as a central foundation, contains the basic conceptualization of organizational change by emphasizing organizational learning, routines, and path dependence through which past developments influence current developments. In addition, by including behavioral aspects in considering dynamic capabilities, H. A. Simon (1947) and Cyert and March (1963) also influenced the DCV. For example, Teece (2007) spoke of "entrepreneurial managerial capitalism" (p. 1346) for encompassing individual and differentiated, creative, and usually simultaneously in-demand managerial skills for spotting trends, seizing opportunities, and reshaping resources as an advantage of an agile organization essential for generating and continuously ensuring financial success in organizations. Thus, along with the behavioral aspects, psychological and sociological theories are also respected when considering dynamic capabilities. Hodgkinson and Healey (2011) showed that the development and maintenance of dynamic capabilities are often only possible through individuals' and groups' cognitive and emotional capabilities. Not least, DCV includes an organizational-theoretical component regarding organizational and strategic processes as best practices for the conscious steering of resources toward value-creating strategies (Eisenhardt & Martin, 2000).

Different approaches of dynamic capabilities in the literature jointly assume directly or indirectly impacting competitive advantage and firm performance of dynamic capabilities in reconfiguring resources or positions in a volatile environment (Teece et al., 1997; Eisenhardt & Martin, 2000; Rindova & Kotha, 2001; Helfat & Peteraf, 2009) with a dynamic capabilities' perspective ranging from skills and competencies to processes or routines (Barreto, 2010). Despite the multitude of dynamic capabilities' definitions, as illustrated by the listing of crucial definitions of Barreto (2010, Table 1, p. 260), dynamic capabilities comprise clearly the ability for reconfiguring existing resource bundles, assets, and organizational structures for long-term

competitive advantage (Eisenhardt & Martin, 2000; Makadok, 2001; Teece, 2007). Thus, the concept rests on understanding meta-competencies as overarching universal competencies that “to do with learning, changing, adapting, forecasting and anticipating, and creating change” (Burgoyne, 1989, p. 59). Such capabilities are the antecedent organizational and strategic routines that enable the organization to change the resource base (Eisenhardt & Martin, 2000). Mihaylova (2013) summarized dynamic capabilities as a

firm’s ability to purposefully create patterns of routines over time, which, based on the acquired knowledge, ensure a strategic flexibility that can help maintain a correspondence between the resource base and the external environment, and thus manage the competitive advantage dynamics. (p. 87)

The critical concepts’ definition of dynamic and capabilities helps to understand how dynamic capabilities contribute to generating a sustainable competitive advantage. Teece et al. (1997, p. 515) determined that the critical concept of the term dynamic must be considered regarding an environment characterized by uncertainty and change. Thus, the dynamic concept refers to the constant renewal and adaptability of competencies in a specific, appropriate strategic response to environmental change. In contrast, the critical concept of the term capabilities emphasizes the critical key role of management in appropriately realigning resources, capabilities, and competencies to environmental change. Consequently, dynamic capabilities encompass specific strategic and organizational processes that enable the firm to manipulate its resource base to contribute to new value-creating strategies in dynamic markets (Eisenhardt & Martin, 2000). Therefore, dynamic capabilities include the companies’ potential to use their situation to their advantage by deliberately changing or further developing their resource base, making timely and market-oriented decisions, and thus systematically solving problems and seizing opportunities (Barreto, 2010, p. 271).

Specific and dynamic capabilities as complex constructs can be divided into several different levels regarding the degree of change they generate, leading to a hierarchical classification of capabilities. In an enriching overview, Mihaylova (2013, Table 1, p. 88) hierarchically classified the different understandings of specific and dynamic capabilities due to their generating extent of change by different authors into a total of four levels (zero, first, second, and third levels). The “zero level” comprises the company’s ordinary resource base, on which the company operates and pursues its goals and through which the company can get by in the short term (Winter, 2003). The “first level” includes capabilities, which are used to change or update the company’s resource base by, for example, purposefully changing existing

products or services or the processes used to produce them (Hoopes & Madsen, 2008). These capabilities initiate a gradual adaptation process for maintaining a competitive advantage while also being found in a stable environment (Mihaylova, 2013, p. 90). The “second-level” or “higher-level” capabilities transform the existing resource base through a process and creative component in the form of strategic innovation (Winter, 2003). An organization’s routines reflect the development of these capabilities, progressing through accumulating experience and specific knowledge (Ambrosini et al., 2009) and drive change through continuous resource configuration, modification, or renewal both in a stable environment without external pressures or dynamic environment (Andreeva & Chayka, 2006). Finally, the “third level” capabilities modify dynamic capabilities, allow a transition to new dynamic capabilities, and occur when there is a large discrepancy between the resource base and the external turbulent environment or as an attempt by an organization to create new competitive conditions (Ambrosini et al., 2009, p. 15; Mihaylova, 2013, p. 91).

Absorptive, adaptive, and innovative component factors decompose dynamic capabilities into three main components (Wang & Ahmed, 2007). Diverse authors, e.g., W. M. Cohen & Levinthal, 1990; Wang & Ahmed, 2004, 2007) classified absorptive capability encompassing the ability to continuously absorb new information and assess its importance to the organization. The adaptive capability involves identifying, recognizing, and exploiting new market opportunities in the context of strategic flexibility. Furthermore, innovative capability refers to developing new products and opening new markets via innovative behavior and processes.

Mihaylova (2013) added another nine component factors as an extension of the mentioned three components, among which we emphasize the particular importance of managerial capabilities as a resource control function (Adner & Helfat, 2003) in light of the dissertation focus. Managerial capabilities, related to unique (subjective) perception, experience, and knowledge, are of central importance in the maintenance and development of processes and firm-specific resources, as a starting point for the development and differentiation of the firm as a basis for generating competitive advantage (Penrose, 2009; Pettus et al., 2009). Furthermore, Adner and Helfat (2003) highlighted in their research a positive effect of dynamic managerial capability as an interaction of managerial human and social capital and managerial cognition in response to changes in the external environment and firm performance.

Asset positions, processes, and paths are three critical determinants that DCV uses at the firm level to explain the heterogeneity of dynamic capabilities. The stock of capabilities or asset positions, the organizational and managerial processes as routines, patterns, and practices of learning, and the paths as alternatives available to an organization limits its ability for resource changes (Teece & Pisano, 1994). Accordingly, dynamic capabilities emerge as “systematic patterns of organizational activity” (Zollom & Winter, 2002, p. 348) based on mutual learning processes. In addition, they involve specific strategic and organizational processes, including strategic decision-making and helping to manage resources in ways that contribute to new value-creating strategies (Eisenhardt & Martin, 2000). Thus, opportunity recognition and strategic change are highly dependent on organizational systems, routines, processes, and individuals’ ability to learn (Helfat & Peteraf, 2009). Consequently, entrepreneurial management involves creatively identifying and seizing the next big opportunity rather than relying on analysis and optimization (Teece, 2007, p. 1346).

In general, with the research of Teece et al. (1997) and Eisenhardt and Martin (2000), the DCV grounds on two different perspectives containing commonalities but also differences with partly contradictory elements. Although the approaches differ in understanding some core elements, both perspectives also share commonalities and common emphases. Commonalities exist in the organizational routines and processes, the role of management, and the view of DCV as an extension of the resource-based view. Differences lie in assumptions about the degree of market dynamics and the nature of capabilities, but both perspectives also jointly assume that dynamic capabilities are the basis for competitive advantage. In the context of a contingency-based approach, M. Peteraf et al. (2013) even saw the possibility of uniting both perspectives through integration.

Studies of dynamic capabilities produced various criticisms, among which very prominent criticisms refer to the theoretical foundation, which is accused of being a tautology, and a lacking description of the conditions and the degree of dynamic characteristics of the environment. The term tautology means that the explanatory phenomenon and the factors clarifying it are logically interdependent. For this reason, the assumptions of the theoretical foundation cannot be refuted. Relating this criticism to the DCV, this means that the view puts dynamic capabilities on the level with the resources of the classical RBT. Thus, among other things, the criticism refers to an incorrect operationalization of the central constructs of the DCV (Williamson, 1999). A clear and unambiguous operationalization of what is meant by dynamic capabilities can counter this opinion (Winter, 2003). Another criticism targets the

missing detailed description of the shape and the degree of dynamic of environmental conditions. Therefore, it is crucial whether dynamic capabilities are also valuable in more stable environmental conditions (Zollom & Winter, 2002), so further research on the relevant context is needed (Barreto, 2010).

At the same time, numerous empirical studies demonstrate the benefits of dynamic capabilities in firms' performance and competitive advantage, which, however, varies depending on the degree of dynamism of the external environment. For example, Døving and Gooderham (2008), Salvato (2003), and Kale and Singh (2007) emphasized the relevance of dynamic capabilities for the performance of small, medium, and large companies. This positive relationship between a firm's dynamic capabilities and its performance has also been demonstrated for global multinationals (Teece, 2007), large, diversified companies (Zollom & Winter, 2002), or public sector organizations (Pablo et al., 2007). Other researchers provided mixed results for a relationship between dynamic capabilities and the firms' competitive advantage. For example, Schilke (2014) demonstrated that dynamic capabilities could provide firms with a competitive advantage, but the competitive advantage depends on the degree of dynamism of the external environment. The results include an inverted U-shaped relationship, which states that the relationship between dynamic capabilities and competitive advantage is vital in an environment with medium dynamics. In contrast, the relationship is weaker when dynamics are low or strong.

Much of the empirical research on dynamic capabilities address the effects of different types of management practices as a form of dynamic capabilities and found various effects on firms' productivity, product development, adaptability, and innovativeness positively related to firm performance. Bloom and van Reenen (2010), using their large sample consisting of firms from 17 different countries, showed a relationship between different management practices and differences in firm productivity. Clark and Fujimoto (1991) and Pisano (1996) also presented similar results for product development. R. M. Henderson and Clark (1990) attributed the firms' adaptability to significant environmental changes to specific managerial behavior. O'Reilly and Tushman (2008) emphasized organizational ambidexterity as a dynamic capability to develop and efficiently use innovations. They also emphasized the role of leadership teams in building dynamic capabilities to achieve long-term success. Finally, using a sample of pharmaceutical biotechnology companies, Deeds et al. (2000) showed that management skills based on experience in scientific research institutions are relevant to new product development and firm performance.

Even though other studies found mixed evidence on the relationship between dynamic capabilities and firm profitability, criticizing the concept of dynamic capabilities as vague and elusive (Kraatz & Zajac, 2001, p. 653), the positive implications of dynamic capabilities in explaining firm heterogeneity and performance for the research discipline of strategic management prevail in most studies. The helpful features and benefits of DCV to explain firm-specific heterogeneity in the competitive environment and firm performance are paramount to strategic management (Winter, 2003, p. 995). In this context, management is understood as a critical driver of firm-specific capabilities. Hence, recognizing that firm capabilities do not follow a random distribution and that “management matters” (Pisano, 2017, p. 751) in the development of dynamic capabilities, management will be explored in more detail in the next part of this dissertation.

Despite the general emphasis on the distinguishing features and different emphases of the presented approaches to classical RBT as their enhancements, all approaches have in common that they view firms as heterogeneous bundles of crucial resources critical for competitive advantage and superior performance (Lockett, 2005). In particular, they emphasize the relevance of strategic management competencies for entrepreneurial management and drive the creation of new organizational forms and business models to further develop value creation as an expression of entrepreneurial fitness and a relevant factor for firm success (Teece, 2007). Thus, the preceding explanations of firm-specific competitive advantage and performance shift the focus to a more person-centered perspective. This perspective will be further emphasized by introducing the upper echelons theory in the following section since a behaviorally plausible presentation of organizations involves “thinking and feeling inhabitants who are fired by affect, and often as reliant on inspiration and the skilful management of emotion and intuition as on calculating cognition” (Hodgkinson & Healey, 2011, pp. 1510–1511).

2.4 Upper Echelons Theory: TMT as Determinant for Firm’s Heterogeneity

The upper echelons theory goes back to the contribution “Upper Echelons: The Organizations as a Reflection of Its Top Managers” of Hambrick and Mason (1984). It focuses in essence on the fact that parts of organizational outcomes in the form of firm performance or strategic decisions can be attributed to the personality traits of members of top management teams (TMT), measured by demographic characteristics. From this point of view, the diversity of

leaders explains differences in organizational strategic positioning and performance in terms of human factors, such as individual experiences, values, or perceptions. In this regard, previous research on demographic characteristics as actual observable indicators of personality traits serves as a basis for approximating and measuring different cognitions, values, and perceptions of individuals (Carpenter et al., 2004). These include demographic research approaches, such as Pfeffer (1983), highlighting relationships between demographic characteristics and organizational outcomes. Examples of such individual demographic characteristics include age, personal education, experience in various functional areas, and other factors as determinants of socioeconomic background.

Upper echelons theory focuses on the characteristics of upper management members as determinants of strategic decision-making due to the members' interpretation of the decision-making situation and their personality traits, which influence organizational outcomes. Hambrick and Mason (1984) argued that subjective cognitive endowments measured by observable demographic characteristics influence strategic decisions differently. For example, product innovation, diversification, or acquisitions affect diverse organizational outcomes such as performance, change in performance, growth, and survival. According to Hambrick (2007), two key assumptions are critical as a framework of the upper echelons perspective. First, the characteristics of the executives greatly influence the interpretations of the decision-making situation, and second, the personality traits constructs are "a function of the executives' experiences, values, and personalities" (Hambrick, 2007, p. 334).

Decision situations characterized by information overload, ambiguous clues, and competing goals stand out by a subjective interpretation of the decision situation that includes a significant behavioral component of decision makers' perspective as an expression of their subjective world. Based on personal cognitive foundation and values, certain stimuli are evaluated in the context of subjective filtering and interpretation (Carpenter et al., 2004). Thus, the assumption that managers act based on their situation interpretation forms the starting point of this person-centered perspective going back to recognizing that strategic decisions have a prominent behavioral component (Cyert & March, 1963) because "there is in fact no objective world for the individual; rather, it is always his *picture* of the objective world. It is always his 'private world'" (Argyris, 1957, p. 36, emphasis in original).

Decisions are an expression of limited individual knowledge and ability, so making the "right" decision always involves reference to the information and openly discernible contexts available in the relevant situations and the subjective perceptions of the decision-makers

(Serman, 2000). The natural world's complexity and the limitation of human cognitive abilities to comprehensively perceive this complexity lead people to make intuitive decisions under time pressure, processing only a part of the available information through learned actions, rules of thumb, or habits as an expression of subjective perceptions (H. A. Simon, 1972; Serman, 2000). H. A. Simon (1955) declared that assumptions regarding the decision-making process on extensive knowledge and rational calculations of available alternative actions do not correspond to actual decision processes. Instead, decision-making takes place based on limited individual knowledge and ability, which H. A. Simon (1957b) first described as "bounded rationality" (p. 198).

The behavioral perspective of upper echelons theory combines, in addition to the concepts of bounded rationality and demographic factors as indicators of personality traits, simultaneously the concept of dominant coalitions (Cyert & March, 1963) as a network of individuals impacting the firm's decisions as major decision-making groups by shaping the strategic positioning. Dominant coalitions consist of a network of individuals within an organization's environment and are characterized by having the most significant influence on the organization's goals. This influence results from controlling specific essential organizational resources owned by the dominant coalition, which allows them to control and manipulate the organization according to their agenda (Pfeffer & Salancik, 1978). Members of an organization primarily pursue individual interests and, in pursuit of these, seek allies with whom they form alliances so that the firm's decisions made and goals set are the result of negotiation processes to resolve conflicts in the face of conflicting interests, as Cyert and March (1963) explained. Thus, in organizational leadership, this concept does not focus on influences of management by individuals, like a chief executive officer (Helmich & Brown, 1972). Instead, it emphasizes the importance of whole top management teams as major decision-making groups because it is usually a team of managers who share strategic tasks, primary responsibility for decisions, and power in the organization (Hambrick & Mason, 1984; Jackson, 1992).

Empirical research paid particular attention to the composition and characteristics of TMTs and examined the effects of TMT heterogeneity and on their abilities to identify and solve problems, to engage in strategic change, and in decision-making. For example, D. A. Harrison et al. (1998) pointed to a positive relationship between the inevitable heterogeneity of groups and their ability to identify problems and find solutions for them. Moreover, Wiersema and Bantel (1992), Bantel (1993), and Hambrick et al. (1996) studied the effects on a firm's

strategic change, performance, and competitive behavior. All indicated that the cognitive diversity of TMTs associated with heterogeneous composition significantly affects a firm's outcomes, such as strategic awareness and strategic diversity. Other studies also established a link between the benefits of the diversity of TMTs due to, among other things, a greater diversity of perspectives in decision-making and firm's performance, e.g., Murray (1989) or Milliken and Martins (1996).

Numerous valuable results on the suitability of demographic characteristics as a proxy of the cognitive framework stem from empirical research on the relationship between external observable characteristics and organizational outcome in strategic and financial firm performance. For example, Eisenhardt and Schoonhoven (1990) highlighted significant results related to the composition of top management founding teams of firms and their strategic ability to cope in the start-up environment. In addition, D'Aveni (1990) studied the relationship between the reputation of top managers and companies' failure, and Boeker (1997), who showed the relationship between characteristics of the TMT and the extent of strategic change in the organization. In contrast, the meta-analyses by Webber and Donahue (2001) and Homberg and Bui (2013) found no relationship between TMT diversity and performance.

Instead of a direct relationship, many authors found a moderating, indirect effect of externally observable TMT characteristics on organizational performance. Like K. G. Smith et al. (1994) showed that team characteristics indirectly influence organizational or group performance via team process variables such as social integration or communication. Pelled et al. (1999) found a moderating effect of conflict on the relationship of heterogeneous TMTs and group performance by group heterogeneity influences conflict, which, in turn, negatively affects group performance. Furthermore, task routines and group longevity moderated the relationship of TMT heterogeneity and conflict. Buyl et al. (2011), in turn, scrutinized the impact of a CEO's character in exploiting the rewards of TMT heterogeneity and underlined that for the highly dynamic and innovative IT industry CEOs with a strong marketing background are most effective in tapping into the benefits of functionally diverse TMTs.

Critical appraisals of studies on the relationship between external observable demographic characteristics and organizational outcomes, e.g., B. S. Lawrence, 1997, point, among other things, to an unclear mechanism for how cognitive frames, as a subjective concept, correspond to demographic factors and serve to predict strategic actions. Certo et al. (2006) also referred to an unclear relationship between TMTs' demographic characteristics and firm performance. Nevertheless, these criticisms seem to be a regular part of a scientific argument

to improve and advance research and merely describe the weaknesses and limitations of the theory, as do other approaches. Hambrick (2007, p. 335) also acknowledged that demographic characteristics are an imprecise and incomplete approximation of leaders' cognitive frames. However, given the difficulties in collecting cognitive data in the context of psychological testing of executives, they are nonetheless a reliable source of information for predicting strategic actions because they have reliability and ease of access for investigation (Certo et al., 2006).

Overall, there are several alternative ways to conceptualize the relationship between TMT composition and strategy at the firm or business level, underlined with at least three different paradigm-dependent perspectives persisting of rational, emergent, and contingent perspectives on this relationship by Jackson (1992, p. 371). The rational perspective postulated that organizational strategy influences the selection of top managers, and thus a company's strategy is a determinant of the composition of TMTs. In contrast to the former, the second perspective includes an emergent component and consequently understands the composition of TMTs as a determinant of a company's strategic direction. Finally, the third perspective sees the relationship as contingent. Therefore, an improvement in organizational performance is always achieved when the strategy and composition of the TMT match.

This dissertation, with the use case of banks headquartered in the eurozone and Switzerland, follows the paradigm of the emergent perspective on the relationship between the composition of the TMT and the strategic positioning and regards the TMT as the decision-making body of the company with final responsibility for the strategic positioning and resulting safeguarding of the financial performance of the company in the present and future. With banks as a concrete unit of analysis in our research, this view corresponds to the definitions according to CRD IV, 2013/26 June 2013, Article 3(1) point (7) and the guidelines "Corporate governance principles for banks" of Basel Committee on Banking Supervision. Under this definition, the management body as the executive and therefore representative body "has ultimate responsibility for the bank's business strategy and financial soundness, key personnel decisions, internal organisation [*sic*], and governance structure and practices, and risk management and compliance obligations" (Basel Committee on Banking Supervision, 2015, Principle 1, text digit 23). Thus, the top management team is responsible for defining a sustainable firm strategy and positioning the banks within the industry in compliance with regulatory requirements, measurable based on comprehensible performance indicators as part of the Supervisory Review and Evaluation Process (SREP).

Against the backdrop of constantly changing new technologies, products, markets, business processes, and business areas, and the resulting difficulty in capturing and managing their dynamics, the critical role of the TMT in shaping strategic positioning and financial performance, influenced by subjective perceptions, values, experiences, and knowledge as the style of TMT members, is one of the focal points of strategy and management science. On the contrary, when managers take on their jobs, they have fixed values and norms and experiences and knowledge that they bring to their work. To a large extent, they can no longer be molded and have their style. Mintzberg (1994) referred to this as “The Person in the Job” (p. 12). Following Selznick (1957), leadership involves responsibility and a creative task that serves to self-position the organization and is associated with defining the organization’s purpose, fostering the ways of acting and thinking necessary to achieve the goal, retrospectively assessing and making sense of past activities, and resolving conflicts in the organization. Thus, decision-making as one of the essential tasks of the members of management can be highlighted as a “product of a marriage between cognitive psychology and economics” (Loewenstein, 1996, p. 289). It is, for this reason, why the cognitive perceptions and the associated subjective biases in decision-making with decision-making as one of the most crucial management tasks will be discussed in more depth below.

2.5 Prospect Theory: Bounded Rationality and Cognitive Biases of Decision-Making Situations

By taking a TMT-related view of the relationships between strategy, competitive advantage, and superior performance, we view the organizational and strategic management competencies and TMT’s members’ subjective perspective as critical and decisive factors in the decision-making situation. Therefore, we combine different theoretical approaches by considering the TMT responsible for the firm’s strategic positioning decisions finding decisions in a negotiation process of different interests and against the background of sometimes divergent goals through interaction and negotiation. Introducing the behavioral science antecedents, RBT and its enhancements as a combining managerial and economic perspective of the firm’s internal resources for value creation (M. A. Peteraf & Barney, 2003), the upper echelons theory, and the consideration of bounded rationality and cognitive biases approaches in the following paragraphs, we acknowledge the TMT driving creation and adaptation of new organizational

forms and business models for value creation expressing entrepreneurial fitness relevant to the company's success (Teece, 2007).

Appropriate managerial competencies are necessary for companies to adapt actively to changes in their environment by making decisions related to changing strategy, structure, and processes while maintaining the minimum capability to ensure competitive survival.

The work of a manager includes making decisions (or participating in their making), communicating them to others, and monitoring how they are carried out. Managers must know a great deal about the industry and social environment in which they work and the decision-making process itself to make decisions well. (H. A. Simon, 1987, p. 57)

Consequently, the organizational and strategic management competencies enable a company to gain a competitive advantage and maintain it through adjustments and driving innovation, resulting in long-term success. Thus, this finding refers to the context of the DCV and clearly emphasizes the top management influences on competitive advantage and business performance presented previously.

The decision situations discussed in various scientific disciplines as an interdisciplinary phenomenon can be distinguished into different forms of decision behavior according to their degree of standardization of the decision and based on the complexity and uncertainty inherent in the decision situation. Standardized decisions represent a form of decision behavior that refers to uniform decision-making patterns and routines. In this decision form, the underlying decisions have been established in standardized processes to reduce complexity in recurring situations and therefore do not require renewed reflection. As a counterpart, distinguishable from this standardized form of decision behavior are such decision-making situations in a rapidly changing environment characterized by complexity and uncertainty, which requires a reflection of available information. Since decision-making behavior in organizations is always under the impression of adaptation to a complex and changing environment (Cyert & March, 1963), we focus on the directional decisions for the company, which require reflection according to the adaptation to a dynamic environment. Accordingly, the bounded rationality of decision-makers at the top management level (members of the top management team) and their personal perceptions based on norms, experiences, and values represent the starting point for the decisions under consideration.

The complex decision-making process with distinct phases always involves uncertainty and ambiguity (Mintzberg, 1990). The specific actions or alternatives to achieve a particular outcome are often ambiguous and the future outcome uncertain. (H. A. Simon, 1972). In this context, already Barnard (1938) pointed out,

the making of decisions, as everyone knows from personal experience, is a burdensome task. Offsetting the exhilaration that may result from correct and successful decision and the relief that follows the terminating of a struggle to determine issues is the depression that comes from failure or error of decision and the frustration which ensues from uncertainty. (p. 189)

With this in mind, Drucker (1955) distinguished various decision-making phases. These first two phases consist of situation definition, involving prioritizing goals by deciding on the risk degree and determining what is relevant in the specific situation. These phases are followed by evaluating information and non-knowledge, which involves risk due to imperfect knowledge and developing alternative solutions. Finally, with the realization of the decisions in concrete action, the fifth phase is attached.

In a world where no one can predict with certainty what will happen tomorrow, decisions must be made under uncertainty, characterized by incomplete information, complexity and distinguished by the degree of uncertainty. Therefore, the question is not whether decisions must be made under uncertainty but rather the degree of uncertainty or certainty of the environment in which decisions must be made is a distinctive feature (Conrath, 1967; Hansson, 1996). Complexity and incomplete information are the reasons for the lack of certainty in forecasting future events (Hayek, 1974), so “uncertainty [...] is the only certainty there is” (Paulos, 2003, Dedication). A well-known example that science gives for such a decision situation under uncertainty is the prisoner’s dilemma. Here, one’s own decision, as well as a consequence resulting from this decision, depends on the decision of another person, which is uncertain for oneself, so that a complex decision has to be made under incomplete information (Bolle & Ockenfels, 1990).

In the age of the knowledge society, the focus is on the growing importance of limited and individualized knowledge as the basis of a subjective reality by considering the management’s decision-making situation. Thus, the management task is not an objectively rational activity based on reasonable goals, internal and external environment assumptions, and calculated risk-taking. Instead, echoing the statement of Hayek (1974) of “The Pretence of

Knowledge”, exact and perfect knowledge is a utopia, and knowledge rests on observation and experience and is thereby individualized and limited (Peterson, 2017). Hence, the limited nature of knowledge means that only some – but not all – features of a fact can be considered (Hayek, 1974). Moreover, since reality is characterized by multidimensionality due to its inherent complexity, it only allows a limited perception of information and contexts, a kind of filtering (Sterman, 2000). By projecting specific facts from the past into a unified picture for the future, people construct their subjective reality to navigate and achieve certainty in the face of uncertainty (Taleb, 2007). Thus, the kind of situations’ perception expresses an individualized uncertainty handling in subjective reality and a selection of information to reduce complexity (Hayek, 1994; Luhmann, 2009).

In purely physical terms, the economy comprises diverse activities, technologies, and participants in a market system, but behind the physically tangible business facilities, it is real people with bounded rationality who form hypotheses about the future and make decisions based on their beliefs as part of their cognitive endowment and as “DNA of the economy” (Arthur, 1995, p. 25). As Arthur (1995) stated, the totality of the cognitive endowment as beliefs, anticipations, experiences, expectations, values, and interpretations of human actors in the economy constitutes the macroeconomics and at the same time forms the starting point for decision-making in the context of strategic behavior and economic development. Thus, individuals are not objective observers due to their bounded rationality since only what is consistent with the self-image is perceived (Argyris, 1957). For example, bounded rationality is visible in accepting, ignoring, denying, or distorting experiences as a function of self-image as an interpretive guide for interacting with the environment.

The expected utility theory (EUT) of von Neumann and Morgenstern (1944), whose principle of expected utility goes back to Daniel Bernoulli (1738) in the 18th century (Tversky, 1975), reaches its limits in complex and dynamic situations because actors cannot objectively decide rationally due to their limited information processing capacity (H. A. Simon, 1959) and limited time for reflection and completing a variety of tasks with brevity and relentless pace (Mintzberg, 1990). Thus, Tversky criticized that EUT does not seem adequate for describing decision-making under uncertainty and risk (Tversky, 1975). In the decision-making situations faced by TMT, there is usually no opportunity to comprehensively analyze and calculate the situation, so managers must act intuitively in the form of a primitive and emotion-driven urge that contradicts objectively rational decisions (H. A. Simon, 1987). Furthermore, natural cognitive limitations for information processing (H. A. Simon, 1957b), and even assuming

perfect knowledge, time constraints, and the multitude of necessary decisions in everyday work impede rational decisions (Luhmann, 2000, p. 450). Thus, the economy is not a purely rational entity as long as people make the decisions, causing H. A. Simon (1959) to criticize the utility maximization construct from expected utility theory (EUT). Instead of optimization, he understood bounded rationality as “the behavior of human beings who *satisfice* because they have not the wits to *maximise* [*sic*]” (H. A. Simon, 1957a, p. xxiv, emphasis in original).

In their publication “Prospect Theory: An Analysis of Decision under Risk”, the two psychologists Kahneman and Tversky (1979) took up the bounded rationality approach and, based on empirically determined patterns in decision behavior, e.g., Ellsberg (1961), and psychological findings from their preliminary experimental work, developed prospect theory as an alternative approach to EUT, according to which people simplistically resort to heuristics to be able to make decisions under uncertainty despite their limited knowledge and time frame. As “a leading alternative to expected utility” (Levy, 1992, p. 171), Wakker (2010) described prospect theory as one of the first, more realistic alternative models to EUT by considering that decisions under uncertainty trace back to subjective beliefs about the probability of the uncertain event. This subjective evaluation of the probabilities of uncertain events can, in turn, lead to cognitive biases that manifest themselves in systematic errors in the assessment of the decision-making situation as a result of resorting to simplistic heuristics (Tversky & Kahneman, 1974).

The divergent view of the decision situation according to EUT and prospect theory rests on the opposite assumption of heuristics and algorithms as relevant elements in the decision process and the different emphasis on cognitive biases’ possibility in decisions. “An algorithm is a mathematical recipe, formulated as a finite set of rules to be performed systematically, that has as outcome the solution to a well-formulated problem” (Martignon, 2001, p. 382). Unlike algorithms, which produce a correct solution when the input is complete and correct, according to Todd (2001), heuristics are “approximate strategies or ‘rules of thumb’ for decision-making and problem solving that do not guarantee a correct solution but that typically yield a reasonable solution or bring one closer to hand” (p. 6676). In contrast, the EUT understands decision situations like an algorithm as “the core element of thinking machines” (Martignon, 2001, p. 384), producing correct and unbiased decisions. However, humans are demonstrably not like machines. Since it is doubtful that the decision-maker has complete and reliable data for the decision, it is more evident “that people adopt heuristics that enable them to make inferences and predictions from what scanty and unreliable [*sic*] data are available” (S. E.

Taylor, 1982, p. 191). Like the three of Tversky and Kahneman (1974) identified heuristics of representativeness, availability, and anchoring, heuristics simplify complex tasks to simple procedures in assessing probabilities and a thoroughly suitable solution method, leading to severe and systematic biases in human judgment (Tversky & Kahneman, 1974, p. 1124).

The representativeness heuristic enables decision-making by using prototypes to assess the probability of an uncertain event by evaluating the information's similarity, while its usefulness depends on the possibility of further additional available information and overestimation of similar information. Representativeness involves a specific similarity relationship assigning an object to a particular class as a prototype for this category (Tversky, 1977). Thus, according to Tversky and Kahneman (1974, p. 1124), the degree of similarity between A and B determines the probability that A descends from B. This means that the probability that A descends from B is considered high if A is typical of B, and conversely, low if A only resembles B slightly. In the botanist example given by Nisbett and Ross (1980), a newly discovered plant was classified "as belonging to the species that its principal features most nearly resemble" (p. 7), which seems useful when no additional information is necessary (Kahneman & Tversky, 1972). However, the representativeness heuristic application without considering or underweighting additional information available leads to overestimating similarity information because information with subjectively high relevance dominates over those with low relevance (Bar-Hillel, 1980), reducing heuristic's usefulness.

The availability heuristic describes decision situations in which frequency and probability judgments are subject to the accessibility of the available information in memory, which, in turn, varies depending on information's frequency and other characteristics unrelated to frequency. Accordingly, the availability heuristic involves decisions "in which people assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind" (Tversky & Kahneman, 1974, p. 1127). Thus, the ease of accessibility of information in memory is used to proxy for frequency or probability judgments (Tversky & Kahneman, 1973). Therefore, the easier it is to remember or think of examples of an event, the more likely that event appears, which increases subjective probability in consequence (J. S. Carroll, 1976). Since frequent events tend to be easier to remember, this heuristic is also helpful to inference on frequencies and probabilities, but other frequency-independent factors influence actual frequencies and lead to bias (Tversky & Kahneman, 1973, 1974). For example, Tversky and Kahneman (1973) pointed out how factors such as vividness,

actuality, familiarity, values, and beliefs or the way information is structured or stored in memory can bias probability judgment based on information accessibility.

The adjustment and anchoring heuristic involves including single available information as an anchor in the judgment process, acting as a reference point for judging further information in the rest of the decision process, and can lead to systematic biases if subsequent information is adjusted concerning the anchor. Tversky and Kahneman (1974) declared that in uncertainty, single available information is picked up and subsequently taken as a reference point considering “people make estimates by starting from an initial value that is adjusted to yield the final answer” (p. 1128). Consequently, decisions vary according to the chosen reference point. Risks of systematic bias in the estimation result from decision-makers not making subsequent adjustments to the starting point (Das & Teng, 1999) even when more recent information would suggest an adjustment. In addition, an overweighting of the anchor point results in a final estimation too close to the starting point, or the value used as an anchor may have no significance for the estimate (Tversky & Kahneman, 1974).

While judgment heuristics can be expedient in various situations, at the same time, they can also lead to systematic misjudgments in the decision-making process due to an inflated sense of superiority, underestimation of past surprises, or by looking at problems in isolation and singularly. As shown, each judgment heuristic listed by Tversky and Kahneman (1974) can lead to different biases. Furthermore, other researchers cited other complementary biases, like Langer (1975), who underlined that various factors resulting from skill situations make individuals feel confident and superior, culminating in a bias toward an unreasonably higher personal probability of success. Alternatively, Fischhoff (1975) highlighted that past surprises are systematically underestimated, and Fischhoff et al. (1977) pointed to biases concerning excessive personal certainty. Furthermore, Kahneman and Lovallo (1993) underlined that decision-makers tend to view their problems in isolation and uniquely, which is why they ignore historical data from their inside view. Thus, the willingness to take risks varies depending on the cognitive perspective.

The editing and evaluation phase, also referred to as the framing and valuation phases in the further development of prospect theory (Tversky & Kahneman, 1992), characterize two essential phases of decision-making, producing at the end the final decision. The editing phase involves presenting the problem and a simplified presentation of the alternatives, while in the evaluation phase an evaluation of the alternatives and selecting the preferred perspective takes place in the context of the final decision (Levy, 1992). In this context, Kahneman and Tversky

(1979) summarized that the goal of the editing phase “is to organize and reformulate the options so as to simplify subsequent evaluation and choice” (p. 274), while within the evaluation phase, “the edited prospects are evaluated and the prospect of highest value is chosen” (p. 274).

The editing or framing phase essentially consists of six action steps aimed at processing and simplifying the decision options, thereby significantly determining the perception of the different decision options, including biases and inconsistencies in the representation of preferences. As Kahneman and Tversky (1979) elaborated, coding as a natural reference point determination (usually the wealth situation) comprises evaluating the outcome alternatives in terms of gains and losses as a significant action step of this phase. Depending on the formulation of the outcomes and consequences of the different options available and the individual expectations and probabilities of each option, it strongly influences the decision-maker’s evaluation. This phase’s other action steps relate to combination, segregation, cancellation, simplification, and the detection of dominance. These phases include adding probabilities of identical outcomes, separating risky and safe outcome components from each other, ignoring identical outcome components of the options, and simplifying probabilities, such as by deleting improbable outcomes (K. D. Edwards, 1996), leading to biases and inconsistencies (Kahneman & Tversky, 1979, p. 275) as “a ubiquitous reality” (Kahneman, 2003, p. 1459) of the editing phase. The assumption that transparently dominant alternatives are eliminated without further evaluation (Kahneman & Tversky, 1979, p. 275) is no longer considered necessary in the extension of prospect theory by Tversky and Kahneman (1992).

With the certainty, isolation, and reflection effect, the second phase of the decision process, the evaluation or valuation phase, follows the edited alternatives and involves various valuation principles of gains and losses associated with uncertain, risky decisions inconsistent with the assumptions of expected utility theory. First, according to Kahneman and Tversky (1979), these valuation principles include underweighting probable outcomes relative to certain outcomes, which the two referred to as the “certainty effect” (p. 265). Second, by decomposing prospects into identical and different components, identical outcome components are disregarded, known as the “isolation effect” (Kahneman & Tversky, 1979, p. 271). Third, the “reflection effect” (Kahneman & Tversky, 1979, p. 268) covers the dichotomy of decision preferences in negative and positive domains. Thus, decision-makers behave in a risk-averse manner in situations with certain gains, while they act in a risk-seeking manner in decisions with inevitable losses.

The value function is one of two functions within the evaluation or valuation phase to evaluate the previously edited perspectives. Specifically, always relative to a subjective reference point, the value function implies that human perception is biased toward evaluating changes as increases (above the reference point) or decreases (below the reference point) in value, so the function is concave for gains and convex for losses, reflecting the different risk propensity within the reflection effect (Kahneman & Tversky, 1979, p. 279). Consequently, decisions are viewed as based not on an end state but on change separated through the individual reference point. Accordingly, individuals tend to avoid risk when there is a chance of gain (risk aversion in the domain of gains, concave value function) and seek risk when there is a threat of loss (risk appetite in the domain of losses, convex value function). In addition, the value function is steeper for losses than for gains, reflecting loss aversion in human decision behavior and implying that the marginal utility of gains declines faster than that of losses (Levy, 1992, p. 181).

The choice of the option with the highest value as the evaluation or valuation phase result further comprises the weighting function next to the value function. Thus, in a second step, the weighting function as a further relevant function envisages the gains and losses weighting by a decision weight rather than a probability in the decision context (Fox & Poldrack, 2009). The decision weighting results from decisions between different perspectives, similar to a subjective probability and not presenting a purely perceived probability (Kahneman & Tversky, 1979, p. 280), given that ambiguity, uncertainty, risk, and the reliability and adequacy of the information available can still influence the weighting (Ellsberg, 1961). Thus, the prospect theory describes the decision for the option with the highest value based on the combined results of value and weighting function, contradicting the utility function and the probabilities of the EUT (K. D. Edwards, 1996).

Like the value function, the weighting function illustrates various properties of decision behavior such as ignoring or overweighting of improbable events, the inability to understand extreme events, and insensitivity of preferences to changes in probability, as another nonlinear function. Accordingly, Kahneman and Tversky (1979) noted that improbable events are ignored or overweighted because of the human inability to understand and evaluate extreme events so that despite the S-shape of the value function, risk appetite in the profit domain and risk aversion in the loss domain can also be explained, while events with medium to high probability are simultaneously undervalued, reinforcing the pattern of risk aversion in the profit domain and risk appetite in the loss domain (Fox & Poldrack, 2009). Moreover, the slope,

which is largely less than one, suggests that preferences are not sensitive to changes in probability (Levy, 1992). Thus, it appears that “just as the value function captures diminishing sensitivity to changes in the number of dollars gained or lost, the weighting function captures diminishing sensitivity to changes in probability” (Fox & Poldrack, 2009, p. 150).

Prospect theory, explaining risk propensities based on the value and weighting function (Levy, 1992), was refined by Tversky and Kahneman (1992) into cumulative prospect theory (CPT), addressing the restrictions and drawbacks of the basic model from 1979 for a realistic decision behavior representation by allowing, as essential difference, differential valuation of gains and losses. Hence, cumulative prospect theory removes the restriction to two outcomes, extends the results to finitely many options and continuous distributions, allows the application to both probable and improbable events, and accounts for different decision weights for gains and losses (Tversky & Kahneman, 1992, p. 302). For a more realistic representation of decision behavior, a key difference is the use of cumulative probabilities to which the consequences of an alternative ascending sorted, separated into gains and losses depending on the subjective reference point, and then evaluated with decision weights separately for both the positive and negative ranges (Fox & Poldrack, 2009). This approach makes it possible to evaluate gains and losses differently according to their “sign- and rank-dependent representation of preferences” (Prelec, 1998, p. 499).

As a central aspect of the theory of decision under uncertainty from the combination of value and weighting function, Tversky and Kahneman (1992) elaborated the four patterns of risk attitudes as a combination of valuation into gains and losses and probabilities as decision weights. According to the four patterns, individuals behave in a risk-seeking manner for gains with low probabilities and losses that occur with high probabilities. In contrast, risk-averse behavior occurs for gains with medium and high probabilities and losses with low probabilities.

Numerous other studies confirmed the assumptions of prospect theory by extending the principles to other areas of research, such as the limited information processing capacity, the valuation of alternatives relative to a reference point, the difference in risk propensity in the profit and loss domain, and the overweighting of low probabilities. In an experimental study of customer and student insurance preferences, Schoemaker and Kunreuther (1979) confirmed the limited ability to process information in decision-making and risk-taking in the loss domain as contradictory to the traditional risk aversion of expected utility theory. The evaluation of alternatives relative to a reference point and managers’ risk-averse behavior in the profit domain and corresponding risk-seeking behavior in the loss domain were substantiated by

Payne et al. (1984) using a sample of 128 managers of U.S. firms. Based on data from U.S. companies from 1960 to 1979, Fiegenbaum and Thomas (1988) found that the relationship between risk and return always depends on whether the company is expected to perform well or poorly. Thus, they detected that companies that suffered losses or performed below the targeted ROE level tended to be risk-seeking (convex value function). In turn, companies that achieved their targets tended to be risk-averse (concave value function). The results support the findings of Bowman (1982) within his risk-return paradox, which attributed risk-seeking behavior to poorly performing companies while good performance tended to lead to risk-averse attitudes, based on prospect theory approaches. Kanto et al. (1992) confirmed the overweighting of low probabilities.

Further empirical studies confirmed systematically different decisions depending on the external problem formulation and the decision-maker's internal subjective framing by factors such as experiences, norms, and habits that influence information processing as processing of alternatives and the resulting decision based on individual perception. For example, Tversky and Kahneman (1981) pointed out in several studies that the way problems are presented, both externally and mentally, influences the decider's perception. Thus, by presenting the same problem differently, decision-makers preferred certain gains to the chance of an even higher profit, avoided losses, and sought the chance of lower losses. Additionally, in experiments eliciting subjective frames, Elliot and Archibald (1989) confirmed the definition of the value function in terms of a subjective reference point and the reflection effect inherent in the S-shape of the function, and the findings that different perceptions of a problem lead to systematically different decisions.

Regarding critical appraisal of the (cumulative) prospect theory, other researchers mainly criticized a missing results' transparency and the artificial laboratory situation and pointed, in empirical studies, to a lack of transferability of the reflection effect and suggested better suitability of other approaches to explain decision behavior. For example, from an economic perspective, Rossiter (2019) pointed out an opacity of the results based on the mathematical calculations and the artificial situation within the experimental studies, which would be an obstacle to transferability to actual decisions. At the same time, he emphasized that the findings were borrowed from psychology, especially from perception and learning theory, without emphasizing this separately. In an empirical study, Hershey and Schoemaker (1980) questioned the reflection effect generality and pointed to context effects in problem presentation that may influence risk-taking behavior. Similarly, Martinez-Vazquez et al. (1992)

rejected the reflection effect based on their study of the propensity to evade taxes. In addition, Brockner (1992) disagreed with other researchers viewing escalating decision behavior, understood as the behavior of decision-makers to persist in failed courses of action in the prospect theory's context, and suggested the explanatory pattern of self-justification as a more appropriate explanation.

These criticisms seem to be a regular part of the scientific debate and instead show, as is usually the case with other approaches, limitations and weaknesses of a theory. Nevertheless, despite some critical issues, from the point of view of the dissertation's author, the fundamentals of the (cumulative) prospect theory of Kahneman and Tversky (1979) and Tversky and Kahneman (1992) provide essential insights into the people's decision behavior and their different willingness to take risks concerning gains and losses. We, therefore, share the view of Thaler (1980) that the merit of (cumulative) prospect theory is to have accentuated the fact that cognitive biases in the decision process are the rule and not the exception. For this reason, in light of answering our research questions, we consider the theory to be a relevant part of the theoretical framework.

With the development of prospect theory as an alternative view of the decision-making situation, a dispute between the normative and descriptive theory developed because of the divergent understanding of rationality. The normative theory assumes a perfectly rational economic subject who can gather, process, and evaluate all information relevant to decision-making, while the descriptive theory supposes human beings with limited knowledge and ability in decision-making (H. A. Simon, 1955). Thus, the seemingly divergent understanding of rationality regarding utility maximization within the normative theory and the "very close to the common sense notions of rationality" (H. A. Simon, 1978, p. 6) within the descriptive theory is central. Against this background, Tversky and Kahneman (1981, p. 458) emphasized that the use of frames in decision-making does not necessarily correspond to irrational action but results from the deliberate avoidance of high mental effort when considering all possible alternatives. The argument is also consistent with the view of H. A. Simon (1957a), using the term bounded rationality to describe how individual decision-making aims at finding a satisfactory solution instead of one that maximizes benefits. Consequently, the normative and descriptive views do not fundamentally differ in a loose understanding of maximizing behavior used in scientific discussion (H. A. Simon, 1978).

Other researchers highlighted the link between cognitive processes, decision-making, and behavior by considering behavioral intention – depending on attitudes toward the behavior,

subjective norms, and perceived behavioral control – as critical to the performance of a particular behavior. For example, the “Theory of reasoned action” of Fishbein and Ajzen (1975) assumes that only behavioral intention, shaped by attitudes toward one’s behavior and subjective norms, directly influences entirely self-determined behavior, which for this purpose also includes the consequences of a particular behavior in the decision for a behavior. As an advancement of the theory of reasoned action, “The Theory of Planned Behavior” by Ajzen (1991) additionally introduced the determinant of perceived behavioral control for broad applicability, which “refers to people’s perception of the ease or difficulty of performing the behavior of interest” (Ajzen, 1991, p. 183). Accordingly, the performance of a particular behavior depends, at least to some degree, on one’s perceived ability to execute a behavior so that a particular behavior appears unlikely if the means and resources to perform that behavior are perceived to be lacking in one’s perception.

People act within specific contexts and play different roles by interacting with external expectations and the actor’s perception of the decision-making situation. Thus, Goffman (1959) focused on the different roles as the framework condition for behavior to which actors behave according to the expectations externals have of this role. In doing so, individuals adapt their presentation to the standards or norms of the audience that are already in place and yet can draw on creative latitude in performing and sustaining the role that depends on the actor’s perception.

The compliance or violation of expectations and rules differentiates with normal and pathological, so-called deviant behavior, two forms of behavior in tension between legality and illegality. In a dynamic, continuously changing environment characterized by ambiguity, challenges meeting existing demands and expectations while complying with existing rules, norms, and regulations (Erikson, 1962). In this context, normal behavior takes place within the existing rules. If the behavior associated with a decision violates expectations and rules, including the rules of the criminal code, it is a transgressive behavior, a so-called deviant behavior (Opp, 1985, p. 222). According to Erikson (1962),

deviance is considered a vagrant form of human activity, moving outside the more orderly currents of social life. And since this type of one aberration could only occur (in theory) if something were wrong within the social organization itself, deviant behavior is described almost as if it were leakage from machinery in poor condition: it is an accidental result of disorder and anomie, a symptom of internal breakdown. (p. 307)

Transgressive behavior as an omnipresent phenomenon is not related to class or stratum and can also be seen as deviant behavior among members of the TMT possessing, in their creative task, specific design leeway through economic and social power in firms' strategic positioning and its operationalization in business models. These can be exercised within the legal boundaries but also exceed these boundaries and go beyond them. Moreover, as the top level of an organization, they possess economic and social power as a chance to assert their own will in a social relationship even against the opposition (Weber, 1922, p. 28), so deviant behavior is also likely among members of TMTs. The definition of crime and deviant behavior was, in this context, for a long time class- or stratum-related, so sociologist Edwin H. Sutherland was the first to illuminate that transgressive behavior also occurs in business. Sutherland (1949) shaped the term "White Collar Crime" and declared that crime is also committed in the occupational domain within the context of economic and social power.

As a state of missing structural order principles, anomie is associated with questioning social norms and values and a lack of collective consciousness fostering deviant behavior, as described by the well-known anomie theory of Émile Durkheim. According to Burke (2009), Émile Durkheim saw deviant behavior caused by expanding human objectives into immeasurable ones that do not experience any limitations. Whenever structural order principles erode and society changes rapidly, clear social rules and collective consciousness fade so that individuals question social norms and values. According to Durkheim, a state of anomie arises when clear social patterns and norms of action are absent.

As another well-known anomie theory, Robert K. Merton took up the thoughts of Durkheim and associated with anomic pressure an imbalance of goals and means resulting from the absence of access to legitimate means for achieving goals. Merton (1938) attached great importance to the necessary means to perform a specific behavior, similar to "The Theory of Planned Behavior" of Ajzen (1991). Accordingly, anomic pressure occurs when generally accepted social rules are absent and goals are given but access to the necessary means to achieving the goal is lacking. Thus, when individuals or groups have limited access to the legitimate means to achieve goals, the relationship between goals and means becomes disturbed and anomic conditions arise.

Other researchers considered deviant to delinquent behavior as a choice function of expected utility and associated costs. Becker (1968), for example, viewed deviant and delinquent behavior as a choice action in the context of rational utility maximization.

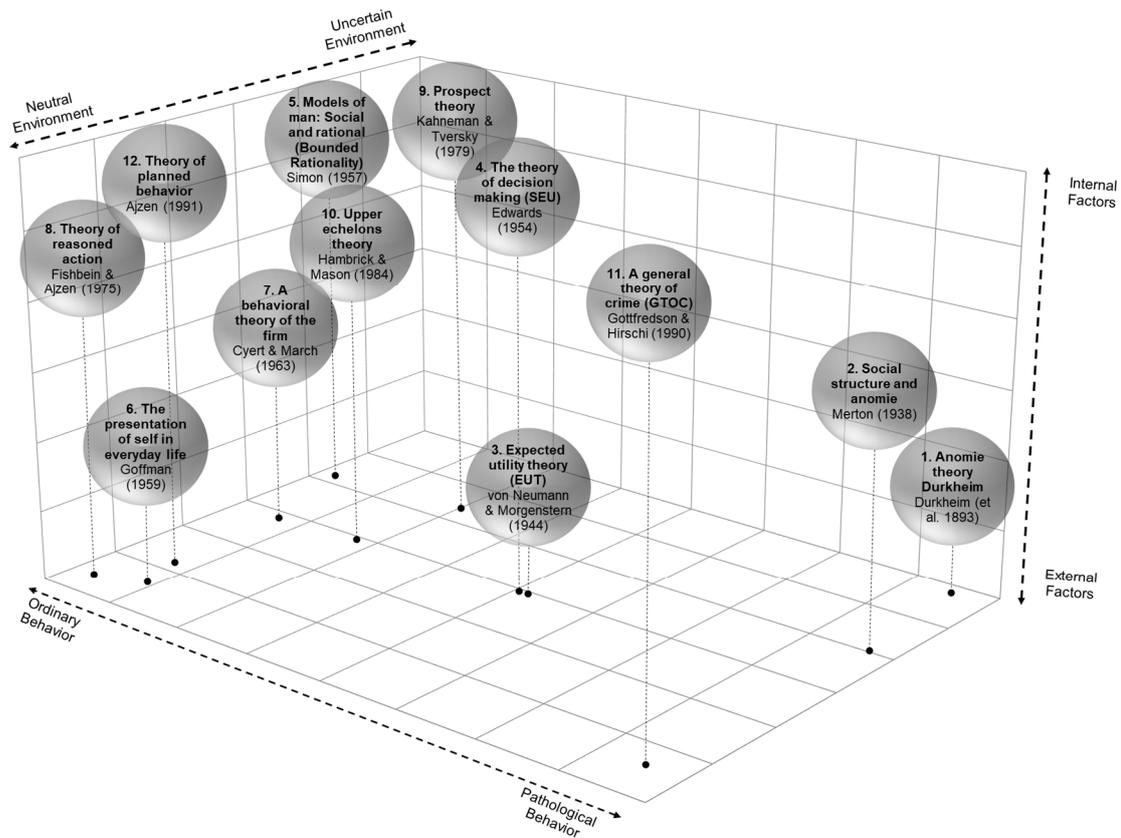
Consequently, it depends on the expected utility of committing a crime as pleasure and the costs, as pain associated with the deviant act.

As an extension, “Subjective Expected Utility Theory” (SEU) regarded deviant or delinquent behavior as subjective utility-maximizing choice action resulting from weighing subjective expected utility against the actions’ consequences. Thus, SEU considers the choice of behavior in light of the option that yields the highest subjective utility and dates back to W. Edwards (1954). Therefore, deviance appears as a choice action against the background of the subjective expected utility considering the consequences of the action.

In turn, another perspective viewed deviant and delinquent behavior as conditional actions resulting from the combination of certain character traits of an actor as an expression of low self-control and the appropriate opportunities. Hence, Gottfredson and Hirschi (1990) proposed with their “General Theory of Crime” (GTOC) a concept of action based on which criminal acts occur when various character traits of an actor that can develop early on and express low self-control corresponds with a favorable opportunity. Thus, low self-control reveals by various deviant behaviors and only ever manifests itself in criminal acts when the opportunity arises.

The interplay of three different perspectives can categorize the different approaches explaining decisions and corresponding behavior by distinguishing different types of behavior, different environmental conditions, and internal and external explanatory factors. The first perspective includes focusing on the various types of decisions and the resulting behavior to be explained. Specifically, this includes approaches that examine ordinary or everyday behavior on the one hand and pathological behavior, understood as deviant or transgressive, as explanandum on the other. The second perspective considers the characterization of the environmental conditions against which the behavior, including the initial decisions, is explained. Thus, we distinguish a behavior within a neutral, undefined environment and behavior within a dynamic, ambiguous and complex, uncertain environment. Finally, factors influencing decision-making and behavior form the third perspective in considering approaches explaining the decision and corresponding behavior. Accordingly, internal factors within character traits, individual experiences, values, and perceptions explain decisions and behavior. Otherwise, external factors, such as rules, norms, and values of society, or externally available resources, also explain decisions and behavior in more detail in some approaches. Figure 2.3 gives an overview of the classification of the different approaches presented to explain decision-making and behavior against the background of the three perspectives.

Figure 2.3: Three Main Perspectives of Significant Approaches Explaining Decision-Making and Behavior



Note: The figure illustrates the interplay of three different perspectives categorizing diverse approaches to explaining decisions and corresponding behavior. The three perspectives differentiate between ordinary and pathological behavior, a neutral and uncertain environment against which the behavior is explained, and external and internal factors causing a specific decision and behavior. The following approaches to decision and behavior are distinguished: 1. Anomie theory Durkheim, Durkheim (et al. 1893); 2. Social structure and anomie, Merton (1938); 3. Expected utility theory, von Neumann & Morgenstern (1944); 4. The theory of decision making (SEU), Edwards (1954); 5. Models of man: Social and rational (Bounded Rationality), Simon (1957); 6. The presentation of self in everyday life, Goffman (1959); 7. A behavioral theory of the firm, Cyert & March (1963); 8. Theory of reasoned action, Fishbein & Ajzen (1975); 9. Prospect theory, Kahneman & Tversky (1979); 10. Upper echelons theory, Hambrick and Mason (1984); 11. A general theory of crime (GTOC), Gottfredson & Hirschi (1990); 12. Theory of planned behavior, Ajzen (1991).

Source: Own illustration adapted and extended from Schulte-Mattler (2019, p. 18).

2.6 Selection of Theoretical Foundation: Relevance for Dissertation's Research

With an interdisciplinary approach, this dissertation aims to empirically investigate business models and the critical determinants of the relationships between business models, risk-taking behavior, and performance within a behavioral science perspective as an expression of decision-making in TMT resulting from individual perception. To this end, the exposition of

the evolution of the strategic management theories, including the different research perspectives, underscores the current emphasis on an organizational understanding at the level of individuals with their idiosyncrasies and restrictions through a behavioral science approach, as opposed to the rigid and monotonous work organization at the beginning of the 20th century. In this understanding, the organization shaped, formed, and developed through continuous decision-making processes is forced to adapt and evolve dynamically to ensure survival. As a result, TMT as the upper decision-making body plays a crucial role in shaping and functioning the organizations. Consequently, the organization as a reflection of its top managers (Hambrick & Mason, 1984) represents “the specific knowledge, experience, values, and preferences of top managers are reflected not only in their decisions but in their assessments of decision situations” (Cannella & Monroe, 1997, p. 213) in the context of their guiding decisions for the firm’s development.

The TMT’s decisions form the core of our consideration since they define the firm’s strategic direction and its operationalization in the context of business models as an inherent decision on the firm’s resources with implications for firm performance. As a result, this thesis builds on RBT as one of our main approaches. Following the RBT’s argumentation, each business model requires key resources to provide a value proposition (Osterwalder & Pigneur, 2010, p. 34), consisting of firm-specific resources to explain the firms’ heterogeneity concerning sustainable competitive advantage and superior performance. Accordingly, the endowment and shaping of a firm’s strategic resources and competencies determine its adaptability and performance (Kraatz & Zajac, 2001).

In this context, the TMT’s management competencies represent critical resources of a company since the positioning and achievement of goals depend mainly on the competencies and the related exercise of management as a creative task (Selznick, 1957). Thus, the knowledge of the TMT members, as an intangible resource not to imitate, is a unique selling proposition of companies and an essential basis on which the strategic direction of companies and its operationalization within the framework of business models are formed (Pemberton & Stonehouse, 2000). Additionally, the dynamic capabilities are critical capabilities of management in exercising its leadership task as a prerequisite for creating sustainable competitive advantage and superior performance in an overarching understanding. To flexibly adapt to changing environmental conditions, a firm’s dynamic capabilities as strategic and organizational processes, including strategic decision-making, enable to manipulate the resource base, with management playing a pivotal role (Teece et al., 1997; Eisenhardt &

Martin, 2000). Thus, they lead the way to realign resources, capabilities, and competencies for systematic problem solving and opportunity exploitation as a key driver and contribute significantly to firm-specific heterogeneity (Barreto, 2010). For this reason, we regard RBT, including its further developments, suitable as the theoretical foundation of our research because of its relevance for the firms' positioning based on their business models.

As another main approach, we combine prospect theory, which, based on the recognition of bounded rationality and cognitive biases in decision-making, considers the variation of individual risk behavior against the background of uncertainty and risk. Decisions under uncertainty as a complex task lead people to resort to simple procedures for estimating probabilities, which leads to systematic biases in human judgment (Tversky & Kahneman, 1974, p. 1124) and can explain divergent decisions of different decision-makers in the same situation. Accordingly, decisions are dependent on the subjective perception of the decision situation under risk and uncertainty.

Subjective perception rests on the decision-maker's internal subjective framing based on experience, norms, habits, and knowledge, which influence information processing as the processing of alternatives and the resulting decision based on individual perception. People make decisions based on their cognitive endowment (Arthur, 1995), so the management task cannot be understood as a purely objectively rational activity. Instead, the cognitive endowment in the decision-making situation influences the processing and evaluation of alternatives (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992) and leads to different outcomes identifiable by organizational results. Consequently, the TMT's decision-making shapes the organization based on individual perception and heuristics as the norm, not the exception, in decision-making (Kuglanski & Ajzen, 1983).

Human judgments are based on the subjective perception of the decision situation and often rely on a heuristic basis to reach conclusions despite high uncertainty in decision-making, which sometimes leads to misjudgments and runs counter to objectively rational decision-making. Subjective perception is a component of human reasoning and thus essential to strategy and management research covering the TMT consisting of perceiving, knowing, and discerning individuals responsible for creatively identifying and seizing the next significant entrepreneurial opportunity, including implementation (Teece, 2007). Differences in top managers' psychological and cognitive conditions are highly evident based on the breadth of information processing, how information is received, organized, interpreted, and processed, and the subsequent decision-making (Finkelstein & Hambrick, 1996). The TMT members'

values, norms, and attitudes and their personal experiences, opportunities, and expectations as external factors shape the decisions and behavior of managers, precisely also their risk-taking behavior, based on situation perception. Hence, their consideration in integrating prospect theory is of enormous importance for answering the research questions.

In summary, our research adopts a TMT-related view of the relationships and therefore additionally integrates upper echelons theory as an overarching approach highlighting the TMT as the firm's central decision-making body, makes resource endowment and design decisions according to its cognitive endowment in the context of business model design, and in this way contributes differently to the creation of sustainable competitive advantage and superior performance. We extend RBT and prospect theory by considering business model design as the outcome of organizational and strategic management competencies and TMT members' subjective perspectives as critical and decisive factors in decision-making and applying this perspective to our use case of banks. Based on the subjective perception of the decision-making situation according to the individual cognitive endowment, competencies, and dynamic capabilities, managers themselves are a critical resource for the company's alignment and positioning toward the rapidly changing environmental conditions in the context of a business model design. We extend the literature by understanding business model design as the TMT's decision about the endowment and alignment of critical resources to achieve sustainable competitive advantage and superior performance. At the same time, we assume that business model design reflects the TMT's perception of the decision-making situation under uncertainty and risk as a prime determinant influencing the TMT's actual behavior.

CHAPTER 3

CONCEPTUAL FRAMEWORK

The chapter “Conceptual Framework” includes defining and explaining the critical concepts referred to in this thesis. Specifically, the chapter refers to explaining concepts and their presumed relationships to one another, which will be examined as critical factors and variables within the empirical study and can be done in graphical and narrative forms (Miles & Huberman, p. 18). Accordingly, Chapter 3 presents how the research problem underlying the thesis will be explored.

The conceptual framework synthesizes the concepts consisting of individual components into an overarching whole, the construct. Thus, the conceptual framework is closely related to essential theories of the research discipline and empirical research and serves as a framework of systematization and description of knowledge about the research concepts (Peshkin, 1993). Since “every concept has components and is defined by them” (Deleuze & Guattari, 1994, p. 15), concepts always consists of several components that define the concept through their coincidence (Deleuze & Guattari, 1994; Jabareen, 2009). Therefore, the conceptual framework as a construct includes the individual interrelated and mutually supportive concepts as integral components and determines subsequent research direction (Jabareen, 2009, p. 51).

Although the theoretical and conceptual frameworks are two different elements necessary to distinguish from each other, they are directly related. Accordingly, both elements link through a direct connection because the conceptual framework builds on the theoretical framework as the scientific basis for interpreting the research, which thus serves as the basis for establishing the relationship between the individual constructs within the conceptual framework. To describe and delineate the conceptual and theoretical framework, C. Grant and Osanloo (2014, p. 17) used the metaphor of building a house to illustrate that “the theoretical

framework and its associated tenants and principles would entail the elevation blueprints for a house, whereas the conceptual framework would involve the floor plan blueprint of how information flows throughout the dissertation” (p. 17). By applying it to the metaphor of mountaineering underlying this dissertation, the theoretical framework is the mountain’s view map, the representation of a mountain from different perspectives, so to say. In comparison, the conceptual framework is a scaled overview map of the various tours as a guide for climbing the mountain. The map provides information about the multitude of different routes to the summit, indicating the specific routes, including individual stages, turnoffs, or forks on the way to the summit.

As an interpretive framework, the conceptual framework establishes the logical structure of the relationships between each of the central concepts within the theoretical framework. Thus, the conceptual framework is “an interpretative approach to social reality” (Jabareen, 2009, p. 51). Therefore, it is not a mere stringing together of concepts but conveys the researcher’s worldview of the phenomenon under study (C. Grant & Osanloo, 2014, p. 17). As a result, in addition to defining the central concepts, this chapter discusses them, including their components. Based on the dissertation’s research question, the derivation of hypotheses about the presumed relationships of the variables used follows. In addition, we explicitly present the measurement approaches used to measure the concepts and variables in the empirical research.

The conceptual framework as a guideline draws on the renowned literature presented in the previous chapter as “a grounding base, or an anchor” (C. Grant & Osanloo, 2014, p. 12) for presenting our perspective and framing the research problem, as well as for analysis and methodological development for problem’s examination. To this end, the conceptual framework for extending previous literature combines the resource-based view with upper echelons theory and insights into decision-making under uncertainty in the context of prospect theory. Against the background of information overload, ambiguous goals, and a dynamic environment, it also seems helpful to shed light on decision-makers varying risk propensity and willingness to accept risks based on their cognitive perspective regarding the complementary presented socio-psychological approaches, including the anomie concept. The distinct approaches presented are brought together to examine the research questions and serve as a guiding principle in examining the concepts and the relationships among the variables. Specifically, we first divide the empirical analysis into separate studies that test the individual links of the conceptual framework to increase the clarity of the construct.

3.1 Definition of Central Concepts

To concretize, delineate, and determine the assumptions and contributions of this dissertation, it is necessary to clearly define the central concepts used in this dissertation based on the prevailing literature in the face of multiple interpretations to draw basic conclusions based on universally accepted definitions. As shown in Chapter 2, applying the central concepts of business models in the context of strategic positioning to generate competitive advantage, risk-taking behavior in decision-making under uncertainty, and firm performance find broad appeal in the literature. However, the diverse use of the concepts in different and interdisciplinary research contexts stands out by a diverse interpretation and a lack of universally accepted definitions. This circumstance results from the fact that researchers shape the central concepts used in their studies depending on the specific research discipline and direction by adapting them in their nuances. Therefore, a clear understanding of the concepts used in our research seems essential.

The TMT, as the firm's central decision-making body, combines various tasks related to shaping the firm's direction, requiring constant decision-making under uncertainty against the background of dynamically changing conditions or unforeseen disruptions to respond and adapt appropriately to changing circumstances. Thus, as the central authority in a company, the TMT associates multidimensional tasks that cannot be confined to one generic term (Mintzberg, 1994), as they resolve conflicts, conduct negotiations, establish interpersonal relationships, disseminate information, and allocate resources, among others. Overall, the TMT has the most crucial role in a firm's decision-making system as a direction-setting body responsible for setting direction and charting new courses through constant decision-making under uncertainty (Mintzberg, 1990).

A company's positioning results from the permanent and appropriate decision-making of the TMT members, aiming to make the company perform at its best to ensure its survival through economic performance. Thus, the company is the "specific object of the Manager, his specific concern and his specific responsibility" (Drucker, 1955, p. 118, emphasis in original). In this context, the TMT's primary responsibility is ensuring the firm's economic performance in the present and the future (Drucker, 1986) to justify the firm's existence. Therefore, the TMT's efforts aim to direct the company to the most remarkable possible contributions and achieve the results for the organization's sake. Accordingly, "it is managers and management

that make institutions perform”(Drucker, 1986, p. 3) by making the decisions necessary to achieve the goals set (Drucker, 1955).

TMT decisions must enable the company to fulfill its mission by pooling its resources and thus determining the structuring and specification of money-making through value creation. Therefore, through decisions, the TMT has to create company’s mission in the form of stable corporate structures, strategies, and rules as the company’s money-earning logic that follows the vision and values, within the framework of which it can act operationally (Sterman, 2000, p. 84). Hence, management’s responsibility is to organize and pool resources to achieve its mission (Drucker, 1986).

The designing role of TMT founds the heterogeneity of companies by individual and specific organizing, in a kind of creative decision-making task to shape the company’s positioning. Drucker (1994) summarized this conglomerate of decisions and assumptions that make up the understanding of business with the term “theory of the business” (p. 95). In this regard, Nelson (1991) found that the heterogeneity of companies is essentially due to organizational differences. While new company’s technologies are easy to imitate and adapt, this is not the case with its identity, vision, mission, and value creation. Against this background, the definition of the research concepts used rests on recognizing the influence of TMT in its creative role. Therefore, we do not consider TMT as a separate concept in its composition, such as the number of members or their demographic factors. Instead, the separate concepts are assessed as part of the management process.

The literature has not clearly defined the top management team, especially concerning the different TMT’s membership descriptions ranging from senior executives with a specific title to a small group of top managers, so in practice, publicly available information is usually used to identify the TMT’s members. For example, Cannella and Hambrick (1993) understood members of TMT as “officers [...] who either held a title above the rank of Vice-President or were inside directors, or both” (p. 144). Finkelstein et al. (2009), in turn, defined top management team as a “relatively small group of most influential executives at the apex of an organization—usually the CEO (or general manager) and those who report directly to him or her” (p. 10). As defined by the latter, strategic leadership is prevalently associated with a small group of top executives. Nevertheless, it often remains questionable which persons make up the group of top management teams. Publicly available information, for instance, from annual reports, can support the delineation of this group of persons. However, this approach always

includes a bias concerning those who internally exert significant strategic influence but do not hold a title above vice-president to follow the definition of Cannella and Hambrick (1993).

Country-specific rules for corporate bodies such as the design of board systems, roughly differentiated into monistic and dualistic systems depending on the separation of control and management by an additional organization level, complicate the identification of TMT members. In monistic systems, mainly found in the Anglo-Saxon area, single-tier boards usually consist of executive and non-executive directors ensuring a direct information flow between the functions. According to Jungmann (2006), this information symmetry is possible since the supervisory board is involved in decision-making due to institutional separation. Thus, in such one-tier systems, strategy is set by the same board of directors. Although the non-executive directors primarily have a service and control function, they constructively co-develop the strategy so that there is a combination of confirmation and monitoring of decisions and initiation and implementation of decisions in the one-tier system (Zahra, 1990). In dualistic systems, in contrast, often referred to as the traditional German model (Davies & Hopt, 2013, p. 317), the company's management by the executive board and the control of the management by the supervisory board are separated into two bodies by an additional organizational layer (Jungmann, 2006). In this two-layer concept, Maassen (1999) highlighted that the supervisory board as the upper layer consists exclusively of non-executive directors. As the lower layer, the executive board comprises executive directors and is responsible for strategy monitored by the upper layer. Thus, the formal structural separation of the boards should contribute to greater independence (Maassen & van den Bosch, 1999).

Choices between the one- and two-tier systems within a country, hybrid forms of one- and two-tier systems, and country-specific roles and functions of supervisory boards within the two-tier system further complicate the demarcation of members belonging to the TMT. For example, as Davies and Hopt (2013) pointed out, there is a freedom of choice between a one-tier and a two-tier system in countries such as France, Italy, or the Netherlands. In Italy, this choice has led to the emergence of hybrid forms. Accordingly, on top of the traditional one-tier and two-tier "German" system, Italy also has a one-tier system that replaces the traditional internal audit committee with a mandatory audit committee of the board of directors. Furthermore, in the two-tier model, both executive and non-executive directors can be board members. Compared to the classic German model, a strict hierarchy also characterizes the Nordic model, but the systems differ in country-specific roles and functions of the supervisory boards. In the Nordic model, the executive board is subject to the extensive authority of the

board of directors as “the main body of management” (Ringe, 2016, p. 32), whereas, in the German understanding, the supervisory board has a control function primarily. As Ringe (2016) explained, the board of directors in the Nordic region is vested with its executive power and, as the higher-level management body, decides on strategy and oversees risk management and internal controls. In contrast, executive management is entrusted with the day-to-day business and, as a result, has no far-reaching decision-making powers.

The management bodies of European companies, such as those of European banks as our research use case, are organized in a one- and two-tier board structure whose units differentiate by different functions and competencies and intend to perform both an executive and a supervisory function. Accordingly, to stay with our use case, the recitals of the Capital Requirements Directive, abbreviated CRD, that the management body should perform an executive and supervisory function to employ the management body’s different units with separate tasks concerning the executive and supervisory function (CRD IV, 2013/26 June 2013, (56) of the recitals). Thus, the functions and competencies of the governing body members of the European banks differ in the member states depending on the corresponding unit in the one- or two-tier board structure.

As declared in Chapter 2, our study follows the emerging perspective by considering the relationship between the composition of the TMT, their cognitive abilities as a crucial influencing factor in decision-making, as a determinant of a company’s strategic positioning. By considering banks of the eurozone and Switzerland in our research, we refer to the so-called management body to approach an understanding of TMT. Following the capital requirements directive (CRD)

- ‘management body’ means an institution’s body or bodies, which are
- (i) appointed in accordance with national law,
 - (ii) are empowered to set the institution’s strategy, objectives and overall direction,
 - (iii) oversee and monitor management decision-making, and
 - (iv) include the persons who effectively direct the business of the institution.
- (CRD IV, 2013/26 June 2013, Article 3(1) point (7))

Consequently,

the management body approves and periodically reviews the strategies and policies for taking up, managing, monitoring and mitigating the risks the

institution is or might be exposed to, including those posed by the macroeconomic environment in which it operates in relation to the status of the business cycle. (CRD IV, 2013/26 June 2013, Article 76 (1))

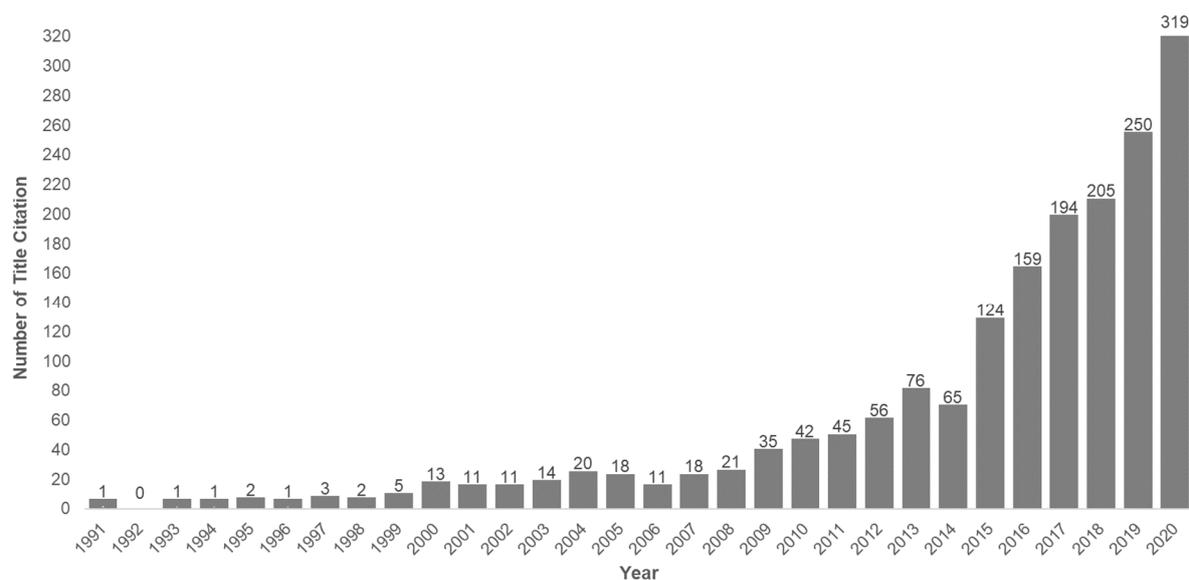
In our study, the positioning and scope of the company's activities as part of the continuously analyzing, and, if necessary, adaptation for ensuring a sustainable competitive advantage and long-term firm success as a leadership task is paramount by focusing on the executive members of the TMT and the ongoing business activities and disregarding the non-executive members entrusted with the control function. Therefore, in the definition of TMT applicable to our dissertation, we regard the executive TMT members belonging to the bank's senior management. According to the capital requirements directive (CRD), "senior management' means those natural persons who exercise executive functions within an institution and who are responsible, and accountable to the management body, for the day-to-day management of the institution" (CRD IV, 2013/26 June 2013, Article 3 (1) point (9)). Thus, decisions to shape resources and structures and, if necessary, redesign them to adapt the company to ongoing environmental changes are their responsibility. However, we do not consider non-executive members of the management body – especially the board of directors – who essentially perform the control function and as part of the management body since in its supervisory function they "acting in its role of overseeing and monitoring management decision-making" (CRD IV, 2013/26 June 2013, Article 3 (1) point (8)).

Business Model

Frequent use in practice, mainly due to the rise of the Internet and increasing technologization, has not yet elaborated a uniform definition of the term business models, of its understanding, functioning, and development so that the term's usefulness is also still questioned. Despite the history of the term and its frequent and extensive use in practice, theoretical research has neglected this unit of analysis of the business model for a long time (A. B. Jensen, 2014). However, interest in the unit of analysis has increased in recent years (Morris et al., 2005). In particular, the rise and advance of the Internet economy and technologization have driven the focus to theory building in terms of business models (Mahadevan, 2000). Nevertheless, numerous discussions deal with the usefulness of business models, primarily attributed to the still relatively recent appearance of the research topic, e.g., Richard J Arend, 2013.

The evolution of the growing interest in the term business model is most evident by illustrating the frequency of mentions of the term business model in the title of scientific journal

Figure 3.1: Number of Title Citations of Business Model Term per Year (1991–2020)



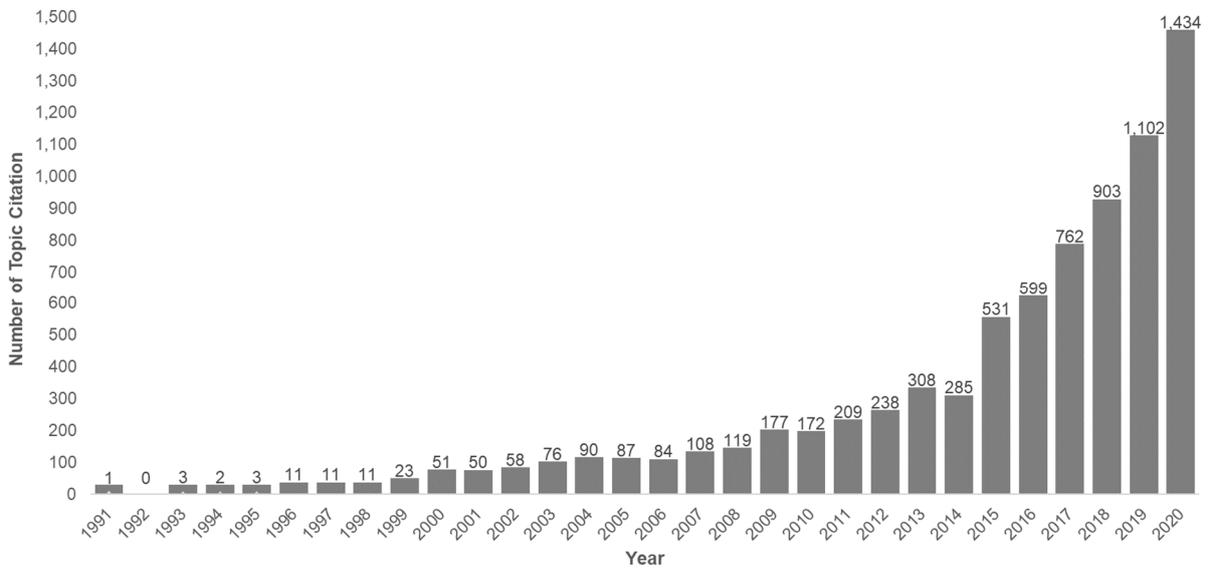
Note: The graph shows the citations' frequency of the term business model as part of the title per year over the last 30 years (1991–2020).

Source: Own illustration based on Web of Science Core Collection, May 2021 (Clarivate, 2021b).

articles, books, and conference proceedings in Science per year over the past 30 years. Data from the Web of Science Core Collection is a global and interdisciplinary collection of journal articles, books, and conference proceedings that includes all significant (Clarivate, 2021a) journals that serves as a basis for illustration. Figure 3.1 contains the search results for frequencies of citations of the term “business model” in the titles of journal articles, conference proceedings, books, or book chapters per year for the period 1991–2020. Titles of journals are not included in this search. A similar picture emerges from the complementary search for the frequency of the term “business model” as a topic of journal articles, conference proceedings, books, or book chapters per year for 1991–2020. In addition to the title citation, citations in abstract, author keywords, and keywords plus, as index terms that are automatically generated from the title of the cited articles and must appear more than once in the bibliography, are also considered. Figure 3.2 shows the frequency results of this extended version.

The figures show that business models played only a marginal role in the scientific literature in the early to late 1990s, which is also evident from the low citation frequency in the title, ranging from none to five times. Then, in the early 2000s, interest increased moderately; but remained below 50 mentions per year until the first decade. However, in the last decade, especially in the second half, the business model as a unit of analysis got enormous momentum in the scientific discussion, as the figures illustrate. Of course, the frequency of mentions of the term is only an approximation of the increased research interest in the scientific discourse. For

Figure 3.2: Number of Topic Citations of Business Model Term per Year (1991–2020)



Note: The graph shows the citations' frequency of the term business model as part of the topic per year over the last 30 years (1991–2020).

Source: Own illustration based on Web of Science Core Collection, May 2021 (Clarivate, 2021b).

example, not all papers contributing to this research area's development and interest are contained due to search criteria. However, in this way, it is possible for the dissertation's author to prove the tremendous and further increasing scientific interest of the analysis of business models and their theoretical foundation in recent years, which "is relatively recent, with much of the research appearing in the past decade, a time period associated with the 'new economy'" (Morris et al., 2005, p. 727).

A variety of definitions of the term business model reflects the lack of a uniform definition, with a large number focusing on how business models work as a representation of value creation or core logic of business operations. For example, Richard J Arend (2013) described business models as "a useful representation of how the organization creates value through transforming and transferring matter, by drawing on available factors, fueled by an identifiable economic engine" (p. 391). Teece (2010) also concerned value creation by highlighting that "the essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit" (p. 172). In this context, Wirtz et al. (2016) referred to an "architecture of value creation" (p. 41), and similarly, Timmers (1998) described business models as the company's architecture representing the core logic of business operations.

Other definitions' efforts consider business models as a conceptual tool to illustrate individual elements as part of business models and the interrelationships between the single elements. For instance, Johnson et al. (2008) defined a business model by the four interrelated elements of customer value proposition, profit formula, key resources, and key processes, and highlighted the customer value proposition as the most important for the business model's success. Likewise, Osterwalder (2004) stated that a business model as a "conceptual tool" (Osterwalder, 2004, p. 15) represents the different elements that make it up and the relationship between the elements. In addition, Mahadevan (2000) differentiated interlocking value, revenue, and logistical streams, and Afuah and Tucci (2003) defined a list of questions as components that a business model must answer. Finally, Osterwalder (2004) and Osterwalder and Pigneur (2010) distinguished the nine key elements of customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure as a composition of business models' building blocks. These nine elements form the guiding principle of the Business Model Canvas (BMC), particularly well-established and much used in practice.

Business models contribute to the practical concretization of the company's purpose by making assumptions about the revenues, costs, and profits associated with delivering the value proposition along different categories. Thus, modeling a business model that translates a company's mission or strategy into concrete practice helps achieve a shared understanding of what it does and how it makes money (Osterwalder, 2004). Business models are the "business and money earning logic of a company" (Osterwalder, 2004, p. 15). As a plan for shaping the company's mission along with defined categories, it maps the value proposition, the customer, the infrastructure, and the revenue generation capability against the backdrop of the interplay of costs and revenues (Venkatraman & Henderson, 1998; Osterwalder & Pigneur, 2010).

Modeling successful and sustainable business models as a working system of interlocking elements encompasses numerous possibilities, but all of them emphasize customer centricity as central to defining a value-adding value proposition for the customer. As Teece (2010) pointed out, modeling the business model as a concept involves the logic of how value is created, how customers are made to pay for that value, and how those payments are converted into profit, for which customer orientation is necessary. He showed that business modeling encompasses value creation for the customer and the principle of converting some of the value creation into profits. Therefore, "a business model's great strength as a planning tool is that it focuses attention on how all the elements of the system fit into a working whole" (Margretta,

2002, p. 90). Thus, it is essentially “a conceptual, rather than financial, model of a business” (Teece, 2010, p. 173).

The business models’ development and reinvention are management tasks closely related to individuals’ cognitive perception as a subjective interpretation of reality and the resources and competencies associated with the model. Thus, Voelpel et al. (2004) considered the development of new business models along the four critical dimensions of customers, technology, business infrastructure, and profitability to be an essential task for management to achieve sustainable competitive advantage. With the creation, extension, revision, and termination of a business model, Cavalcante et al. (2011) differentiated four types of business model changes and emphasized the management’s individual capacity to act that strongly influenced by the individual’s cognition to create and develop business model abstraction. Demil and Lecocq (2010) noted that a business model’s success depends on the resources and competencies associated with that model by using the example of the long-term success of FC Arsenal’s business model. The resources and competencies must bring the ability to continuously revise the single interrelated components through changes and adjustments, including response to external factors such as globalization, deregulation, and technological advances (Casadesus-Masanell & Ricart, 2010), for a long-term sustainable competitive advantage.

Successful business models in a dynamic and complex environment distinguish by regularly subjecting the business modeling to a test of the underlying assumptions and, after identifying a discrepancy between assumptions and reality, self-initiating a change similar to the scientific way of working. Drucker (1994) clarified that this involves rethinking every product, service, area, and distribution channel to whether you would be doing what you are doing if you were not already doing it as a kind of assumptions’ testing. He declared that a company fails whenever reality has changed so that its assumptions no longer fit reality, resulting in the company stagnating and getting into trouble because decisions were made based on wrong assumptions. Business modeling, with the business model as the outcome (Rentmeister & Klein, 2003) is therefore inherently analogous to the scientific way of working, in that assumptions are made about how the business will work, which then need to be tested in practice and revised if necessary (Margretta, 2002).

A static and dynamic perspective characterizes the understanding of business models depending on emphasizing the extent of changeability. The static perspective includes the sketchy representation of the business models’ core components and their interaction and

coordination. Thus, Wirtz et al. (2016) determined in this context that the focus is on explaining the relevant business activities in aggregate form and the business processes. In contrast, the dynamic perspective focuses on transforming the existing business model as an instrument for change and innovation in the company or the existing business model and emphasizes the changeability of business models or their reinvention. Against the background of a dynamic environment characterized by ambiguity, complexity, and uncertainty, Voelpel et al. (2004) analyzed that “new sources of sustainable competitive advantage can often only be attained from business model reinvention that is based on disruptive innovation and not on incremental change or continuous improvement” (p. 259). For our research, we combine both perspectives by considering the business model as a practical implementation of its mission or strategy, describing the different components’ design and relationships. Perhaps, a change or innovative disruption preceded the status quo, or the components’ analysis is a starting point for change and innovation by directly comparing models within an industry.

Concrete decisions and the decisions’ consequences are decisive determinants of business models, which as a business case, determine the organization’s path as the company’s logic. In this context, Casadesus-Masanell and Ricart (2010) referred firstly to the concrete decisions made by management on how the organization should operate, e.g., decisions on locations or sales activities. Furthermore, they highlighted the decisions’ consequences for its operations, like how a company’s pricing policy affects sales volume. As a business case, the business model is “a recommendation to decision makers to take a particular course of action for the organisation [*sic*], supported by an analysis of benefits, costs and risks” (van Putten & Schief, 2012, p. 139). Hence, every organization has a business model – regardless of whether the model is known or sufficient to meet expectations and demands in the long term, as Casadesus-Masanell and Ricart (2010, p. 200) noted. As a result, the TMT’s central task is to make decisions with the corresponding consequences that determine the company’s logic and thus its business model.

A company’s chances of profit and long-term survival in the market are crucially related to the choice of the business model as an instrument for the holistic description of interlocking activities for exploiting business opportunities. Thus, Zott and Amit (2010) appealed for holistic and systemic thinking in modeling business models. As a tool for the holistic description of entrepreneurial activity, business modeling describes the interaction of entities, i.e., the activities necessary to create customer value. Casadesus-Masanell and Ricart (2010) compared the business model to an “activity system” (p. 197), which includes the description

of how value is created and focuses on the set of interlocking activities that make up a business model. In this context, Amit and Zott (2001, p. 511) spoke of “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (p. 511).

The comprehensive business model concept reflects the rationale of value creation and provides a framework for decisions and actions by illustrating how the company functions. Therefore, “business models, though, are anything but arcane. They are, at heart, stories – stories that explain how enterprises work” (Margretta, 2002, p. 87). In total, “a business model describes the rationale of how an organization creates, delivers, and captures value” (Osterwalder & Pigneur, 2010, p. 14). A clear, simple, and unambiguous idea of what constitutes the business characterizes the business model as a guiding principle for decisions and actions taken in the organization’s interest (Drucker, 1986). As a coherent guiding principle, it creates orientation by providing a framework for action in which decisions and actions of the company are controlled and executed against the background of a complex environment (Tikkanen et al., 2005; Richardson, 2008). Furthermore, it considers how the individual components of an organization fit together and, accordingly, addresses how the organization functions and its ability to satisfy a customer’s need (Margretta, 2002). Thus, the comprehensive business model concept links the strategic positioning of a company and its operational manifestation in business processes by outlining the business strategy in a sketchy plan on the one hand, and on the other establishing the basis for its execution (Osterwalder, 2004).

The delineation of the terms business model and strategy against the background of the emphasis on a competitive or customer perspective is necessary for a clear understanding of the business model concept. The frequent blending of concepts results from the differentiation of the business model concept along the strategy perspective from the 2000s onwards (Wirtz et al., 2016, p. 37), although the terms business model and strategy do not mean the same thing (Teece, 2010; Zott et al., 2011). Considering external and internal factors, the concept of strategy encompasses how it is possible to be better, and thus different, than the competition to generate revenue in practice (Margretta, 2002). Even though the business model expresses the strategy (Casadesus-Masanell & Ricart, 2010, p. 201), strategy nevertheless takes a different perspective by focusing more on competition and the company’s positioning in the competitive environment, whereas business modeling emphasizes the customer value perspective and revenue generation (Zott et al., 2011).

Derived initially from military language (Kreikebaum et al., 2011, p. 23), strategy, as discussed in the previous Chapter 2, means the fundamental orientation of a company by differentiating it from the competition and creating uniqueness through precise positioning for or against customers and their needs, products, or services. Thus, the strategy concept aims at differentiation from the competition by creating a valuable, unique position to stand out from the competition (Porter, 1996, p. 68). In addition, strategic positioning tries to make the company unique by doing something no other company is doing or doing what another company is doing differently (Porter, 1996, p. 62; Margretta, 2002, p. 91). Consequently, a unique strategy requires positioning for and against something to gain a competitive advantage through differentiation and organizational consistency as part of strategic positioning (Porter, 1996). Competitive positioning opportunities in this context refer to general cost leadership by offering a product/service at the lowest price, differentiation based on a unique selling proposition through exclusivity and high quality, and focus as a particular form of differentiation by tailoring to a specific market segment (customers, product, or geography) and intending to achieve both a low-cost and differentiated position (Porter, 1997).

Strategy as a long-term plan is the task of management setting the long-term goals against the background of the internal bundle of resources and competencies, defining, designing, and establishing activities and functions as consistent behaviors, and further developing the resource profile into new procedures as strategic change. Thus, companies rely on a particular internal resource and competency profile to pursue a particular strategy (Barney, 1991), simultaneously defining and constraining the strategy definition as a complex activity by the nature of the opportunities to achieve sustainable competitive advantage and long-term performance (Collis, 1991). At the same time, a company must change itself to become or remain successful (Drucker, 1994). Therefore, especially in a complex and uncertain organizational environment, it is necessary to change and adapt resources to remain successful (Teece et al., 1997; Eisenhardt & Martin, 2000), so “strategy can then be viewed as the set of consistent behaviors by which the organization establishes for a time its place in its environment, and strategic change can be viewed as the organization’s response to environmental change” (Mintzberg, 1978, p. 942).

The concept of strategy must also be distinguished from operational effectiveness, which focuses on short-term performance improvement and is related to tactics. Unlike strategy or strategic positioning in generating a distinctive corporate offering concerning the competition, operational effectiveness is concerned with doing things right and performing

specific activities better than the competition (Porter, 1996, p. 62). As Porter (1996) differentiated, operational effectiveness aims at short-term performance improvements through optimization by creating leaner processes, speed, and flexibility, neglecting long-term sustainable differentiation from competitors. Thus, as Casadesus-Masanell and Ricart (2010) delineated, there is a close relationship between operational effectiveness and tactics, standing for situational decision-making and selection from the individual alternatives available in the framework, while strategy focuses on the long-term, cross-situational goal. As a result, tactics represent the course of action within the framework of individual sub-steps. The business model, as the determination of the action framework, operationally limits the possibilities of sub-steps.

By considering a football match, the interaction of business model and strategy can be described by the relationship between a team's general way of playing and its basic structure:

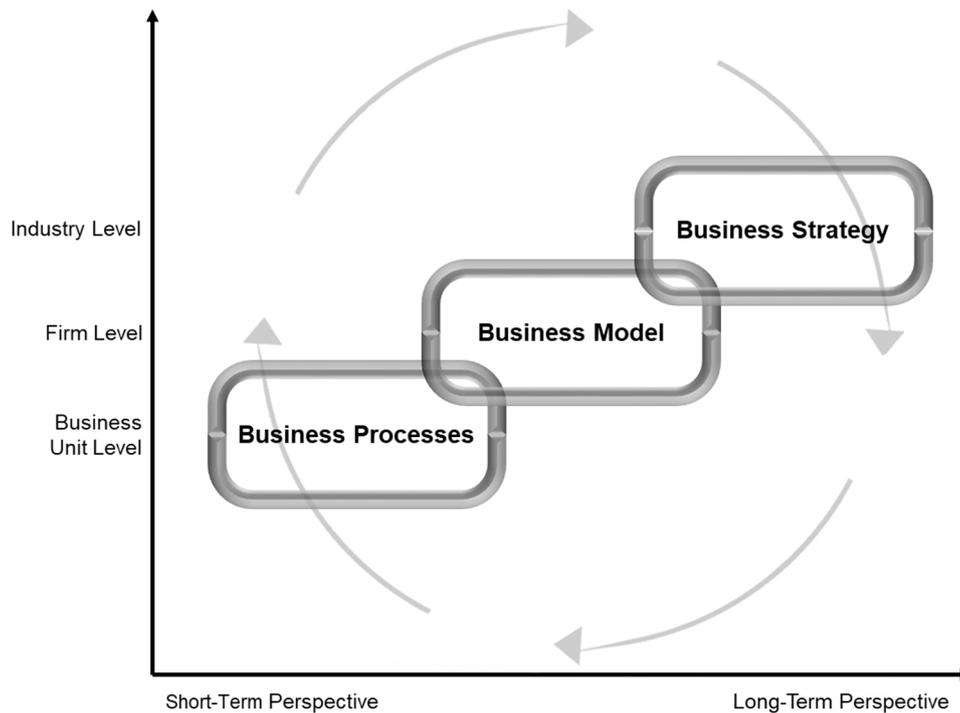
- Strategy as a team's general way of playing: An offensive and ball-oriented attacking soccer as overriding goal is a possible game's strategy for 90 minutes of play. Considering the opponent's capabilities, this is usually when superiority and a favorite role can be assumed. However, if a team is inferior to the opponent's team, defensive safety soccer oriented toward the opponent's loss of the ball seems appropriate as the strategic positioning determines the entire game.
- Business model as the basic structure: The basic structure, including the team's lineup, functions in this context as a plan for achieving goals, i.e., as a method for implementing the strategy. Depending on the basic structure, the coach, as the team manager, assigns individual players a position on the field. Accordingly, they draw up a concept of who should play and aligns the basic structure, the lineup, with the team's general way of playing – whether offensive or defensive. Among the many different basic structures, a “5-4-1” playing system, for example, reflects a strongly defensive style of play with the defense as the central anchor point.
- Tactics as play system with movement: We must separate the game-related tactics from the strategic positioning as play and the line-up within the basic structure as a metaphor for the business model. The tactics are the execution of the way of playing and the basic structure. Tactical alignment assigns each position of the basic structure tasks within certain rooms by considering different circumstances like the situationally available players' capabilities, the opponent's capabilities, or the basic order of the opponent. It

involves the identification and exploitation of specific running routes or playing spaces as weaknesses in the opponent. Tactics as the system of play with movement reflect what to do concretely.

Different emphases on value creation and the resulting customer benefits on the one hand and differentiation from the competition on the other characterizes the concepts of business model and strategy, which nevertheless focus uniformly on opportunities to provide performance. Zott et al. (2011) highlighted that both concepts are united by focusing on the firm's output performance. Casadesus-Masanell and Ricart (2010) concluded that the business model as "a reflection of the firm's strategy" (p. 203) is related to the strategic orientation, and both are related to each other despite the conceptual differences. Thus, strategy functions as a sense-making and directional unit by linking the individual components of a business model and relating them to other components (resources, competition, environment), thereby putting the individual components on track in the context of the big picture (Tikkanen et al., 2005). Unlike, the business model, as an anchor between strategy and concrete implementation, sharpens the understanding of strategic positioning in competition with the help of a clearly outlined plan for implementation and, as a guide, creates orientation for decision-making in exercising strategy (Richardson, 2008).

A comprehensive firm's approach by interlocking strategy as an abstract theory, business model as an implementation plan, and business processes as concrete execution are necessary for sustainable competitive advantage and long-term performance because one cannot function without the other. Richardson (2008) clarified that strategy as a theory of competition that abstracts from the real complex world is not sufficient to reach sustainable competitive advantage and superior performance in the long term. Instead, a strategy requires implementation and execution in an interacting system defining value creation and revenue generation to verify achieving objectives in this way (Casadesus-Masanell & Ricart, 2010). As a link between strategy and implementation (Osterwalder, 2004, p. 15), the interlocking of strategy and implementation through the holistic concept of the business model enables the generation of inimitable differentiation for sustainable competitive advantage and superior performance (Margretta, 2002; Teece, 2010; Zott et al., 2011). As a translation of strategy into a blueprint of a concrete business structure, the business model and strategy, as well as process models at the operational level, address the same issues and problems and seek answers to these issues, but do so from different perspectives and at different business levels (Osterwalder, 2004), as shown in Figure 3.3.

Figure 3.3: The Business Model as a Link Between Long-Term Strategy and Short-Term Operational Implementation



Note: The figure illustrates how the business model functions as a link between the long-term geared strategy and its implementation in the context of operational business activities, which relate to a short-term period. In addition, the figure illustrates the different levels at which strategy, business models, and business processes operate.

Source: Own illustration.

The TMT significantly influences sustainable competitive advantage and long-term performance due to the responsibility for strategic positioning and conceptualization of the company in a business model against the perception of numerous opportunities based on individual cognition. Therefore, based on the above distinction, we are interested in how the conceptualization of the business model as the implementation of strategic decision-making and the primary responsibility of the management influences the competitive advantage and superior performance of a bank. Thus, the diversity of different business model conceptualizations reflects the unlimited number of possibilities and opportunities people face in today's world (Axinn & Matthyssens, 2002). Hence, answering the question of what constitutes the company is a cognitive phenomenon since it is incumbent upon management, which must address and reach an agreement on this question in light of its resources (Drucker, 1986).

The perception of the firm's reality, how to ensure its survival, together with the opportunities and risks, results from the management's business decision, which can be

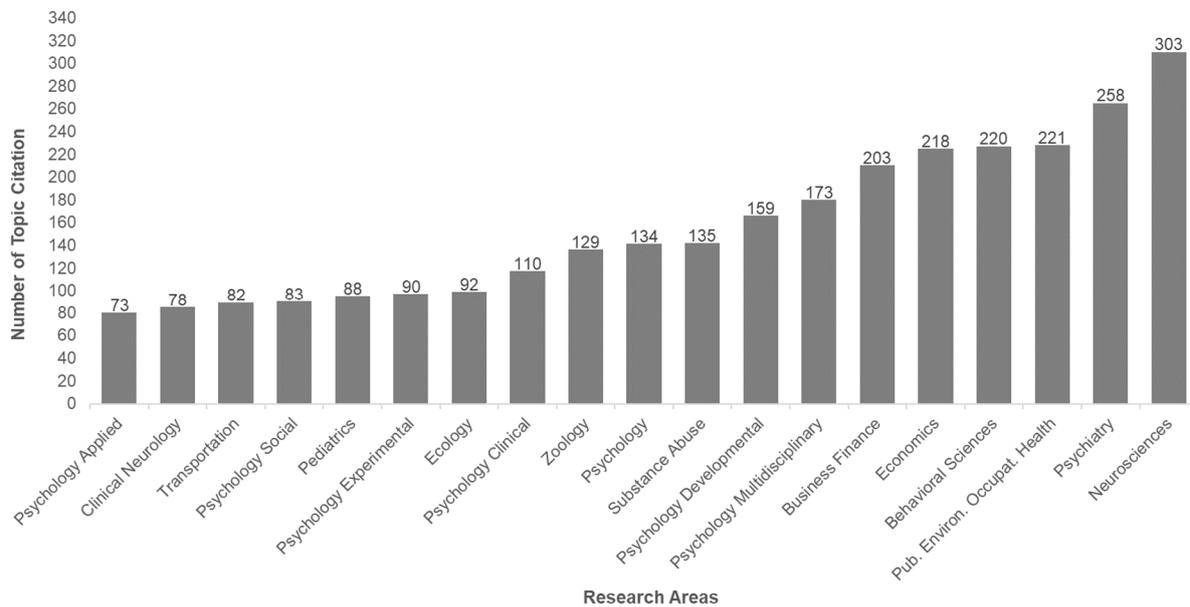
assessed by the systematic analysis of products, services, processes, revenue sources, for example, as a way of strategy implementation. As shown before, this systematic analysis can refer to different elements of business models. In our study, we align with the nine elements of the BMC concept and analyze business models as a decision made previously negotiated by management and as an expression of the cognitive perception of TMT members. The BMC includes the nine key elements of customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. Using the BMC structure as a guide, we operationalize the business models of our bank sample as a use case and their consequences on sustainable competitive advantage and superior performance to address our research questions.

Risk-Taking Behavior

A direct link between the decision-making situation and risk results from the inherent presence of risk in almost all decision-making situations, so risk-taking behavior, or rather the individual propensity to take risks as an interdisciplinary construct receiving much attention in the literature in numerous research disciplines reflected in various theoretical foundations. Consequently, Mishra (2014) underlined that the consideration of decision-making behavior of individuals or groups is closely related to risk-taking. Correspondingly, he underlined that a certain risk degree is inherent in almost all decision-making situations, leading to a lively and interdisciplinary research interest in the concept of risk-taking, particularly in the behavioral sciences.

An evaluation applying the Web of Science Core Collection of the term risk-taking behavior citations as a topic in different research areas reveals a significant dispersion of citation as a proxy for its diverse use in different research disciplines. For example, the most striking frequencies of topic citation of the risk-taking behavior term in the Web of Science Core Collection database indicate a strong emphasis in Neurosciences, Psychiatry, Psychology, Economics, Behavioral Sciences, and Substance Abuse, to name just a few research areas from the overview in Figure 3.4. In this context, the mentioned frequencies of the term risk-taking behavior as a topic serve only as an approximation to illustrate the interest in this research construct. Nevertheless, it is possible to illustrate the interdisciplinary research interest and diversity concerning risk behavior, also reflected in various theoretical foundations, like expected utility theory in economics or prospect theory and heuristic approaches in psychology, for analyzing decision behavior and inherent risk behavior.

Figure 3.4: Overview of Research Disciplines With the Highest Frequencies of Topic Citations of Risk-Taking Behavior Term



Note: The graph gives an overview of the research areas with the most prominent citation frequencies of the term risk-taking behavior as part of the topic.

Source: Own illustration based on Web of Science Core Collection, May 2021 (Clarivate, 2021b).

Approaches to rational decision-making reach their limits in complex and dynamic environments due to the uncertainty inherent in these decision situations, as shown in Chapter 2, which is why behavioral approaches to decision behavior instead emphasize cognitive biases and reasonable risk-taking. In an experimental research design, Allais (1953) already showed that factual choice decisions deviate from the predictions of expected utility theory. Kahneman and Tversky (1979) took up this finding and explained individual risk behavior in decision situations based on cognitive biases with prospect theory. Moreover, prominent representatives in the management literature, such as Peters and Waterman (1982), also emphasized the importance of a try-and-fail mentality and the importance of reasonable risk-taking in the face of an uncertain outcome contradicting rational decision-making behavior for producing successful and creative businesses.

Entrepreneurial activity and management decisions require a certain degree of risk-taking by managers, which is inherent in their managerial role and determines the company's progress. There is no question that entrepreneurial decision-making, which is the principal responsibility of firm managers (Mirza et al., 2019), almost always involves an element of uncertainty and risk. Thus, even managers consider risk-taking as "an essential component of

the managerial role” (p. 1409) because it “is valued, treated as essential to innovation and success” (p. 1413), as the empirical findings of March and Shapira (1987) revealed.

The TMT’s strategic posture about which products or markets to pursue, which technology to use, or what to ignore accounts for a firm’s competitive advantage and rests on decisions related to uncertainty and risk, reflected in profit as a premium for the risk taken. Accordingly, to comply with the explanation of Covin and Slevin (1989), a firm’s strategic posture “is demonstrated by the extent to which the top managers are inclined to take business-related risks, to favor change and innovation in order to obtain a competitive advantage for their firm, and to compete aggressively with other firms” (p. 77). This activity always contains a “high-risk decision” (Drucker, 1986, p. 59) because it is forward-looking, characterized by uncertainty and risk. Consequently, the profit from this entrepreneurial activity is the premium for the risk of uncertainty that management was willing to take (Drucker, 1986).

Variable risk preferences of decision-makers characterize organizational risk-taking behavior, depending on various factors ranging from contextual factors to decider characteristics. Paraphrased as variable risk preferences (K. D. Miller & Chen, 2004), individuals behave in a risk-averse manner under certain circumstances, while in turn, behaving in a risk-seeking manner in other situations. Thus, contextual factors of the uncertain decision situation, such as the extent of insufficient information (Funtowicz & Ravetz, 1990) and personal situation’s appraisal in which “the human mind is used as an instrument for the assessment of uncertainty” (Lindley et al., 1979, p. 146) lead to different decisions under uncertainty and risk. Since numerous studies have highlighted the importance and impact of managers’ risk-taking on organizational performance, such as K. D. Miller and Chen (2004) or García-Granero et al. (2015), the connection of individual risk-taking behavior of managers and the risk-taking of organizations can be assumed.

As a significant determinant of the decision situation and the inherent risk-taking behavior, uncertainty consists of different interacting dimensions that vary in degree depending on the situation and can also be attributed to different reasons. Thus, Row (1994) distinguished four interacting dimensions of uncertainty present in every situation, but appeared with different dominance depending on the situation. He differentiated the categories into temporal uncertainty for future or past states, structural uncertainty due to complexity, metrical uncertainty concerning measurement, and translational uncertainty in communication because of different perspectives and viewpoints of the parties. To distinguish different reasons for uncertainty, Walker et al. (2003), in turn, defined different dimensions of perceived

uncertainty. In particular, they distinguished the location where uncertainty is evident, the level or even degree of uncertainty between knowledge and complete ignorance, and the nature of uncertainty, such as whether it is due to imperfect knowledge or a phenomenon's inherent range of variability.

Finance and management science usually defines risk as a possible deviation from the expected value, including both opportunities and threats resulting from uncertainty about the outcome of an event. This definition goes back to Markowitz (1952, p. 89), who equated risk with variance and defined it as a possible deviation from the expected value. Hence, this understanding views both opportunities and threats as risks. In addition, numerous other researchers used the variance of the probability distribution of outcomes as a proxy for risk in empirical research. For example, Bowman (1980) studied the risk-return paradox by using the profit variance to measure risk, such as Fiegenbaum and Thomas (1988), who conducted further research on the risk-return paradox. Other examples of using the variance of the firm's return as a proxy for risk can also be found in Fisher and Hall (1969) or K. D. Miller and Chen (2004). In this mentioned studies risk "is defined as the inability to predict the outcome of a forthcoming event with complete certainty" (Fisher & Hall, 1969, p. 80), and decisions in entrepreneurial context "are viewed as making decisions in the face of uncertainty on the basis of probabilistic expectations about future outcome" (Fisher & Hall, 1969, p. 80).

When evaluating alternatives, risk perception usually focuses on downside risk as the possibility of an adverse deviation, usually perceived as a loss. For example, Menezes et al. (1980) found that positive deviation is often not perceived as a risk, whereas in a risky environment, in particular, downside risk as a negative deviation from the expected value seems to be essential in evaluating behavior. Furthermore, Koonce et al. (2005) empirically showed that higher risk corresponds with increasing potential for loss within people's risk assessment. In addition, Jaspersen and Peter (2017) confirmed risk perception as negative deviance in qualitative studies of managers' risk preferences and individual decision-making.

While the concept of variance considers both positive and negative deviations, semi-variance as a measure considers only the downside risk of deviation, reflecting managers' perception of risk in practice. Accordingly, Mao (1970) pointed out in his case study of managers' investment opportunities that they perceive risk in financial terms primarily as downward deviation. In this context, he highlighted semi-variance as the squared negative deviations from the expected value as an arbitrarily chosen reference point instead of the positive and negative squared deviations inherent in the concept of variance as a relevant

measure. The suitability of semi-variance as a measure for assessing the average loss that a portfolio might suffer was also emphasized by Markowitz (1959).

Based on the previous remarks, we understand risk-taking behavior in a dynamic, ambiguous and complex world as a person's differential willingness to take risks in light of a possibility of adverse outcomes based on the cognitive perspective, associated preferences, and bounded rationality. In this context, individual risk-taking behavior becomes visible based on the person's decisions. Hence, from the entrepreneurial perspective, the TMT's risk-taking behavior as the upper decision-making body appears crucial. Even though each TMT member has a personal cognitive perspective, its collectively negotiated firm decisions reflect the different perspectives united by a common denominator in the TMT's decision expressing its risk-taking behavior. Moreover, unlike the usual focus in finance and management sciences, we focus exclusively on downside risk. Accordingly, we understand risk-taking behavior to be the deliberate risk-taking that involves the possibility of adverse or harmful development and the possibility of losses. Thus, we consider TMT decisions to reflect risk-taking behavior by expressing the extent to which negative deviations are perceived and accepted in the form of losses in value. At the same time, by considering downside risk in terms of considering losses, we are consistent with the mental model of managers, which "identifies risk as the possibility of loss" (Jaspersen & Peter, 2017, p. 915).

Firm Performance

Performance measurement is ubiquitous in organizations' reality, and although it is central to decision-making, there is nevertheless no universal measurement concept due to the interdisciplinary differences in emphasis on understanding performance. In this context, Parker (2000) elaborated that

measuring performance is something that all organisations [*sic*] do. They may do it systematically and thoroughly, or on an *ad hoc* basis and superficially – but they do it. External agents and organisations [*sic*] also measure performance – shareholders, investment houses, banks, regulators, and so on. Performance measurement is an important aid to making judgements and to making decisions. (p. 63, emphasis in original)

Behn (2003), in turn, compared measuring performance to the search for the only true path – much discussed, multifaceted applied, and yet there is no overarching answer for measurement

as what is meant by performance depends heavily on the research discipline and the corresponding target.

The multitude of performance indicators covering various performance areas by differentiating nuances of the performance concept reveals the complexity of the performance concept based on the great diversity of performance measurement options. For example, Boubakri et al. (2005) used various performance indicators in analyzing the relationship between privatization and bank performance in developing countries. They referred to the impact study of large-scale mergers on bank performance of Cornett and Tehranian (1992), who highlighted four performance areas by distinguishing between profitability, capital adequacy, efficiency, and risk. Other authors also addressed the complexity of performance measurement by separating the different performance nuances with the help of broadly dispersed measures like profit margin, return on assets or equity, loan growth, or capital to assets, such as Pearce II (1983). Thus, the complexity of the performance concept is confirmed even when focusing exclusively on performance measurement in the banking sector as our use case, which reveals the application of a wide range of financial, risk- or efficiency-oriented performance indicators.

With recourse to empirical research to identify performance indicators measuring profitability relevant to our research context reveals the use of a wide range of profit return measures, ranging from market-based to accounting-based or individual to groups of profitability measures. The use of individual financial performance measures, such as Bharadwaj et al. (1999) or Zott and Amit (2007), and the use of groups of financial performance indicators, e.g., Gerdoçi et al. (2018) or Farnè and Vouldis (2021), differentiates the literature on measuring financial performance. Furthermore, the application of various indicators differs by using accounting- and market-based measures. For example, Fahlenbrach and Stulz (2011) or Aebi et al. (2012) combined market- and accounting-based financial performance measures of buy-and-hold returns, return on equity, and return on assets as a group of dependent variables for operationalizing performance to examine correlations for heterogeneous bank performance during the economic and financial crisis in 2007-2008. In turn, Bharadwaj et al. (1999) applied Tobin's Q as a performance measure, defined as a combination of the market- and accounting-based data in their study of the relationship between IT investment and firm performance. Thus, it is evident that financial performance measurement focuses on "all types of profit return measures (e.g., on assets, equity); other performance measures are either not compatible or infrequently found" (Capon et al., 1990, p. 1146).

Myriad ways of approaching the construct of financial performance, conceiving growth-based or perceived indicators in addition to the presented accounting or market-based indicators, reflect the complexity and multi-layered nature of the company as an object of analysis. Zott and Amit (2007) applied stock market value as a perceived market-based measure for firm performance to examine the impact of different business models on firm performance. Thus, they used the purely market-based ratios to reflect the company's perceived performance as "the market's expectations of future cash flows to shareholders" (Zott & Amit, 2007, p. 187). In contrast, Aspara et al. (2010) employed a growth indicator to measure financial performance by focusing on profitable growth. Consequently, the various approaches for measuring financial performance address different parts of the business, so there is no consensus in the literature on the best approach to measure a company's financial performance because all approaches are helpful according to the specific research context.

Considering the frequently used approaches and the research context based on literature enables identifying appropriate measures for a company's financial performance as best practice approaches. Thus, Hagel III et al. (2010) declared that the appropriateness of financial performance measures depends on the circumstances and context in which the metric is applied, given that the literature review shows that no metric is perfect. For example, using an industry-independent meta-analysis, Capon et al. (1990) concretized that the accounting-based earnings ratios of the return on equity, return on capital, return on assets, return on sales, price/cost margin, and the market-based measure of stockholder return are most frequently used financial performance measures in the literature.

Several advantages and disadvantages characterize the use of accounting-based performance measures, so measures using a combination of market-based and accounting-based data are also conceivable. Accounting-based performance measures prominent in the literature are advantageous because of their easy access as part of financial reports, but disadvantageously do not predict long-term performance. Using a combination of the market- and accounting-based data, as is the case with Tobin's Q, "defined as the capital market value of the firm divided by the replacement value of its assets" (Bharadwaj et al., 1999, p. 1009) counter this disadvantage. However, disadvantageous distortions – especially for young, high-growth companies that often still have negative earnings, little property, plant and equipment, and low to negative book values at the current time – are possible.

In practice, many executives, analysts, and investors often use return on equity (ROE) or return on assets (ROA) as primary measures of firm performance by assessing returns using

ratios. ROE, in particular for shareholders, provides an appropriate way to assess the return on their investment by limiting the metric's view solely to the performance of the investment (Hagel III et al., 2013). Although the use of ROE is prominent in literature, Hagel III et al. (2013, p. 16) illustrated that ROA is, however, the most effective financial metric for holistically evaluating a company's performance. As ratios, they clarified that ROA, as a performance measure, captures the entire fundamentals of business management by focusing attention on the returns generated using all assets necessary to run the business, not just the returns generated through equity.

The ratios capture firm performance as a result of business decision-making against the backdrop of an overall assessment of the productive use of equity or total assets. Specifically, ROA weights the return relative to total assets and indicates how productive a company uses its total assets, including both debt and equity, to generate profits, while ROE concentrates solely on the productive use of equity. Moreover, since, as determined by Hagel III et al. (2013), "ROA reflects the cumulative outcome of decision making" (p. 16), it has the advantage of "holding management accountable for the cumulative decisions made in deploying assets" (p. 16). Thus, using ROA, it is possible to assess how a company's resources and competencies have been used in the strategic positioning and operationalization of these based on the individual components of the business model to generate value. Therefore, it appears to be an appropriate indicator for capturing firm performance in our research context.

Our study uses ROA as one of the most widely studied accounting-based financial performance indicators in the literature and considers only the banking sector as our use case to comprehensively assess the firm performance as the outcome of the productive use of the entire capital structure without bias. The application of ROA avoids potential biases due to differences in capital structures across companies, as illustrated by Admati et al. (2013). Furthermore, by comprehensively considering all assets, including debt, as a significant source of financing and an essential balance sheet component, ROA provides a comprehensive picture of firm performance, as presented previously. Additionally, this approach avoids the risk of incorrect conclusions of an increase in ROE resulting from additional borrowing and income generation from the additional debt. Furthermore, by focusing exclusively on the banking sector industry as our use case already presented, we avoid possible distortions that could result from comparing different industry structures and their peculiarities, e.g., different balance sheet structures. Finally, for methodological reasons and due to the nature of the sample – including both listed and unlisted banks – we resort to the accounting-based measure ROA to measure

financial performance in our study and waive the application of market- or growth-based indicators.

3.2 Business Model, Risk-Taking Behavior, and Firm Performance

The following section introduces and explains the critical components of the conceptual framework in greater depth to prepare the hypotheses in more detail. First, the infrastructure traits and diversity degree characteristics of business models are presented. Then, the interaction of the listed business model infrastructure characteristics, diversity degree characteristics, performance, and TMT's risk-taking behaviors are discussed in the second part. Finally, the following third part delves into the risk-taking behavior-performance relationship.

As a starting point for further discussion, the upper echelons theory considers the top management team as the central decision-making body. Accordingly, our research builds on the upper echelons theory, which states that the top management team shares strategic tasks and power and is responsible for company decision-making, not individual members (Hambrick & Mason, 1984). Differences in the strategic direction of companies are explained by the diversity of managers in terms of human factors, such as individual experiences, values, or perceptions. Therefore, a central component of upper echelons theory is studying the influence of TMT on diverse organizational events.

This understanding ties in with RBT by highlighting the cognition of TMT members expressed by the managerial practices as rare resources and capabilities responsible for the heterogeneity of a firm's strategic positioning. RBT explains the differences between firms through the rare resources and capabilities (organizational processes, firm characteristics, information, or knowledge) available to the firm that cannot be fully imitated and are not interchangeable. Therefore, management practices as a form of dynamic capabilities have a special significance as a resource control function (Teece et al., 1997; Eisenhardt & Martin, 2000). In this context, the TMT, with its unique (subjective) perceptions, experiences, and knowledge, is critical to strategic positioning and its implementation within a business model as firm design. The TMT members' values, beliefs, and knowledge as a group with a common purpose are the "business resourcefulness and creativity" (Teece, 2010, p. 186) reflected in the TMT decisions and evident in the decision-making on the business model design.

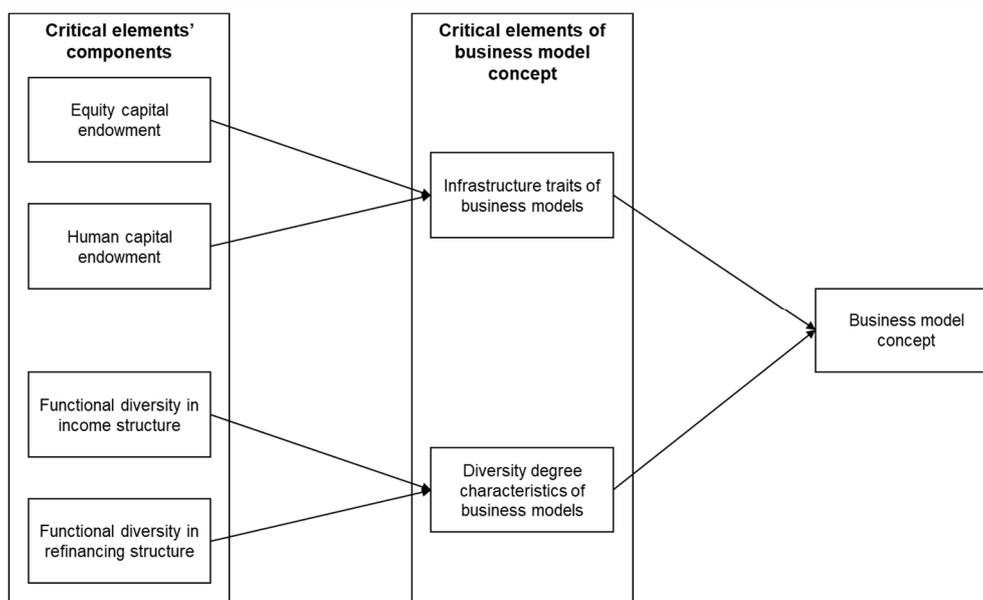
This decision-making is closely related to the insights of prospect theory, which considers decisions under uncertainty in the context of individual perception and emphasizes cognitive biases. TMT decision-making for sustained competitive advantage and superior performance occurs in an environment where only some, but not all, circumstances are known, so predictions relevant to decision-making must be made. Consequently, this decision-making under uncertainty is based on subjective values, beliefs, knowledge, understanding of risks, influenced by the individual perception in TMT (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). Research agrees that individuals or groups perceive the same uncertain situation differently due to cognitive biases, visible through a spectrum of different decisions (Hillson & Murray-Webster, 2005).

3.2.1 Infrastructure Traits and Diversity Degree Characteristics of Business Models

Based on the theoretical perspective presented, the business model as an outcome of strategic decision-making and strategy transfer into practice is an important research topic in strategic management, which has received little empirical attention so far. Theory suggests that differences in strategic orientation and design in business models can be explained as an expression of the variety of managers concerning diverse individual factors. These individual factors shape managers' views and interpretations, and in this way, influence decision-making. The TMT's decision-making is evident in the design of the business, which in turn influences organizational outcomes.

In detail, in the following, we discuss the theoretical basis of the infrastructure traits and diversity degree characteristics of business models against the background of different elements of the BMC analysis tool, widely used in practice. We point out that there has been no operationalization of the individual elements of the BMC in empirical research to date. However, individual components describing business models have been studied. Therefore, illustrated in Figure 3.5, we will present equity capital endowment and human capital endowment as well as functional diversity in income structure and functional diversity in refinancing structure as characteristic elements of business models based on the two dimensions of infrastructure traits and diversity degree characteristics by assigning them to the individual elements of the BMC analysis tool. For these purposes, we specifically refer to our use case of banks to identify the relevant characteristics.

Figure 3.5: Components of Critical Elements Describing Business Models' Concept



Note: The figure illustrates the connection between the design of business models based on the infrastructure traits and diversity degree characteristics as two critical elements of the business model concept. Equity capital endowment and human capital endowment as components of the infrastructure traits element as well as functional diversity in income structure and functional diversity in refinancing structure as components of diversity degree characteristics element define the business model concept through their coincidence.

Source: Own illustration.

Equity Capital Endowment

As an infrastructure trait of a business model, we highlight equity capital endowment for our unit of analysis of banks as a critical financial resource for operating banking businesses that can significantly strengthen and weaken a bank's positioning in the banking sector. In this context, Osterwalder (2004) generally stated that the infrastructure of a business model includes its capabilities and resources and their interaction. Additionally, considering critical resources, Wernerfelt (1984) concretized that resources mean everything that contributes to the "strength or weakness of a given firm" (p. 172).

Different resources can be distinguished in terms of the infrastructure traits of business models, with the financial resource of equity capital endowment being an essential determinant for a sound banking sector concerning our use case of banks. Of course, it is possible to distinguish different resources (Hall, 1993) and the importance of physical, intangible, financial, or human resources varies depending on the business model (Osterwalder & Pigneur, 2010). However, for banks as systemically important companies, due to their function as financial intermediaries in the economic cycle between providers and recipients of capital, the financial resource of equity capital endowment is critical and even subject to special regulation for ensuring a trouble-free financial sector. Thus, to absorb possible losses from the risks of

operating the banking business, a specified regulatory degree of equity capital aims to ensure a sound banking sector (CRR I, 2013/26 June 2013, (7) of the recitals). For this reason, it is obvious to highlight equity capital endowment as a central key resource and fundamental prerequisite for providing the value proposition to the customer in our use case. Moreover, since adequate equity capital endowment is “required to make a business model work” (Osterwalder & Pigneur, 2010, p. 34), the consideration as infrastructure trait appears reasonable.

Bank’s equity capital endowment plays a crucial role in macroeconomics by influencing business cycle fluctuations, the amount of lending, or the financial system’s stability. First, binding prudential regulations can increase fluctuations in the economy (Bernanke & Lown, 1991). Second, rigid regulatory requirements on the amount of bank capital affect the extent of lending (Chen, 2001). A decline in lending, in turn, has a substantial impact on the overall actual economic situation by denying credit-dependent firms access to financial resources (Bernanke et al., 1996), further fueling a recession. Third, the different components of capital and their levels contribute in different ways to the systematic risk of the financial system and have different impacts on stabilizing the financial system (Anginer & Demirgüç-Kunt, 2014).

As a significant internal control parameter for the management, the bank’s amount of equity capital endowment influences external market perceptions by being perceived as a buffer and expressing stability. Thus, despite minimum regulatory requirements, some banks hold significantly more equity than required by supervisory law, which has also attracted the interest of researchers. Researchers found that the amount of equity as an internal control variable is a crucial component of a bank’s survival strategy in times of crisis and, at the same time, an expression of stability (A. N. Berger & Bouwman, 2013). Moreover, it is suitable as a buffer to reduce the risk of bank failure (Ng & Roychowdhury, 2014). The level of equity capital endowment also projects a particular external perception that can lead to a competitive advantage through market discipline, both when competing on the liability side (Flannery & Nikolova, 2004) and the asset side (Allen et al., 2011). Therefore, it is evident that despite minimum regulatory requirements, the level of equity provides some scope for proactive strategic action by the TMT.

Proactive strategic action aims to optimize equity capital endowment by balancing advantages such as low indirect bankruptcy costs and increasing profitability against disadvantages that reduce the return on equity. On the one hand, well-capitalized firms face

lower indirect bankruptcy costs in the form of lower debt costs, leading to lower refinancing costs and, in turn, increasing profitability (A. N. Berger, 1995). On the other, opportunity costs of holding equity lower performance in terms of return on equity, as Goddard et al. (2013) pointed out. Thus, a positive relationship between the amount of equity up to a particular optimum is expected. However, when bank capital becomes too large, this effect diminishes and may even turn negative. A general optimal level of bank capital cannot be given, as it depends on many determinants, like decisions on the tolerated probability of default, or the TMT's expected return on risky assets as well as on market conditions such as interest rates or the economic outlook (Wahl & Broll, 2005).

Human Capital Endowment

As another elementary infrastructure trait, we highlight the human capital endowment for banks as our unit of analysis because, in the customer-contact-intensive banking industry, the resources are critical in determining the nature of customer interaction through the extent of personal and individual contact. Osterwalder and Pigneur (2010) noted a vast nature of key resources for business models, and although human capital endowment is required in every business model, human resources in the customer-contact-intensive banking industry are the critical differentiating factor in the intermediation of products and services. For example, Buttle and Maklan (2015) emphasized that personal, individualized contact with the customer appears irreplaceable for a long-term and profitable customer relationship to build mutual trust through emotional and empathetic customer interaction. Since the human capital endowment is essential for the opportunities to shape the customer relationship, we consider human capital endowment another component of the infrastructure traits.

Employees as a company's human resources are the customer's partners responsible for building long-term customer-company relationships based on knowledge about the customer. Parasuraman et al. (1991) declared that customers "want a 'partner'—someone who knows and cares about them" (p. 43). Likewise, Gwinner et al. (1998) underlined the employees' responsibility for establishing long-term customer-company relationships beyond the standard core service as an essential differentiating factor in competition, translating into a unique customer treatment and a beneficial relationship at the social and trust levels. Therefore, the provisioning of excellent service, requiring an understanding of what customers expect, supports the development of a long-term customer relationship (Parasuraman et al., 1991). Consequently, knowing the customers, their needs, and preferences is the basis for building a

lasting customer relationship by convincing and retaining its customers through service, which is tantamount to a significant competitive advantage.

The number or group size essentially shapes the extent of human resources in a company determines the available skills and competencies that can be used more successfully by teams to solve complex problems than by individuals. Hence, Hambrick and D'Aveni (1992) pointed out that "at a basic level, the resources available on a team result from how many people are on it" (p. 1449). For example, researchers found that large groups have more skills and competencies for solving complex issues (Hill, 1982). In an experimental study, Cooper and Kagel (2005) noticed that teams consistently play more strategically than individuals due to positive learning transfer and create positive synergy under challenging games, suggesting that teams are better at dealing with complexity than individuals. A positive relationship between group size and effectiveness, Steiner (1972) also highlighted for divisible and additive tasks, i.e., tasks resulting from the sum of individual performances. Littlepage (1991) supported these findings for tasks that required all group members' participation.

Capacities and efficiency are dependent on the size as a group property and organizations characteristic, thereby influencing performance and stability. This fact means that size is a significant factor influencing the characteristics of organizations (Meyer, 1972) and a critical factor in the analysis of group behavior (E. J. Thomas & Fink, 1963). Thus, a limited level of resources constrains the level of knowledge and expertise needed to solve problems (Dutton & Duncan, 1987). Furthermore, Wiener and Mahoney (1981) found that larger firms, thus larger groups, also exhibit greater capacity and better efficiency, contributing to a positive relationship between size and profitability and stabilizing companies visible in their ability to survive.

More complex group communication and inertial effects cause larger groups to fall short of their potential as size increases, suggesting an optimum group size. Bray et al. (1978) clarified that as group size and task difficulty increased, the results fell short of their potential in that these groups were effective but not efficient. They also described that as group size increases, the number of non-participants also increases, leading to a smaller group of active participants than the actual size, summarized under the concept of functional size. In particular, communication intensity and group cohesion as a sense of community and group membership become more complex and thus more complicated as group size increases (Shaw, 1976). In addition, inertial effects cause the organization to cling to the current state, creativity decreases, and necessary changes are not addressed (Hannan & Freeman, 1984). As a result, Goodman et

al. (1986) highlighted the existence of optimal group size in the form of an inverted U-shaped relationship of group size and effectiveness, in which small and large groups have a disadvantage compared to intermediate size groups.

Functional Diversity

As diversity degree characteristics of a business model, we highlight for our unit of analysis of banks the functional diversity anchored in the strategic positioning as a critical factor influencing organizational outcomes through advantages and disadvantages. Functional diversity as the firm's diversification degree of business activities and part of strategic positioning is a topic of much theoretical and empirical interest in the literature. Depending on the diversification design, synergies and economies of scope and risk reduction as advantages on the one hand, but also complex organizational structures or interest conflicts as disadvantages on the other are highlighted as diversification outcomes (Walter, 2004).

Economies of scope through complementary research and knowledge assets, economies of scale, and efficiencies, and performance increase are benefits of diversification. In this regard, Chandler (1977) highlighted the exploitation of economies of scope by modern firms diversified by multiple units. Likewise, Teece (1982) emphasized economies of scale by saving transaction costs associated with using different markets or services as an advantage of multiproduct firms. Furthermore, Williamson (1975) emphasized the increase in efficiency and performance through diversification in multi-divisional firms. Additionally, Stein (1997) pointed to value enhancement through improved allocation of scarce resources on internal capital markets and performance transfer between different business units.

Expanding functional diversity improves the competitive position through an overall risk reduction traced back to portfolio diversification. Lewellen (1971) confirmed this by underlining that the expansion of market share, the attractiveness of an expanded product portfolio, and increased administrative efficiency through the pooling of management capacity favor a competitive advantage. In addition, he highlighted the reduction of the probability of default on outstanding financial obligations and the provision of more favorable capital access by allowing interest and principal payments to be covered by cash flows from other company's business parts when needed as advantageous of conglomerates reducing their overall risk through diversified cash flows. Diamond (1984) linked to the diversification of default risks and emphasized this fact as the core of banks' business operations as our use case. He explained that banks, in their role as financial intermediaries, can reduce project monitoring costs, reduce

information asymmetries, and solve the cooperation problem of lenders and borrowers through portfolio diversification.

Diversification costs due to agency problems, lower profitability, and resource allocation problems are disadvantages of diversification. Laeven and Levine (2007), for example, demonstrated that the market values financial institutions with a diversity of activities at a discount and related this to increased agency problems among financial conglomerates. As a result, managers have an incentive not to distribute surpluses and instead reinvest them in inefficient projects to increase their power and compensation, related to the company's size and diversification degree, even beyond an optimal level (M. C. Jensen, 1986). In addition, investments in loss-making segments tend to cause the segments of diversified firms to have lower operating profitability than their non-diversified counterparts (P. G. Berger & Ofek, 1995). Lamont (1997), Scharfstein (1998), and Rajan et al. (2000) also pointed to a misallocation of resources in the form of overinvestment in business segments with poor investment prospects within diversified firms.

Information asymmetries, coordination problems, and organizational sluggishness as costs associated with diversification often diminish the gains from business activity. For example, Harris et al. (1982) pointed to asymmetry in the availability of information, as heads of departments often have more extensive knowledge of their local unit than the central unit, which, however, depends on this information for resource allocation. Additionally, Rawley (2010) referred to costs of coordination problems and organizational rigidity arising from interdependencies between specific tasks, a more complex overall structure of work, and organizational adjustments concerning a firm's diversification.

The availability of experience and expertise and the ability to transfer competencies are the main factors determining the success of diversification, so the type of diversification is crucial. In this context, Schmalensee (1985) described that profitable firms diversify only within their areas of competence and not beyond because diversified firms cannot offhand transfer their competencies to other markets. Moreover, Wernerfelt and Montgomery (1988) also found a dependency between the performance of diversified firms and efficiency differences in transferring competencies to other markets. At the same time, they made clear that narrowly diversified firms perform better compared to broadly diversified firms. Thus, overall, it appears that the type of diversification is decisively for diversification's success.

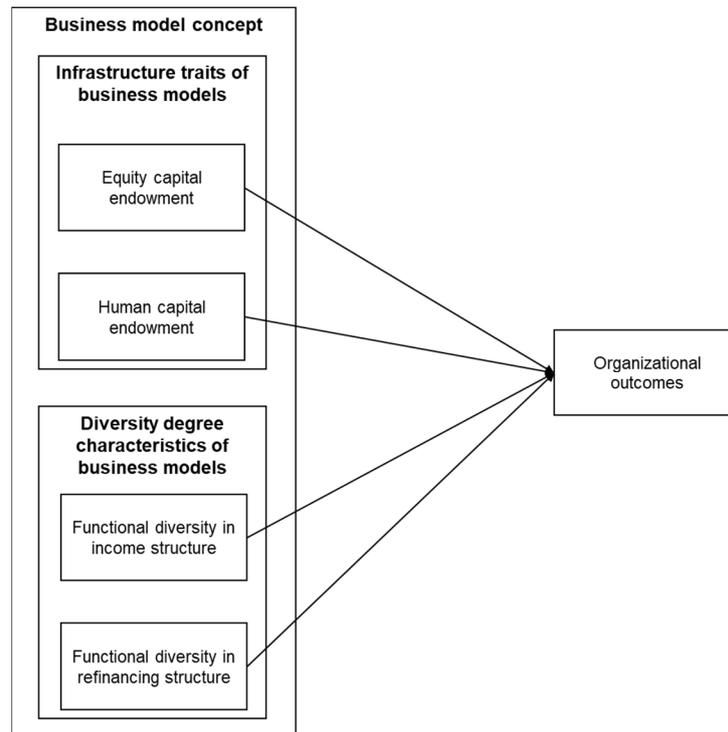
Analyses of the benefits of diversification specific to our banking use case also show that for it to succeed expertise and the level of competition are critical, as diversification at any cost is not the panacea. Hence, specifically for our use case of banks, Winton (1999) highlighted that diversification benefits turn to the opposite when the portfolios expand across different sectors and regions to markets where banks lack expertise, as seen by a decline in performance and monitoring. Furthermore, Acharya et al. (2006) also confirmed that the expansion and diversification of a bank portfolio to sectors with strong competition and bad lending experience leads to a loan portfolio deterioration, associated with a deterioration in performance. Thus, Markowitz (1952), as the founder of modern portfolio theory, already emphasized that the “expected returns—variance of returns (E-V) rule” (p. 79) does not imply diversification at any price, but “it implies the ‘right kind’ of diversification for the ‘right reason’” (p. 89). Therefore, according to Markowitz (1952), what matters for an efficient and optimal portfolio are the covariances and hence the type of portfolio diversification.

3.2.2 Infrastructure Traits and Diversity Degree Characteristics of Business Models and Organizational Outcomes

As a “blueprint for a strategy to be implemented through organizational structures, processes, and systems” (Osterwalder & Pigneur, 2010, p. 15), the business model concept rests on the integrative union of the main theoretical approaches of strategic management and entrepreneurship research (Amit & Zott, 2001) by directing the focus on firm-specific determinants and emphasizing managerial capabilities and attributes compressed in the TMT for decision-making. With explaining organizational performance through firm-level determinants (Crook et al., 2008) as causes for firm heterogeneity used to explain the superior performance of firms within similar markets (Hitt et al., 2016), RBT forms the starting point emphasizing the importance of managerial capabilities and attitudes for generating competitive advantage and superior performance (Penrose, 2009). It is the TMT as the central decision-making body in shaping the company’s strategic direction which is responsible for making the correct assumptions about the environment, the mission, and the core competencies in line with dynamic reality and for elaborating the strategy and the business model on this basis (Drucker, 1994).

Supplementary, upper echelons theory and prospect theory as the foundation for explaining different hypotheses’ derivation about the company’s reality visible in strategic positioning decisions appear suitable for predicting corporate outcomes. The upper echelons

Figure 3.6: Relationship Between Infrastructure Traits and Diversity Degree Characteristics of Business Models and Organizational Outcomes



Note: The figure illustrates the relationships to be explored between the presented four components of the two critical elements infrastructure traits and diversity degree characteristics of business models on organizational outcomes.

Source: Own illustration.

theory spans the overarching bow to decision-making in TMT, responsible for decisions about the firm's resources. Prospect theory provides the basis for understanding the business model design as an expression of the TMT's assumptions about entrepreneurial reality influenced by subjective perception and cognitive biases at decision time. Therefore, the primary criteria for the goodness of a business model are the assumptions about reality as the basis for success in terms of profits as a critical measure (Margretta, 2002). Accordingly, the business model reflects management's hypothesis about what customers want and how the satisfaction of needs can best be organized (Teece, 2010, p. 172). Figure 3.6 illustrates the theoretical relationships to be examined in the following section of the four presented infrastructure traits and diversity degree characteristics of business models' equity and human capital endowment and the functional diversification in income and refinancing structure on organizational outcomes, addressed in the context of performance and the relationship of these characteristics with the TMT's risk-taking behavior. The focus of firm performance and risk-taking behavior of the TMT was developed within the conceptual model.

Equity Capital Endowment and Organizational Outcomes

Empirical studies focusing on the banking sector as our use case show a positive relationship between capital and performance in terms of benefits in doing business and a signaling effect on future profitability. For example, for a European banks' data set, Goddard et al. (2004) showed a positive relationship between capital adequacy ratio and profitability because well-capitalized firms face lower indirect bankruptcy costs, also highlighted by A. N. Berger (1995) for a U.S. data set of banks. In addition, researchers pointed out the signaling effect of a high equity ratio, which managers use to send out cues about expected future profitability. C.-C. Lee and Hsieh (2013) confirmed this positive relationship for their panel data set of Asian banks.

In contrast, other empirical studies related to the banking sector indicate a negative relationship, so conclusions about the bank's equity capital endowment impact on firm performance are mixed, supporting the assumption of an optimum. For example, using a panel data set of U.S. banks for a first, less regulated period between 1983 and 1989 and a second, more regulated period between 1996 and 2003, Hutchison and Cox (2006) found a negative relationship. Moreover, they underscored the banks' incentive to minimize equity to increase return on equity. A. N. Berger and Di Bonaccorsi Patti (2006) confirmed these results, pointing to higher leverage and lower equity are significantly associated with better performance in light of the agency cost hypothesis. Consequently, the mixed evidence suggests an inverted U-shaped relationship between bank capital and performance because the market rewards equity above regulatory requirements to mitigate risk to some extent providing a competitive advantage through better terms on the liability side (A. N. Berger, 1995). Nevertheless, on the other hand, it harms performance due to opportunity costs, so that the initial positive effect may even turn negative after a certain optimum.

Considering the impact of equity capital endowments on organizational performance variables is closely related to risk, which is to be reduced by higher equity capital under equity's disciplining nature and compensating character. C.-C. Lee and Hsieh (2013), in addition to the positive relationship between capital and performance, also pointed out that higher equity capital endowment leads to lower bank risk, which Brewer III and Lee (1986) already showed earlier. Bitar et al. (2016) also suggested that higher capitalization improves performance as higher protection against risk due to its disciplining nature. Accordingly, banks with higher capital ratios also hold a higher loan loss reserve to compensate riskier assets by the higher capitalization. The compensation relationship between high risk and high capital ratios was also underlined by Altunbas et al. (2007).

The various capital components of equity capital endowment, differentiated into regulatory and traditional capital, as well as different equity capital components' qualities, affect organizational results in different ways. For example, Ng and Roychowdhury (2014), examining the relationships between individual components of regulatory capital and bank failures between 2008 and 2010, showed that regulatory capital like Tier 1 capital acts as a buffer against the risk of bank failure. In contrast, loan loss provisions attributed to Tier 2 capital positively correlated with bank failure risk. Against the backdrop of the 2007-2008 economic and financial crisis, Anginer and Demirgüç-Kunt (2014) highlighted, from a macroeconomic perspective, the influence of different types of regulatory and traditional capital and its impact on a bank's respective contribution to systemic risk. According to them, different qualities of equity capital have different effects on systemic risk, such that higher-quality capital (Tier 1 and tangible common equity capital) lowers risk and, in contrast, lower-quality forms of capital (Tier 2 capital) have a destabilizing effect.

Bank features like the ownership structure or functional bank characteristics in operating business or income levels as a country feature are intervening factors influencing the relationship between capital ratios as equity capital endowment and organizational outcomes. The results of individual studies point to different types of monitoring as a function of ownership structure affecting the management of equity, performance, and risk (A. N. Berger & Di Bonaccorsi Patti, 2006), confirmed, for example, by the results of Iannotta et al. (2007) on the influence of ownership structure on bank performance. In addition, Saunders et al. (1990) and Laeven and Levine (2009) showed that banks with more influential owners tend to take more significant risks, so banks' risk appetite also appears to vary with the ownership structure. In a study regionally limited to the Spanish market, García-Marco and Robles-Fernández (2008) pointed to a relationship between risk-taking and ownership structure, showing that Spanish commercial banks are more risk-averse than Spanish savings banks. Furthermore, functional bank characteristics amplify or diminish the relationship between capital and performance, reinforced by different income levels in different countries, as pointed out by C.-C. Lee and Hsieh (2013).

Human Capital Endowment and Organizational Outcomes

The extent of the human capital endowment depends on the organization's size, which consists of groups and the corresponding group mechanisms as fundamental building blocks (Leavitt, 1975) because the allocation of resources to solve complex tasks varies due to greater diversity,

expressed in organizational outcomes. In this context, Josefy et al. (2015) emphasized that size is one of the dependent variables most heavily used to explain organizational outcomes in strategic analysis. For example, a positive relationship between group size and the ability to generate resources, such as expertise or financial resources, was highlighted by Hill (1982), underscoring the advantage in accomplishing difficult and complex tasks in an uncertain environment. Furthermore, Kimberly (1976) emphasized four essential aspects of organizational size, according to which a larger organizational size has several advantages. Thus, there are advantages in physical capacity, i.e., the organization's work volume, greater personnel diversity and volume of organizational inputs and outputs, and higher levels of free resources as sources of organizational wealth, past activities, and potential for new ones. As a result, since the mechanisms leading to higher profitability increase as firm size increases, there is a positive relationship between firm size and profitability as an organizational outcome, as Gale (1972) pointed out.

Various studies highlighted available resources as a function of firm size and emphasized the importance of firm size for firm outcomes while also pointing to the competitive advantages of a larger group in terms of higher effectiveness and greater market power. In this context, Wiener and Mahoney (1981) considered firm size as a proxy for the available firm resources affecting the range of economic activities a firm can engage in and found that size can explain 79 percent of the variance in profits demonstrating size as a relevant factor. Furthermore, as competitive advantages of larger firms, larger teams are more effective (Magjuka & Baldwin, 1991), and an increasing number of employees also increases the opportunities for greater market power (Amah et al., 2013).

Instead, other studies pointed to higher coordination effort and poorer employee motivation due to a large firm size, which negatively affects firm performance and causes customer interaction problems. Accordingly, Geeraerts (1984) showed that large companies operate in a more complex, standardized, and decentralized manner, which leads to an increased coordination effort associated with a loss of process and performance (Gooding & Wagner III, 1985). By contrast, small company sizes promote employee motivation and commitment, positively impacting effectiveness (Amah et al., 2013). Additionally, G. R. Carroll (1994) also focused on the advantage of better customer interaction of smaller companies supporting the findings of Pilloff and Rhoades (2000), pointing to complex administrative structures and difficulties in personal service at large banks. Thus, in general,

various studies emphasize the relevance of size for organizational outcomes but provide mixed results.

The effects of different firm sizes on organizational outcomes are diverse and characterized by advantages and disadvantages, suggesting a broadly positive relationship that reaches its optimum at some point. For example, against the background of offsetting advantages and disadvantages, J. N. Liang and Rhoades (1991) found that while larger banks have better opportunities for risk diversification, the offsetting effect of higher leverage mitigates these advantages. In turn, R. S. Demsetz and Strahan (1997) showed that larger banks also take higher risks in their business operations, but they fail less often and have advantages in cost efficiency, as pointed out by Boyd and Runkle (1993). In summary, there appears to be a positive relationship between organizational size and organizational outcomes. However, there is also evidence that the optimal groups' size is a fundamental element of organizations, suggesting that a positive trend in organizational outcomes is initially associated with an increasing number of employees until an optimal size is reached and the effects are reversed.

Functional Diversity and Organizational Outcomes

Extensive academic literature on the impact of functional diversity through a shift away from the traditional interest-bearing banking businesses focuses on different performance effects and higher return volatility as risk visible in an opposing interplay of advantages and disadvantages characterizing the relationship of functional diversity and organizational outcomes. With a panel data set of U.S. banks from 1997 to 2004, Stiroh (2006) examined the increase of functional diversity through non-interest banking activities and found adopting the riskier non-interest activities to be less profitable overall. The analysis showed that functional diversity did not improve the average returns of banks with a strong focus on non-interest business, but at the same time, the bank's idiosyncratic risk as return volatility and systemic risk, measured as the firm's market beta, increased with higher functional diversity. While diversification concerning non-interest business positively affects performance, this advantage is offset by an increased risk of higher volatility presented by Stiroh and Rumble (2006). In this context, they pointed to an opposing interplay of diversification advantages and disadvantages of income sources and referred to "the darkside of diversification" (p. 2158). Similarly, DeYoung and Roland (2001) emphasized higher earnings volatility due to a significant shift toward fee and commission business and pointed to an associated increase in leverage.

The attractiveness of a concentration or diversification of the bank's income structure depends on an impact assessment on performance and bank-specific and systemic risk. For instance, Baele et al. (2007) and Demirgüç-Kunt and Huizinga (2010) identified a positive effect on (long-term) performance through a higher proportion of functional diversification of non-interest business offsetting the increase in complexity and intermediation costs associated with diversification. In addition, Baele et al. (2007) pointed out that diversification of revenue sources favored a reduction in bank-specific risk for most banks in their sample while not exceeding a certain optimal threshold of diversification. In contrast, they underlined an increase in banks' systematic risk, as banks are more vulnerable to market or economic shocks due to diversifying income sources toward more fee and commission business. J.-R. Lin et al. (2012) also highlighted a reduction in idiosyncratic risk associated with lower vulnerability to shocks in net interest margins.

Deterioration in credit quality and a resulting decline in earnings are disadvantages of functional diversity whose negative performance impact varies depending on a bank's risk profile. Due to diversification inefficiencies, Acharya et al. (2006) depicted an optimal banking sector consisting of several focused, specialized banks than of a large number of highly diversified banking institutions. Thus, when diversification occurs in sectors with a high degree of competition or lacking expertise areas, it leads to a credit quality deterioration of the loan portfolio, associated with a decline in bank returns from diversification, as indicated by their results. Hayden et al. (2007) underscored the drawbacks of diversification by showing a negative relationship between diversification and performance for their German banks' sample and pointing to profitability advantages of functionally concentrated banks. At the same time, they found that the negative performance impact varies depending on the bank's risk profile, thus showing a performance advantage only for banks with low to medium risk and diversification across different industries.

The impact of functional diversity on performance and risk varies according to the variation in bank business models as the extent of functional diversity in the revenue and refinancing structure as a function of bank type and value proposition. Demirgüç-Kunt and Huizinga (2010) emphasized a deterioration in performance due to an expansion of capital markets refinancing and a shift away from deposit-taking, and an increase in bank risk due to a higher proportion of non-interest income or non-deposit refinancing. They underscored the relevance of a limited extent to which banks are shifting away from the traditional banking model of earning interest income and taking limited deposits. By classifying banking business

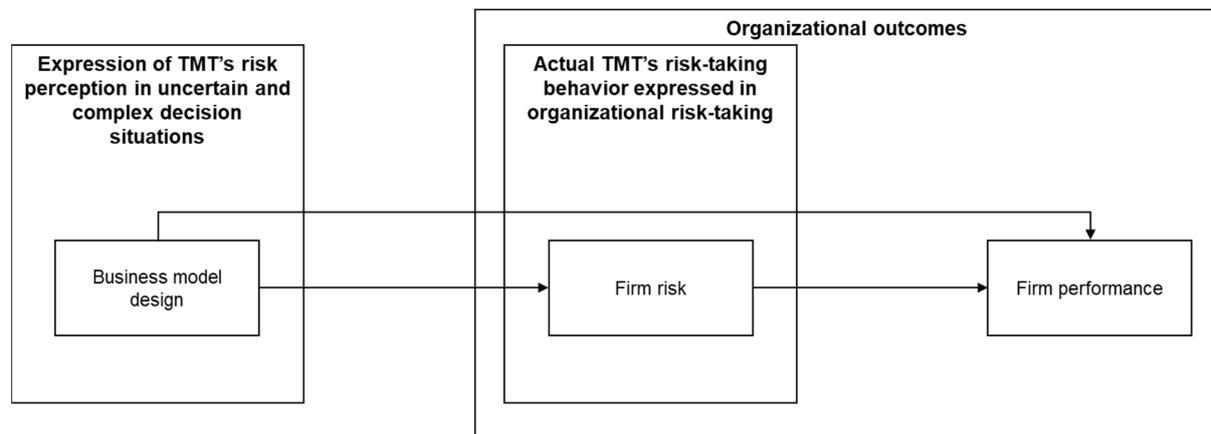
models based on the share of non-interest income in operating income and non-deposit funding in total liabilities, Köhler (2015) also illustrated a moderating effect of different bank types impacting the effects of functional diversity on performance and risk. He found that diversifying income sources by expanding fee and commission business positively affected profitability and stability for smaller banks – especially savings and cooperative banks, which tend to be heavily dependent on interest business. Unlike banks with an already existing strong dependence on fee and commission business, investment banks, for instance, become even riskier attributed to possible over-diversification. While a significant decline in stability accompanied an expansion of capital market funding for retail-oriented banks, a further reduction in deposit funding for investment banks had a positive effect. These results for the European banking market are in line with the findings of Köhler for the German market, where he differentiated the effects of functional diversity on performance and stability according to different banks' value propositions, underscoring their importance when analyzing the functional diversity's impact.

3.2.3 Risk-Taking Behavior and Firm Performance

Based on prospect theory, we have already argued that an organization's decisions reflect the TMT members' subjective norms, values, experiences, and knowledge that shape their style and work. Thus, the tangible design of an organization is an expression of the decisions produced within it. Therefore, the business model as the TMT's hypothesis about the customer's will and its view through which the organization best satisfies that will (Teece, 2010) appears appropriate for understanding those decisions.

We suggest that the organization's design expresses the risk perception in decision-making situations under uncertainty and complexity. Hence, the decisions express the limited capacity to process information, the subjective beliefs about the probability of an uncertain event, and the heuristics that are resorted to in uncertain decision situations. Accordingly, we introduce risk-taking behavior as actual externally observable risk-related actions and as an expression of dealing with the uncertainty and complexity that the TMT faces in decision-making situations influenced by the individual perception of the decision situation. Thus, Hillson and Murray-Webster (2005) underscored "how the environment is *perceived* by each person, since a situation that appears hostile to one may seem benign to another" (p. 44, emphasis in original) as the most crucial factor influencing behavior.

Figure 3.7: Risk-Taking Behavior as Mediator in the Relationship Between Business Model Design and Firm Performance



Note: The figure illustrates the influence of business model design on firm risk and firm performance as organizational outcomes. In turn, firm risk itself influences firm performance. The business model design expresses the TMT's risk perception in the decision situations, whereas the firm risk is the externally observable firm's risk-taking resorted to the TMT's risk-taking behavior.

Source: Own illustration.

The subjective norms, values, and experiences shape the TMT members' risk perception as the basis to position the company toward risk, expressed in the business model design. Overall, given that risk perception drives actual risk behavior, as depicted in Figure 3.7, we presume a direct and indirect relationship between business model design as risk perception and firm performance as an organizational outcome, in which TMT's actual risk-taking behavior mediates the indirect relationship. In this context, TMT's actual risk-taking behavior becomes visible in firm risk as a further organizational outcome next to firm performance. The following sections examine the theoretical relationships between risk and performance in detail.

Although risks are associated with all entrepreneurial activities, since they significantly affect the cost side and thus performance, few researchers have addressed this relationship for a long time. However, the risk-return paradox changed the focus in strategic management research by presenting a negative correlation between risk and performance by emphasizing the relationship between risk and performance as a research object. Hence, Bromiley (1991) described that it was not until the risk-return paradox for strategic management introduced by Edward H. Bowman in 1980 that risk and return became more of a research focus. Bowman (1980) demonstrated that increased risk-taking is not associated with better performance through higher returns.

Ambiguous results characterize the relationship between risk and performance because the results depend on the operationalization and theoretical explanatory contexts. As a result,

the realization that the positive risk-return expectations of Markowitz's portfolio theory cannot be unconditionally generalized led to many research projects on the relationship between risk and performance based on different methodological approaches. However, due to the wide range, especially in terms of the measures used to operationalize the relationship and the theoretical explanatory contexts, as seen, for example, in the comprehensive review by Nickel and Rodriguez (2002), these studies did not produce clear-cut results. While some authors found a negative correlation (e.g., Singh, 1986; Bromiley, 1991), other researchers, for instance, confirmed the results of prospect theory and differentiated the correlation to high and low performers.

Individual risk-taking behavior as an expression of the perception of the decision situation results from the subjectively determined reference point and the subjective weighting of the decision alternatives, which influence risk preference and decide on risk-seeking or risk-averse behavior. As one of the fundamental insights of prospect theory, individual reference points are formed based on aspirations, expectations, norms, and social comparisons that influence the risk preferences of decision-makers (Holmes et al., 2011). Accordingly, if performance is above this reference point, individuals take fewer risks and behave in a loss-oriented manner, whereas, below the reference point, individuals take more risks and behave in a profit-oriented manner expressed in risk-seeking behavior. Thus, researchers such as Fiegenbaum and Thomas (1988) or Gooding et al. (1996) showed that loss-making companies, or companies whose results are below the expected target behave more riskily, and high performers who achieve their targets show risk-averse behavior. In addition, R. M. Wiseman and Bromiley (1996) emphasized that poorly performing firms are often put in the position of taking unprofitable risks due to the loss of free resources, which increases risk and further deteriorates performance.

Firm risk is closely related to the individual risk-taking behavior of management, whose extent influences competitive advantage and firm performance, addressed by numerous empirical research on the relationship between TMT characteristics and organizational outcomes. From a theoretical perspective, Nickel and Rodriguez (2002) clarified that the management's risk-taking behavior influences firm risk, influencing the company's performance. Furthermore, Hoskisson et al. (2017) attested that risk-taking has a critical role in strategic management because "to improve competitive advantage and performance, managers need to take risks, often in an uncertain environment" (p. 137). In this context, against the background of upper echelons theory, numerous studies have been conducted on

the influence of TMT members' characteristics in terms of their values, cognitive perceptions, and personality traits on risk-taking behavior and organizational outcomes. For example, Eggers and Kaplan (2009) showed that the interpretation of the environment influences the firm's response, highlighting that CEOs' ability to discover new market opportunities can break through strategic inertia. Similarly, Gamache et al. (2015) pointed out that regulatory focus influences the number and size of corporate acquisitions. M. Simon and Houghton (2003) underlined that overconfidence as personality trait influences risky behavior to the extent that CEOs' overconfidence makes companies more likely to act as pioneers in launching new, risky products.

Assumptions about the relationship between risk and performance diverge according to a financial economics perspective on the one hand and a behavioral science perspective on the other, with important mediators and moderators additionally influencing this relationship. By consolidating former research on the relationship between risk-taking and organizational outcomes, we summarize that the financial economics perspective assumes a positive relationship between risk and return based on the expected utility hypothesis and the perfectly rational individual. In contrast, the behavioral science perspective assumes a negative relationship, as the overview of different studies, through classification in various research strands and theoretical background by Nickel and Rodriguez (2002) or multi-theoretical review by Hoskisson et al. (2017) demonstrated. Furthermore, Hoskisson et al. (2017) also pointed to important mediators and moderators that can influence and change the relationship between risk and return. For example, the discretion and agency available to managers influences decision-making and risk-taking behavior (Hambrick & Finkelstein, 1987). Thus, depending on different forms of monitoring, managers also exhibit different risk-seeking or risk-averse behavior (R. M. Wiseman & Gomez-Mejia, 1998).

3.2.4 Moderating Role of Ownership Structure, Geographical Diversification, Slack and Value Proposition

Ownership Structure

As a strategic alliance between the company's owners and managers, the freedom of management in strategic decision-making can vary systematically, depending on the ownership structure and the resulting control. Thus, the design of the relationship between owners and management influences strategic decisions and the resulting organizational outcomes.

Ownership is associated with certain rights and obligations, so that property rights enable owners, among other things, to control their property and have a decisive influence on the design of the use of the company's resources (H. Demsetz, 1967). Therefore, depending on the design and concentration of the company's ownership structure, there is a different influence on the strategic decisions of the TMT (H. Demsetz, 1983). As "a cornerstone of many business models" (Osterwalder & Pigneur, 2010, p. 38), the link between the owners and the TMT can be understood as a strategic alliance between non-competitors. Given the significant influence of the owners on the strategy and activities of the company, it is evident that organizational outcomes are influenced as a function of ownership structure.

Empirical work on the impact of ownership structure often examines the relationship between ownership structure and organizational outcomes by analyzing different bank types concerning state-owned, private, savings, and cooperative banks as a proxy for mapping ownership structure and emphasizing the importance of ownership structure. Accordingly, much of the finance literature emphasizes the importance of ownership structure, and work outside the finance sector does so as well (Altunbas et al., 2001). X. Lin and Zhang (2009) distinguished various bank types and demonstrated a negative relationship with efficiency and performance for state-owned commercial banks, emphasizing the significantly inferior asset quality of state-owned banks than private banks. Boubakri et al. (2005) showed that privatization led to better performance compared to state ownership. Micco et al. (2004) indicated a strong relationship between ownership structure and bank performance in developing countries, while they found no significant differences between the performance of state-owned and private banks for banks in developed countries.

Other empirical work on different forms of ownership emphasizes cost and profit advantages and benefits in customer interaction as a function of ownership structure, highlighting different outcomes attributed to different models of financial intermediation. For example, the study by Altunbas et al. (2001) showed no efficiency advantages for private commercial banks, but the size-independent cost and profit advantages of public savings and cooperative banks were evident. On the other hand, the results of Iannotta et al. (2007) drew attention that cooperative and state-owned banks – despite lower costs – performed worse than private banks. Moreover, they underlined a substantial similarity between private and cooperative banks in holding more favorable customer relationships and focusing on the same level of diversified financial activities. Overall, they pointed to a different model of financial

intermediation depending on the different forms of ownership, visible, among other things, in the different composition of assets or the financing mix.

Geographical Orientation

Geographical diversification as a largely stable positioning of the company about a regional, national, European, or international orientation appears significant for strategic decision-making by influencing the need for strategic resources in the area of tension between diversification and focus. Accordingly, the extent of geographical diversification is an essential framework for strategic decision-making, which must consider the service of the target geographic markets and the knowledge of where the value proposition reaches customers. Depending on the geographical diversification or orientation, the need for the presence of specific resources can vary decisively. Hence, geographic positioning moves around tension between diversification and focus.

Against the backdrop of whether diversification across different target markets appears reasonable, the finance literature provides mixed results concerning a change in bank-specific risk components, performance, and benefits related to systematic risk diversification. In the context of U.S. banking market deregulation with the removal of interstate banking restrictions, N. Liang and Rhoades (1988) found that diversification does not automatically reduce all risk components since, for example, the financial risk decreases with diversification and the operational risk increases, like due to changes in strategy or management. However, provided that geographical diversification is strong and exceeds a certain threshold, diversification can lead to risk reduction in the form of a lower probability of default as well as a reduction in operating costs, as noted by Rose (1996). Hughes et al. (1996) found differences in the relationship between geographical diversification and insolvency risk and performance between efficient and nonefficient banks. Banks achieved tremendous economic benefits in the U.S. consolidation wave when their activities focused on consolidation across state lines, allowing them to diversify systematic risk, according to Hughes et al. (1999).

The effects of geographical diversification are related to firm size and the type and extent of diversification. For example, D. P. Morgan and Samolyk (2003) showed that increased diversification worsened the profitability of smaller banks but found no impact for larger banks. Pilloff and Rhoades (2000) argued that large, geographically diversified banks do not have a competitive advantage over smaller, locally operating banks in winning new customers and retaining old ones because the large banks have difficulties providing

personalized service by tailoring products and services to customers' needs. In contrast, Deng and Elyasiani (2008) pointed to a reduction in risk and increased firm value through geographical diversification. However, the type of diversification is essential since diversification into remote and distant areas led to a significant increase in risk, partially offset by higher profits. Meslier et al. (2016) found that as diversification progressed, a positive effect turned into a negative one as agency costs outweighed the benefits of broader diversification. Acharya et al. (2006) also pointed to a nonlinear effect of geographical diversification on performance and risk.

Slack

Slack as a firm's feature shapes managers' discretion in the form of a resource surplus is often the subject of academic debate, characterized by diverse understandings of slack due to a different nature of slack resources and directly relating the presence of slack to organizational decision-making. Depending on the nature of slack resources, certain forms of slack provide the basis for significant discretion and action by organizations' managers (Sharfman et al., 1988). For example, slack is understood as a source of inducements, such as in the form of paying wages beyond what is necessary but serving to retain employees (Cyert & March, 1963). Another interpretation regards slack as a source of conflict resolution when members of a firm's dominant coalition have incongruent goals, and the presence of slack resources allows them to pursue different goals (Bourgeois, 1981). Alternatively, another interpretation views slack as a buffer or reserve stock that includes some flexibility to respond to workflow vagaries (Thomson, 1967). In addition, slack can be understood as an intermediary in the TMT's strategic decision-making impacting organizational outcomes (Bourgeois, 1981).

As a strategic phenomenon, slack provides space for certain strategic and creative behaviors considered in strategic decision-making and reflected in various organizational outcomes positively affected by the additional resources. In this respect, slack influences strategic decision-making and affects organizational outcomes, as Hambrick and Snow (1977) pointed out. In addition, Cyert and March (1963) emphasized a positive relationship between slack and performance, arguing that well-performing organizations also have high levels of slack, while moderate performance is related to low levels of slack resources. Besides, Cheng et al. (1997) underlined, in particular, the relationship between slack resources and their impact on the extent of the response to environmental change. Finally, Greve (2003) examined the effects of organizational slack on the innovation capability of companies, and his results

underlined a clear connection between slack resources and innovation capability in the context of research and development activities.

Organizational outcomes vary according to the type of slack resources, time component, and contextual economic factors. In this context, George (2005) drew attention to the importance of the slack type and its different effects on the performance relationship. Similarly, Agusti-Perez et al. (2020) also emphasized the importance of the kind of slack resources in question for the specific impact and the classification of effects duration over different periods (short-term, medium-term, and long-term effects). For example, they showed that potential slack has a permanent impact on financial performance and that contextual economic factors influence the direction of the relationship. Previously, Bourgeois and Singh (1983) already pointed to different forms of slack and their differential effects on political behavior as strategy-making measures in TMT. Whereas short-term and recoverable slack as already utilized resources in the form of excess overhead reduced strategic behavior and thus negatively affected it, potential slack as future resources generated from external sources positively affected strategic behavior. In addition, Singh (1986), next to a direct negative relationship between performance and risk-taking in business decisions, addressed an indirect positive relationship moderated by organizational slack resources.

Value Proposition

Business models require a clear definition of the business purpose, expressed in a value proposition to the customer consisting of assumptions about the company's core competencies bundled into a company's mission. The analysis of business models always deals at its core with the value proposition made available to customers and the problem to be solved or satisfied by the products offered. As a result, core competencies are the basis for fulfilling the company's mission, so the value proposition is composed of assumptions about it and the modeling of what the company stands for (Drucker, 1994). A clear definition of the business purpose includes the company's mission as a value proposition to customers as the starting point for all further considerations in shaping the business model (Drucker, 1986). Thus, for example, the mission of financial intermediation and the fulfillment of economic transformation functions shape the value proposition of the banking sector as our use case and, despite the strong industry's prudential regulation and the associated limitation of the value proposition, there is, however, some leeway concerning the scope of the value proposition, especially reflected in a focused or diversified value proposition.

The literature on the advantages and disadvantages of different value propositions often compares generalist and specialized forms, emphasizing either advantages of specialized banks or advantages of generalist bank forms over specialized banks, depending on the perspective. In a theoretical paper, Benston (1994) compared universal and separation banking systems as synonymous with generalism and specialization, pointing to risk mitigation through a diversified service offering in universal banks. At the same time, he emphasized the importance of the coexistence of universal and specialized banks, which are better suited for certain activities because of their internal organization. Kimball (1997) listed the advantages of specialization as favoring purpose-driven optimization through operational economies of scale in the context of pooled customer groups or products, a reduction in the cost of expertise as a significant competitive advantage, a reduction in risk due to economies of scale, and an increase in marketing effectiveness through the development of distribution channels explicitly tailored to the target segment. Furthermore, for specialized banks, he also highlighted a high-risk/high-return strategy. By distinguishing different categories of functional diversification with specialized banks focusing on traditional lending and deposit business, financial conglomerates combining various financial services beyond traditional banking business, such as investment or insurance business, with the banking business, and universal banks as diversified banking institutions with holdings in non-financial institutions, Vander Venet (2002) underlined the superior earnings efficiency of financial conglomerates compared to specialized banks.

3.3 Hypotheses and Conceptual Model

The following subsections about developing the conceptual model and the hypotheses rest on the detailed analysis of the core theoretical concepts, including the constructs contained therein. The conceptual model illustrates the hypotheses about the relationships between the dependent and independent variables. At the same time, it points to moderating effects on specific relationships between dependent and independent variables.

3.3.1 Derivation of Hypotheses

The discussion of the business models' characteristics revealed that, against the background of different elements of the BMC analysis tool widely used in practice, a differentiation of banking business models along the two dimensions of infrastructure traits and diversity degree

characteristics appears suitable. Specifically, equity and human capital endowment appear as essential infrastructure traits of banks as our unit of analysis to provide a value proposition. In addition, the focal points of income and refinancing structure as functional characteristics are suitable to describe the diversity degree characteristics of business models for its differentiation.

Overall, the listed characteristics reflect the TMT members' subjective perception and personal knowledge, expressed in the strategic positioning on the market toward competition, operationalized and visible through business models in an uncertain and complex business environment. Accordingly, the calibration of the variables above expresses the decision-making process in the TMT as the leading decision-making group responsible for the strategy's development and implementation. Against the background of a dynamic business environment, this basis forms the starting point of the analysis, which considers decisions based on personal cognitive foundations of values, experiences, and knowledge that influence subjective perception through filtering and interpretation of the situation.

The hypotheses on the relationship between equity and human capital endowment and the functional diversity in income and refinancing structure of banks with the performance and risk-taking behavior of TMTs, additionally consider the assumed moderating effect of ownership structure, geographical orientations, value proposition, and slack. The moderating variables are characteristics that profoundly differentiate banks' business models and are mainly stable characteristics over time. Moreover, these characteristics are not subject to immediate and short-term strategic decision-making but rather represent stable features of the framework in which decision-making takes place. In this way, we argue for moderating variables in the form of contextual factors that influence our hypothesized relationships. Furthermore, we derive the hypothesis about the relationship between the TMT's risk-taking behavior and performance.

Infrastructure Traits-Outcome and Diversity Degree Characteristics-Outcome Relationships

We argue that the cognition-based TMT members' risk perception (Kahneman & Lovallo, 1993) varies concerning equity capital endowment as a crucial physical resource for operating the banking business and absorbing losses from the risks taken by the business, has an inverted U-shaped effect on organizational outcomes, specifically on firm performance. Thus, to a certain extent, the market appreciates capital exceeding regulatory requirements because it

reflects stability and a sustainable business model. In contrast, a massive excess of capital reverses this effect as the market infers high risks of business activity from a surplus of equity within the institutions' strategic positioning, leading market participants to demand a risk premium that negatively impacts performance. Therefore, we assume an optimal point of equity capital endowment that stands for adequate stability and a sustainable business model and represents the business activity's risks as balanced.

H1: A bank's equity capital endowment has an inverted U-shaped relationship with performance.

As a crucial customer interface, the human capital endowment is a substantial element in the company's success. For example, suppose the company can convince its customers of its service, retain them, and build a long-term relationship. In that case, this equates to a significant competitive advantage that can translate into more growth and profitability since the rationale of entrepreneurial activity, i.e., the purpose of a company, lies outside the company and consists in satisfying the customers' wants or needs. Therefore, businesses must benefit society by satisfying a current need or creating that need (Drucker, 1986). In addition, an increasing human capital endowment in the form of an increasing organization's employees density includes a greater variety of resources, such as expertise (Hill, 1982), which improves the ability to solve the customer's needs in the form of complex problems in an uncertain environment.

Equipped with considerable performance potential, banks are interested in building long-term customer relationships with their customers that, in terms of sustainability, target customers' needs with core activities and deliver a service that meets the necessary satisfaction level. As a result, we regard the human capital endowment as the number of employees, providing information on how the value proposition is realized, as a relevant measure with considerable explanatory power in terms of a more advantageous position over competitors, reflected in performance.

H2: A bank's human capital endowment has a positive relationship with performance.

The analysis of the results of different researchers showed that the diversification type is crucial for assessing the impact's extent and directionality on the organizational outcome, so depending on this, there are mixed results in the previous literature regarding the impact of diversification and performance. Following the results of Demirgüç-Kunt and Huizinga (2010),

we assume a positive relationship between the expansion of diversification in the income structure and performance. By increasing the diversification of the bank's income structure, synergies of business activities can be exploited and optimized.

H3: The degree of a bank's functional diversity in income structure positively correlates with performance.

There is a negative correlation between the degree of diversification of the refinancing structure and performance. The negative correlation rests on greater diversification of the refinancing side simultaneously means greater exposure to diverging interests. In addition to a more complex structure, increasing the diversification of the refinancing side entails a more significant potential for conflicting interests between the traditional deposit customers and investors in the capital market, leading to frictional losses. Thus, these diverging interests cause problems in strategic decision-making in the organization, which negatively impacts performance.

H4: The degree of a bank's functional diversity in refinancing structure negatively correlates with performance.

Depending on how uncertainty is perceived, the same situation evokes different attitudes in different individuals or groups. These are based on subjective values, beliefs, and knowledge and lead to various perceptions of the situation (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). The corresponding perception becomes visible based on the TMT's strategic decisions and operationalization within the business model, influencing as an antecedent the actual risk-taking behavior. Consequently, equity capital endowment as a feature of the infrastructure traits of a bank's business model reflects the TMT members' assumption about the entrepreneurial reality related to risk. Therefore, we assume that banks with higher equity capital endowments also take greater risks reflected by higher loan loss reserves than the expected loss. Thus, we conclude that business models based on higher equity capital endowment provide incentives for increased risk-taking in TMT.

H5: The bank's equity capital endowment has a positive relationship with risk-taking behavior.

Companies need to know their customers to know what their customers want and what their needs are. Thus, to generate a competitive advantage, knowledge about the customers is

indispensable (Leong et al., 1989). Already Schumpeter (1939) pointed out the necessity of knowing the customer. He stated that

the banker must not only know what the transaction is which he is asked to finance and how it is likely to turn out, but he must also know the customer, his business, and even his private habits, and get, by frequently ‘talking things over with him,’ a clear picture of his situation. (p. 116)

Deriving products and services and assessing the risks associated with doing business with the customer require customer-oriented knowledge. As a result, knowing the different needs of the target groups to be addressed enables providing a specific value proposition optimally tailored to the customers (A. Sharma & Levy, 1995). As a result, employees are needed who are given a delegated supervisory function as a link between the companies to guarantee close customer contact. For this reason, we assume that banks with a larger number of employees as human capital endowment have a better opportunity to assess the risks associated with customer business, which subsequently reduces risk-taking behavior.

H6: A bank's human capital endowment has a negative relationship with risk-taking behavior.

The present literature on the advantages and disadvantages of diversification and its impact on organizational outcomes in numerous facets has mixed empirical results overall. This overall picture is mainly because the effects of diversification depend significantly on the type of diversification. Thus, we acknowledge the findings of Acharya et al. (2006), who showed that diversification does not necessarily significantly reduce risk when the bank diversifies in areas where it lacks expertise. Therefore, we hypothesize that increasing functional diversification leads to the opacity of information and sourcing opportunities and, as a result, increases risk-taking behavior.

H7: The degree of a bank's functional diversity in income structure has a positive relationship with risk-taking behavior.

Similarly, we assume that increasing the diversity degree in refinancing structure is simultaneously associated with increased risk-taking behavior.

H8: The degree of a bank's functional diversity in refinancing structure has a positive relationship with risk-taking behavior.

Risk-Taking Behavior and Performance Relationship

Mixed results have been found in the contemporary literature regarding the relationship between risk-taking behavior and performance, also known as the risk-return paradox (Bowman, 1980). While the financial perspective assumes a positive relationship between risk and returns based on a perfectly rational individual, the behavioral perspective sees the opposite negative relationship between risk and return. Therefore, taking a behavioral perspective on risk and return, we argue a negative relationship between risk-taking behavior and performance.

H9: Risk-taking behavior has a negative relationship with performance.

Moderating Role of Ownership Structure, Geographical Orientation, Slack and Value Proposition

As a firm's characteristic, the ownership structure is often used as a direct independent variable in research, especially in the light of the principal-agent approach (e.g., Micco et al., 2004 and Iannotta et al., 2007). More generally, in this context, the findings of M. C. Jensen and Meckling (1976) that the separation of ownership structure and managers, and consequently the design of control, has different effects on firm performance is recognized. For example, Shleifer and Vishny (1997) found that, within a concentrated ownership structure, owners have quite different incentives of monitoring and controlling management due to the absence of free-rider problems and can exert pressure on management to a greater extent. Consequently, ownership structures with dominant or concentrated owners can more effectively monitor management (Faysal et al., 2020). Thus, depending on the design of the ownership structure, we expect a different ability of profitable and efficient management through the influence on the firm's strategic positioning.

More concentrated ownership structures are assumed to powerfully incorporate their values, goals, and missions into the firm's strategic positioning through greater management control, reflected in performance. For example, Thomsen & Pedersen, 2000 presented that concentrated ownership structures with dominant owners positively affect firm performance and that ownership identity influences firm performance and strategy. Consequently, we hypothesize an influence of ownership structure on the relationship between business models' infrastructure traits and performance.

We assume an influence of the ownership structure on the business model's infrastructure through differences relating to concentrated ownership structures with dominant owners and ownership structures characterized by many different owners. Specifically, the prevalence of concentrated ownership structures with dominant owners dissipates the opposing effects of equity capital endowment demonstrated within the inverted U-shaped relationship with performance. Thus, high equity capital endowment's stability and sustainability aspects prevail due to the decisive influence of concentrated ownership structures with dominant owners on effective management, avoiding high risks in business activities as an expression of opportunistic management behavior. In addition, the significant influence of concentrated ownership structures with dominant owners on the firm's strategic positioning leads to a weakening of the positive linear relationship between human capital endowment and performance. We attribute this to the fact that high human capital endowment's advantages cannot prevail to the same extent because of the substantial influence of owners.

H10a: Ownership structure moderates the equity capital endowment and performance relationship in a way that stretches the inverted U-shape, and the relationship becomes almost linear when concentrated ownership structures with dominant owners and clear ownership identity are present.

H10b: Ownership structure moderates the human capital endowment and performance relationship in such a way that weakens the positive linear relationship when concentrated ownership structures with dominant owners and clear ownership identity are present.

For strategic decision-making and business model design, the determination of target markets to be served as a largely temporally stable positioning is essential because the geographical orientation has clear implications for the orientation of the business model. Thus, we propose that the extent of geographical orientation moderates the hypothesized positive relationship between functional diversity and risk-taking behavior. Following the findings of Rose (1996), we expect that a sufficiently high level of geographical diversification will lead to an exceedance of a certain threshold of diversification. For this reason, we assume that a high level of geographical diversification will reverse the positive relationship between functional diversity and risk-taking behavior. At high levels of geographical diversification, a high degree of functional diversity leads to lower risk-taking behavior and thus to lower entrepreneurial risk. Risks are perceived as less controllable due to the great complexity

resulting from a highly diversified company structure. Conversely, the decision-making body perceives regional concentration as security resulting in a pronounced risk-taking behavior in companies with a high geographic concentration and a high functional diversification. Hence, we hypothesize that the direction of the relationship between functional diversification and risk-taking behavior varies due to the moderating effect of geographical orientation.

H11a: Geographical orientation negatively moderates the relationship between functional diversity in income structure and risk-taking behavior at high levels of geographical diversification.

H11b: Geographical orientation negatively moderates the relationship between functional diversity in refinancing structure and risk-taking behavior at high levels of geographical diversification.

Changes in slack influence strategic behavior of the TMT, such as in the form of more experimental behavior in the context of entering new markets, product innovations, or progressive strategy adjustments, as manifested by increased risk-taking behavior, concluded from the contemporary debate on slack. In this context, we follow the analysis of Hambrick and Snow (1977) of the effects of slack on strategic positioning, arguing that the organization takes the presence of slack resources as an occasion to strategically seek new challenges and experiment because slack allows the organization to afford such behavior. Low slack levels have little impact because managers view a certain slack level as a necessary condition, as Iyer and Miller (2008) argued. In contrast, when slack resources exceed a certain level and are perceived as surplus, they provide the basis for more experimental and risky activities with the potential of competitive advantage influencing performance.

We hypothesize that a perceived excess level of slack resources enables firms to make experimental, innovative, and risky decisions, which reinforces the negative relationship between the TMT's habitual risk-taking behavior and performance, while the reinforcing moderating effect below the threshold of perceived excess of slack resources has little impact on the direct relationship between risk-taking behavior and performance. A high level of slack resources gives the TMT, as a decision-making body, a buffer as organizational latitude to get creative, respond to change, and reallocate internal resources. However, additional risks, especially during the transformation phase, entails such behavior.

H12a: Slack moderates the risk-taking behavior and performance relationship in such a way that the negative relationship between them is strengthened and steepened when a sufficiently high level of slack resources is present.

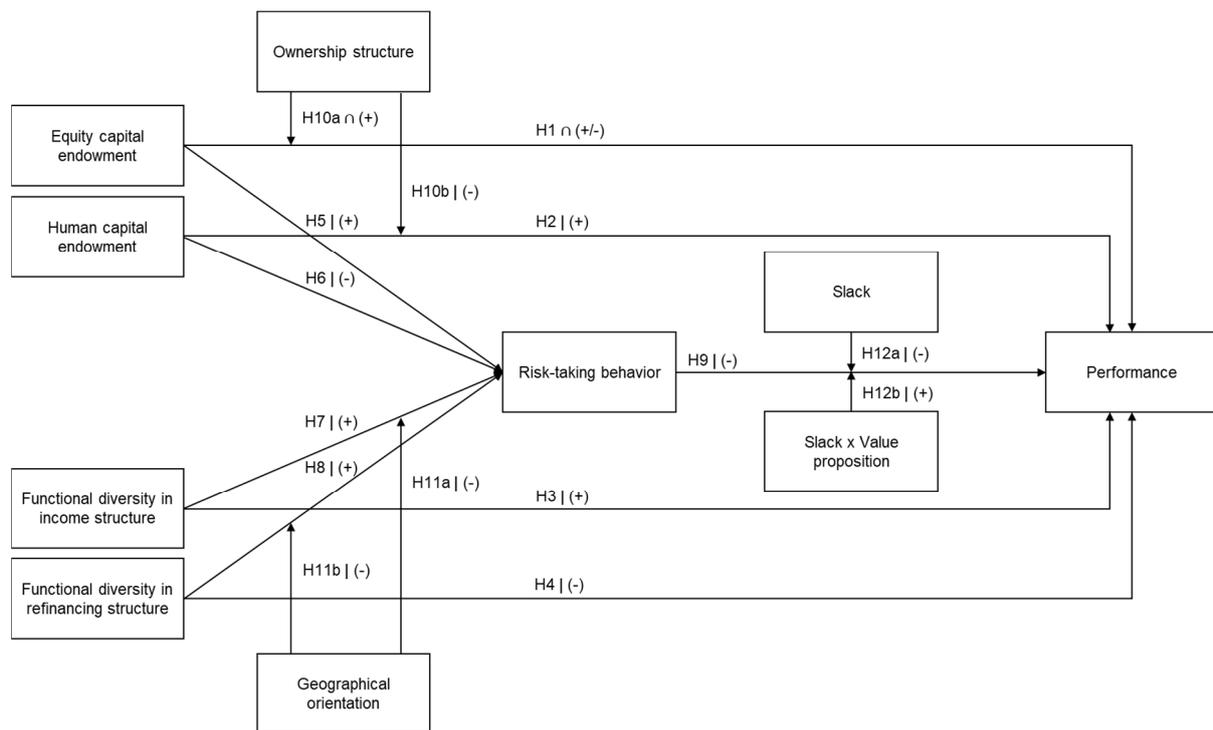
There is some leeway in implementing the value proposition, especially concerning a specialized or diversified value proposition, even though the banking sector industry is highly regulated. While banks with a diversified value proposition can assume a wide range of options for innovative and experimental activities in the presence of a surplus of slack resources, the radius for specialized banks is limited if they do not want to abandon their focus. Exploratively, we propose that the moderating effect of slack on the relationship between risk-taking behavior and performance is itself moderated by and dependent on a bank's value proposition, and that the negative interaction effect between slack and risk-taking behavior on performance changes direction for banks with a diversified value proposition when the excess of slack resources is high enough. In this case, a pronounced risk-taking behavior combined with a high excess of slack resources leads to innovative activities that enrich the value proposition and improve performance.

H12b: A diversified value proposition design positively moderates the interaction effect of slack on the relationship between risk-taking behavior and performance.

3.3.2 The Risk-Taking-Behavior-Performance Business Model

The risk-taking-behavior-performance business model (RBPB model) shown in Figure 3.8 suggests that equity and human capital endowment as critical components of the business models' infrastructure traits element and the income and refinancing structure as critical components of diversity degree characteristics element can explain firm performance. At the same time, the business model is an expression of the TMT's situation perception as a precursor for the management's risk-taking behavior. To this end, the variables operationalize the essential guardrails for characterizing banking business models as our use case for research. Moderating effects of ownership structure, geographical orientation, and value proposition influence this relationship as contextual factors of entrepreneurial orientation that are substantially stable over time and characterize the environment in which strategic decision-making occurs. In addition, a moderating influence of a high level of slack resources on the relationship between risk-taking behavior and performance is examined. Subsequently,

Figure 3.8: Conceptual Framework of the RBPB Model



Note: The figure illustrates the hypothesized relationships between infrastructure traits and diversity degree characteristics as essential elements of business models and performance and risk-taking behavior as organizational outcomes and the influence of moderating factors within the risk-taking-behavior-performance business model (RBPB model). Differentiation of relationship type through the following symbols “|” for a linear relationship and “ \cap ” for a curvilinear relationship.

Source: Own illustration.

Chapter 4 presents the test of the conceptual framework and discusses the relevant studies in more detail.

3.3.3 Measurement Approach for Concepts and Variables

This subchapter provides an overview of the measurement of the main concepts and variables. Given the conduct of the three studies in Chapter 4, it should be underlined that the same definitions and variables are used in the empirical studies. The measurement of the variables was intentionally not changed to allow for the most general conclusions possible.

Measure of Equity Capital Endowment

The measurement of equity capital endowment can essentially be divided into the regulatory-defined, risk-based capital measurement and the traditional, non-risk-based capital measurement, which differ in whether exclusively balance sheet equity items are considered. Overall, a variety of “definitions of a bank’s ‘equity’ each emphasise [*sic*] different aspects of the desired information content” (Neisen & Schulte-Mattler, 2021, p. 342). The Basel Capital

Accord set out internationally what equity capital means from a regulatory and risk-based perspective. The Capital Requirements Regulation (CRR) (definition of CET 1, Tier 1, and Tier 2 capital in Part Two (Article 25 to 91) of CRR) transposes the standards into European law. The regulatory view of an institution's equity is generally broader and includes all items that have liability and loss-absorbing functions. In contrast, the traditional, non-risk-based perspective takes a balance sheet view of own funds, with a narrower frame, only includes the items reported as equity on the balance sheet. Thus, two approaches are conceivable with the risk-based and non-risk-based consideration of the equity capital level, often regarded simultaneously in the literature (e.g., Anginer & Demirgüç-Kunt, 2014).

We measure equity capital endowment in a corresponding year using the ordinary balance sheet equity of the consolidated financial statements relative to total assets. In this way, we focus on the capital components of banks that are indisputably suitable as risk buffers, in line with the widely held view in the literature. Moreover, we avoid possible distortions that may result from a risk-based view of equity due to the different possibilities in determining the risk-weighted assets to be included in the denominator.

Measure of Human Capital Endowment

According to the knowledge-based view of the firm, employees as a link between customers and the company are a source of sustainable competitive advantage, so the number of employees is crucial for shaping contact with the customer as a component of strategic positioning. In this context, R. M. Grant (1996b) stated that “if the primary productive resource of the firm is knowledge, and if knowledge resides in individual employees, then it is employees who own the bulk of the firm's resources” (p. 119). Thus, employees are the essential link between customers and the company, especially in the service industry (Gwinner et al., 1998). Therefore, in strategic decision-making, the number of employees is an essential and direct influencing factor for the TMT regarding how the strategy should be operationalized in a business model. For example, if a bank's TMT strives for largely systems-based contact with the customer, fewer employees will be needed to conduct business activities.

To measure human capital endowment, we use the bank's total assets to the total number of employees (full-time equivalent (FTE)). The ratio indicates the human capital resources available in the bank at a time (t) as the density of personnel relied upon to run the business activities. Hence, the ratio expresses how many assets are attributable to one full-time employee. We have calculated the ratio based on the data available in the SNL Financial

Institutions database, and subsequently determined individual missing data based on the annual reports, particularly the number of full-time employees in a given year, to conduct our analysis as part of a balanced panel. Finally, the natural logarithm of a bank's total assets to the total number of employees (full-time equivalent (FTE)) to ensure the assumption of normal distribution was used.

Measure of Functional Diversity in Income Structure

First, we conceptualize functional diversity in the context of banks' business models in terms of their income streams, separating them into traditional interest-based business and fee- and commission-based business as accounting-based indicators. In this way, we pursue the standard approach in the literature by estimating the bank-side product orientation of business orientation by distinguishing banks' income streams by differentiating between interest-based and fee- and commission-based business to the sum of interest- and fee-and commission-based business, as in Laeven and Levine (2007). The accounting-based indicator thereby differentiates income streams into the ratio of interest-generating business and the fee and commission-generating business ratio, as banks differ especially in the weighting of traditional interest-based business. For example, while some banks are highly dependent on the interest-generating business, others focus on fee and commission-generating business. Thus, a specialized bank in the lending business will also have a higher interest income ratio to the sum of income from interest plus fee and commission business as part of its business activities.

Measure of Functional Diversity in Refinancing Structure

In addition to the income stream diversity, we also conceptualize the orientation within a bank's business model regarding the refinancing structure as accounting-based indicators to capture the proportion of customer deposits and non-customer deposits in a bank's refinancing, given that banks also particularly differ in the alignment within their refinancing structure. Therefore, the extent of diversity of the refinancing structure is an accounting-based measure considering the ratio of customer deposits to the total sum of refinancing and non-deposit funding to total refinancing. In this context, non-customer deposits are the difference between total assets minus equity and customer deposits. Thus, for example, a specialized bank with a strong focus on traditional deposit business or, on the other hand, a strong focus on capital market funding will have a higher ratio of deposit or non-deposit funding. Furthermore, depending on the corresponding focus of the refinancing structure, different characteristics are associated, for instance, consisting in considering customer deposits as safer and less susceptible to

fluctuations (Demirgüç-Kunt & Huizinga, 2010) or as a favorable refinancing option due to the relatively lower interest costs (Iannotta et al., 2007).

Measure of Risk-Taking Behavior

Managerial risk-taking behavior is evident in TMTs' strategic decision-making against the backdrop of an uncertain and complex environment through analysis of firm risk that reflects the risks taken within strategic decision-making. In this context, we argue that the variety of TMT's strategic organizational decisions expresses this risk-taking behavior. Thus, managerial risk-taking behavior influences firm risk and is expressed regarding the amount of risk taken by the firm, so measures reflecting firm risk appear useful for operationalization.

The relevant literature on the use of risk measures reflecting the risk taken by a firm shows mixed results, roughly divided into approaches based on market data but limiting the possible unit of analysis or approaches concerning accounting-based risk measures. Risk measures commonly used in the literature often rest on market data, such as in the studies by Stiroh (2006) or Baele et al. (2007). However, an operationalization based on market data has the disadvantage of being inherently limited to listed companies. For this reason, those approaches run counter to the conceptualization of this research and its underlying sample, including many small and medium-sized banks that are not listed on a stock exchange. Therefore, we consider only accounting-based risk measures for our purposes.

Critics question the suitability of accounting-based indicators for risk measurement, while proponents emphasize the significant link between accounting-based risk measures and firm-specific risk and stress the equivalence of accounting- and market-based measures. Criticism of accounting-based risk measures is directed at management's temporal discretion and the constraints imposed by their backward-looking nature, while at the same time they can be credited with adequately reflecting bank's portfolio quality, as Altunbas et al. (2007) pointed out for their large sample of European banks. Moreover, in a study of the relationship between accounting-based and capital market-based risk measures, Agusman et al. (2008) showed that accounting-based risk measures, such as loan loss reserves relative to assets or gross loans, are significantly related to firm-specific risk. Decades earlier, Beaver et al. (1970) also emphasized the usefulness of accounting-based risk measures compared to market-based risk measures, emphasizing their suitability as indicators of firm-specific risk. In addition, the scholars argued that accounting-based and capital market-based risk measures could be considered equivalent, since accounting-based measures precisely reflect the events

usually also mirrored by the different securities and determine the different risk content of the securities.

As an adequate approach to measure the firm-specific risk, we resort to expected losses as an ex-ante risk measure to capture the riskiness of a bank's activities reflecting the extent of managerial risk-taking behavior with an accounting-based indicator. Following the literature, firm-specific risk, which is affected by the TMT's managerial risk-taking behavior, is conceptualized as loan loss reserves (LLR) divided by total assets at a given year (t). LLR as a proxy for the riskiness of bank activities dictated by the TMT's strategic decisions is used. Consequently, banks that engage in riskier and more complex activities must ultimately set higher LLR. Dividing LLR by the total assets of the company will eliminate size effects. Using the ex-ante risk measure of expected losses in the portfolio, we follow a common operationalization of firm-specific risk in studies like Acharya et al. (2006) or Bitar et al. (2016). Data are obtained from the SNL Financial Institutions database.

Measure of Firm Performance

As a recognized performance measure in strategic management, we use ROA to measure the performance of business operations holistically within an accounting-based perspective, thus considering our sample's composition. Regarding ROA as a standard proxy for performance in strategic management, it is measured as annual return (net income) divided by total assets. In this way, it is possible to measure business operations holistically, allowing a comprehensive assessment (Hagel III et al., 2013, p. 16). The accounting-based ROA was measured for a given year (t; panel waves from 2010 to 2019). With net income in the numerator, the ratio also includes the result from the revenue streams and the cost structure as two key elements of the BMC as a basis to assess whether the company operates profitably in providing a value proposition to its customers (Osterwalder & Pigneur, 2010). The data was obtained from the SNL Financial Institutions database, which contains detailed information on the European financial sector over an appropriate period. In addition, bank annual reports were used to fill in missing data. These also served to validate the data from the database mentioned above.

Measure of Ownership Structure as Moderator

The distinction of firms' ownership structures follows two dimensions, specifically classifying ownership structures based on the degree of concentration of ownership and the type of owners. In this context, Iannotta et al. (2007) specified these two dimensions as follows:

First, the degree of ownership concentration: firms may differ because their ownership is more or less dispersed. Second, the nature of the owners: given the same degree of concentration, two firms may differ if the government holds a (majority) stake in one of them; similarly, a stock firm with dispersed ownership is different from a mutual firm. (p. 2128)

We conceptualized the different ownership structures of banks based on the legal forms, further detailing them by using additional characteristics to distinguish between six ownership structures for our research. Based on the legal form, we first distinguished stock corporations and further differentiated them using the additional criterion of the proportion of shares in free float. This way, we classified these banks on the one hand into banks with significant shares in free float (equal to or more than 50 percent of the shares are fully transferable and freely tradable in a stock exchange) as the first category and on the other hand, banks without significant shares in a free float as the second category. Furthermore, in a further step, cooperatives (third category), partnerships (fourth category), public-sector banks not guaranteed by the state (fifth category), and public-sector banks guaranteed by the state (sixth category) were separated. Overall, similar to García-Marco and Robles-Fernández (2008), we used the degree of ownership concentration as a further differentiating factor between ownership structures, distinguishing between banks with and without a significant free float, partnerships, and public-sector banks non-guaranteed and guaranteed by the state.

The variable of ownership structure was collected as part of the content analysis of the qualitative data material, using different company's information sources for identifying the legal form and further information to distinguish different categories of ownership structures in terms of ownership concentration degree. The institution's official name, the website's legal notice, or parts of the annual report are suitable company's information sources to either derive the legal form from the institution's official name or identify it as information. In addition, after the presentation by the management and supervisory board and before the financial reporting, the annual report often also provides the legal form and further information to specify different categories of ownership structure concerning ownership structure. For example, this section of the annual report is often also titled "About the Group", "Company Profile", "Who we are and what we do", or "[name of bank] at a glance". Identical or similar headings for corporate presentation can generally also be found on the banks' websites. For the distinction between the first and second categories, the amount of freely tradable shares was decisive. In a case where more significant – meaning equal to or more than 50 percent of shares – are fully

transferable and freely tradable in a stock exchange, we classified the institutions in the first category of banks with significant shares in free float. Conversely, if more than 50 percent of the shares are not freely tradable in a stock exchange, we designated the institutions for the second category of banks without significant shares in free float.

The ownership structure variable is a non-metric categorical nominal scaled variable. Since we did not include any banks with significant changes during the reporting period in the sampling, the corresponding value of the variable for a bank is the same over the entire reporting period. Therefore, only one possible classification of ownership structure is included for each bank. For further statistical analysis, the individual categories have been numerically coded with digits from one to six.

Measure of Geographical Orientation as Moderator

The literature on operationalizing geographical orientation as a significant structural feature of a firm's strategic positioning, encompassing the relevant target markets to be served, contains various approaches ranging from balance sheet-based ratios to the counting of frequencies for the number of states or the number of branches as a proxy for banks' geographical orientation as our use case. For example, N. Liang and Rhoades (1988) approximated geographical diversification using balance-sheet data for calculating the inverse of the sum of the squares of the percentage of a bank's deposits in each of the markets within the bank's operations area. Additionally, they used the number of markets as a simplified measure for geographical diversification. Similarly, also other researchers used frequencies to capture geographical orientation. For instance, Rose (1996) applied the number of different states in which branch banks represent a bank, or Hughes et al. (1999) employed the number of bank's branches to measure geographical diversification.

As part of our empirical research, it was decided to operationalize geographical orientation within the framework of a non-metric, nominal scaled variable that reflects the different degrees of orientation toward diverse target markets. The variable distinguishes between international (first category), pan-European (second category), national (third category), and regional orientation (fourth category) and comprises in total four categories, coded with the numbers one to four for statistical processing. Furthermore, since geographical orientation is a stable and largely time-invariant variable over the period under consideration, each bank belongs to only one category, regardless of the year.

We conceptualized the variable of geographical orientation primarily based on content analysis of the qualitative bank's description of geographical orientation within annual reports to differentiate various degrees of geographical orientation mapped to the four different categories. The assignment rests primarily on illustrating the proportions of business operations according to different countries or the geographical description of business operations in the annual reports. On this basis, it was possible to distinguish the respective degree of geographical diversification. As the greatest extent of geographical diversification, we identified international orientation as the first category, referring to banks that operate beyond national borders and are not limited to the geographical area of Europe. The target markets of such banks also lie outside their home country and Europe by maintaining branches and subsidiaries on other continents outside Europe. A high degree of geographical diversification through a business radius not restricted to a specific national area also characterizes banks with a pan-European focus as the second category. However, the target markets lie in the geographical area of Europe, not having branches or subsidiaries on other continents. As the third category, banks with a national focus limit their target market to a specific national area and have a stronger geographical concentration. Such banks may diversify through branches and subsidiaries, but the customer focus and scope of operations are limited to the parent company's respective territory. Finally, as the fourth category, regionally oriented banks concentrate their business activities on a specific region within a national territory. The offering of products and services rests on a regional principle almost exclusively for customers in this region, which is often also listed in the name of the bank, e.g., "Sparkasse Düsseldorf". Representative offices outside the country of domicile, whose main tasks are to maintain contacts and initiate business, did not function as a decision criterion for categorization.

A taxonomy based on the geographical breakdown of credit risk derived from the quantitative information of the Pillar III reports differentiated in an additional step the geographical focus in unclear allocation to one of the four categories based on the qualitative data. Thus, to determine the quantitative differentiation criterion, we used the detailed country-level information of the Pillar III report on the geographic distribution of credit risk exposure and calculated the sum of percentages of credit risk exposure according to relevant geographical areas. Subsequently, the application of a taxonomy served to allocate to a geographical orientation based on the geographic distribution of credit risk exposure by geographic unit. The taxonomy includes an allocation to the first category of international orientation if more than or equal to 10 percent of the risk positions are attributable to

geographical areas outside the country of domicile and Europe, such as North America, Asia, or Africa. An allocation to the second category of pan-European orientation applied if, in addition to the country of domicile, more than or equal to 10 percent of the risk positions are attributable to the geographical area of Europe and less than 10 percent to other continents. The institution is nationally oriented and classified into either the third or fourth category if more than or equal to 90 percent of the risk positions are attributable to the country of domicile. Classification in the fourth category as a regionally oriented bank was only possible by examining the aforementioned qualitative information in the annual report.

Measure of Slack as Moderator

The financial data access and the fact that no realistic zero point can be identified for slack decisively determine the measurement of slack, which mainly refers to relative measures. Therefore, when measuring slack at the firm level, two aspects are critical. First, researchers can draw on different types of financial data to measure slack as a proxy and use them in combination. Second, however, an absolute level of slack with a realistic zero point is hard to determine, so slack measurement should rest on relative rather than absolute numbers (Bourgeois, 1981; Bourgeois & Singh, 1983). Bourgeois (1981) presented several indicators that suggest a change in slack in the organization. For example, an increase in retained earnings, general and administrative expenses, credit rating, price-earnings ratio, or a decrease in dividend payout or debt as a percent of equity indicates an increase in slack resources.

Earlier conceptualizations distinguished different slack dimensions with administrative resources or financial reserves and reserves in utilizing available credit potential. Accordingly, Bourgeois and Singh (1983) differentiated between three interrelated but distinct slack dimensions as recoverable (absorbed), available (not absorbed), and potential slack. In line with this conceptual distinction, Greve (2003) detailed that absorbed slack resources consist mainly of administrative resources that exceed the level required to sustain the organization and business activities in the short term. He further declared that unabsorbed slack mainly includes financial reserves, such as cash or holding financial instruments. Moreover, potential slack includes the underutilization of available credit potential. Various researchers maintained this differentiation and considered all three dimensions in their studies, such as Iyer and Miller (2008) or Agusti-Perez et al. (2020).

For our statistical analysis, we conceptualize slack as potential slack to focus exclusively on the impact of underutilized available credit potential. For the members of the

TMT in the decision-making situation, potential slack implies a great deal of discretion through the provision of a variety of options and possibilities, and thus a wide range of applications that provide room for active decision-making (Sharfman et al., 1988). With our conceptualization, Iyer and Miller (2008, p. 813) were followed by measuring potential slack as the inverse of debt-to-equity ratio at the respective year-ends in the period under consideration.

Measure of Value Proposition as Moderator

The nature of the value proposition provides the framework for aligning the infrastructure traits and diversity degree characteristics of business models, so we conceptualized the value proposition based on observable differences classifying different bank types as a categorical variable with a total of five categories. In distinguishing between different types of banks and their associated value propositions, the work of, e.g., Vander Venet (2002), who used observable organizational and financial characteristics to distinguish between three different types of banks in terms of their degree of universality, served as a guide. As a result, we measured the value proposition as a categorical variable based on a system of value proposition categories for our analysis that differentiates between five different bank types: Commercial Banks, Commercial & Investment Banks, Investment Banks, Specialist Banks by statutory mandate, and Niche Banks.

The qualitative content analysis for identifying the individual manifestations of the value proposition variable rests on an explorative design for structuring categories for developing a coding guideline to ensure objectivity in classifying various value propositions based on delimiting characteristics. Thus, an explorative design elaborated substantiated aspects of evaluation within the framework of the inductive category formation method, based on the material itself. Hence, we elicited various definitions and then structured them in delimiting categories. In total, a systematically structured coding guideline, incorporating the characteristics relevant to the assignment within the category-guided qualitative content analysis procedure (Mayring, 2014), i.e., the category system with anchor examples and coding rules for collecting the corresponding characteristics of the variables, was used to group the banks into the individual variable's categories.

The category-led approach filters out the value proposition as a largely stable and time-invariant characterization of the bank based on previously defined categories summarized in the systematically developed coding guideline, which essentially aims to identify the manifestations of the value proposition based on the bank's description of its range of products

Table 3.1: Coding Guideline for Content Analysis of Value Proposition

Coding	Category	Definition	Anchor examples
1	Commercial banks	Commercial banks fulfill the classical economic transformation functions as financial intermediaries and make them available to the broad public (e.g., private individuals, companies, states). They are marked by many products and customers within the lending or borrowing business framework and act as a payment service provider.	<p>ING Group (2019, p. 17): Commercial banks like ING are in scope of regulations [...].”</p> <p>Crédit Mutuel Arkéa (2017, p. 8): “As a producer and distributor, Crédit Mutuel Arkéa can offer its customers, whether they are individuals, companies, associations or local authorities, a full range of banking, financial, asset management and insurance products and services.”</p>
2	Commercial & Investment banks	As a mixed form of a commercial and an investment bank, also known as universal banks, these banks concentrate on lending and deposit business and act as a financial intermediary in the narrow and broader sense. Thus, besides a broad spectrum of products and services for a wide variety of customers, as is customary with commercial banks, these bank types offer the typical product range of an investment bank.	<p>Deutsche Bank (2019, p. 5): “As of December 31, 2019, we were organized into the following segments: – Corporate Bank (CB) – Investment Bank (IB) – Private Bank (PB) – Asset Management (AM) – Capital Release Unit (CRU) – Corporate & Other (C&O)”</p> <p>UBS Group (2017, p. 2): “Our diversified business model also benefits from Personal & Corporate Banking, the Investment Bank and Asset Management.”</p>
3	Investment banks	A pure investment bank is primarily involved in the investment business and acting as a market. As voluntarily specialized banks, they provide a wide range of investment banking products and services to corporations, financial institutions, investors, high net worth individuals, and government clients. Examples of services are issuing and trading securities, advice on IPOs, divestitures, business restructurings, spin-offs, or proprietary trading.	<p>Oddo BHF (2017, p. 8): “Corporates & Markets: This division comprises: the Equities and Fixed Income business lines, offering their institutional clients in France and Germany their expertise in execution and research across a wide range of products: shares, bonds, convertible bonds, derivatives, and structured products; The Corporate Finance activities in France and Germany, which offers its clients advice adapted to their individual needs for all corporate finance transactions, including M&A, IPOs, financial engineering, investments, and corporate brokering; [...].”</p> <p>Mediobanca (2018, p. 40) “Corporate and Investment Banking: This division provides services to corporate customers (including sales and corporate gains) in the following areas: Wholesale Banking: CIB client business (lending, capital market activities and advisory services) and proprietary trading, [...]; Specialty Finance, factoring and credit management (including acquisition and management of NPL portfolios), [...].”</p>

4	Specialist banks by statutory mandate	Specialized banks with a statutory mandate have a restricted scope of business by law. For example, mortgage banks granting long-term loans to finance real estate and public projects represent banks in this category. Such banks refinance themselves by issuing bonds (so-called Pfandbriefe) secured by mortgages. Bausparkassen, collecting money from customers based on concluded contracts and granting loans to them according to an allocation plan are another example.	Münchener Hypothekenbank (2019, p. 75): “The Bank’s core areas of business are granting mortgage loans for residential and commercial property, as well as issuing Mortgage Pfandbriefe. ” Deutsche Pfandbriefbank (2017, p. 6): “pbb is one of the leading European specialist banks for commercial real estate finance and public investment finance. These two segments build our strategic business. Our core funding instrument is the Pfandbrief. ”
5	Niche banks	In addition to the specialist banks acting on behalf of the law, a niche bank is a voluntarily specialist bank. Specialization may relate to specific products, customer groups, or even professional sectors but not legally initiated. It covers different characteristics like the specialization in real estate financing, the focus on exceptionally wealthy clients, the concentration on members of a specific profession, or the concentration on products in an area that supports the group’s orientation to which the bank belongs, e.g., car financing. Thus, group banks also belong to the voluntarily specialist banks. Thus, the specialization also covers investment banks meeting the qualitative criteria but included separately in their category.	Carrefour Banque (2017, p. 4): “Our purpose is to support customers, in particular Carrefour’s customers , in their daily lives, with simple, innovative, accessible products that are adapted to their needs. We focus our efforts on products that are connected to our parent company Carrefour. ” Aareal Bank (2019, p. 36): “The strategic business segments of Aareal Bank Group are commercial property financing and services, software products and digital solutions for the property sector and related industries. ”

Source: Own illustration, with examples taken from annual reports retrieved from the official banks’ websites.

and services within the annual report. The categories as expressions of the non-metric variable are nominally scaled and were coded with the numbers one to five for further statistical analysis. Table 3.1 summarizes the coding guideline with the individual categories, corresponding definitions, and text passages as anchor examples. The latter also contains the coding rules used to distinguish the individual categories. The description of the value proposition to customers in the product and service range within the annual report served as the basis for assigning a bank to a category. We conducted a final assignment by a context check that considered all possible contexts of the bank’s presentation, e.g., negations. The category system guarantees that each bank can only be assigned to one category.

Control Variables

A country's economic growth was measured as the three-year average growth rate (in t , $t-1$, $t-2$) of gross domestic product, based on actual changes from year to year. The actual change is obtained by comparing the nominal change in absolute terms, from which inflation, which may distort the result, is removed. Data was obtained from the freely accessible database of the Statistical Office of the European Union (Eurostat). Average gross domestic product (GDP) growth as a proxy for the economic growth of a country is a good indicator of actual changes in economic performance, as the measure allows dynamic comparisons over time and between countries (Eurostat, 2021).

It is necessary to consider the influence of the initial economic situation on the TMT's strategic decision-making behavior of banks in their role as financial intermediaries, affecting the conduct of banks' business operations as financial intermediaries and the organizational outcomes. Thus, the specific characteristics of the economic environment can significantly impact management's strategic decision-making, as there is a close linkage between the financial and real economies in banks' role as financial intermediaries – also emphasized by Aiyar (2012) – because banks provide the resources for future growth and monitor the performance of other businesses (Boubakri et al., 2005). Consequently, if an economic downturn dampens the demand for additional funding for investment or leads to a widespread deterioration in the creditworthiness of many market participants, this has a massive impact on the banks' operations and, accordingly, on their performance. In addition, because managers' focus is guided by critical performance targets influencing managers' decisions and risk-taking behavior (March & Shapira, 1987), an overall hostile economic environment may cause managers to take more significant risks for achieving their targets. For this reason, country-specific influences at the macroeconomic level that may affect bank performance are excluded. At the same time, we counteract possible distortions of the results due to the sample construction by weighting the sample by gross domestic product.

Given the impact that industry growth can have on management decisions and behavior, we also controlled industry growth. Consistent with the approach to measuring economic growth per country, industry growth as the three-year median growth rate (in t , $t-1$, $t-2$) of the industry return on average equity was measured. For this purpose, the SNL European Bank Index, which includes banks or savings banks headquartered in Europe, accessed via the S&P Global Market Intelligence (S&P MI, formerly SNL Financial) platform was used.

Specific characteristics of an industry and the current industry situation are reflected in industry-dependent competitive structures and influence the strategic behavior of management in terms of their risk attitudes. As Porter (1980b) pointed out, the competitive structures in the individual industries differ significantly in terms of competitive forces and the resulting profit potential. The decision on strategic positioning is thus significantly influenced by the analysis of the individual competitive forces. Furthermore, industry characteristics can influence a company's attitude toward risk and thus the extent of diversification (Hoskisson & Hitt, 1990). For example, the influence of industry characteristics on diversification strategies (R. Reed & Luffman, 1986) includes defensive change strategies to avert undesirable adverse effects of the business environment or proactive strategies concerning new products and markets when growth and profit prospects are low (Ansoff, 1965). In addition, an intra-industry comparison also affects managers' risk-taking behavior. For example, Fiegenbaum and Thomas (1988) showed that the relationship between risk and return also always depends on whether the firm performs well or poorly relative to the industry. These findings conclude that firms with a low performance compared to the industry take more risk, while firms with a high performance take less risk.

Firm size was used as another control variable, as much literature on the relationship between firm size and performance suggests an influence. We calculated firm size as the value of total assets in euros in one year (t) as a widely used approach in the literature. To satisfy the assumption of normal distribution, the natural logarithm of total asset value was adopted in this study. Alternative measures, such as sales and number of employees (Capon et al., 1990), which can also be applied as proxies for firm size, were also examined. However, their use did not change our results.

Size is critical for generating competitive advantage and influences risk management capacities essential for strategic decisions and risk positioning. For example, the systematic risk increases with the size of the bank (Laeven et al., 2016). However, larger banks also have a broader potential for asset diversification, suggesting a negative relationship between bank size and bank-specific risk (Saunders et al., 1990). In addition, larger banks have more risk management capacity, providing the TMT with a more detailed basis for decision-making through comprehensive risk identification, analysis, and quantification (Köhler). At the same time, the size of a bank also affects the generation of competitive advantages. In this context, Hakenes and Schnabel (2011) found that larger banks have a competitive regulatory advantage in improving their capital requirements by more easily adopting an internal ratings-based

approach (IRBA), so smaller banks may be forced to take more risks. Increasing a bank's size also affects revenue generation, as banks can achieve significant economies of scale up to a specific size, as their greater ability to diversify gives them a significant cost advantage. Therefore, they need to raise less funding and generate higher revenues (McAllister & McManus, 1993). In lending, in turn, smaller banks have a competitive advantage because of their ability to produce soft facts (A. N. Berger et al., 2005).

In addition to the effects of bank size on bank structure, the involvement of other control variables in our analysis was also considered, but due to the high multicollinearity with our research object we refrained from using them to assess the influence of business model on performance, as they also reflect characteristics of banks' business orientation. For example, to adequately assess the effects of business orientation, other studies controlled the characteristics of bank product orientation by using the fee-to-income ratio or characteristics of loan portfolio orientation with the loans to banks to total assets ratio (X. Lin & Zhang, 2009). Furthermore, similar to C.-C. Lee and Hsieh (2013), other studies also controlled for characteristics of portfolio risk structure using the loan loss reserves to gross loans ratio. However, the involvement of other variables to control for bank characteristics did not seem appropriate concerning the research questions of this paper because business orientation and its impact on bank performance and TMT's risk behavior are the focus of our research and act as dependent variables. For this reason, we also refrained from using credit ratings, which act as a suitable indicator of bank creditworthiness at a given point in time. Credit ratings reflect a bank's ability to service its debt. Thus, in addition to numerous other parameters, they already indirectly include assessing the business model and performance of the corresponding bank by the independent rating agencies. Therefore, bank ratings at a given time were also disregarded, due to strong multicollinearity with the research object.

In testing additional control variables that capture a country's political environment as components of the World Governance Index that may influence strategic decision-making, we found no effects on our experimental studies. For this, following Bitar et al. (2016), six control variables reflecting a country's political environment were subsequently integrated. The variables stemmed from the 2019 World Governance Index obtained from various data sources from survey institutes, think tanks, or nongovernmental organizations through surveys and expert estimates worldwide. Specifically, the population's participation opportunities, political stability, and the absence of violence and terror. Moreover, the measures indicate the governance's quality and public administration, sound governance that encourages the private

sector, the acceptance of and compliance with laws, and the quality of police and judiciary as the capture of the state for private gain as a measure of corruption (Kaufmann & Kraay, 2019). Overall, no indicator influenced the experimental studies in this dissertation, so they were disregarded.

Since it can be assumed that better efficiency also leads to better organizational results, we also tested the impact of the cost-to-income ratio, measured as operating costs to income, as an indicator of the magnitude to which a bank is managed efficiently. For example, Beccalli et al. (2006) showed that more cost-efficiently managed banks perform better than more inefficient competitors. On the other hand, A. N. Berger and Mester (1997) demonstrated that banks with the largest cost inefficiencies might also generate the largest profits. The researchers explained that partly by a negative correlation of cost and profit efficiency or partly by unmeasured differences in product quality that require additional costs in the creation and therefore translate into negative cost efficiency.

Finally, we tested the impact of bank-specific variation in return on assets over our observation period as a control variable on the hypothesized relationships derived, using the coefficient of variation to measure the degree of planning uncertainty in return on assets faced by TMTs. The coefficient of variation is calculated by dividing the standard deviation of the return on assets in the numerator by the mean value of the return on assets in the denominator. However, no significant effect on our study could be demonstrated for the homogeneity or heterogeneity of the return on total assets per bank over the period under consideration; hence, this variable is excluded. The following chapter contains the empirical studies in which the derived hypotheses are tested. Before describing the individual studies and their results in detail, the data sample and research design that serve as the basis for the studies are first presented.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

The hypotheses presented are tested in Chapter 4. This chapter begins with a description of data as the sample for testing the hypotheses, including an explanation of rule-based sample generation. The description is followed by a presentation of the general research methodology used to analyze the data. Subsequently, the actual testing of the hypotheses in three separate studies follows. In doing so, the individual studies focus on different aspects of the conceptual framework. Finally, the research aims to determine if the previously proposed conceptual framework confirms and determines the significant relationships between the measures.

4.1 Data Sample and Sample Descriptive Statistics

The empirical research focuses exclusively on the eurozone and Swiss banking sectors to avoid heterogeneity in the sample through comparable monetary policy and regulatory conditions. Consequently, the concentration of the research effort on credit institutions at the consolidated level domiciled in the eurozone (i.e., countries with the euro as official currency) and Switzerland to answer the research questions raised, was accompanied by several fundamental considerations. The first is to avoid heterogeneity in the sample, which ensures better validity of the results, as all institutions operate in the same industry and are comparable for this reason. In this way, we also consider the seminal work of Porter (1980a) that the industry environment matters a great deal for firms' strategic decisions. In particular, the comparable monetary policy and regulatory environment of the European Central Bank (ECB) and the Swiss National Bank (SNB) are crucial for assuming a homogeneous population and sample composition.

Accordingly, all eurozone banks are subject to the Single Supervisory Mechanism (SSM), established in response to the 2007-2008 economic and financial crisis, and creates a uniform set of supervisory conditions to improve the safety and stability of the banking sector. Furthermore, as the Swiss Financial Market Supervisory Authority (FINMA) provides a nearly equivalent regulatory framework for supervision as well as resolution and recovery for banks domiciled in Switzerland, we ensure a high degree of comparability in the competitive conditions of the banks in the sample.

The decision for including the Swiss in addition to the eurozone banking sector in our sample rests on various preliminary considerations relating to close economic ties, the importance of the Swiss banking sector for Europe, and the complementary enrichment of the sample by a banking sector characterized by diversity. After all, even though Switzerland is not an EU-member state, there is a close link to the European economy and a high correlation of business cycles (J.-P. Roth, 2003), which argues for the comparability of the banking sectors. Furthermore, Swiss banks are significant for the European and international market because “Switzerland as a European financial centre [*sic*]” (J.-P. Roth, 2003) directly competes with the world financial centers in London, New York, or Tokyo due to its globally oriented financial activities (Brillard, 1988, p. 13). Moreover, similar to the banking market of the eurozone, the Swiss banking market comprises a large variety of universalistic banking models that differ in size, ownership, and geographical orientation, e.g., in the form of big banks, cantonal, and savings banks (European Banking Federation, 2021). Thus, it stands in contrast to the Anglo-Saxon separation banking system characterized by specialization.

Our analysis focuses on banks associated with the bank-based banking model and starts after the economic and financial crisis of 2007-2008 to ensure a uniform starting point for banks with a similarly challenging environment. The bank-based banking model, to which the Swiss financial system also belongs, is a financial system with a strong dominance of banks, mainly prevalent in continental Europe, compared to the market-based model in the Anglo-Saxon region with a strong capital markets’ dominance (Zogning, 2017). Additionally, the eurozone and the Swiss banking markets were similarly affected by the economic and financial crisis of 2007-2008. In contrast, for example, the Nordic banks had learned lessons from the Nordic banking crisis in the early 1990s leading to better returns, greater financial stability, and finally, a more robust positioning during the crisis (Berglund & Mäkinen, 2019). Both eurozone and Swiss banks face various challenges, including rising regulatory costs, increasing competition, and margins pressure (European Banking Federation, 2021). Including non-euro

member countries such as Bulgaria or Hungary would have been conceivable. However, we refrained from doing so because they do not fulfill the binding economic and legal conditions laid down in the Maastricht Treaty of 1992 or – like Denmark – have negotiated an opt-out concerning the introduction of the euro (European Union, 2021) and would thus jeopardize the homogeneity of the sample.

The banking sector also offers suitable opportunities for a more differentiated coverage of the characteristics of the unit of analysis by ensuring careful and controlled data collection of high data quality and availability based on the mandatory regular disclosure of information on economic circumstances and other relevant content about business operations. Our longitudinal study is therefore based on a careful and controlled survey that demonstrates high data quality and availability due to the banking industry's disclosure requirements and comparable regulatory standards. In addition to the regular publication of information on economic circumstances, banks are obligated to disclose further information at regular intervals and in a largely standardized form. These include, among other things, risks taken, encumbered and unencumbered assets, risk management targets, or the scope of application of capital regulations to strengthen market discipline.

The analysis exclusively comprises data from credit institutions at the consolidated level domiciled in the eurozone and Switzerland as the unit of analysis, excluding central banks and development banks that are not subject to general competition. We used the function available in the database that converted the Swiss bank data in Swiss francs into euros at the exchange rate prevailing on the respective reporting date to ensure comparability of the credit institutions' data at the consolidated level, also in terms of a single currency. Additionally, we do not include ESCB central banks, those being “the national central banks that are members of the European System of Central Banks (ESCB), and the European Central Bank (ECB)” (CRR I, 2013/26 June 2013, Article 4(1) point (45)) and the Swiss National Bank as the unit of analysis. Similarly, national and European development institutions are not part of the sample. These include banks with a statutory public development mandate that perform their functions based on unlimited liability or guarantee of the local authority as the entity on whose behalf they act. Due to this function, they are not subject to general competition in the banking industry and are not designed for profit. Some examples are the European Investment Bank (EIB) as an institution of the EU, Cassa Depositi e Prestiti (CDP) in Italy, and KfW Bankengruppe (KfW) in Germany and Caisse des Dépôts (CDC) in France.

Banks face numerous challenges requiring strategic decision-making in a dynamic, complex, and uncertain competitive environment to remain competitive. While these developments and challenges affect all companies – albeit in different ways, banks are affected in two ways at once, classifying them as a suitable unit of analysis because of the significant impact's magnitude. Thus, on the one hand, the challenges influence banks' strategic management directly as regular companies and, on the other, indirectly in their role as financial intermediaries by changing customers' requirements profile. Consequently, for banks as our unit of analysis, it is particularly technological and demographic changes, in addition to the regulatory, legislative initiatives in Basel III and Basel IV, that influence customer behavior and confront the banking landscape with strategic decisions of existential relevance.

Some authors of current reflections on the banking sector speak metaphorically of landslide changes affecting the banking sector. In addition, European banks suffer from persistent profitability problems compared to banks in North America, which further supports an analysis specific to European banks. Overall, it is undisputed that banking services will continue to be needed, but the question arises about the banking industry's nature and extent of value creation. Therefore, to remain in the market, banks must leverage their capabilities and resources to create value within their business models, giving them a competitive advantage and boosting their performance, thus ensuring their continued existence.

We drew the sample based on available data on the S&P MI platform for listed and unlisted credit institutions in the eurozone countries and Switzerland for our observation period. The S&P MI database SNL Financial Institutions Data contains information on balance sheets, income statements and other detailed industry data, key figures, ownership structures, market analyses, and geographical classifications of companies' financial sector. In addition, data on more than 9,500 operational and 5,000 historical banks and subsidiaries are available, including listed and unlisted banks, with a history for European banks since 2005 and thus of more than 15 years (S&P Global Market Intelligence, 2021). The sample period chosen for the data covers the years from 2010 to 2019. This period was selected to avoid data bias due to crises, which is why the period starts after the significant upheavals in financial markets during the 2007-2008 economic and financial crisis.

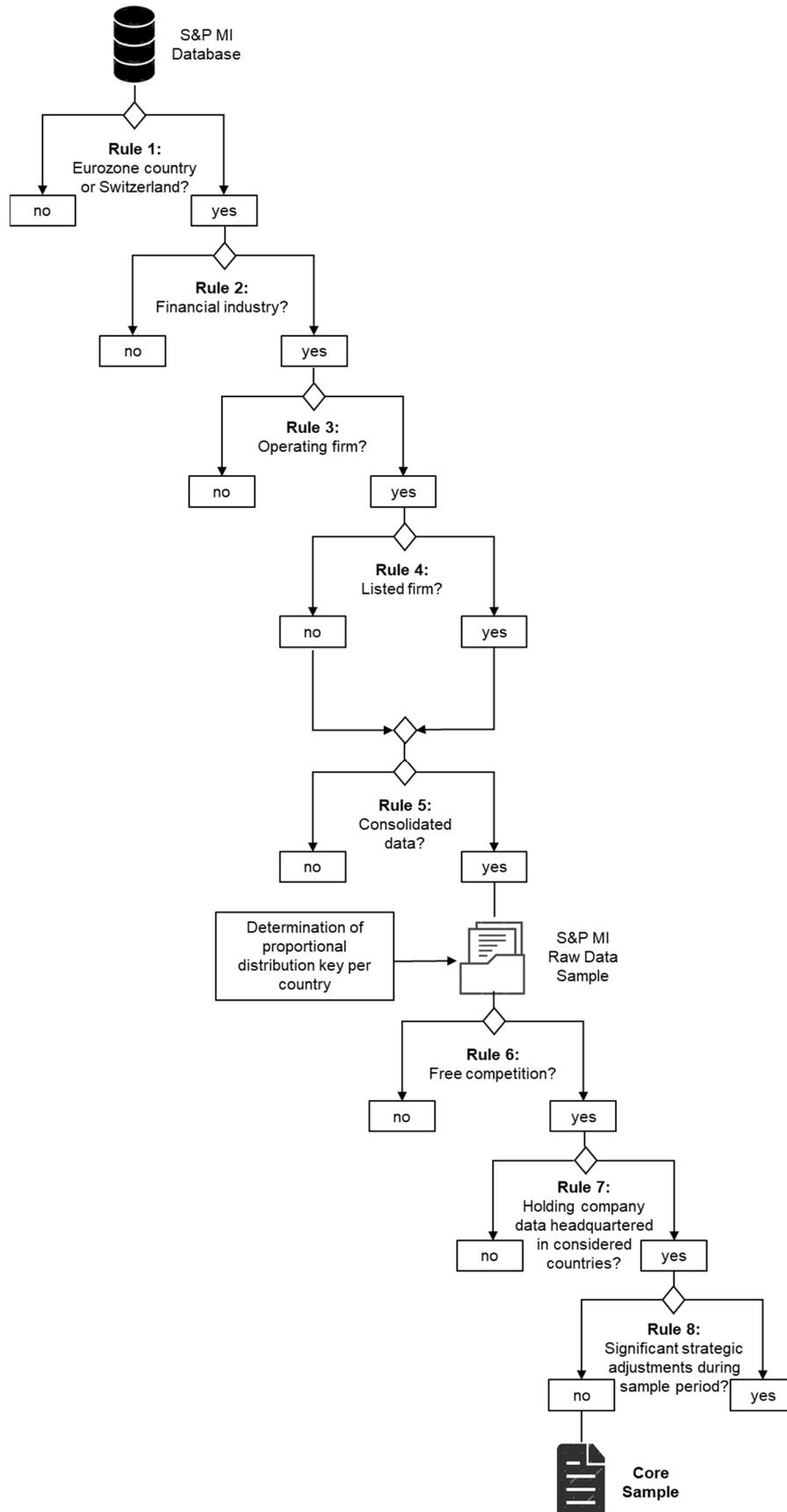
A total of eight rules defined the core sample of banks to be analyzed, comprising S&P MI-supported presorting of the data and subsequent manual filtering as a set of criteria. Specifically, five rules are relevant in generating a raw data set from the database, and the other three rules refer to further manual processing. First, we restricted the S&P MI database to the

19 eurozone countries and Switzerland (Rule 1). The second step limited the industry to the financial sector (Rule 2). Then, we narrowed the data set to operating companies at the extraction time in a third step (Rule 3). To answer the dissertation's research questions, we ensured a tremendous possible diversity of banks in the sample. Hence, both listed and unlisted banks were allowed in the data set (Rule 4). The data set was additionally restricted to consolidated results (Rule 5). As a result, a raw data sample of just under 3,900 banks was obtained.

Rule-based sampling continued as part of a deliberate selection process using a quota-based distribution key based on country GDP with the requirement that each nation is represented by at least one bank in the core sample. In line with the procedure of a systematic quota sample, the quota-based distribution key was determined based on a proportional distribution of countries according to their GDP. Precisely, we used the average gross domestic product of the years 2010 to 2019 as the sample period, which served to replicate the population in terms of its economic performance to ensure representativeness. In addition, the consideration of each country in the core sample was determined, with at least one bank for the quota calculation applied to countries whose average GDP is so low that the proportional distribution would be excluded from the core sample. This minimum inclusion refers to Cyprus, Estonia, Latvia, and Malta, intended to take account of representativeness. We used freely available data from Eurostat to define the corresponding ratios. In a further step, the raw data sample generated from the S&P MI database in descending order per country according to total assets as of December 31, 2019, was sorted.

After determining the weighting and sorting of the raw data sample, banks were selected per country considering three additional criteria for manual processing of the extracted data. In the next step, we excluded all banks not subject to free competition, especially government development banks with a statutory mandate (Rule 6). It is not advisable to examine banks' business models regarding their impact on competitive advantages and profitability if they are not in free competition. Furthermore, only consolidated data of parent companies as the leading institution headquartered in one of the countries under consideration have been analyzed (Rule 7). Consolidated data of subsidiaries that were still included in the raw data sample have been excluded. Next, we specified banks with significant breaks in the form of strategic adjustments, e.g., start-ups, mergers, or other significant changes in strategic positioning and business model during our period under consideration. Accordingly, they were excluded from the sample to avoid bias to our research questions (Rule 8). To this end, each

Figure 4.1: Decision Tree of Rule-Based Sample Generation



Source: Own illustration.

bank was manually screened for a continuous history going back to and including 2010.

The combination of the quota-based distribution key and the three additional criteria for manual processing of the raw data sample generated from the S&P MI database served to determine the core data sample. Thus, for example, if the distribution key based on GDP provided for the consideration of the country with a total of five banks in the core data sample, the five largest banks by total assets in 2019 were first considered. Afterward, rule-based manual validation was performed contingent on the set of criteria, as shown in the decision tree in Figure 4.1. If an institution did not meet the requirements, it was excluded from the sample, and the subsequent institution that met the criteria was considered. Consequently, according to the country quota, the core sample consisted of 193 banks that met all the selection criteria listed in Rules 1 to 8. Except for France and Ireland, all countries were included according to their weighting. For France, only 32 institutions instead of the planned 39, and for Ireland, only three institutions were analyzed instead of the planned five because only these banks complied with the above rules and, in addition, the relevant information was not available in the database for any other banks in the countries.

Missing data cause two main problems for statistical analysis. First, missing data reduces statistical power in terms of the ability to identify a relationship within the data set, and second, missing data can bias estimates by, among other things, weakening the correlation between two variables (P. L. Roth, 1994). For this reason, in cases where data were missing from the database, we attempted to manually identify the missing data using annual reports from previous years or based on data from bank websites. However, for a total of 50 banks, we were unable to collect the relevant data for our study, so these 50 banks in the core sample could not be further included.

Multiple or single imputation techniques are used to solve the problems that missing data cause in statistical analysis by filling in the missing values. Imputation, as Newman (2003) concretized, refers to “a set of techniques that fill in values for the missing data” (p. 331). The techniques for imputing missing data can be roughly divided into single and multiple imputations (Newman, 2003). In single imputation, missing values, such as the time or overall mean for metric data and the mode for non-metric data of the same observed variables are replaced with empirical measures of location. These are simple ways of replacing missing data where the standard deviation sinks because the imputed values have no variability (Little & Rubin, 2020). However, the procedures’ disadvantage is underestimating the standard error,

resulting in overestimating the actual sample size and bias due to underestimating the actual variance (Jamshidian & Mata, 2007).

In multiple imputation, rather than replacing the missing values with a single value, multiple plausible values are iteratively estimated using a distribution of the observed data, which are then separately analyzed and averaged to obtain an estimated value (Newman, 2003; Royston, 2004). Combining the results into a general estimator and standard error, the final imputed value in these procedures contains an uncertainty component that reflects the uncertainty in the data (D. B. Rubin, 1987). Accordingly, the imputed values produce a covariance matrix that would also have been observed in the data if no missing data had been available (D. B. Rubin, 1996), so no bias is caused.

Even though many ways are available to impute missing data, we decided not to use imputation to fill in the missing data. While multiple imputation is an acceptable method compared to single imputation procedures, even the data generated by this method are not actual data but synthetic data (D. B. Rubin, 1996), although they do not alter the variance-covariance matrix. In addition, after deleting the banks with incomplete data, the sample size is still comprehensive, allowing us to dispense with procedures for determining synthetic data. Therefore, the final sample comprises 143 banks, as shown in Table 4.1.

Table 4.2 summarizes the descriptive statistics of the banks in our sample for our observation period from 2010 to 2019. The review supports a better understanding of the data and characteristics of the 143 banks in the sample, including the banking sector in the eurozone and Switzerland. We introduced additional variables and their measurement and discussed them for informational purposes. For example, the review also reports the shares of interest income and fee and commission income and the shares of customer deposit and non-deposit refinancing. Furthermore, the moderators in the corresponding research studies are discussed in more detail, and, additionally, the distribution of the banks in our sample in the individual categories is shown.

Equity Capital Endowment

The average capital adequacy for the period under review is 8.03 percent, with a standard deviation of 5.48 percent. The minimum value of -3.93 percent is important, as negative equity indicates a corresponding over-indebtedness. The value is attributable to one of the largest resident banks in Greece in terms of total assets, Piraeus Bank, in 2011. In 2012, this bank still had negative equity. In 2011 and 2012, the National Bank of Greece data series also contains

Table 4.1: Overview of the 143 Banks Included in the Sample

No.	Bank	Country code	Average total assets (in bn EUR)	Average ROA (in %)	Average number of employees
1	Deutsche Bank AG	DE	1,675.23	-0.05	97,539
2	Crédit Agricole SA	FR	1,603.83	0.14	75,513
3	Banco Santander, SA	ES	1,322.53	0.54	191,084
4	Société Générale SA	FR	1,271.63	0.27	145,065
5	UBS Group AG	CH	919.64	0.34	62,865
6	ING Groep NV	NL	917.05	0.45	62,902
7	UniCredit SpA	IT	868.46	-0.15	122,554
8	Coöperatieve Rabobank U.A.	NL	857.28	0.36	51,717
9	Credit Suisse Group AG	CH	753.96	0.14	47,484
10	Banco Bilbao Vizcaya Argentaria, SA	ES	653.33	0.62	124,674
11	Nordea Bank Abp	FI	620.03	0.48	30,524
12	Crédit Mutuel Alliance Fédérale	FR	564.06	0.43	66,571
13	Commerzbank AG	DE	555.17	0.11	47,089
14	DZ BANK AG (Deutsche Zentral-Genossenschaftsbank)	DE	448.62	0.31	26,512
15	ABN AMRO Bank NV	NL	391.28	0.37	21,842
16	CaixaBank, SA	ES	343.66	0.33	32,622
17	Landesbank Baden-Württemberg	DE	283.80	0.10	11,167
18	KBC Group NV	BE	274.14	0.66	39,488
19	Bayerische Landesbank AöR	DE	248.86	0.13	8,454
20	Bankia, SA	ES	237.83	-0.53	17,305
21	La Banque Postale, SA	FR	216.54	0.31	3,085
22	Erste Group Bank AG	AT	213.71	0.38	47,773
23	Belfius Banque SA	BE	192.88	0.21	6,776
24	NORD/LB (Norddeutsche Landesbank Girozentrale)	DE	189.33	-0.17	6,487
25	Banco de Sabadell, SA	ES	177.45	0.26	20,117
26	Landesbank Hessen-Thüringen Girozentrale	DE	175.29	0.20	6,112
27	Raiffeisen Gruppe Schweiz	CH	170.14	0.36	8,943
28	Governor and Company of the Bank of Ireland	IE	136.38	0.15	11,588
29	Raiffeisen Bank International AG	AT	132.02	0.58	53,546
30	Zürcher Kantonalbank	CH	131.14	0.48	5,050
31	DekaBank Deutsche Girozentrale	DE	110.85	0.31	3,947
32	AIB Group Plc	IE	110.85	-0.65	12,188
33	Crédit Mutuel Arkéa SACC	FR	110.17	0.29	9,261
34	Caixa Geral de Depósitos, SA	PT	103.94	-0.15	17,648
35	Hamburg Commercial Bank	DE	99.12	-0.12	2,528
36	National Bank of Greece SA	GR	94.22	-2.09	24,175
37	Landesbank Berlin AG	DE	93.11	0.15	4,899
38	Deutsche Pfandbriefbank AG	DE	84.31	0.19	839
39	Banco Comercial Português, SA (Millenium Bank)	PT	81.58	-0.05	17,850
40	OP Financial Group	FI	80.13	0.66	6,040
41	Mediobanca - Banca di Credito Finanziario SpA	IT	73.28	0.26	3,930
42	Piraeus Bank SA	GR	71.86	-1.59	16,321
43	de Volksbank NV	NL	69.32	-0.04	2,762
44	Julius Bär Gruppe AG	CH	68.96	0.51	5,259
45	Alpha Bank AE	GR	65.03	-0.63	13,417
46	BPER Banca SpA	IT	65.03	0.27	11,943

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47	Bankinter, SA	ES	64.17	0.50	6,893
48	Ibercaja Banco, SA	ES	53.76	0.03	5,679
49	Volkswagen Bank GmbH	DE	52.80	0.88	1,636
50	Aareal Bank AG	DE	44.67	0.45	2,343
51	Banque et Caisse d'Epargne de l'Etat, Luxembourg	LU	42.58	0.53	1,825
52	Deutsche Apotheker- und Ärztebank eG	DE	39.68	0.14	2,455
53	Raiffeisenlandesbank Oberösterreich AG	AT	39.30	0.71	3,631
54	RCI Banque SA	FR	38.31	1.67	3,255
55	Münchener Hypothekbank eG	DE	37.92	0.06	427
56	Credito Emiliano SpA (Credem)	IT	36.76	0.39	5,854
57	Banque Cantonale Vaudoise	CH	36.63	0.75	1,952
58	Argenta Spaarbank NV	BE	35.73	0.38	609
59	Banca Popolare di Sondrio SCpA	IT	35.29	0.31	3,123
60	Migros Bank AG	CH	35.07	0.49	1,350
61	Basler Kantonalbank	CH	34.12	0.41	1,298
62	Banca Carige SpA - Cassa di Risparmio di Genova e Imperia	IT	33.99	-1.30	5,158
63	Banca Mediolanum SpA	IT	33.84	1.12	2,149
64	Bpifrance SA	FR	29.37	0.29	1,897
65	Raiffeisenlandesbank Niederösterreich-Wien AG	AT	28.91	0.47	1,184
66	Bank of Cyprus Public Company Ltd.	CY	28.05	-2.29	6,965
67	Luzerner Kantonalbank AG	CH	27.99	0.56	974
68	Sparkasse KölnBonn	DE	27.74	0.10	3,193
69	EFG International AG	CH	26.53	-0.24	2,695
70	Kreissparkasse Köln	DE	24.81	0.20	2,813
71	Wüstenrot Bausparkasse AG	DE	24.22	0.10	1,732
72	NIBC Bank NV	NL	24.14	0.47	653
73	BMW Bank GmbH	DE	23.52	0.64	1,357
74	LeasePlan Corporation NV	NL	22.35	1.57	6,864
75	Crelan NV	BE	20.49	0.28	3,189
76	Caixa Económica Montepio Geral, caixa económica bancária, SA	PT	20.49	-0.29	4,026
77	Oberbank AG	AT	19.05	0.81	2,048
78	Stadtsparkasse München	DE	17.15	0.26	2,124
79	Van Lanschot Kempen NV	NL	16.53	0.32	1,761
80	Landesbank Saar	DE	16.19	0.17	471
81	Banca March, SA	ES	15.53	1.54	1,735
82	Achmea Bank NV	NL	15.11	0.13	255
83	Banca Sella Holding SpA	IT	13.72	0.31	4,202
84	Nova Ljubljanska banka d.d., Ljubljana (NLB Group)	SI	13.61	-0.88	6,623
85	Mittelbrandenburgische Sparkasse in Potsdam	DE	13.27	0.24	1,458
86	Sparda-Bank Baden-Württemberg eG	DE	13.19	0.22	722
87	Cassa Centrale Banca - Credito Cooperativo del Nord Est SpA	IT	12.98	0.29	1,285
88	Stadtsparkasse Düsseldorf	DE	11.79	0.13	2,060
89	Berliner Volksbank eG	DE	11.55	0.14	1,955
90	Nassauische Sparkasse	DE	11.48	0.31	1,595
91	Banco di Desio e della Brianza SpA	IT	11.36	0.31	2,062
92	Die Sparkasse Bremen AG	DE	11.11	0.27	1,235
93	Sparkasse Pforzheim Calw	DE	11.06	0.14	1,775
94	Kreissparkasse München Starnberg Ebersberg	DE	10.55	0.25	1,383
95	AEGON Bank NV	NL	10.53	0.12	173
96	Sparkasse Aachen	DE	10.34	0.40	1,752

97	Banca di Credito Cooperativo di Roma SC	IT	10.33	0.21	1,316
98	Sparkasse Nürnberg	DE	10.33	0.20	1,353
99	Caja Rural de Navarra, SCC	ES	10.23	0.49	1,306
100	Kreissparkasse Ludwigsburg	DE	9.97	0.18	1,699
101	Sparda-Bank Südwest eG	DE	9.47	0.16	585
102	Bank of Valletta Plc	MT	9.25	0.83	1,563
103	Sparda-Bank West eG	DE	9.15	0.21	766
104	Sparkasse Münsterland Ost	DE	8.87	0.21	1,121
105	Cassa di Risparmio di Bolzano SpA (Südtiroler Sparkasse AG)	IT	8.78	-0.23	1,187
106	Landessparkasse zu Oldenburg	DE	8.75	0.22	1,544
107	Kreissparkasse Heilbronn	DE	8.33	0.17	1,286
108	Sparkasse Krefeld	DE	8.25	0.09	1,728
109	Credit Europe Bank NV	NL	8.25	-0.06	4,565
110	Bank für Sozialwirtschaft AG	DE	8.18	0.58	352
111	Sparkasse Essen	DE	8.11	0.15	1,234
112	Banca Popolare dell'Alto Adige SpA	IT	7.80	0.18	1,171
113	Triodos Bank NV	NL	7.68	0.38	1,076
114	Kreissparkasse Böblingen	DE	7.54	0.25	1,081
115	Banca Generali SpA	IT	7.34	2.23	833
116	Volksbank Mittelhessen eG	DE	6.84	0.32	1,161
117	La Cassa di Ravenna SpA	IT	6.71	0.24	954
118	Banque Degroof Petercam SA	BE	6.70	1.06	1,210
119	Eurocaja Rural, SCC	ES	6.15	0.24	862
120	Caja Rural de Granada, Sociedad Cooperativa de Crédito	ES	5.58	0.25	803
121	Carrefour Banque SA	FR	5.10	0.73	1,806
122	ODDO BHF SCA	FR	4.93	1.87	1,392
123	My Money Bank SA	FR	4.81	-0.62	759
124	KAS BANK NV	NL	4.48	0.24	620
125	Banca Agricola Popolare di Ragusa SCpA	IT	4.46	0.32	888
126	Banca Popolare di Cividale SCpA	IT	4.44	0.07	543
127	Cassa Centrale Raiffeisen dell'Alto Adige SpA	IT	3.33	0.56	164
128	Banque Française Mutualiste	FR	3.32	0.64	211
129	Credito Cooperativo ravennate, forlivese e imolese SC	IT	3.29	0.32	469
130	Emil Banca Credito Cooperativo SC	IT	3.14	0.13	513
131	Oney Bank SA	FR	3.07	1.58	2,266
132	AS Citadele banka	LV	2.86	0.56	1,588
133	Caixa de Crèdit dels Enginyers – Caja de Crédito de los Ingenieros, SCC	ES	2.62	0.37	403
134	Banco Caminos, SA	ES	2.34	0.53	250
135	Socram Banque SA	FR	1.91	0.46	220
136	Šiaulių Bankas AB	LT	1.59	1.05	1,180
137	Arquia Bank, SA	ES	1.48	0.45	193
138	Caja Rural Central, SCC	ES	1.39	0.41	273
139	Banque Edel SNC	FR	1.27	0.64	163
140	AS LHV Group	EE	0.98	0.43	231
141	Banque Delubac & Cie SCS	FR	0.59	0.17	184
142	Slovenská záručná a rozvojová banka, a.s.	SK	0.54	0.10	162
143	Caisse de Crédit Municipal de Lyon	FR	0.08	1.07	59

Note: The stated figures relate to the period 2010 to 2019.

Source: Own representation.

Table 4.2: Descriptive Statistics of Sample Banks

	Min	Max	Mean	S.D.
Banks				
Total assets (in bn EUR)	0.06	2,164.10	136.20	298.15
RWA (in bn EUR)	0.05	605.24	47.72	91.55
Number of employees	54	202,713	12,410	28,556
ROE (in %)	-662.84	4,871.17	7.05	131.22
ROA (in %)	-13.41	4.15	0.28	1.03
Banks' Business Model Traits				
Equity capital endowment (in %)	-3.93	60.77	8.03	5.48
Human capital endowment (log)	6.227	12.222	9.198	0.846
Share of interest income (in %)	4.02	100.00	76.47	17.66
Share of fee and commission income (in %)	0.00	95.98	23.53	17.66
Standardized diversity index of income structure	0.00	1.00	0.59	0.26
Share of total deposits to customers (in %)	0.97	98.46	62.42	22.73
Share of non-deposit-based refinancing (in %)	1.54	99.03	37.58	22.73
Standardized diversity index of refinancing structure	0.04	1.00	0.73	0.25
Moderators				
Slack (in %)	-3.78	154.91	9.36	10.98
Ownership structure	1	6	2.65	1.42
<i>Number of banks in cnon-depositcategory:</i>				
1 - Banks with significant shares in free float	28			
2 - Banks without significant shares in free float	56			
3 - Cooperatives	30			
4 - Commercial Partnerships	1			
5 - Public-sector banks not guaranteed by the State	23			
6 - Public-sector banks guaranteed by the State	5			
Value proposition	1	5	2.25	1.65
<i>Number of banks in category:</i>				
1 - Commercial banks	76			
2 - Commercial & Investment banks	27			
3 - Investment banks	2			
4 - Specialist banks by statutory mandate	4			
5 - Niche banks	34			
Geographical orientation	1	4	2.63	1.07
<i>Number of banks in category:</i>				
1 - International orientation	25			
2 - Pan-European orientation	43			
3 - National orientation	34			
4 - Regional orientation	41			

Note: The figures stated refer to the period 2010 to 2019.

Source: Own representation.

negative values for equity. Just as in 2012 for Bankia based in Spain. Probably, these values are an offshoot of the economic and financial crisis of 2007-2008 and the resulting banking crisis. The maximum value for capital adequacy is attributable to Slovakia's largest bank, Slovenská záručná a rozvojová banka, a. s., with wholly owned shares by the Slovak state.

Human Capital Endowment

The human capital endowment as staff density measured as total assets to the total number of employees (full-time equivalent (FTE)) expresses how many assets are attributable to one full-time employee. The average number of employees excluding total assets is 12,410 employees, with a standard deviation of 28,556 employees. The lowest number of employees is 54 at Caisse de Crédit Municipal de Lyon, a niche regional French public sector bank. In addition to banking activities, the bank also carries out pawnbroking. In France, the regional caisses de crédit municipal have a legal monopoly on the short-term granting of pawn loans. The maximum value of 202,713 employees is attributable to the Spanish Banco Santander, SA, an internationally operating commercial & investment bank as a multi-channel bank with an extensive branch network.

When considering the ratio of total assets to the number of employees, the mean value is 14.55 million euros, and a standard deviation of 17.08 million euros. The minimum value of employee density of 0.51 million euros of assets per employee is accounted for by the Lithuanian Šiaulių Bankas AB, which has the lowest level of assets per employee. The corresponding value for the natural logarithm is 6.23. The bank is a commercial bank with activities limited to the national market in Lithuania. On the other hand, the German-based Deutsche Pfandbriefbank AG, which operates as a specialist bank by statutory mandate in the European market and offers commercial real estate and public investment finance, provides the maximum value of 203.29 million euros (natural logarithm of 12.22).

Functional Diversity in Income Structure

The ratio of income from the interest-generating business and the ratio of income from fee and commission-earning business to total income from the two income streams are indicators of the extent of different income streams of a bank. We used bank income statement data in the SNL Financial Institutions database to calculate the ratios for the relevant period under review. The banks in our sample have an average share of interest income of 76.47 percent with a standard deviation of 17.66 percent. In comparison, fee and commission-based income as a percentage of total interest plus fee and commission-based income averages 23.53 percent. Thus, interest income ranges from 4.02 percent to 100 percent. The minimum value of 4.02 percent is attributable to the Estonian AS LHV Group, a national commercial bank that provides various banking services through its subsidiaries. The Dutch Achmea Bank NV provides the maximum value of 100.00 percent interest income from 2010 to 2014. The bank,

which operates as a specialized direct bank without a statutory mandate, conducts its business nationally with a narrow focus on the retail segment and offers savings products and home loans under various brands. Socram Banque SA, France, as a nationally active specialized direct bank in the consumer lending business, also reported fully interest-based income in 2010. The fee and commission-based income thus range from 0.00 to 95.98 percent.

Comparison of similarities and differences plays a role in various scientific disciplines and contexts, visible from various possible operationalizations, from analyzing deviations to observing the diversity of how characteristics are distributed. Consequently, approaches to assessing commonalities and differences are diverse, and operationalizations are dependent on perspective. One way to analyze differences, for example, is by capturing deviance. As a possible measure, the standard deviation is also conceivable as an average deviation from the mean. On the other hand, the recording of diversity also has a special significance, which is why Stirling (2007) also spoke of “the ubiquity of diversity” (p. 708). Thus, diversity is relevant whenever different entities can be classified into different categories, and the absolute number of categories is essential for the assessment (Leonard et al., 1989). Accordingly, it matters for assessing diversity within an absolute number of categories whether a characteristic is evenly or variably distributed among the possible categories.

To operationalize the diversity of income structure from a bank’s operations, we therefore, use the diversity index of Blau (1977), in line with current research on capturing diversity. The Blau index is also known as the Herfindahl (1950) and Hirschman (1945) index. In addition, it goes back to the Simpson index of Edward H. Simpson from 1949 for conceptualizing the diversity of species in an ecosystem (D. A. Harrison & Klein, 2007, p. 1211). This way, our operationalization of diversity refers to the approach of Stiroh and Rumble (2006).

The definition for Blau’s diversity index (DIV_{INC}) is as follows:

$$DIV_{INC} = 1 - \sum_{i=1}^c p_i^2, \quad (4.1)$$

where c is the number of categories of income structure in the operational banking business, and p_i is the share of income in each category i . As a measure of diversity, the Blau index supplies information on the extent to which characteristics are highly diversified or concentrated. The sum of the squared shares of interest-based and fee and commission-based income is subtracted from one to calculate the diversity ratio.

The values for DIV_{INC} range between zero and $\frac{(c-1)}{c}$. The number of categories of an element in the data set determines the maximum value for the Blau index. If the number of categories c is high, the diversity index values vary between zero and one. The maximum value of the diversity index varies according to the number of categories. Thus, it increases if there is an increase in the number of categories. Whereas zero reflects complete concentration, a ratio tending toward one stands for massive diversification. Transferred to our key figure DIV_{INC} zero stands for complete focus on only one income source. That is, the bank's strategic focus is entirely homogeneous on one source of income, either interest-based income or fee and commission-based income. The maximum Blau index value is $0.5 (= \frac{(c-1)}{c} = \frac{1}{2})$ and thus represents the highest possible heterogeneity in the distribution of income streams, when interest and fee and commission-based income contribute equally to total income.

We standardized the measure varying between zero and one to facilitate the interpretability of the Blau index as a measure of the functional diversity of the income structure. For standardization purposes, the Blau index was multiplied by $\frac{(c-1)}{c}$ to get one as the maximum value of heterogeneity independent from the number of categories, often referred to in the literature as the Index of Qualitative Variation (IQV) (Agresti & Agresti, 1978, p. 208; Biemann & Kearney, 2010, p. 584). The index standardization traces back to Mueller and Schuessler (1961).

We refer to this standardized measure as $SDIV_{INC}$. The definition of the standardized diversity index for the income structure is given in Equation (4.2):

$$SDIV_{INC} = \frac{c}{c-1} \left(1 - \sum_{i=1}^c p_i^2 \right). \quad (4.2)$$

The highest possible concentration of the income structure is reflected by the value zero. For example, if a bank focuses exclusively on interest- or fee and commission-based income, $SDIV_{INC}$ will take the value zero. In contrast, $SDIV_{INC}$ will take a value of precisely one if the income structure is as diversified as possible (meaning the lowest possible concentration).

The standardization of the Blau index means that the values no longer depend on the number of categories. While the non-standardized Blau index takes the value of 0.5 for two categories for the income structure with the greatest possible diversity, the maximum amount is now one. For example, assuming interest income and fee and commission-based income

each contribute half and thus equal to total income, the standardized Blau index, illustrated in Equation (4.3), is one:

$$SDIV_{INC,c=2} = \frac{2}{1} \left(1 - \left(\sum_{i=1}^2 0.5_i^2 \right) \right) = \frac{2}{1} (1 - 2 * 0.25) = 1. \quad (4.3)$$

In contrast, if the strategic positioning of income structure concentrates on only one category, e.g., on fee and commission-based income ($p_{1,interest\ income} = 0$ and $p_{2,fee\ and\ commission\ income} = 100\%$), the standardized Blau index has a value of zero:

$$SDIV_{INC,c=2} = \frac{2}{1} (1 - 1) = 0. \quad (4.4)$$

The descriptive statistics reveal that the functional diversity of income structure ranges from 0.00 to 1.00. Thus, the broadest possible range of diversity of income structure is present – from a perfect concentration on one income stream to the broadest possible diversity in terms of a half contribution of both income streams from interest-, fee- and commission-based income. Furthermore, the mean value of the sample is 0.59 with a standard deviation of 0.26, indicating a stronger emphasis on one income source concerning the diversity of the income structure.

Functional Diversity in Refinancing Structure

The operationalization of functional diversity in refinancing structure follows the operationalization of functional diversity in income structure. The basis is the share of customer deposit-based refinancing and the corresponding refinancing not attributable to customer deposits. As in the case of the income structure indicators, we used the bank balance sheet data available in the SNL Financial Institutions database for the relevant observation period to calculate the ratio of customer deposits to total refinancing on the one hand and the ratio of non-customer deposits to total refinancing on the other.

The banks in our sample have an average share of customer deposit financing of 62.42 percent with a standard deviation of 22.73 percent. Thus, the average share of non-customer deposit financing is 37.58 percent. French Socram Banque SA accounts for the minimum value of 0.97 percent for customer deposit-based funding in 2010. Against this, the maximum value of 98.46 percent refers to Triodos Bank NV, active in the European market as a niche bank that engages in sustainable banking by offering products and services directly promoting sustainability. The range thus extends from a minimum value of 1.54 percent to a maximum of

99.03 percent for non-customer deposit-based funding. For the standardized Blau index mapping, the degree of functional diversity of refinancing structure denoted $SDIV_{REF}$, the descriptive statistics show that the numbers range from 0.039 to 1.00. Similar to the diversity of the income structure, the design of the refinancing structure also shows a markedly wide range. The sample mean is 0.73 with a standard deviation of 0.25, indicating a greater emphasis on one source of funding in refinancing structure diversity among banks in our sample.

Institutional Characteristics

In terms of size and performance, the institutional characteristics of sample banks show a high degree of variation. The total balance sheet amounts of the banks considered ranged from 0.06 billion euros for the French Caisse de Crédit Municipal de Lyon to 2,164 billion euros for Deutsche Bank AG as the largest internationally operating German commercial & investment bank. The mean is 136.20 billion euros, with a standard deviation of 298.15 euros billion. The total amount of risk-weighted assets (RWA) as a relevant indicator for the financial sector ranges from 0.05 billion to 605.24 billion euros, correspondingly at AS LHV Group and Banco Santander, SA. The average of risk-weighted assets is 47.72 billion euros, with a standard deviation of 91.55 billion euros.

A comparably extensive range of variation is also evident when looking at the performance of the banks. In the period under review between 2010 and 2019, the ROE ranges from -662.84 to 4,871.17 percent, with a mean value of 7.05 percent and a standard deviation of 131.22 percent. In this context, the minimum value of -662.84 percent is attributable to the Cyprus-based Bank of Cyprus Public Company Ltd., which operates on the European market as a commercial & investment bank and generated a net loss of EUR 2.2 billion in 2012. The maximum value from 2011 is attributable to the Greek National Bank of Greece SA as a commercial & investment bank operating on the European market. The bank generated a net loss of -12 billion euros in that year with negative equity of -253 million euros, attributable to over-indebtedness and a net loss not covered by equity. The quotient of net loss by the number of negative equity results in a positive result, which does not reflect the actual return on equity of the bank. A net loss with simultaneous over-indebtedness affects National Bank of Greece SA in 2012, Greek Piraeus Bank SA in 2011, and Spanish Bankia SA in 2012 in the period under review. The maximum value of the return on equity adjusted for effects from net loss and over-indebtedness is 34.95 percent for Greek Alpha Bank AE, which operates on the European market as a commercial & investment bank, in 2013.

The ROA varies from -13.41 to 4.15 percent in the sample, with a mean of 0.28 percent and a standard deviation of 1.03 percent. In 2011, Greek Piraeus Bank SA showed the lowest value, while the French ODDO BHF SCA provided the maximum value in 2013. The figures are indicators of a wide variation in performance across banks, which supports a deeper examination of performance outcomes and the factors driving them. Furthermore, differentiating the metrics based on the different types of banks in terms of their value proposition provided with the business model, as seen in Table 4.2, also shows a considerable variation, suggesting that other factors influence the banks' performance outcomes. These results argue for further analysis of banks' performance to better portray the factors influencing it.

4.2 General Research Methodology

Time in Business Model Research

The research field of the business model approach is at a very early stage, and there are still many fundamental questions to be addressed by the academic and practical literature. This circumstance is due, among other things, to different historical development strands and perspectives of business model research (Wirtz et al., 2016). Furthermore, different compilations for the individual components describe a business model, e.g., Osterwalder and Pigneur (2010) or Mahadevan (2000). Nevertheless, despite the numerous open questions, there is agreement that a well-formulated business model puts a company in the position to achieve "a competitive advantage in its industry, enabling the firm to earn greater profits than its competitors" (Afuah & Tucci, 2003, p. 51).

Capturing the temporal component in strategic management is relevant to fully map sustainable competitive advantage and superior performance. As demonstrated, the heart of strategic management is to position a company to generate a competitive advantage and sustain it to achieve lasting financial success and ensure its survival (Helfat & Peteraf, 2009; Teece et al., 1997; Teece, 2007). With this in mind, the focus is on the long-term rather than the short-term success of companies, so it seems essential to consider the influence of time in the business model analysis, given the underlying research questions.

Within the business model concept research, three main research strands can be identified, focusing on the classification of business models, performance heterogeneity, and

its improvement. Lambert and Davidson (2013) also emphasized that previous research has mainly focused on these three perspectives. For example, the first research strand focuses on empirical studies of business model classification, e.g., Amit and Zott (2001). The second strand of research at its core relates to the heterogeneity of firms and their varying performance and explores the question of whether some business models are more powerful than others, e.g., Malone et al. (2006), Zott and Amit (2007), and Zott and Amit (2010). In contrast, the third research strand focuses on business model innovations and their potential to improve firm performance, for instance, Chesbrough and Rosenbloom (2002) or Zott et al. (2011).

The business model approach in strategic management is very young and diverse, with significant gaps in empirical research on the business model concept, reflected in an enormous need for conceptual and empirical research due to an emphasis on cross-sectional analyses and neglect of longitudinal analyses. Thus, the literature review manifests that most former studies on business model analysis methodologically rest on the theoretical derivation of business models (Wirtz et al., 2016), on case studies or cross-sectional examinations. Moreover, only isolated studies, such as the panel data analysis of outperforming business models by Malone et al. (2006), include longitudinal studies to account for underlying temporal processes. For this reason, Foss and Saebi (2017) pointed to a tremendous need for additional conceptual and empirical research in business model analysis. Ramdani et al. (2019) also emphasized knowledge gaps in business model research and highlighted the potential of longitudinal studies to fill these gaps.

Comparing the advantages and disadvantages of cross-sectional and panel studies reveals that the advantages are the disadvantages of the other and vice versa, so the methodological choice of analysis always depends on the perspective to be studied. Cross-sectional research captures a state of affairs valid at a specific point in time (Certo & Semadeni, 2006). They do not contain information about processes or individual developments or trajectories, but the positioning at a particular time is crucial. On the other hand, panel data allow for improved causal analysis and an increased ability to better grasp the complexity of an issue through the repeated measurement of the same issue (Hsiao, 2007). Thus, changes in a unit of analysis can be directly observed and attributed to changes or constant effects of the dependent variable. Panel data thus offer the advantage that they can be used to make dynamic statements regarding changes in a variable over time and static statements about the influence of a particular level or type of expression (Certo & Semadeni, 2006). Consequently, the research interest is decisive for the choice of the analysis method.

The use of panel data increases the potential for analysis to test our study's hypotheses and underlying research questions, considering a temporal component necessary for capturing the impact of business model positioning decisions over time and combining dynamic and stable components. The effects of strategic TMT decisions can often only be measured with a time lag, which is why an analysis of business models taking a temporal component into account seems to be helpful. Furthermore, the focus is on the review of a sustainable competitive advantage through a specific business model configuration as an expression of the TMT's decision-making and as a basis for superior long-term performance, while ensuring the survival of the company over several years and not once at a specific point in time.

Overall, the methodological approach allows studying the combination of stable and dynamic elements of the business models. On the one hand, firms and their environment are continuously changing, which requires dynamic strategic decision-making by the TMT and accompanying changes, is regarded. In particular, the different risk perceptions in this dynamic and uncertain environment, which are reflected in the TMT's decision-making, can be analyzed. Nonetheless, business models also include components with a stable configuration over many years, whose influence can also be captured using the panel data design. In this way, the interaction of the individual dynamic and stable elements of business models can be better understood simultaneously.

A longitudinal perspective will extend previous research regarding the validity of hypotheses over time and provide new approaches to the interaction of the different components of business models to express the TMT's strategic decision-making. The dissertation thus claims to extend the knowledge on the heterogeneity of firms and their different performance, thereby making a conceptual and empirical contribution to filling existing gaps identified by researchers such as Foss and Saebi (2017) or Ramdani et al. (2019), including the call for longitudinal research. Furthermore, the analysis of risk-taking behaviors as an expression of different human perceptions and their consequences for the design and performance of business models introduces components in analyzing business models that have not yet been considered.

Panel Data Analysis and Estimation Model

The data of the three empirical studies are organized in a panel design. The panel design implies that we have observed the banks in our sample at different points in time. The deliberate selection process assures continuity in the business model of the unit of analysis within the

sample from 2010 to and including 2019 and can guarantee a repeated measurement of the variable values among the identical study units. In total, the study thus considers ten panels based on the data from the database and the annual reports from 2010 to 2019 inclusive.

For the statistical analysis of the panel data – also known as longitudinal or cross-sectional time-series data (Park, 2011) – the statistical software Stata, which offers a variety of approaches that can be broadly divided into fixed-effects (FE) and random-effects (RE) models, was utilized. Moreover, this statistical software package includes a wide range of user-friendly features for panel data analysis (Baum, 2006a). Therefore, which approach appears to be the best is impossible to answer. Instead, “in practice, there is a great deal of overlap between all of them” (Berrington et al., 2006, p. 7) – either as a more general extension or as an equivalent model with identical conclusions. Hence, different methods can be applied to the same panel data set depending on the two basic models of individual effects, the FE model and the RE model (Cameron & Trivedi, 2009).

Working with panel data poses some statistical challenges associated with time series because of the classical ordinary least squares (OLS) assumptions like autocorrelation or homoscedasticity of residuals for independent and identically distributed (i.i.d.) random variables are not satisfied, requiring additional testing and modification. Autocorrelation, often referred to as serial correlation, is present whenever the observations of a variable at one point in time correlate with the value of a variable at an earlier point in time (Clarke & Granato, 2005). Due to the nature of panel data as a study of a certain number of units at different points in time, a lack of independence of observations collected over time is quite conceivable, and a violation of the assumption of independently distributed random variables is probable. Thus, the observations of one unit at different time points are probably more similar than the observations of two different study units. If there is a violation of the homoscedasticity assumption (i.e., the assumption of constant variance of the residuals) heteroscedasticity is present, and the dispersion of the observations varies. For example, it is conceivable in cross-sectional data due to strongly differing groups (companies from different industries) or in panel data due to a significant change in the values from the beginning to the end of the observations (Baum, 2006b). Accordingly, heteroscedasticity occurs whenever the dispersion of the dependent variable varies with the level of one or more explanatory variables. Overall, heteroscedasticity and autocorrelation cause estimated standard errors to be biased and inferences less efficient (Breusch & Pagan, 1979; Drukker, 2003), so modifications are needed for unbiased and efficient estimates.

The main disadvantages of panel data are the usually lengthy and costly collection and sometimes poor data quality. Even though data availability has increased tremendously in recent years, collecting panel data is much more time-consuming and costly than collecting cross-sectional data (Hsiao, 2007). Therefore, the field of traditional strategy and management research relied on the easy availability of cross-sectional data for many years (Bowen & Wiersema, 1999). However, as data availability has increased, the use of longitudinal data has become more prevalent in recent years (Bergh & Holbein, 1997). Nevertheless, data quality is often not satisfactory, and additional quality assurance of longitudinal data seems necessary (Hsiao, 2007).

Despite the various challenges that panel data present, with the possibility to control for unobserved heterogeneity, greater degrees of freedom, and mapping differences between units of analysis while capturing individual dynamics, there are several advantages of panel data collection that make an effort at collection worthwhile. As Hsiao (2007, pp. 3–6) pointed out, panel data allow for much better determination of model parameters than causal variables, due to the combination of inter-individual differences and intra-individual dynamics. In addition, panel data contain more degrees of freedom than cross-sectional data and higher variability in observed values and thus more significant sampling variability. Likewise, panel data allow controlling for unobserved heterogeneity and potentially omitted model parameters by providing information on intertemporal dynamics, e.g., firm turnover or firm profits, and individual details of the units of analysis.

Overall, the nature of panel data as observations of the same entities at different points in time allows for better capture of complex strategic and managerial relationships over time. Based on different responses to environmental factors, mental factors, and strategic positioning and their effects on competitive advantage and firm performance, panel data with the firm-specific and time-related aspects in particular capture the two essential dimensions of most theoretical models of strategy and management research (Bowen & Wiersema, 1999, p. 625). “As a result, strategy can best be understood by tracking it over time; by looking at behavior rather than condition; by studying ‘what happens in response to what’” (D. Miller & Friesen, 1982, p. 1020).

For the different types and objectives of panel data analysis, the FE and RE models can be distinguished as two basic linear models for individual effects in panel data analysis that differ in the properties assumed for the individual effects. Cameron and Trivedi (2009, p. 231) underlined that both basic estimation methods have in common the unobserved individual

effects (α_i) as an expression of the heterogeneity of individuals, which are random in both models. Moreover, the individual effects include the individual-specific influencing factors invariant over time (Vijayamohanan, 2016). Instead, the two fundamental models of panel data analysis differ in the properties assumed for individual effects. The RE model assumes that the regressors are independent of the unobserved individual effects (Cameron & Trivedi, 2009, p. 232). Against, the FE model assumes, as an additional complication, “that regressors may be correlated with the individual-level effects so that consistent estimation of regression parameters requires eliminating or controlling for the fixed effects” (Cameron & Trivedi, 2009, p. 231).

According to Cameron and Trivedi (2009, p. 231), the following notation, as given by Equation (4.5), can be adopted as the most general notation of the linear individual-specific effect model for the scalar dependent variable:

$$y_{it} = \alpha_i + x'_{it}\beta + \varepsilon_{it}. \quad (4.5)$$

The index i with $i = 1, \dots, N$ represents each observed subject. In our study, this is the total number of subjects with $N = 143$ banks in our final sample. The number of regular periods is denoted by the index t with $t = 1, \dots, T$ and reflects the number of periods for which the panel data were observed. Our study rests on a total of ten years of observations from 2010 to 2019 inclusive, so $T = 10$ for our study. Since panel data models described observations over different subjects and over time, the double index it stands for the observations of each bank i at time t . Thus, x'_{it} stands for an observed regressor as exogenous variables of bank i at time t . y_{it} stands for the dependent variable in the regression equation. β includes the slope parameters constant over i and t , thus independent of the unit and time studied. α_i represents the random individual-specific effects of each study subject, which may vary across banks but are constant over time. Thus, each subject has a different intercept term, but all have the same slope parameter. Furthermore, analogous to the cross-sectional data analysis, ε_{it} includes the observation-specific error terms, including other unobserved time-point-specific characteristics of the subject and thus vary across i and t .

If the heterogeneity of subjects expressed by the time-invariant unobserved individual effects α_i did not exist, it would also be possible to estimate the equation using the pooled OLS method as shown in Equation (4.6) for comparison:

$$y_{it} = \alpha + x'_{it}\beta + \varepsilon_{it}. \quad (4.6)$$

The pooled OLS model rests upon the assumption for cross-sectional analysis and therefore specifies constant coefficients with α and β . Thus, the starting point is a pool with $N * T$ independent cases. However, the pooled OLS as the most restrictive panel data model ignores potential interdependencies between data from a single study subject, so the temporal and individual dimensions are not considered. Instead, the OLS model assumes that individual-specific effect does not exist (Park, 2011).

Returning to the linear individual-specific effect model, we obtain the total number of observations in our study by multiplying N for the cross-sectional dimension and T for the longitudinal dimension of the data set. In our sample, we have all data for all banks for all time points so that a balanced panel is available. Thus, the total number of observations results from $N * T = 1,430$ individual data points. Our data set comprises N banks and a relatively small number of T periods, and because $N > T$ holds, it can be called a short panel due to few periods and the high number of subjects (Cameron & Trivedi, 2009, p. 230). In contrast, a long panel consists of many periods and few individuals.

Assuming the individual-specific effect α_i is time-invariant and varies only across subjects, we can illustrate the panel data model as longitudinal data with multiple observations of different subjects over different periods in matrix notation. By examining the cross-sectional effects along N -dimensions (rows) and the variation over time along T -dimensions (columns), we obtain the following matrix:

$$\begin{array}{l} \text{Cross-section effects} \\ \text{Time-series effects} \end{array} \begin{bmatrix} y_{11} & y_{21} & \dots & y_{i1} & \dots & y_{N1} \\ y_{12} & y_{22} & \dots & y_{i2} & \dots & y_{N2} \\ \vdots & \vdots & \ddots & \vdots & \ddots & \vdots \\ y_{1t} & y_{2t} & \dots & y_{it} & \dots & y_{Nt} \\ \vdots & \vdots & \ddots & \vdots & \ddots & \vdots \\ y_{1T} & y_{2T} & \dots & y_{iT} & \dots & y_{NT} \end{bmatrix}.$$

Following the presentation of Frees (2004, pp. 18–22), our dependent variables are assigned a set of K explanatory variables with $x_{it,1}, x_{it,2}, \dots, x_{it,K}$ depending on bank i and time t , without a constant term α , as is the case in the OLS model. In matrix notation, the K explanatory variables can be written $K \times 1$ column vector as follows:

$$\mathbf{x}_{it} = \begin{bmatrix} x_{it,1} \\ x_{it,2} \\ \vdots \\ x_{it,K} \end{bmatrix}.$$

By swapping the rows and columns, we get the transposed vector \mathbf{x}'_{it} with

$$\mathbf{x}'_{it} = [x_{it,1} \quad x_{it,2} \quad \dots \quad x_{it,K}].$$

For each K independent variable, $\boldsymbol{\beta}$ represents the slope parameter, also called the regression coefficient, of the corresponding independent variable, constant for all units and periods. In matrix notation, this gives the following $K \times 1$ column vector:

$$\boldsymbol{\beta} = \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ K \end{bmatrix}.$$

In longitudinal data models, it is possible to separate the idiosyncratic error term ε_{it} , defined as an observation-specific zero-mean random-error term from the individual-specific effect α_i , making the standard errors more precise and allowing to draw better conclusions.

In the individual-specific effects models, we assume that there is unobserved heterogeneity across individuals. This fact is captured by α_i e.g., in banks, an unobserved composition of customer density at the location affects performance and does not change over time and therefore varies only from one bank to the next. Thus, the main question is whether the individual-specific effects α_i correlate with the regressors. Hence, we have the FE model; if not, we have the RE model.

The FE model uses OLS estimators accounting for the unobserved individual-specific heterogeneity of subjects α_i as part of the intercept in the form of time-invariant unobserved characteristics with constant variance (Vijayamohan, 2016). As pointed out by Cameron and Trivedi (2009, p. 231), the FE model assumes a limited form of endogeneity, as it allows the individual-specific effects α_i to be correlated with the regressors x_{it} while further assuming that the idiosyncratic error term ε_{it} is uncorrelated and independently distributed with zero mean and constant variance (homoscedasticity) (Vijayamohan, 2016, p. 10). Due to the assumption of limited endogeneity, in the context of conditional mean formulations, $E(\alpha_i | x_{it}) \neq 0$, so for exogeneity $E(\varepsilon_{it} | \alpha_i, x_{it}) = 0$ is assumed (Cameron & Trivedi, 2009, p. 231). Decomposing the individual-specific effect of subjects α_i into a term α that is constant

across all subjects and the individual-specific effect, now denoted u_i , yields for the FE model to the Equation (4.7) by following Park (2011, p. 9):

$$y_{it} = (\alpha + u_i) + x'_{it}\beta + \varepsilon_{it}. \quad (4.7)$$

The error term of the RE model is similar to the representation in the FE model. However, for the individual-specific effect α_i the assumptions of RE model are distinguished. It also assumes an identically and independently distributed error term with zero mean and constant variance – like ε_{it} – but additionally assuming that it is uncorrelated with the regressors x_{it} (Cameron & Trivedi, 2009, p. 232; Vijayamohanan, 2016, p. 10). Park (2011, p. 9) stated that the RE model estimates error variance specific to the cross-sectional elements as individual-specific and random heterogeneity, which is treated as part of the composite error term, so the RE model is also called the error component model. Since the diversity of subjects is rooted in their individual-specific error term, the regressors' intercept and slope are the same for all subjects. Accordingly, following Park (2011, p. 9), decomposing the individual-specific effect of the subjects α_i into a constant term α and the individual-specific effect u_i results in the following Equation (4.8) for the RE model:

$$y_{it} = \alpha + x'_{it}\beta + (u_i + \varepsilon_{it}). \quad (4.8)$$

When deciding which model seems appropriate for the analysis, the advantages of one model turn out to be disadvantages of the other and vice versa, which is why it is necessary to check for the suitability of the models in a specification test. Thus, whenever the FE model is appropriate, Cameron and Trivedi (2009, p. 255) also declared that the RE model is inappropriate and the contrary. Therefore, it is necessary to examine whether there is a correlation between the unobserved heterogeneity and the observed regressors, for which the Hausman test as a specification test is recommended (Hsiao, 2007, p. 9).

The Hausman test as a specification test checks the differences between the estimated coefficients in the FE and the RE model. Hausman (1978) proved that the RE model yields consistent estimators only when α_i uncorrelated with the regressors, while the estimators in the FE model are consistent even if α_i is fixed and random. Therefore, the null hypothesis implies that the estimated coefficient under the RE model is efficient and consistent, while the coefficient in the FE model is only consistent. If the difference between the two coefficients is close to zero, the null hypothesis is correct, and both estimators are consistent. However, the estimator of the RE model is also efficient at the same time. Thus, the null hypothesis claims that the first estimator is efficient and consistent, and the second is only consistent. Against,

under the alternative hypothesis, the first estimator, but not the second, becomes inconsistent. Consequently, under the alternative hypothesis, the estimator of the RE model becomes inconsistent, and only the estimator in the FE model is consistent, so the FE model is only valid under the alternative hypothesis.

In addition to deciding on using a FE or RE model, when analyzing panel data, it is necessary to examine whether the model assumptions about the error terms are violated, particularly the presence of heteroscedasticity and/or autocorrelation. Therefore, additional tests are performed to identify possible violations of model assumptions and to make adequate corrections. A Breusch-Pagan test (for RE models) (Breusch & Pagan, 1979) and a modified Wald test as a test for a FE model (Greene, 2003, p. 324) test the assumption of homoscedasticity and determine whether the variance between individual cross-sectional elements in the panel data differ from each other. We identify autocorrelation, leading to systematic underestimation of the coefficients' standard errors, using the Wald test, which assumes no autocorrelation as the null hypothesis (Drukker, 2003; Wooldridge, 2010). Then, depending on the panel model and the test results on the errors in the panel data, it is possible to choose an estimation method.

4.3 Analyses and Results of the Empirical Studies

Our research rests on three separate studies presented in the following sections. The studies based upon the conceptual framework developed in Chapter 3 holds as the studies' basis. The separation of the three studies results from the differentiation of the previously derived hypotheses and the correspondingly different dependent variables. Accordingly, the focus within the studies is on different aspects of the conceptual framework that are tested, as detailed below. We are convinced that consideration in separate studies is helpful to emphasize these various focal points and adequately account for the switch of dependent variables between studies. Below, Table 4.3 contains the compilation of the hypotheses tested in the individual empirical studies.

The sample of 143 banks in the eurozone and Switzerland is the same for all empirical studies. The ten-year period under review covers the years from 2010 to and including 2019. For all studies, the consolidated company or whose TMT as its decision-making body forms the level of analysis. Thus, the analysis does not distinguish between the company and the TMT. Furthermore, it also does not consider subsidiaries, their management level, or their

Table 4.3: Overview of the Empirical Studies' Hypotheses

Study 1: The Relationship Between Infrastructure Traits, Diversity Degree Characteristics, and Performance and the Moderating Role of Ownership Structure	
Tested Hypotheses	H1, H2, H3, H4, H10a and H10b
Pages	188–205
Study 2: Infrastructure Traits and Diversity Degree Characteristics as an Antecedent for TMT's Risk-Taking Behavior and the Moderating Role of Geographical Orientation	
Tested Hypotheses	H5, H6, H7, H8, H11a and H11b
Pages	205–219
Study 3: The Relationship Between Risk-Taking Behavior and Performance and the Moderating Role of Slack and Value Proposition	
Tested Hypotheses	H9, H12a and H12b
Pages	219–232

Source: Own representation.

possibly divergent strategic positioning and operationalization in business models. As the management body of the consolidated company, the TMT is responsible for the company's strategic positioning as a whole, so that decisions in this respect also emanate from only one TMT. Accordingly, we consider the business model at the top level of analysis of the parent company. To meet the quality criterion of validity, all constructs or variables of the conceptual framework have been assigned unique measures in order to provide credible results and be able to draw unambiguous conclusions.

4.3.1 Study 1: The Relationship Between Infrastructure Traits, Diversity Degree Characteristics, and Performance and the Moderating Role of Ownership Structure

Only in the last two decades has the business model concept gained importance in the scientific discussion. Due to the relatively young research area and the evident influence of the “new economy” (Morris et al., 2005), some recent studies have established the connection of the business models' design on firm performance (e.g., Voelpel et al., 2004 or Demil & Lecocq, 2010). To the best of our knowledge, studies that concentrate on the banking sector and consider the concept of business models holistically have not been conducted so far. Only studies examining individual sub-aspects of a business model focus can be found sporadically. In this dissertation, we want to contribute to the literature by using the BMC conceptual tool

as a guideline for operationalizing various elements of the analysis tool for business models for the first time for the banking industry as our use case to examine our research questions. Thus, the qualitative concept, often applied as a guideline in practice, enables us to examine key elements of banks' business models in the dimensions of infrastructure traits and diversity degree characteristics and their impact on firm performance.

We use the scope of upper echelons theory and the insights of prospect theory and extend them to the banking sector. In doing so, strategic positioning and implementation in the form of business models are considered as a significant task of decision-making in TMT and an expression of the cognitive perception of its members. Moreover, we extend existing research on business models with a comprehensive longitudinal perspective to clarify the implications of the TMT's strategic decision-making over time. The relevance of the longitudinal perspective to this research area was also underscored by Bergh and Holbein (1997), who emphasized that strategic management is "an inherently longitudinal subject" (p. 569).

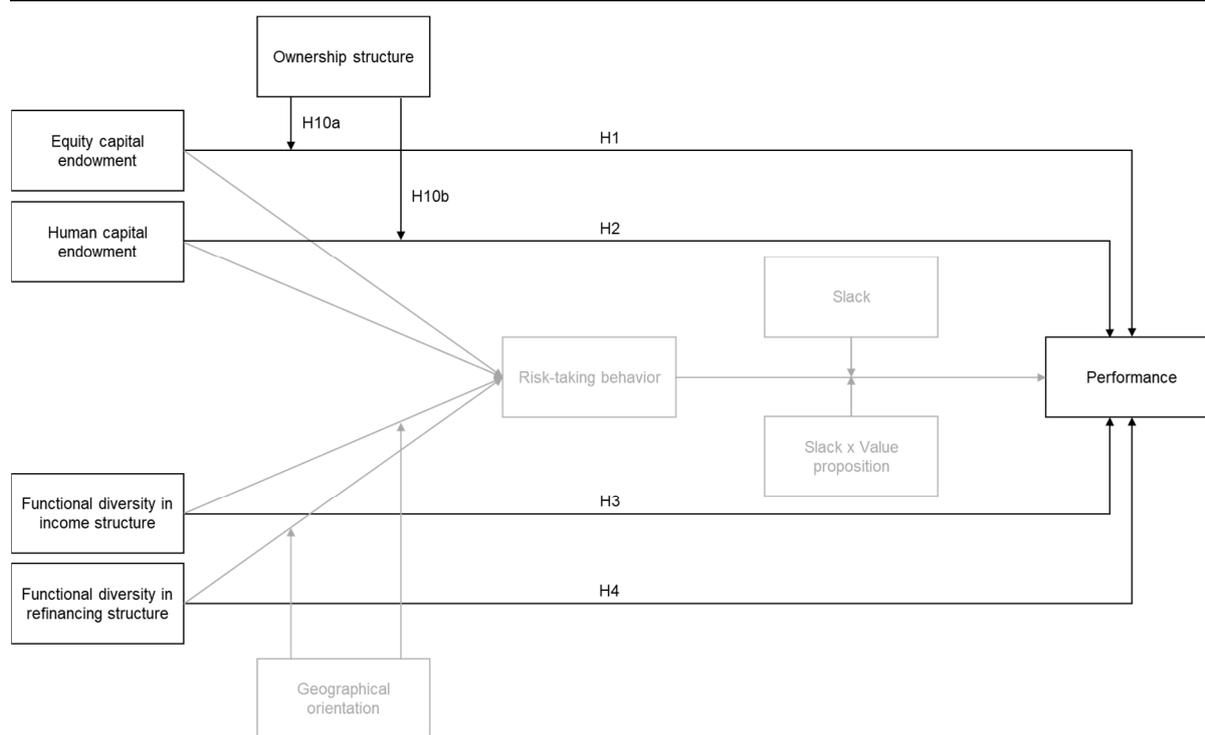
Also, we would like to extend the consideration of business model research to include insights into the extent to which firm characteristics that are relatively stable over time can influence the impact of TMT decisions. To this end, we review the moderating effect of ownership structure, as a firm's characteristic that is usually rigid over many years, on the direct performance relationship between business model infrastructure traits and performance. For this purpose, we follow the studies of Iannotta et al. (2007) or García-Marco and Robles-Fernández (2008), who, nevertheless, analyzed the direct effects of ownership structure on organizational outcomes.

Study 1 aims to analyze the relationship between equity and human capital endowment as infrastructure traits and functional diversity in income and refinancing structure as characteristics of diversity degree as crucial dimensions of banks' business models on performance. This procedure rests on the theoretical and conceptual foundations and methodology elaborated and presented in previous chapters. In addition, the influence of the moderator variable of ownership structure on the relationship between infrastructure traits and performance is analyzed and evaluated.

Hypotheses and Method

This study tests the theoretically hypothesized inverted U-shaped relationship of equity capital endowment (H1) and the linear relationship between human capital endowment (H2) as

Figure 4.2: Conceptual Framework of Study 1



Source: Own representation.

infrastructure traits of business models on performance. Furthermore, we test the linear relationships of functional diversity in income structure and refinancing structure as critical characteristics of diversity degree of banking business models on performance (H3 and H4). Moreover, we assess whether ownership structure moderates the relationship of equity capital endowment (H10a) on performance in such a way that the inverted U-shaped relationship becomes increasingly linear. For the relationship between human capital endowment (H10b) and performance, it is assumed that the direction of the relationship varies depending on the design of the ownership structure. Figure 4.2 provides an overview of the part of the conceptual model tested by Study 1.

Study 1 rests on the sample of 143 banks in the eurozone and Switzerland from 2010 to 2019, drawn based on the earlier criteria. We used a panel data analysis to test the hypotheses representing each bank by one observation per year. Therefore, the analysis comprises a balanced panel.

Several tests need applying the choice of methodology to base the analysis on the most efficient panel data methodology. To this end, we first used the Breusch-Pagan Lagrange Multiplier (LM) test for random effects to support the decision between random effects regression and simple OLS regression. It tests whether there are significant differences between

cross-sectional units due to individual-specific effects. The null hypothesis assumes that the variances across entities are zero, so there is no panel effect, and the random-effects model is inappropriate. For our data, the probability value of the Chi-square statistics (p -value) is significant, and the null hypothesis in favor of simple OLS regression is rejected ($p < 0.001$; Stata 17 command `xttest0`). Hence, individual-specific effects exist, and simple OLS regression is not the preferred model.

Similarly, the F-test was applied to decide between the FE and the OLS model. The null hypothesis implies that all individual intercepts are equal to zero, so there are no individual-specific effects, and OLS regression should be used. We can reject the null hypothesis with a p -value smaller than 0.001, which is why the FE is to be preferred over the OLS model ($p < 0.001$; Stata 17 command `xtreg, fe` that includes the F test).

The Hausman specification test (Hausman, 1978) is used to decide between a FE or RE model. The test's null hypothesis is that estimators under the RE model are more efficient than estimators under the FE model. For analysis, the Hausman specification test compares the results from the FE and RE models. Suppose, if the null hypothesis cannot be rejected, the unobserved heterogeneity is not correlated with the regressors in the model, and the RE model appears appropriate (Firebaugh et al., 2013). The Hausman test showed that we must reject the null hypothesis ($p < 0.001$; Stata 17 command `hausman`), so for our data, the FE model is more appropriate than the RE model.

Analytical problems within the error terms that may result from the characteristics of panel data, make it necessary to test the regression for general model errors (Certo & Semadeni, 2006). First, heteroscedasticity was evaluated using the Breusch and Pagan (Breusch & Pagan, 1979) and Cook and Weisberg test (Cook & Weisberg, 1983) as post estimation commands in Stata. The analyses indicated the presence of heteroscedasticity. Hence, the null hypothesis of homoskedasticity had to be rejected ($p < 0.001$; Stata 17 command `estat hettest`). To support the results, we also tested for the presence of differential variance in the residuals between units, which is referred to as groupwise heteroscedasticity in the residuals. Like the simple OLS model, the FE model also assumes a homogeneous distribution of residuals, so homoscedasticity is also assumed (Baum, 2001). Finally, using a modified Wald statistic (for FE model), the presence of groupwise heteroscedasticity in the residuals in a FE model (Stata 17 user-written Routine `xttest3`) was assessed. The resultS rejected the null hypotheses ($p < 0.001$; Stata 17 command `xttest3`), confirming the presence of heteroscedasticity.

Next, a Wooldridge test to identify autocorrelation in the idiosyncratic error term in panel models (Wooldridge, 2010) was performed. The test examines whether a variable of a unit at a particular time correlates with the same unit's variable at another time. The null hypothesis of the Wooldridge test assumes that there is no autocorrelation. However, the results showed that the null hypothesis could be rejected ($p < 0.001$; Stata 17 command `xtserial`), so the results confirmed the presence of autocorrelation in our data.

We used panel-corrected standard errors (PCSEs) because the test results indicate the presence of heteroscedasticity and autocorrelation. In this manner, the recommendation of – among others – N. Beck and Katz (1995) who suggested the calculation of standard errors with PCSEs in the presence of analytical problems due to panel-specific error structures, were followed. Furthermore, they showed that the use of PCSEs could even be significantly more accurate than ordinary OLS standard errors under certain circumstances. Specifically, we decided to use a Prais-Winsten regression with panel specific corrected standard errors (PCSE), for which we used the Stata PCSE estimator (Stata 17 command `xtpcse`, option for panel-specific first-order autocorrelation `corr(psar1)`).

The popularity of application and proof of panel method effectiveness supports the use of PCSE as the method. Thus, the use of PCSE enjoys popularity, as evidenced by the number of citations on the Web of Science (Moundigbaye et al., 2018, p. 2). Beyond that, recent research on the efficiency of diverse panel methods in the context of the number of sampling units (N) and panel waves (T) supports the choice of method, as illustrated, for example, by the work of W. R. Reed and Ye (2011) and Moundigbaye et al. (2018). The scholars “identify the PCSE estimator as being best for hypothesis testing in all situations” (Moundigbaye et al., 2018, p. 28).

The dependent variable of our study is performance. There is a broad debate about what is meant by performance; the measures of performance also vary. We use ROA for performance measurement to assess the extent to which the TMT has profitably deployed the totality of all resources and competencies in the context of its strategic positioning. These metric measures net profit divided by total assets at the respective year-end. A lagged view of the dependent variable was not taken, as the strategic decisions in connection with the business model directly or without much lag impact the bank's performance within one year, so a short-term perspective seems appropriate.

Study 1 comprises four independent variables represented by the variable equity capital endowment, human capital endowment, and functional diversity in income and refinancing structure. As key infrastructure traits of a banking business model, we measure equity capital endowment using the balance sheet equity of the consolidated financial statements to total assets. In comparison, human capital endowment uses the natural logarithm of a bank's total assets to the total number of employees (FTE) at year-end. To measure functional diversity, we use the standardized diversity index (standardized Blau index, *SDIV*). In terms of income structure, this indicator rests on the shares of interest income and, correspondingly, fee and commission income to the total amount of income from both sources measured at the end of the year. Similarly, the measurement of the standardized diversity index of the refinancing structure depends on the shares of customer deposit refinancing and, correspondingly, non-customer deposit refinancing, calculated as the difference between total assets minus customer deposit refinancing and total equity, to total refinancing at the respective year-end in the period under review.

Likewise, we measure the moderating variable of ownership structure. The ownership structure as a categorical variable collected in the text analysis is mainly derived from the legal form of a company and is designed as a time-invariant variable. We combined the original six categories into four categories against the extent of dispersion of ownership structure and owner identity. The compression of the categories was done specially to increase the validity of the statistical analyses. As shown in the descriptive statistics in Table 4.2, the category of commercial partnerships has only one bank, and the category of public-sector entities guaranteed by the state has five banks. By reducing the categories, the significance of the variable was not affected and did not lead to any distortion. Therefore, the following four categories for further statistical analysis were used: 1 - Banks with significant shares in free float, 2 - Banks with dominant owners, 3 - Cooperatives, and 4 - Public-sector banks. Commercial partnerships were combined with the banks without significant shares in free float to form a single category of banks with dominant owners. We also grouped the public-sector banks into a single category of public-sector banks without further distinguishing the guarantee by the state.

The control variables were chosen to capture contextual factors of the banks' economic environment and other firm characteristics influencing the study results. As control variables to capture the economic context in which banks operate, average GDP growth as a proxy for economic growth is used. As firm characteristics, we use firm size as a critical determinant of

Table 4.4: Study 1 - Measurement of Variables

Variables		Measurement of variables
Dependent variable	Performance	Return on assets (ROA), measured as net income divided by total assets at the end of the year (in %).
Independent variables	Equity capital endowment	Measured as balance-sheet equity divided by total assets at the end of the year (in %).
	Human capital endowment	Measured as total assets divided by the total number of employees (full-time equivalent (FTE)) at the end of the year (log transformation).
	Functional diversity in income structure	Measured as standardized diversity index based on the shares of interest income and correspondingly fee and commission income in relation to the total amount of income from both sources at the end of the year (ranges from 0 to 1).
	Functional diversity in refinancing structure	Measured as standardized diversity index based on the shares of customer deposit refinancing and correspondingly non-customer deposit refinancing, calculated as the difference between total assets minus customer deposit refinancing and total equity, in relation to total refinancing from both sources at the end of the year (ranges from 0 to 1).
Moderating variable	Ownership structure	Measured as a categorical variable for the entire period with four categories: 1 - Banks with significant shares in free float, 2 - Banks with dominant owners, 3 - Cooperatives, 4 - Public-sector banks.
Control variables	Gross domestic product growth	Measured as the three-year median growth rate (t, t-1, t-2) of gross domestic product based on actual changes (in %).
	Firm size	Measured based on total assets of a bank at the end of the year (log transformation).
	Efficiency ratio	Cost to income ratio, measured as operating cost to income at the end of the year (in %).

Source: Own representation.

strategic positioning for competitive advantage and cost to income ratio to measure the extent to which a bank is efficiently managed. Other control variables were tested but not included in the study due to multicollinearity concerns, among others. Table 4.4 provides an overview of the variables used in Study 1, including measurement information.

Analyses and Results

Table 4.5 contains the presentation of the descriptive statistics. In addition to the number of observations, it also gives an overview of the variables' means, standard deviations, and

Table 4.5: Descriptive Statistics for Study 1

	Mean	S.D.	N	1	2	3	4	5	6	7	8	9
1 Performance	0.00	0.01	1,430	1								
2 Gross domestic product growth	0.01	0.02	1,430	0.244 ***	1							
3 Firm size	17.11	1.86	1,430	-0.091 ***	0.033	1						
4 Efficiency Ratio	0.67	0.71	1,430	-0.176 ***	-0.080 **	-0.073 **	1					
5 Ownership structure	2.41	1.01	1,430	0.039	0.092 ***	-0.312 ***	-0.004	1				
6 Equity capital endowment	0.08	0.05	1,430	0.156 ***	0.114 ***	-0.445 ***	-0.019	0.044 +	1			
7 Human capital endowment	9.20	0.85	1,430	0.016	0.141 ***	0.428 ***	-0.099 ***	0.073 **	-0.383 ***	1		
8 Functional diversity in income structure	0.59	0.26	1,430	0.083 **	0.067 *	-0.020	0.015	-0.11 ***	0.049 +	-0.357 ***	1	
9 Functional diversity in refinancing structure	0.73	0.25	1,430	-0.110 ***	-0.225 ***	0.472 ***	-0.048 +	-0.19 ***	-0.183 ***	0.183 ***	-0.057 *	1

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Source: Own representation.

pairwise correlations. To ensure symmetry, we also tested for kurtosis and skewness. Finally, we examined the histograms of the variables and the intervals of skewness and kurtosis statistics using statistical diagnostic tools.

As discussed in the description of measurement approaches, we corrected skewness and kurtosis for human capital endowment and firm size using log transformation. There was no need to correct for asymmetry or kurtosis after performing the tests for the other variables. To classify the results of the correlation matrix in terms of correlations among the independent variables, we followed the threshold of 0.8 or 0.9 proposed by Kennedy (2008) for detecting multicollinearity between two variables. Our testing revealed that all correlations between the independent variables were below this threshold. The variance inflation factor (VIF) was also used as diagonal elements of the inverse of the correlation matrix to examine our data for multicollinearity. The average VIF for all variables was 1.71, well below the value of $VIF < 10$, so our data do not appear to have a severe problem with multicollinearity (J. Cohen et al., 2003; Kennedy, 2008).

For hypothesis testing, we employed a hierarchical approach. Within the framework of different models, the approach comprises the stepwise testing of individual clusters and starts at the coarsest level (Meinshausen, 2008). Control variables, moderators, independent variables, and interaction terms were progressively included in each model. Before introducing the independent variables into the models, we performed mean centering for all variables except the ownership structure. This procedure is particularly useful in interpreting the interaction analysis. Consequently, the arithmetic mean across all observations of a variable was subtracted from each observation of the corresponding variables. The categorical moderator variable was excluded from this procedure.

Table 4.6 shows the standardized β -regression coefficients, standard errors, the number of banks, the number of observations, the R-squared and Chi-squared values, and the overall

significance of the models. It should be noted that for Prais-Winsten regression, the Stata command `xtpcse` provides only one value for R-squared. In turn, with the overall, between, and within R-squared, the Stata command `xtreg depvar indepvar, fe` for fixed-effects models, provide a total of three R-squared measures as quality measures to assess the extent to which the independent variables are adequate in explaining the variance of the dependent variables.

The different R-squared measures as quality measures refer to different levels of explained variance. Cameron and Trivedi (2009) detailed that the overall R-squared, obtained by regressing the dependent variable on the independent variable, as the total R-squared, reflects the “squared correlation between the actual and fitted values of the dependent variable, where the fitted values ignore the contribution of \hat{a}_i ” (p. 258). The between R-squared is based on the explained variation between the units i (banks) by averaging out the time component. We obtain time-demeaned data by taking unit-specific means over t , so that between R-squared reflects the correlation between the time-averaged dependent variable regressed on the time-averaged independent variables. Unlike, the within R-squared considers the correlation of the time-averaged dependent and independent variables as individual-specific deviations from the individual-specific time-averaged mean.

As the fundamental framework, linear regression with panel-corrected standard errors considers heteroscedasticity and autocorrelation and provides only one R-squared. In total, it regards transformed data for the independent and dependent variables due to heteroscedasticity and autocorrelation, making the standard errors turn out higher. Furthermore, the linear regression with `xtpcse depvar indepvar, corr(pсар1)` yields only one R-squared. Thus, Blackwell (2005) stated that the R-squared is “computed for the entire *system* of equations, which is meaningless for either equation individually” (pp. 205–206, emphasis in original). Basically, the R-squared of simple OLS estimation is lower than that of simple time-series data, while the R-squared of linear regression with panel-corrected standard errors due to transformed data is again significantly lower than the R-squared of simple OLS estimation for cross-sectional data, as Wooldridge (2016) noted. Since our data are cross-sectional data over a time series, and the cross-sectional data dominate the time dimensions, the R-squared of our panel data is much lower than that of simple time-series data. Therefore, the values cannot be directly compared.

Model 1 of Study 1 includes the control variables of the study, namely gross domestic product growth, firm size, and efficiency ratio. Model 2 adds the main effects of equity and

Table 4.6: Results of Study 1

		Dependent variable - Performance						
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Control variables	Constant	0.0016 (0.0010)	0.0028 ** (0.0010)	0.0027 ** (0.0010)	-0.0015 (0.0035)	0.0029 (0.0031)	0.0000 (0.0028)	0.0038 (0.0028)
	Gross domestic product growth	0.1697 ** (0.0601)	0.1163 * (0.0514)	0.0860 + (0.0465)	0.0771 + (0.0424)	0.0422 (0.0348)	0.0583 (0.0376)	0.0327 (0.0318)
	Firm size	-0.0006 *** (0.0002)	-0.0004 + (0.0002)	-0.0002 (0.0003)	0.0005 (0.0004)	0.0001 (0.0003)	0.0006 (0.0004)	0.0002 (0.0003)
	Efficiency Ratio	-0.0022 ** (0.0007)	-0.0018 * (0.0007)	-0.0018 * (0.0007)	-0.0018 * (0.0007)	-0.0021 ** (0.0007)	-0.0020 ** (0.0007)	-0.0022 ** (0.0008)
Independent variables	Equity capital endowment		0.1458 *** (0.0351)	0.1465 *** (0.0353)	0.1476 *** (0.0345)	0.1736 + (0.0957)	0.1507 *** (0.0348)	0.1943 * (0.0982)
	(Equity capital endowment) ²		-0.3255 *** (0.0743)	-0.3104 *** (0.0765)	-0.3094 *** (0.0752)	-3.1831 * (1.3666)	-0.3201 *** (0.0759)	-2.8623 * (1.3381)
	Human capital endowment		0.0033 *** (0.0007)	0.0042 *** (0.0009)	0.0036 *** (0.0007)	0.0031 *** (0.0007)	0.0099 * (0.0040)	0.0078 * (0.0031)
	Functional diversity in income structure			0.0065 * (0.0031)	0.0058 + (0.0033)	0.0059 * (0.0029)	0.0043 (0.0029)	0.0051 + (0.0027)
	Functional diversity in refinancing structure			-0.0048 * (0.0023)	-0.0054 * (0.0023)	-0.0053 * (0.0023)	-0.0055 * (0.0023)	-0.0051 * (0.0022)
Moderator variable	Ownership structure				(base)	(base)	(base)	(base)
	1 - Banks with significant shares in free float				0.0053 (0.0036)	0.0003 (0.0034)	0.0039 (0.0029)	-0.0005 (0.0031)
	2 - Banks with dominant owners				0.0058 (0.0036)	0.0006 (0.0033)	0.0044 (0.0028)	-0.0006 (0.0029)
	3 - Cooperatives				0.0051 (0.0035)	-0.0013 (0.0031)	0.0039 (0.0028)	-0.0014 (0.0029)
Interaction variables	Equity capital endowment x Ownership structure							
	1 - Banks with significant shares in free float					(base)	(base)	
	2 - Banks with dominant owners					-0.0558 (0.1048)	-0.0767 (0.1075)	
	3 - Cooperatives					-0.1015 (0.0982)	-0.1409 (0.0993)	
	4 - Public-sector banks					-0.1377 (0.0931)	-0.1893 + (0.0974)	
	(Equity capital endowment) ² x Ownership structure							
	1 - Banks with significant shares in free float					(base)	(base)	
	2 - Banks with dominant owners					2.9356 * (1.3528)	2.6136 * (1.3249)	
	3 - Cooperatives					2.4647 + (1.3686)	2.3829 + (1.3503)	
	4 - Public-sector banks					3.2523 * (1.3629)	2.9635 * (1.3293)	
	Human capital endowment x Ownership structure							
	1 - Banks with significant shares in free float						(base)	(base)
2 - Banks with dominant owners						-0.0072 + (0.0043)	-0.0052 (0.0033)	
3 - Cooperatives						-0.0081 + (0.0042)	-0.0072 * (0.0035)	
4 - Public-sector banks						-0.0071 + (0.0041)	-0.0076 * (0.0034)	
	Number of banks	143	143	143	143	143	143	143
	Number of observations	1,430	1,430	1,430	1,430	1,430	1,430	1,430
	R ²	0.1028	0.2008	0.2187	0.2321	0.3003	0.2452	0.3076
	χ ²	25.68 ***	58.23 ***	70.25 ***	196.70 ***	2668.31 ***	312.23 ***	2724.63 ***

Standard errors in parentheses.

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Source: Own representation.

human capital endowment to the control variables. For the infrastructure traits of a bank business model, we assume an inverted U-shaped relationship for equity capital endowment and a linear relationship for human capital endowment. To test for curvilinearity, the predominant recommendations in the literature for calculating the squares of the independent variables (Cortina, 1993) where a nonlinear relationship is assumed (equity capital endowment), is followed. We additionally included this squared variable in Model 2 after calculation.

In Model 2, we find a significant positive relationship between equity capital endowment and performance ($\beta = 0.1458$, $p < 0.001$) and a negative association with the squared term. This relationship is also significant ($\beta = -0.3255$, $p < 0.001$). The signs of the coefficients and the significant association support Hypothesis 1 of an inverted U-shaped relationship between equity capital endowment and performance. Similarly, there is a significant positive relationship between human capital endowment and performance ($\beta = 0.0033$, $p < 0.001$). These results support Hypothesis 2, which states a positive linear relationship between human capital endowment and performance. By including the main effects in Model 2, a significant increase in R-squared and Chi-squared values can be seen compared to Model 1, supporting the appearance of the curvilinear and linear effect of equity and human capital infrastructure traits of a banking business model.

Model 3 includes the two main effects of diversity degree of income and refinancing structure not considered before. In Model 3, we find a positive and significant association between the diversity degree of income structure and performance ($\beta = 0.0065$, $p < 0.05$), supporting our Hypothesis 3. As hypothesized in Hypothesis 4, the diversity degree of refinancing structure is negatively associated with performance, with significant results ($\beta = -0.0048$, $p < 0.05$). Accordingly, Hypothesis 4 can also be supported. For the equity capital endowment and performance, there is a significant positive relationship ($\beta = 0.1465$, $p < 0.001$), while for the squared term, the relationship is significantly negative ($\beta = -0.3104$, $p < 0.001$). The same is further valid for the relationship between human capital endowment and performance ($\beta = 0.0042$, $p < 0.001$), which is significantly positive. By integrating all four main effects by considering the two infrastructure traits and the two diversity degrees characteristics in the model, we register a moderate increase in R-squared and Chi-squared values compared to the previous two models. The main driver of the increase seems to be the inverted U-shaped relationship of equity capital endowment and the linear relationship of

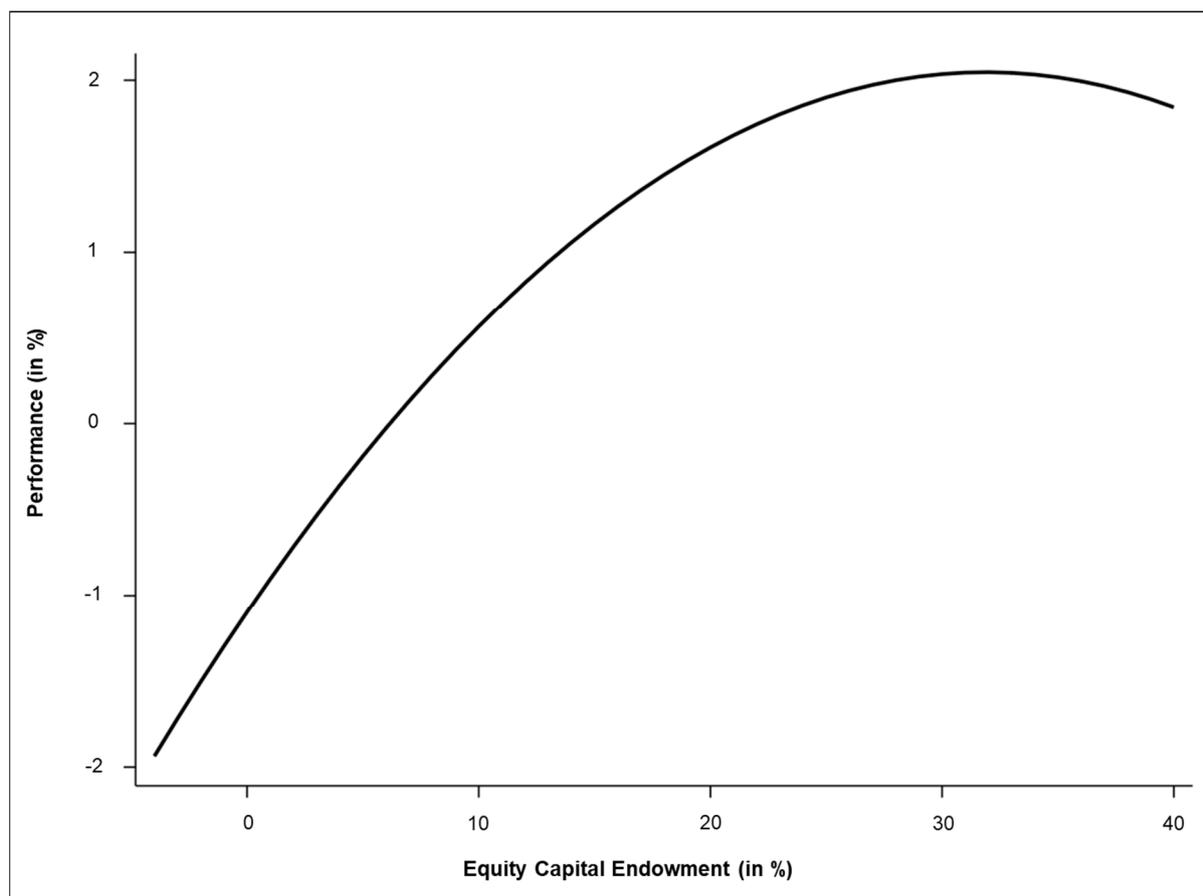
human capital endowment as infrastructure traits, as was found by separating the two main effects in Model 2.

The combination of the four main effects with the main effect of the moderator variable includes Model 4. The results support the previously presented correlations for the two infrastructure traits variables and the two diversity degree variables by confirming the results from previous models. We did not identify a significant effect in any category for the main effect of the moderator. However, there was an increase in the R-squared and the Chi-squared.

Models 5 and 6 of Study 1 test the moderating effects of ownership structure on the relationship of infrastructure traits of bank business models and performance. To test for the moderation of the curvilinear relationship, a product term for interaction in our multiple regression as “a legitimate way to test for interaction” (Allison, 1977, p. 144) is included. Following the recommendations of Dawson (2014) for testing and interpreting moderation in curvilinear regression models, we use two interaction variables per independent variable to test the moderating effect of ownership structure on the relationship between equity capital endowment and performance. The first interaction variable rests on the product of the independent variable equity capital endowment and ownership structure. The second interaction variable for the test of the curvilinear interaction is the product of the multiplication of the squared independent variable of equity capital endowment and the moderator ownership structure (Model 5). Accordingly, for the moderation of ownership structure on the human capital endowment, only one interaction variable of the product of the variables (Model 6) is counted.

In Model 5, we test the interaction effect of ownership structure and equity capital endowment. The results show that the linear effect of equity capital endowment does not change as a function of the ownership structure. Hence, the linear effects of the individual categories of ownership structure do not differ significantly from those of the reference category. For the squared interaction terms, however, we find a significant change in all three categories to the reference category of banks with significant shares in free float (banks with dominant owners: $\beta = 2.9356$, $p < 0.05$; cooperatives: $\beta = 2.4647$, $p < 0.1$; public-sector banks: $\beta = 3.2523$, $p < 0.05$). Moreover, the model’s explanatory power increases significantly due to a substantial increase in R-squared and Chi-squared values, supporting the moderating effect of ownership structure on the curvilinear relationship between equity capital endowment and performance. Overall, these results provide sufficient support for Hypothesis

Figure 4.3: Plot of the Overall Effect of Equity Capital Endowment on Performance



Notes: Plotting predicted performance values using a range of equity capital endowment values from -4 percent to 40 percent. See Table 4.6 for the coefficients of the variables.

Source: Own representation.

10a, that ownership structure moderates the relationship between equity capital endowment and performance.

Without considering the interaction effect of ownership structure, the results from the previous models point to a concave curve (peak at the top, curve opens downward, which corresponds to the definition of an inverted U-shaped relationship). The relationship is also illustrated by Figure 4.3, where the curvilinear relationship between equity capital endowment and performance were plotted into our results without considering the interaction effect. The plot shows the inverted U-shaped relationship and uses margins predicted performance values on equity capital endowment in a range observed by our empirical data from -4 percent to 40 percent.

In Model 6, we test the interaction effect of ownership structure and human capital endowment. For the interaction effects of the individual categories of ownership structure to the reference category of banks with significant shares in free float, we can only find a slight

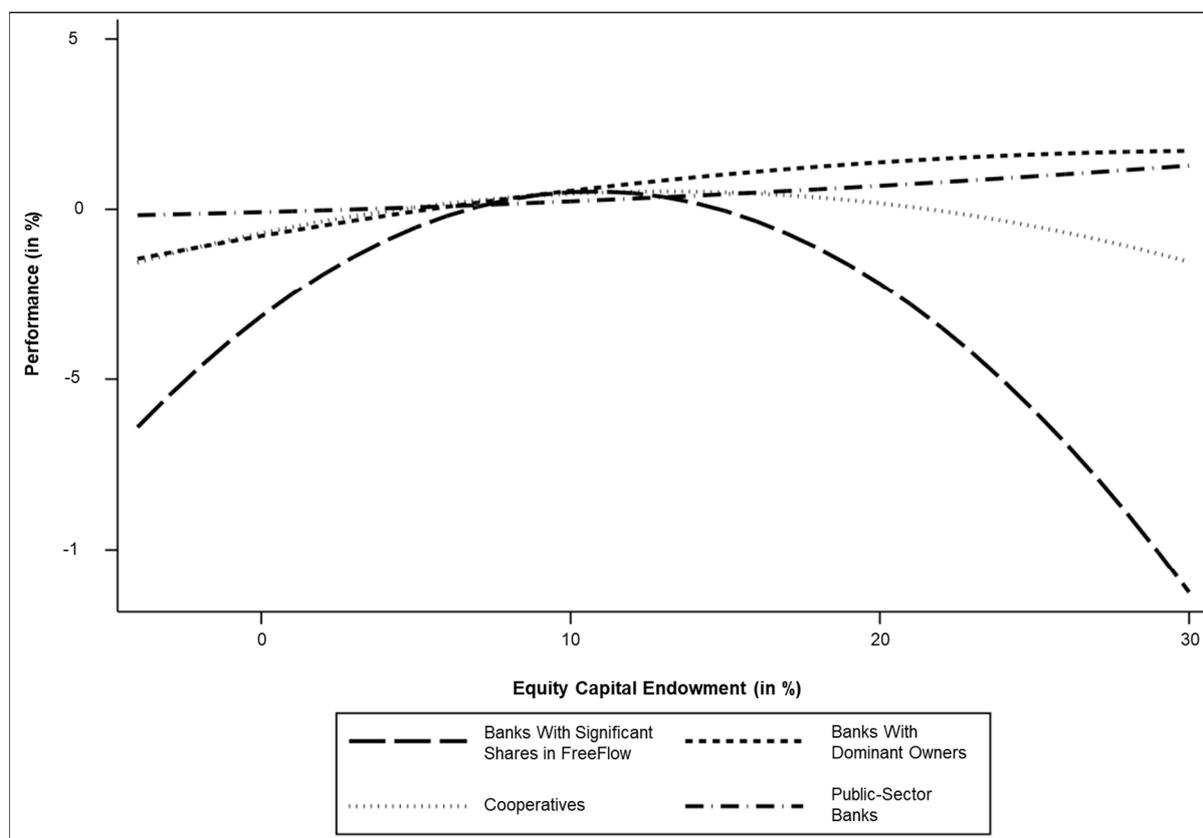
significance (banks with dominant owners: $\beta = -0.0072$, $p < 0.1$; cooperatives: $\beta = -0.0081$, $p < 0.1$; public-sector banks: $\beta = -0.0071$, $p < 0.1$). Moreover, the R-squared increases only marginally compared to Model 4 (without interaction effects), so the moderation of the linear effect between human capital endowment and performance by ownership structure assumed under Hypothesis 10b has not been confirmed. In other words, no significant deviation of the individual categories from the reference category was found.

Finally, Model 7 from Study 1 shows the complete model, and the results are consistent with the previous models. Compared to Model 6, the significance of ownership structure's interaction effect on human capital endowment increases slightly (cooperatives: $\beta = -0.0072$, $p < 0.05$; public-sector banks: $\beta = -0.0076$, $p < 0.05$). However, the insignificant increase in R-squared and Chi-squared values compared to Model 5, which included only the interaction effects of equity capital endowment, continues to argue against support for hypothesis 10b.

The significant results of the moderating influence of ownership structure on the relationship between a bank's equity capital endowment and its performance suggest a further examination of the interaction effect. To this end, we have plotted in Figure 4.4 the interaction of the different categories of ownership structure on the curvilinear relationship of equity capital endowment and performance (compare variable (equity capital endowment)² x ownership structure in Table 4.6). In this way, it is also possible to integrate the moderating relationship of the category of banks with significant shares in free float, reported as a base category, which appears to be helpful for a more in-depth analysis.

The plot shows the relationship between equity capital endowment and performance moderated by the design of the ownership structure. For banks with significant shares in free float, whose ownership structure is characterized by many owners, low ownership identity, and thus decentralized control, the inverted U-shaped relationship between equity capital endowment and performance is evident. After reaching the optimal point as a high point, a negative slope of the curve occurs with increasing equity capital endowment, which becomes increasingly steeper with further increasing equity capital endowment in the negative range. In contrast, for banks with dominant owners and cooperatives, characterized on the one hand by a more centralized ownership structure as well as owner identity and participation by the members of the cooperatives, the relationship becomes increasingly linear. The curves flatten significantly for both forms of ownership structures, and the negative correlation shifts noticeably toward the x-axis. For public sector banks with the state as the dominant owner, the change is more pronounced than banks with a decentralized ownership structure. Here, the

Figure 4.4: Interaction Plot for Squared Equity Capital Endowment and Ownership Structure



Notes: Plotting predicted performance values using a range of equity capital endowment values from -4 percent to 30 percent as a function of ownership structure. See Table 4.6 for the coefficients of the variables.

Source: Own representation.

relationship between equity capital endowment and performance is positive. Moreover, the quadratic relationship is slightly convex (peak at the bottom, curve opens upward), which indicates that the relationship becomes linear as a function of the ownership structure.

Based on the regression analysis results and the analysis of the interactions plot, Hypothesis 10a, that ownership structure moderates the relationship between equity and performance, can be supported. We identified the moderation of ownership structure in a way that stretches the inverted U-shape when concentrated ownership structures with dominant owners and clear ownership identity are present. As a result, the relationship becomes almost linear when the above characteristics of an ownership structure apply.

Interim Discussion

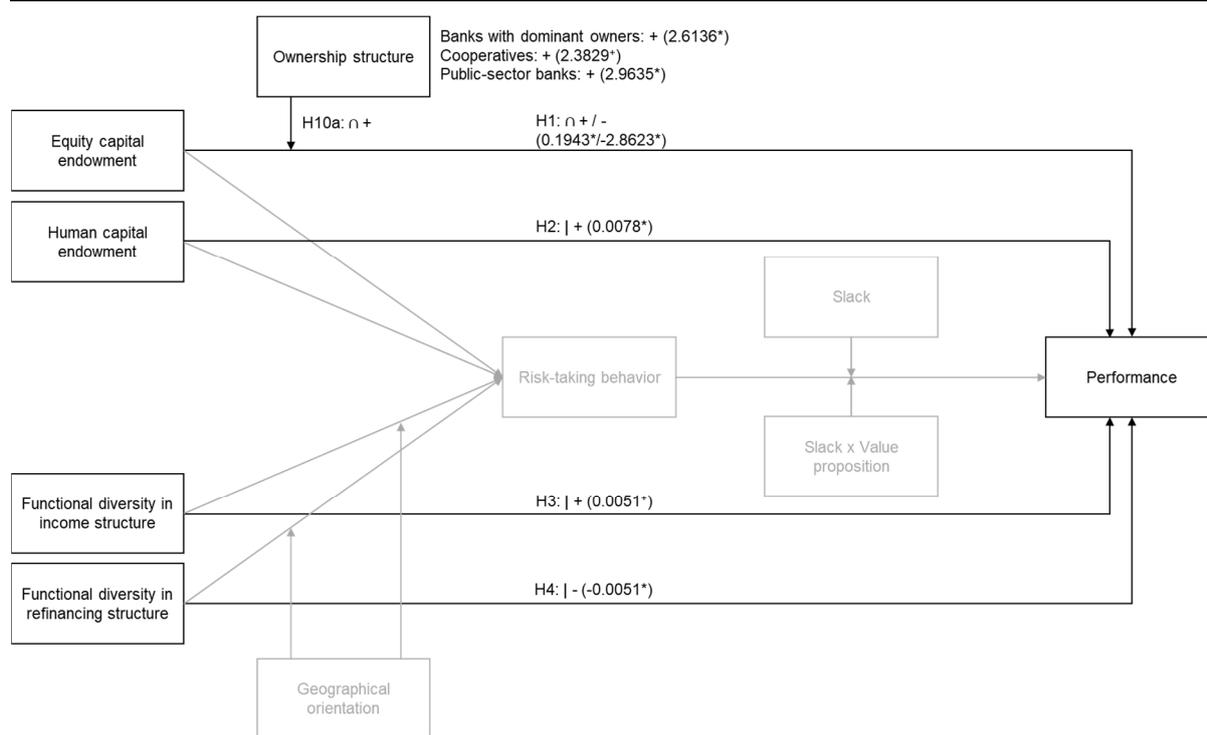
Study 1 highlights four key findings on business model research concerning infrastructure traits and diversity degree characteristics of banks, composed by Figure 4.5. First, in the debate on whether bank capital endowment has a positive or negative impact on performance, the study

unites the two camps by illustrating that this relationship is a curvilinear relationship (H1), further moderated by ownership structure (H10a). Second, the results of this study indicate a significant and positive linear relationship between human capital endowment and performance (H2). The moderating effect of ownership structure on the relationship between human capital endowment and performance (H10b) could not be confirmed due to the lack of significant results. Third, it provides further evidence on the previously mixed results (H3) of income diversification, highlighting a significant positive relationship between income sources diversification and performance. In addition, Study 1 supports the claim that there is a negative relationship between refinancing structure diversification and performance (H4) compared to income diversification and performance.

In particular, Study 1 adds additional support to previous literature that equity capital endowment as an infrastructure element of banks' business models is a significant component of a firm's orientation toward sustainable performance. It shows a direct relationship between the design of a bank's equity capital base and performance. While other studies see either a linear positive or negative performance relationship, we suggest an optimal point for the relationship between equity capital endowment and performance. After this point, the positive effects of equity capital endowment as a sign of stability and sound management appear to diminish and turn negative. Then, the opportunity costs of holding equity outweigh the benefits in refinancing.

Additionally, the study draws attention to the direct correlation between human capital endowment as employee density and performance. As an expression of the diversity of human resources in the company and as an essential characteristic for the design of the company's customer relationship, which the TMT aims at as an operationalization of the strategy, we can also extend the mixed results on the impact on performance concerning human capital endowment by pointing to a positive linear relationship. These results confirm the assumption that employee density as a crucial customer interface is a significant factor in explaining performance differences. Accordingly, the human capital endowment cannot be neglected in terms of competitive advantage in strategic management and represents a sensitive adjusting screw for firm performance and for building long-term customer relationships. The reduction of employees as a popular cost-saving measure in practice should therefore always be evaluated against the background of the positive effects of a high human capital endowment on performance, particularly concerning the customer interface design.

Figure 4.5: Significant Hypotheses of Study 1



+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Note: Coefficients and significance in parentheses. Differentiation of relationship type through the following symbols “|” for a linear relationship and “ \cap ” for a curvilinear relationship.

Source: Own illustration.

Study 1 also contributes to the discussion on the influence of ownership structure on firm performance outcomes. While other literature generally examines a direct influence of ownership structure, we show that ownership structure significantly moderates the relationship between equity capital endowment and performance. Moreover, we find that this relationship is modified so that it becomes almost linear for ownership structures with dominant owners and high ownership identity. Accordingly, equity capital endowment, as an infrastructure trait of business models whose design reflects a TMT’s perception and decision on generating a competitive advantage and sustainable performance, has different effects on performance depending on the ownership structure.

By conceptualizing ownership structure to distinguish different structures by the concentration and dominant ownership type, we show that ownership concentration and dominant owners influence the TMT’s strategic decisions’ outcomes. This is attributed to more centralized control options and a shortened distance between owners and managers than decentralized forms of ownership. It is reasonable to conclude that the shortened distance between owners and managers means that owners can decisively place their missions, values, and goals in the firm differently, which affects organizational outcomes than is the case with a

dispersed ownership structure. Furthermore, considering the shortened distance, effective management that avoids high risks in the business as an expression of opportunistic management behavior is suggested, so high equity capital endowment's stability and sustainability aspects prevail.

Our results regarding the diversity degree characteristics perceived as appropriate by the TMT to generate a sustainable competitive advantage and long-term performance show that diversification is not beneficial in all respects. However, diversification across different income streams has a positive impact on performance. Less focus on one income source provides a broader base and less dependency. In addition, synergies can be exploited. On the other hand, we find a negative correlation between the diversification of the refinancing structure and performance. While synergies can be exploited in the context of income stream diversification, diversification of the refinancing structure appears to lead to frictional losses due to diverging interests of traditional bank customers and capital market investors, which adversely affect performance. Against this background, it is relevant to recognize that diversification brings benefits but that the type of diversification matters.

4.3.2 Study 2: Infrastructure Traits and Diversity Degree Characteristics as an Antecedent for TMT's Risk-Taking Behavior and the Moderating Role of Geographical Orientation

In Study 2, we examine how the business model design concerning the infrastructure traits and the diversity degree characteristics of banks' business models as our use cases influence the firms' risk-taking behavior as an expression of the TMT's risk-taking behavior. Building on upper echelons and prospect theory, we argue that TMT members' strategic business model alignment decisions reflect individual experiences, values, and situation perceptions. The shaping of the business model as the chosen positioning toward risk, as the expression of the TMT's respective perceptions, in turn, influences risk-taking behavior as externally observable risk-based decision-making. Accordingly, we understand positioning decisions in the form of a business model as antecedents of risk-taking behavior.

From the previous scientific discussions, using the conceptual tool of the BMC as a guideline, we have derived equity and human capital endowment as two essential elements that are relevant as infrastructure for business operations and in particular for the provision of a

value proposition. Based on the scientific evidence on the impact of these two factors, a positive relationship for equity capital endowment on risk-taking behavior is assumed. In contrast, we hypothesize a negative relationship for human capital endowment. Furthermore, the diversity degree characteristics is understood as a vital positioning decision in business models. Therefore, we hypothesize a positive relationship with risk-taking behavior between functional diversity of income and refinancing structure, respectively, as diversity degree characteristics. Overall, Study 2 is informative because it considers risk, thereby integrating a significant outcome factor of business models, which to date is unnoted in the practically oriented guidelines to business model analysis.

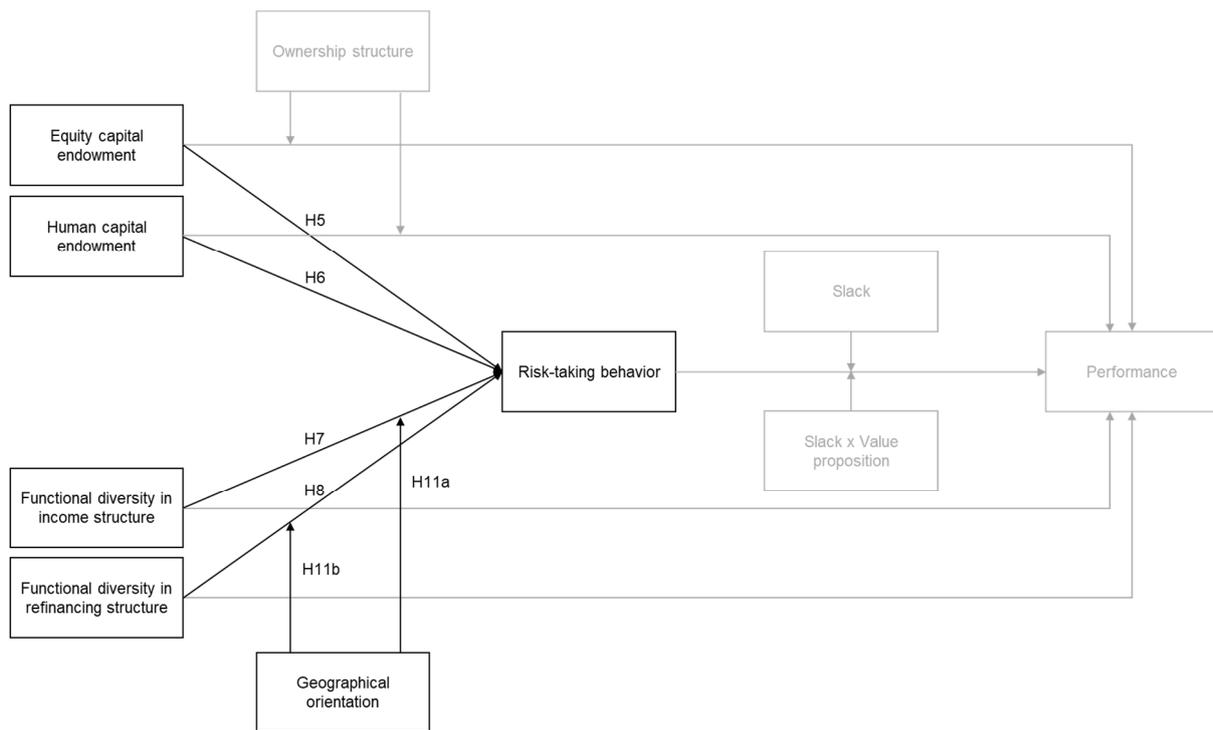
Hypotheses and Method

Study 2 aims to test the theoretically assumed direct linear relationships between equity capital endowment and human capital endowment (H5 and H6) as infrastructure traits of business models and the characteristics of functional diversity degree in income structure and refinancing structure (H7 and H8) on risk-taking behavior. In addition, we test the theoretically hypothesized moderating effect of geographical orientation on the relationships between functional diversity in income structure and refinancing structure and risk-taking behavior (H11a and H11b).

The difference to Study 1 is that the extent to which the business model design in the dimensions infrastructure traits and diversity degree affects the risk-taking behavior of the company is tested. Accordingly, the dependent variable in this study differs from the dependent variable performance in Study 1. Study 2 defines the business model as the perception of how a company's resources and competencies are adjusted to generate a competitive advantage. As an antecedent this situation's definition directly influences the TMT's risk-taking behavior, which can be understood as a mediator and indirectly influence the company's performance. The part of the conceptual framework tested in Study 2 is shown in Figure 4.6.

The study is conducted using a sample of 143 consolidated-level banks headquartered in the eurozone and Switzerland between 2010 and 2019, as in Study 1. Once again, we used panel data to test the hypotheses. We prefer to use panel data because "longitudinal designs offer substantial advantages over cross-sectional designs in examining causal processes" (Taris & Kompier, 2014, p. 7).

Figure 4.6: Conceptual Framework of Study 2



Source: Own representation.

Like before, we used different test procedures to determine the appropriate test method for Study 2. To guide the decision, we first based our testing on the Breusch-Pagan Lagrange Multiplier (LM) test for testing whether the RE model is preferable to the OLS model. The null hypothesis in favor of simple OLS regression ($p < 0.001$) is rejected and we assume the presence of individual-specific effects. In the second step, we applied the F-test with significant results ($p < 0.001$) to test whether the FE model is preferred over the OLS model. In the third, we used the Hausman specification test to choose between the FE and RE models. The analysis showed that the FE model is more appropriate ($p < 0.001$).

The nature of panel data must be tested for heteroscedasticity and autocorrelation to detect model errors and correct them. The results of the Breusch and Pagan test (Breusch & Pagan, 1979) and Cook and Weisberg test (Cook & Weisberg, 1983) indicate the presence of heteroscedasticity ($p < 0.001$). The modified Wald statistic (for FE models) for testing groupwise heteroscedasticity in the residuals confirms these results of the presence of heteroscedasticity ($p < 0.001$). In addition, the Wooldridge test (Wooldridge, 2010) for identifying autocorrelation suggests the presence of autocorrelation in our data set ($p < 0.001$).

Like in Study 1, we use a Prais-Winsten regression with panel corrected standard errors, as heteroscedasticity and autocorrelation problems are present in our data set. Hence, following the recommendation of N. Beck and Katz (1995), the Stata PCSE estimator (Stata 17 command `xtpcse`, option for panel-specific first-order autocorrelation `corr(psar1)`) is employed. Furthermore, the simulation results of W. R. Reed and Ye (2011) and Moundigbaye et al. (2018) showed the efficiency of different panel methods in the context of the number of sampling units and panel waves, supporting our choice of method.

The dependent variable of Study 2 is the risk-taking behavior of TMT members, shown in Table 4.7. As described in detail in Chapter 3, this construct has received much interdisciplinary attention in research. Moreover, the decisions about taking risks are an essential component of the TMT's remit as an upper decision-making body. To operationalize risk-taking behavior, we follow the approach in Acharya et al. (2006) and Bitar et al. (2016), who used loan loss reserves as a proxy for the extent of firm-specific risk. We divide the amount of LLR at the end of each year by the number of total assets simultaneously to eliminate size effects. In this context, we establish our procedure on the approach that the TMT's risk-taking behavior inherent in strategic decisions influences firm risk.

Study 2 includes the four independent variables equity capital endowment, human capital endowment, and functional diversity in income and refinancing structure. Equity capital endowment as balance sheet equity to total assets and human capital endowment as the natural logarithm of a bank's total assets to the total number of employees (FTE) at year-end are measures of the infrastructure traits dimension of a banking business model. We apply the standardized diversity index (standardized Blau index, *SDIV*) to measure functional diversity degree characteristics in income and refinancing structure. On the one hand, we use the shares from interest income and correspondingly fee and commission income to the total income from both income sources for the functional diversity in income structure. On the other, the standardized diversity index for functional diversity in refinancing structure on the shares of customer deposit refinancing and non-customer deposit refinancing is calculated, each to the total sum of both refinancing sources.

We consider geographical orientation as a time-invariant property of firms as a moderator variable. Specifically, the variable regards the companies' geographical orientation in the conflict between diversification and concentration of target markets. We explicitly distinguish between the following four characteristics of the categorical variable of

Table 4.7: Study 2 - Measurement of Variables

Variables		Measurement of variables
Dependent variable	Risk-taking behavior	Risk-taking behavior, measured as loan loss reserves (LLR) divided by total assets at the end of the year (in %).
Independent variables	Equity capital endowment	Measured as balance-sheet equity divided by total assets at the end of the year (in %).
	Human capital endowment	Measured as total assets divided by the total number of employees (full-time equivalent (FTE)) at the end of the year (log transformation).
	Functional diversity in income structure	Measured as standardized diversity index based on the shares of interest income and correspondingly fee and commission income in relation to the total amount of income from both sources at the end of the year (ranges from 0 to 1).
	Functional diversity in refinancing structure	Measured as standardized diversity index based on the shares of customer deposit refinancing and correspondingly non-customer deposit refinancing, calculated as the difference between total assets minus customer deposit refinancing and total equity, in relation to total refinancing from both sources at the end of the year (ranges from 0 to 1).
Moderating variable	Geographical orientation	Measured as a categorical variable for the entire period with four categories: 1 - International orientation, 2 - Pan-European orientation, 3 - National orientation, 4 - Regional orientation.
Control variables	Gross domestic product growth	Measured as the three-year median growth rate (t, t-1, t-2) of gross domestic product based on actual changes (in %).
	Industry growth	Measured as the three-year median growth rate (t, t-1, t-2) of the industry return on average equity (in %).
	Firm size	Measured based on total assets of a bank at the end of the year (log transformation).
	Efficiency ratio	Cost to income ratio, measured as operating cost to income at the end of the year (in %).

Source: Own representation.

geographical orientation: 1 - International orientation, 2 - Pan-European orientation, 3 - National orientation, and 4 - Regional orientation.

Study 2 focuses on the same control variables known from Study 1 and adds industry growth. Thus, we used the average growth of GDP as a proxy for economic growth and the expression of the economic environment as a contextual factor, and also integrated industry growth as a characteristic of the actual industry situation, which can significantly influence a

firm's risk attitude and strategic positioning (Hoskisson & Hitt, 1990). To control for firm characteristics, we used firm size and cost to income ratio, and – in light of our research questions – tested other control variables. However, due to multicollinearity concerns, we did not use any other control variable to map additional firm characteristics because the influence of firm characteristics is one of the central objects of our analysis. Table 4.7 provides an overview of the variables and their measurements for Study 2.

Analyses and Results

We tested for skewness and kurtosis and examined the histograms of the variables and the intervals of the skewness and kurtosis statistics with the available statistical diagnostic tools. As in Study 1, it was found that only firm size and human capital endowment needed to be corrected using a log transformation. Therefore, after running the tests, there was no need to correct skewness or kurtosis for any other variables.

In the next step, we tested for correlations among the independent variables. Table 4.8 contains the overview of the corresponding correlation matrix of the pairwise correlations of the variables included in Study 2 and the other descriptive statistics of the means and standard deviations. Finally, following the threshold of 0.8 or 0.9 suggested by Kennedy (2008) to detect collinearity, the data was checked to see if the threshold was exceeded, which was not the case.

We calculated the variance inflation factor (VIF) and tested whether it exceeded the threshold in excluding multicollinearity. Due to the almost unchanged variable selection, this is 1.83 and thus clearly below the recommended threshold of $VIF < 10$ (J. Cohen et al., 2003; Kennedy, 2008), so that multicollinearity is not a problem in our further analyses. We used a hierarchical approach (Meinshausen, 2008) for hypothesis testing, including stepwise variables in our analysis, starting from the coarsest level. Before introducing the independent variables into the models, we performed mean centering for the independent variables. Table 4.9 presents the results of Study 2, including the standardized β -regression coefficients, standard errors, number of banks, number of observations, R-squared and Chi-squared, and the overall significance of the models.

Model 1 of Study 2 includes gross domestic product growth, industry growth, firm size, and the efficiency ratio, which are the control variables of the study. Among these, gross domestic product and the efficiency ratio are not significant. In contrast, industry growth and firm size are negatively and significantly related to risk-taking behavior.

Table 4.8: Descriptive Statistics for Study 2

	Mean	S.D.	N	1	2	3	4	5	6	7	8	9	10
1 Risk-taking behavior	0.02	0.03	1,430	1									
2 Gross domestic product growth	0.01	0.02	1,430	-0.197 ***	1								
3 Industry growth	0.05	0.02	1,430	-0.077 **	0.309 ***	1							
4 Firm size	17.11	1.86	1,430	-0.132 ***	0.033	0.027	1						
5 Efficiency Ratio	0.67	0.71	1,430	0.022	-0.080 **	-0.002	-0.073 **	1					
6 Geographical orientation	2.64	1.07	1,430	-0.025	-0.036	0.000	-0.610 ***	0.004	1				
7 Equity capital endowment	0.08	0.05	1,430	0.304 ***	0.114 ***	0.064 *	-0.445 ***	-0.019	0.176 ***	1			
8 Human capital endowment	9.20	0.85	1,430	-0.425 ***	0.141 ***	0.057 *	0.428 ***	-0.099 ***	-0.176 ***	-0.383 ***	1		
9 Functional diversity in income structure	0.59	0.26	1,430	0.056 *	0.067 *	0.205 ***	-0.020	0.015	0.073 **	0.049 +	-0.357 ***	1	
10 Functional diversity in refinancing structure	0.73	0.25	1,430	0.075 **	-0.225 ***	-0.102 ***	0.472 ***	-0.048 +	-0.257 ***	-0.183 ***	0.183 ***	-0.057 *	1

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Source: Own representation.

In Model 2, the first two main effects of equity capital endowment and human capital endowment as infrastructure traits are added to the control variables. For the two independent variables, a linear relationship with risk-taking behavior is assumed. We find a significant positive relationship between equity capital endowment ($\beta = 0.1001$, $p < 0.001$) and risk-taking behavior and a negative relationship for the human capital endowment. This relationship is also significant ($\beta = -0.0100$, $p < 0.001$). The signs and significant relationships support Hypotheses 5 and 6. Including the two main effects of the infrastructure traits dimension in Model 2 shows a significant increase in R-squared and Chi-squared values, supporting the assumptions of linear relationships between infrastructure traits and risk-taking behavior.

In Model 3, we add the other two main effects of functional diversity in income and refinancing structure as diversity degree characteristics to the two main variables of infrastructure traits. Model 3 cannot confirm the positive relationship under Hypothesis 7 between functional diversity in income structure and risk-taking behavior. A negative sign describes this relationship and does not exhibit significance. Likewise, the positive direction of the relationship between functional diversity in refinancing structure and risk-taking behavior assumed under Hypothesis 8 is not significant. Consequently, both hypotheses are rejected. The decrease in the R-squared also supports the rejection compared to the previous Model 2 by only considering the main effects of the infrastructure traits.

Then, in Model 4, the main effect of the moderator variable geographical orientation of the business model is added to the four main effects. The results support the previously presented correlations for the two variables of infrastructure traits and the two variables of diversity degrees by confirming the results from previous models. Furthermore, for the main effect of the moderator variable, we can identify positive and significant effects in the two categories of pan-European and national orientation compared to the reference category of regional orientation (pan-European orientation: $\beta = 0.145$, $p < 0.001$; international orientation: $\beta =$

Table 4.9: Results of Study 2

		Dependent variable - Risk-taking behavior							
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	
Control variables	Constant	0.0261 *** (0.0026)	0.0245 *** (0.0021)	0.0245 *** (0.0023)	0.0181 *** (0.0023)	0.0208 *** (0.0027)	0.0186 *** (0.0027)	0.0190 *** (0.0023)	
	Gross domestic product growth	-0.0539 (0.0597)	-0.0738 (0.0612)	-0.0649 (0.0612)	-0.0699 (0.0612)	-0.0654 (0.0598)	-0.0693 (0.0607)	-0.0658 (0.0591)	
	Industry growth	-0.1390 ** (0.0466)	-0.1299 ** (0.0428)	-0.1269 ** (0.0455)	-0.1297 ** (0.0460)	-0.1381 ** (0.0462)	-0.1294 ** (0.0464)	-0.1371 ** (0.0452)	
	Firm size	-0.0022 *** (0.0004)	0.0010 (0.0006)	0.0008 (0.0008)	0.0002 (0.0008)	0.0006 (0.0009)	0.0006 (0.0009)	0.0008 (0.0009)	
	Efficiency Ratio	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.0004 (0.0004)	-0.0003 (0.0004)	-0.0003 (0.0004)	-0.0003 (0.0004)	-0.0002 (0.0004)	
Independent variables	Equity capital endowment		0.1001 *** (0.0123)	0.0970 *** (0.0133)	0.0972 *** (0.0116)	0.0964 *** (0.0122)	0.0975 *** (0.0125)	0.0967 *** (0.0121)	
	Human capital endowment		-0.0100 *** (0.0019)	-0.0097 *** (0.0019)	-0.0092 *** (0.0020)	-0.0100 *** (0.0022)	-0.0093 *** (0.0020)	-0.0105 *** (0.0023)	
	Functional diversity in income structure			-0.0035 (0.0042)	-0.0010 (0.0040)	0.0165 + (0.0086)	-0.0015 (0.0041)	0.0206 * (0.0084)	
	Functional diversity in refinancing structure			0.0026 (0.0032)	0.0046 (0.0030)	0.0036 (0.0031)	0.0170 *** (0.0047)	0.0170 *** (0.0050)	
Moderator variable	Geographical orientation								
	1 - International orientation				0.0028 (0.0022)	0.0000 (0.0028)	0.0020 (0.0028)	0.0016 (0.0027)	
	2 - Pan-European orientation				0.0145 *** (0.0035)	0.0113 *** (0.0031)	0.0143 *** (0.0041)	0.0135 *** (0.0034)	
	3 - National orientation				0.0076 *** (0.0015)	0.0055 *** (0.0014)	0.0076 *** (0.0018)	0.0077 *** (0.0013)	
4 - Regional orientation				(base)	(base)	(base)	(base)		
Interaction variables	Funct. div. in income struc. x Geogr. orientation								
	1 - International orientation					-0.0325 *** (0.0077)		-0.0350 *** (0.0080)	
	2 - Pan-European orientation					-0.0202 + (0.0111)		-0.0259 * (0.0112)	
	3 - National orientation					-0.0178 * (0.0076)		-0.0217 ** (0.0079)	
	4 - Regional orientation					(base)		(base)	
	Funct. div. in refinancing struc. x Geogr. orientation								
	1 - International orientation						-0.0227 ** (0.0073)	-0.0220 ** (0.0083)	
	2 - Pan-European orientation						-0.0226 * (0.0109)	-0.0237 * (0.0106)	
3 - National orientation						-0.0110 * (0.0056)	-0.0114 + (0.0059)		
4 - Regional orientation						(base)	(base)		
Number of banks	143	143	143	143	143	143	143		
Number of observations	1,430	1,430	1,430	1,430	1,430	1,430	1,430		
R ²	0.1715	0.4068	0.3962	0.4678	0.4756	0.4415	0.4711		
χ ²	65.29 ***	381.43 ***	509.59 ***	1174.36 ***	1511.04 ***	1072.20 ***	1638.09 ***		

Standard errors in parentheses.

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Source: Own representation.

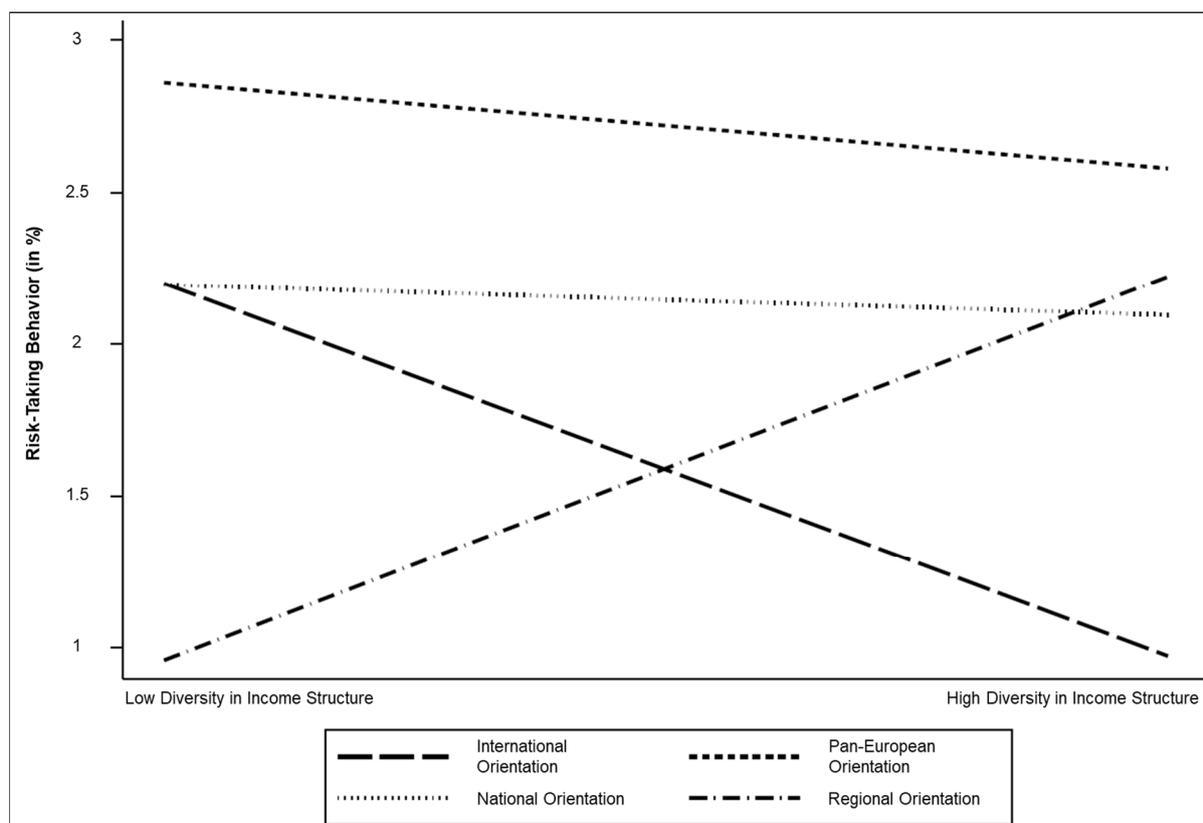
0.0076, $p < 0.001$). Furthermore, after integrating the main effect of the moderator variable, a significant increase for the R-squared and the Chi-squared is also revealed.

In Models 5 and 6, we test the moderating effect of geographical orientation on the relationship between functional diversity of income as well as refinancing structure and risk-taking behavior. The first interaction variable is the product of the independent variable of functional diversity of income structure and geographical orientation (Model 5). Therefore, the second interaction variable arises from the multiplication of the functional diversity of refinancing structure and geographical orientation (Model 6).

The test results of the interaction effect of geographical orientation and functional diversity in income structure (Model 5) reveal that the linear effect changes depending on the geographical orientation of the bank. Adding the interaction term, the linear effect of functional diversity in income structure without interaction becomes slightly significant and positive ($\beta = 0.0165$, $p < 0.1$). The interaction terms of each category of geographical orientation also support our assumption that geographical orientation moderates the relationship between functional diversity in income structure and risk-taking behavior. As a reference category, regional orientation was selected as the one with the lowest geographical diversification. The detailed examination of interaction effects in the respective categories of geographical orientation shows that the interaction effects of all categories are negative and significant (international orientation: $\beta = -0.0325$, $p < 0.001$; pan-European orientation: $\beta = -0.0202$, $p < 0.1$; national orientation: $\beta = -0.0178$, $p < 0.05$). The results support the conjecture that geographical orientation moderates the effect of functional diversity in income structure on risk-taking behavior. The increase in R-squared and Chi-squared values also indicate the conclusion.

In addition, the interaction effect of geographical orientation and functional diversity in refinancing structure is reviewed in Model 6. Again, the linear effect of functional diversity in refinancing structure without interaction becomes significant by adding the interaction term ($\beta = 0.0170$, $p < 0.001$). Following the income structure results, examining the interaction effects between geographical orientation and functional diversity in refinancing structure reveals a similar picture. Analogously, we again choose regional orientation with the lowest geographical diversification as the reference category. The results in the respective categories of geographical orientation show that the interaction effect of international, pan-European, as well as national orientation, is negative and significant (international orientation: $\beta = -0.0227$, $p < 0.01$; pan-European orientation: $\beta = -0.0226$, $p < 0.05$; national

Figure 4.7: Interaction Plot for Functional Diversity in Income Structure and Geographical Orientation



Notes: Low and high functional diversity in income structure are plotted by 1.5 standard deviations below and above the mean. See Table 4.9 for the coefficients of the variables.

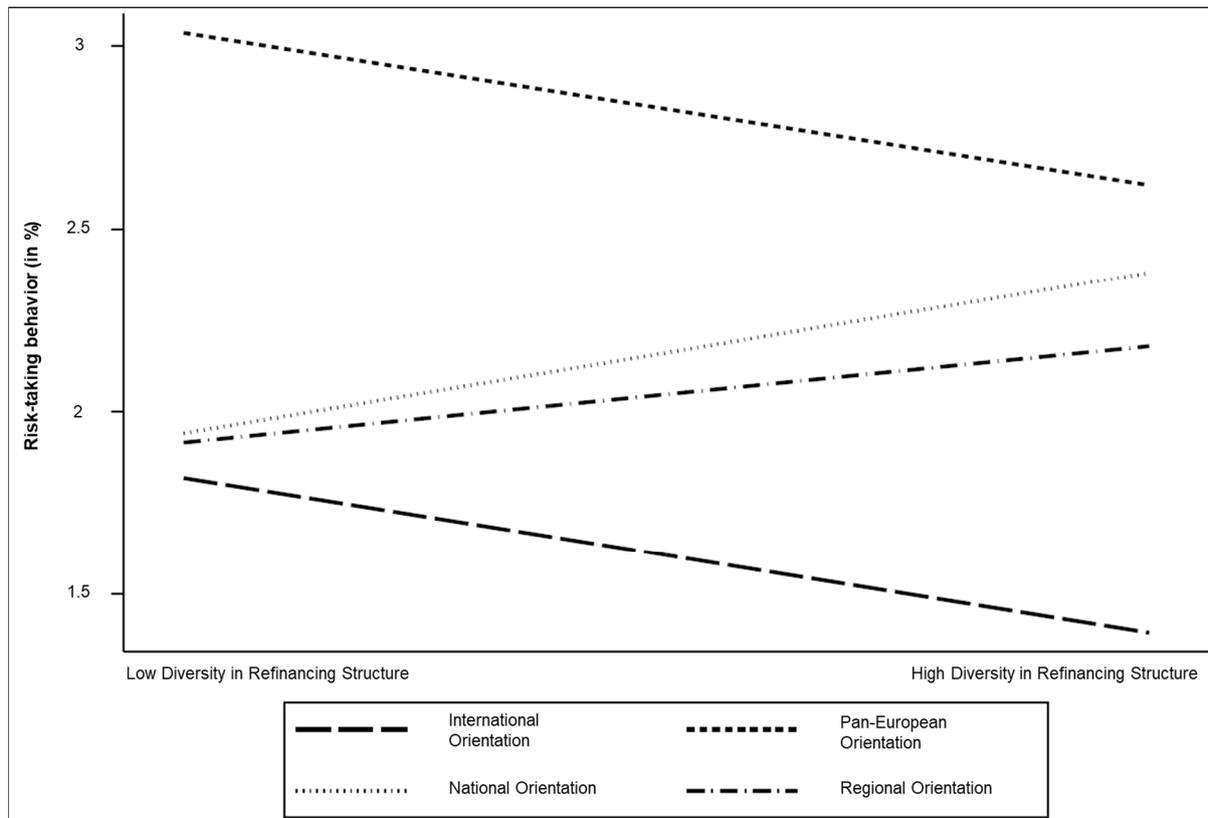
Source: Own representation.

orientation: $\beta = -0.0110$, $p < 0.05$). Accordingly, the results of this model also suggest a significant interaction of geographical orientation on the relationship of functional diversity in refinancing structure and risk-taking behavior.

Finally, Model 7 of Study 2 contains the complete model, and the results are consistent with the previous models. Compared to Model 4 without considering interaction effects, all four main effects without interaction are significant in Model 7. The results of the interaction effects are essentially unchanged.

For a deeper analysis, we have illustrated the significant results for the moderating influence of geographical orientation on the relationship between functional diversity in income structure (compare variable functional diversity in income structure x geographical orientation in Table 4.9) and risk-taking behavior in Figure 4.7. The corresponding relationship of functional diversity in refinancing structure and risk-taking behavior as a function of geographical orientation (compare variable functional diversity in refinancing structure x geographical orientation in Table 4.9) shows Figure 4.8. Both illustrations show that there are

Figure 4.8: Interaction Plot for Functional Diversity in Refinancing Structure and Geographical Orientation



Notes: Low and high functional diversity in refinancing structure are plotted by 1.5 standard deviations below and above the mean. See Table 4.9 for the coefficients of the variables.
 Source: Own representation.

interaction effects for both diversity degree characteristics of business models. In this context, the graph defines low and high functional diversity by 1.5 standard deviations below and above the mean.

According to Figure 4.7, there is a positive correlation between functional diversity in income structure and risk-taking behavior for banks with a regional business orientation. In other words, a high degree of functional diversity in income structure coupled with a regional business orientation is also associated with a higher willingness to take risks. Conversely, the risk-taking behavior of a highly geographically diversified bank (international orientation) decreases with increasing functional diversity in income structure, which corresponds to a negative correlation. There are also negative correlations for the national and pan-European orientation, but they are much flatter than international orientation. With this in mind, we can support Hypothesis 11a: high geographical diversification negatively moderates the relationship between functional diversity in income structure and risk-taking behavior. Thus, the correlation varies as a function of geographical orientation.

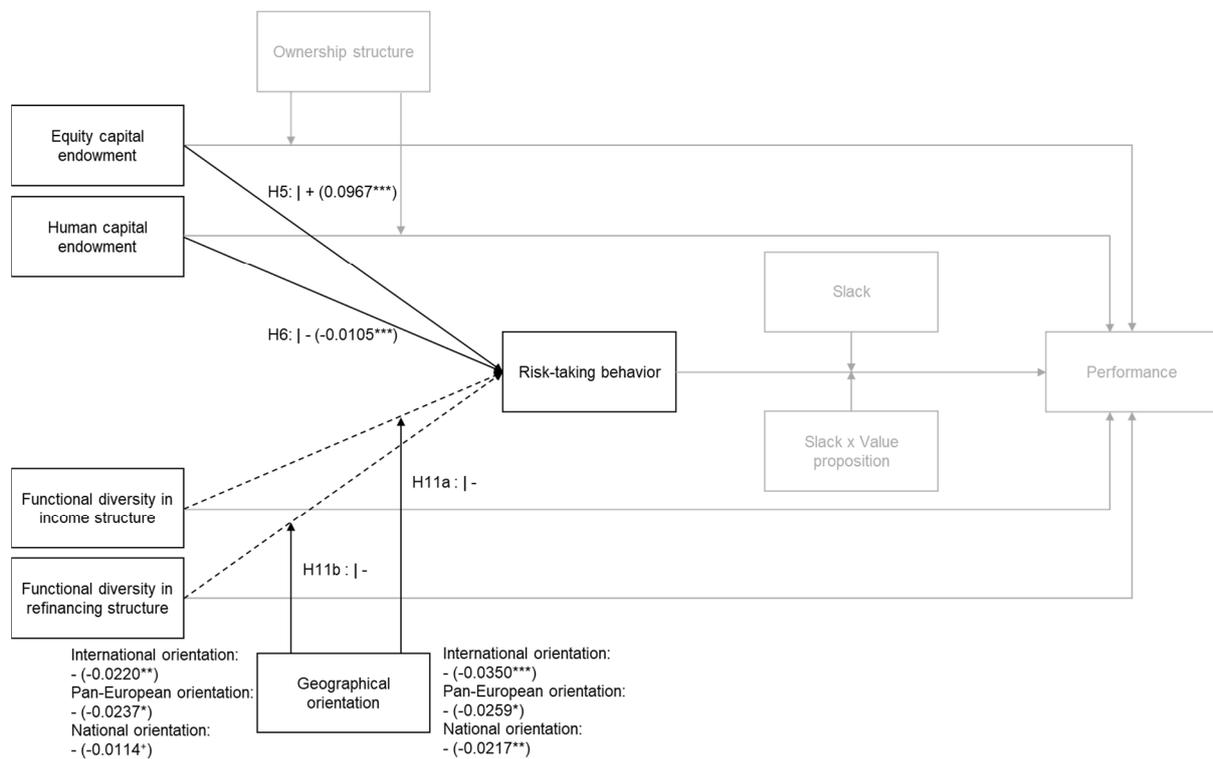
The moderating influence of geographical orientation is also evident in the correlation between functional diversity in refinancing structure and risk-taking behavior, shown in Figure 4.8. The plot shows a positive correlation between high functional diversity and risk-taking behavior for companies with a high geographical concentration (regional and national orientation). However, the relationship is flatter for regional orientation than for national orientation. Moreover, as in the case of the income structure, the significant interaction of the pan-European and international orientation shows a reversal of the positive effect into a negative one. Thus, high functional diversity in refinancing structure coupled with greater geographical diversification reduces risk-taking behavior. Based on these findings, we uncover sufficient support for Hypothesis 11b that geographical orientation negatively moderates the relationship between functional diversity in refinancing structure and risk-taking behavior at high levels of geographical diversification.

Interim Discussion

Study 2 provides insights into the young and rudimentary discussion on how different strategic positionings due to different perceptions of the entrepreneurial environment influence observable firm risk as an expression of TMT's risk-taking behavior. With the (cumulative) prospect theory, Kahneman and Tversky (1979) and (1992) substantiated the different forms of judgment formation based on subjective norms, values, experiences, and knowledge and a resulting different evaluation of the decision situation as an alternative decision theory compared to EUT. Numerous experimental and further studies on judgment formation and testing of the approaches have been conducted, resulting in extensions in other research areas. However, this is the first study that understands different business model dimensions as individual situation definition and perception of TMT members and considers them as antecedents of risk-taking behaviors.

The results in Table 4.9, whose underlying significant hypotheses are summarized in Figure 4.9, show that the infrastructure traits of equity capital endowment (H5) and human capital endowment (H6) have significant relationships with risk-taking behavior. Our results confirm the hypothesis that higher equity capital endowment reflects incentives for increased TMT risk-taking behavior. We argue that higher equity capital endowment is perceived as a buffer and thus encourages riskier behavior. Likewise, the results further support the assumption of a negative relationship between human capital endowment and risk-taking behavior. Accordingly, it is reasonable to conclude that banks with a higher human capital

Figure 4.9: Significant Hypotheses of Study 2



+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Note: Coefficients and significance in parentheses. Differentiation of relationship type through the following symbols “|” for a linear relationship and “∩” for a curvilinear relationship.

Source: Own illustration.

endowment as employee density have better customer interaction capabilities and identify risks associated with business operations, resulting in lower risk-taking behavior. We see a possible explanation that banks with a higher human capital endowment can more deeply exercise the delegated monitoring function given to employees in customer interaction. As a result, they better live the “know your customer principle” to build a better basis for decision-making on the risks associated with business operations.

In addition, Study 2 contributes to the multifaceted discussion on the advantages and disadvantages of diversification. However, our results provide no evidence of a significant relationship between diversity degree characteristics of income and refinancing structure and risk-taking behavior. Therefore, the hypothesized linear and positive relationships between functional diversity in income and refinancing structure with risk-taking behavior (H7 and H8) cannot be confirmed.

In contrast, the analysis of the diversity degrees regarding an interaction effect of geographical orientation yields significant results (H11a and H11b). While the individual effect is not significant for both functional diversity in income structure and refinancing structure, the

interaction terms in the individual categories show that the direction of the relationship varies as a function of geographical orientation. Thus, our results demonstrate that a high functional diversity in income structure and refinancing structure coupled with a geographical orientation that focuses on regional target markets has the most decisive influence on the increase in risk-taking behavior.

Considering the different diversity degree characteristics separately, for the income structure, we were able to show with the help of the illustration in Figure 4.7 that the relationship between functional diversity in income structure and risk-taking behavior even becomes negative with an international orientation of business activity, supporting Hypothesis 11a. Moreover, this direction also applies to the pan-European and national orientation, although the negative relationship is much flatter. Similarly, the interaction effect analysis results of the relationship between functional diversity in the refinancing structure and risk-taking behavior with the help of Figure 4.8 support the assumption that this relationship varies as a function of geographical orientation, too. Again, we observe a significant positive correlation between a high functional diversity in refinancing structure and risk-taking behavior when this occurs together with a focus on regional target markets. This fact also applies to national orientation in the refinancing structure. However, with stronger geographical diversification (pan-European and international orientation), we observe a correlation reversal. Here, the correlations are negative, which supports Hypothesis 11b. The interaction effects results of Study 2 show that this is the case for the course of the linear relationships in situations where functional diversity is more than 1.5 standard deviations below and above the mean.

Overall, a possible explanation for the interaction effects' results is that banks with high functional diversity paired with geographic concentration tend to underestimate risk due to perceived geographic proximity, which becomes visible in higher firm risk. We assume a reversed effect if the geographical diversification is sufficiently high, i.e., if the diversification exceeds a threshold value. High functional diversity coupled with high geographic distance necessitates the implication of additional levels of hierarchy and information in the company. The perception of these complex structures favors a more risk-sensitive approach, as the associated risks are more prominent due to the high degree of diversification in the company, both functionally and geographically.

In summary, Study 2 shows that the strategic decisions to operationalize the strategy in the business model context can be understood as antecedents of risk-taking behaviors. The business model represents the TMT's positioning decision influenced by its perception. The

situational definition of the entrepreneurial environment as an expression of the perception of the decision-making situation in which the TMT finds itself influences that risk-taking behavior, which becomes visible based on entrepreneurial risk. Thus, for the first time, the study brings together the findings of prospect theory and the analyses around the still very recent business model research by focusing on the design of different facets of the business model as individual TMT's perception of risk in decision situations under uncertainty and complexity, and their impact on firm risk as an expression of the TMT's risk-taking behavior.

4.3.3 Study 3: The Relationship Between Risk-Taking Behavior and Performance and the Moderating Role of Slack and Value Proposition

In this study, we examine how risk-taking behavior affects organizational performance. We consider risk-taking behavior as an inherent element of any entrepreneurial activity that has a decisive influence on the performance of an organization (Nickel & Rodriguez, 2002). Hence, the extent of risk-taking behavior is central to generating competitive advantage and improving performance (Hoskisson et al., 2017).

Following the core competency view, risk-taking behavior is understood as a core competency of the TMT. Consequently, risk-taking behavior is one of the specific competencies identified as a source of firms' heterogeneity essential for explaining differences in generating sustainable competitive advantage and superior performance. As a result, it is a sought-after management competency that can ensure financial success even in an environment characterized by uncertainty and complexity by leveraging and modifying the firm's internal resources (Teece, 2007). At the same time, the findings of prospect theory are relevant, according to which differences in psychological and cognitive endowments explain differences in risk behavior (Kahneman & Tversky, 1979), visible with managerial decisions.

The mixed results to the risk-return relationship stem from the different approaches of financial and behavioral perspectives. Against the background of the governance of the physically tangible economic institutions by real people with subjective beliefs, expectations, experiences, and attitudes, we adopt the behavioral perspective and argue for an overall negative effect in the relationship between risk-taking behavior and performance, unlike the financial perspective. The consideration of risk-taking behavior as a mediator in the

relationship between business modeling and its impact on performance is novel. To this end, it suggests a behavioral perspective of risk as a mediator of the relationship.

In addition, for a better understanding, it is our goal to analyze possible influencing factors on the relationship between risk-taking behavior and performance. To this end, we use slack and value proposition to analyze factors that may characterize the TMT's decision-making situation. We follow the analyses of Bromiley (1991) and consider slack as a determinant that can influence the extent of risk-taking, while regarding the value proposition as a critical determinant of doing business and an essential framework on which slack's interaction and risk-taking behavior depend. For this reason, slack and value proposition are applied as moderators and we assume valuable insights for discussing the contextual factors of the relationship between risk-taking behavior and performance since these are new aspects.

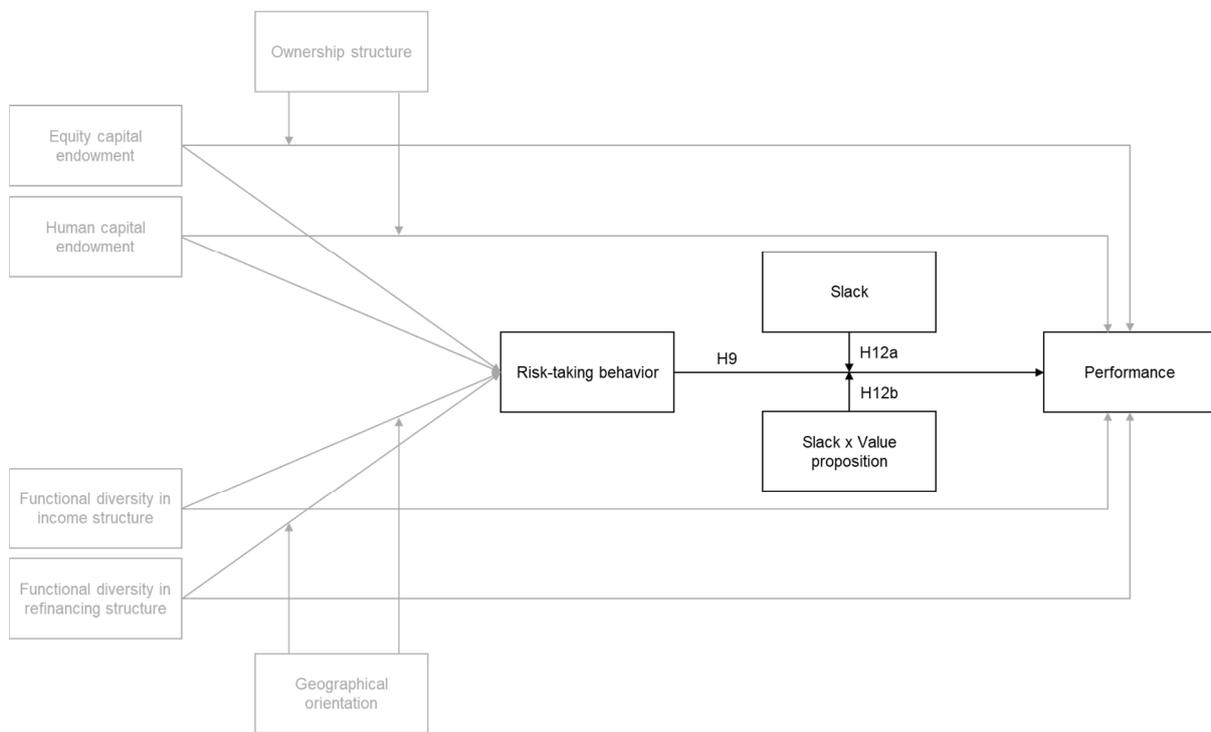
Hypotheses and Method

Building on the resource-based view, upper echelons and prospect theory, and organizational behavioral approaches, we suggest a negative direct linear relationship between risk-taking behavior and performance (H9). The moderating influence of slack as perceived excess capacity is tested further on the direct relationship between risk-taking behavior and performance (H12a). Additionally, we ascertain whether bank type as a vital feature of the value proposition influences the interaction effect of risk-taking behavior and slack (H12b). Figure 4.10 visualizes the component of the overall conceptual model tested in Study 3.

Study 3 uses the same data of the 143 banks at the consolidated level headquartered in the eurozone and Switzerland between 2010 and 2019, serving as the sample in the other two studies. As before, the data are available for each bank per year. For this reason, we again employed panel data for the hypothesis tests, taking advantage of the longitudinal design over cross-sectional data.

The procedure from Studies 1 and 2 to determine which methodology seems most appropriate for statistical analysis of the panel data was followed. First, to test for individual-specific effects in terms of whether the random-effects model is preferable to the OLS model, we applied the Breusch-Pagan Lagrange Multiplier (LM) test with significant results ($p < 0.001$). Next, we continued testing with the F-test and tested whether the FE model is preferable to the OLS model with significant results ($p < 0.001$). Subsequently, we performed the Hausman specification test (Hausman, 1978), which confirmed the FE model to be the most efficient method for hypothesis testing ($p < 0.001$).

Figure 4.10: Conceptual Framework of Study 3



Source: Own representation.

Panel data's properties often cause analysis problems due to heteroscedasticity and autocorrelation. To test for the presence of heteroscedasticity, we applied the Breusch and Pagan (Breusch & Pagan, 1979) and Cook and Weisberg test (Cook & Weisberg, 1983) in the first step. In the second step, we adopted a modified Wald statistic to test our model for groupwise heteroscedasticity in the residuals. The results of both tests indicate the presence of heteroscedasticity ($p < 0.001$). In addition, the Wooldridge test (Wooldridge, 2010) performed in the third step suggests that autocorrelation is present in our data ($p < 0.001$).

Accounting for the presence of heteroscedasticity and autocorrelation as a panel-specific error structure in statistical analysis, we used panel corrected standard errors (PCSE), as recommended by N. Beck and Katz (1995). Specifically, because of the problems caused by heteroscedasticity and autocorrelation, we opted for a Prais-Winsten regression with panel corrected standard errors (PCSE) and used Stata PCSE estimator (Stata 17 command `xtpcse`, option for panel-specific first-order autocorrelation `corr(psar1)`). Our choice rests on the results of Moundigbaye et al. (2018, p. 28) on the efficiency of different panel methods in the context of the number of sampling units (N) and panel waves (T) as the best estimator for hypothesis testing in all situations.

The dependent variable in Study 3, as in Study 1, is performance. The literature on risk-taking behavior contains an extensive discussion of how risk-taking and performance are related. Our study focuses on upper management's risk-taking. Thus, it focuses directly on the TMT's strategic decisions in the context of an uncertain and complex business environment. Therefore, it seems appropriate to use a performance measure that reflects the overall firm performance as the dependent variable. For this reason, we decided to use ROA in our performance measurement, dividing net income by total assets at the respective year-end to calculate it. In addition, using a consistent performance measure in Studies 1 and 3 makes it possible to draw more precise conclusions about both studies.

Study 3 utilizes the risk-taking behavior of TMT as the independent variable. We measure this variable as LLR divided by total assets at the respective year-end. It is a measure of firm risk influenced by the extent of risk-taking behavior within TMT's decisions. Therefore, the measure of firm-specific risk serves as a proxy for the TMT's risk-taking behavior.

Two moderating variables were included in our analysis. First, we considered the variable slack, measured as the inverse debt-to-equity ratio. A low level of slack includes banks with a relatively low level of equity compared to their debt, while a high level applies to banks with a high level of equity compared to their debt. Second, we entered value proposition as another moderating variable in the form of a time-invariant firm characteristic in our analysis. We determined the value proposition as a categorical variable in text analysis and distinguished five different categories of a bank's value proposition: 1 - Commercial banks, 2 - Commercial & Investment banks, 3 - Investment banks, 4 - Specialist banks by statutory mandate, and 5 - Niche banks.

In using control variables, those employed in Study 1 were repeated. Accordingly, as in the previous two studies, we included the gross domestic product growth. The macroeconomic situation is an important factor influencing risk-taking behavior, so it is reasonable to assume that it influences the relationship between risk-taking behavior and performance. We further controlled for firm size, measured as the natural logarithm of total assets at the end of a year, and the efficiency ratio, approximated by the cost to income ratio. These firm characteristics can be assumed to influence the relationship we are analyzing. Finally, the influence of other control variables was tested; however, they were dropped due to lack of significance and multicollinearity concerns. Table 4.10 provides an overview of the variables used in Study 3 and their function in the analysis.

Table 4.10: Study 3 - Measurement of Variables

Variables		Measurement of variables
Dependent variable	Performance	Return on assets (ROA), measured as net income divided by total assets at the end of the year (in %).
Independent variables	Risk-Taking behavior	Risk-taking behavior, measured as loan loss reserves (LLR) divided by total assets at the end of the year (in %).
Moderating variables	Slack	Slack, measured as the inverse debt-to-equity ratio (in %).
	Value proposition	Measured as a categorical variable for the entire period with five categories: 1 - Commercial banks, 2 - Commercial & Investment banks, 3 - Investment banks, 4 - Specialist banks by statutory mandate, 5 - Niche banks.
Control variables	Gross domestic product growth	Measured as the three-year median growth rate (t, t-1, t-2) of gross domestic product based on actual changes (in %).
	Firm size	Measured based on total assets of a bank at the end of the year (log transformation).
	Efficiency ratio	Cost to income ratio, measured as operating cost to income at the end of the year (in %).

Source: Own representation.

Analyses and Results

We controlled the histograms of the variables and the intervals of the skewness and kurtosis statistics to exclude skewness and kurtosis problems. Except for firm size – which was also corrected using a log transformation as in the previous two studies – no other variables needed adjustment. Likewise, we also examined the correlations between the independent variables. For this purpose, Table 4.11 contains the overview of the descriptive statistics of Study 3 and, in addition to presenting the means and standard deviations, also provides information on the pairwise correlations between the individual variables. As shown, none of the pairwise correlations exceed the threshold of 0.8 or 0.9 (Kennedy, 2008), so we see no evidence of a problem with multicollinearity. The variance inflation factor (VIF) calculation supports this conclusion. The average VIF for all variables in Study 3 is 1.28, well below the recommended threshold of $VIF < 10$ (J. Cohen et al., 2003; Kennedy, 2008).

Using a hierarchical approach to hypothesis testing (Meinshausen, 2008), we progressively pulled variables into our analysis, starting at the coarsest level. Then, as in the studies before, mean centering of the independent variables was conducted before introducing them into the models. Table 4.12 presents the results of Study 3. The table includes the

Table 4.11: Descriptive Statistics for Study 3

	Mean	S.D.	N	1	2	3	4	5	6	7
1 Performance	0.00	0.01	1,430	1						
2 Gross domestic product growth	0.01	0.02	1,430	0.244 ***	1					
3 Firm size	17.11	1.86	1,430	-0.091 ***	0.033	1				
4 Efficiency Ratio	0.67	0.71	1,430	-0.176 ***	-0.080 **	-0.073 **	1			
5 Slack	0.09	0.11	1,430	0.086 **	0.095 ***	-0.364 ***	-0.017	1		
6 Value proposition	2.25	1.65	1,430	0.140 ***	-0.011	-0.208 ***	-0.023	0.211 ***	1	
7 Risk-taking behavior	0.02	0.03	1,430	-0.242 ***	-0.197 ***	-0.132 ***	0.022	0.257 ***	0.027	1

⁺ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Source: Own representation.

standardized β -regression coefficients, standard errors, the number of banks, the number of observations, the R-squared and Chi-squared, and the overall significance of the models.

Model 1 of Study 3 includes the three control variables gross domestic product growth, firm size, and the efficiency ratio. All three variables show significance. In Model 2, we add the main effect of risk-taking behavior. The results indicate a negative and significant effect of risk-taking behavior on performance ($\beta = -0.1090$, $p < 0.05$). Moreover, an increase in R-squared and Chi-squared values compared to Model 1 was registered, supporting Hypothesis 9.

Model 3 combines the main effect of risk-taking behavior with the main effects of the moderator variables slack and value proposition. The results for slack show a positive and slightly significant direct effect on performance ($\beta = 0.0122$, $p < 0.1$). For value proposition, only the categories of investment banks and specialist banks by statutory mandate demonstrate significant and direct effects relative to the reference category of commercial banks (investment banks: $\beta = 0.0112$, $p < 0.1$; specialist banks by statutory mandate: $\beta = -0.0020$, $p < 0.05$).

One interaction variable was formed for each moderator to test the interaction with the proposed moderators. Then, by multiplying the independent variable by the moderator, we obtained the interaction variables (Dawson, 2014). Consequently, we attained the following interaction variables from the product of risk-taking behavior and slack (Model 4) and risk-taking behavior and value proposition (Model 5).

Examining the moderation of slack in Model 4 reveals that the interaction term of risk-taking and slack is negative and significant ($\beta = -0.4978$, $p < 0.001$). After integrating the interaction effect, the main effect of slack now also shows a clear significance. Moreover, the R-squared and Chi-squared increase compared to the previous models, providing additional support for the moderating effect of slack.

Table 4.12: Results of Study 3

	Dependent variable - Performance							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	
Constant	0.0016 (0.0010)	0.0022 ** (0.0008)	0.0019 ** (0.0007)	0.0025 *** (0.0007)	0.0021 *** (0.0007)	0.0026 *** (0.0008)	0.0021 ** (0.0007)	
Control variables	Gross domestic product growth	0.1697 ** (0.0601)	0.1421 * (0.0564)	0.1313 * (0.0555)	0.1352 * (0.0564)	0.1283 * (0.0541)	0.1341 * (0.0550)	0.0748 * (0.0372)
	Firm size	-0.0006 *** (0.0002)	-0.0008 *** (0.0002)	-0.0004 (0.0004)	-0.0001 (0.0004)	-0.0004 (0.0004)	-0.0001 (0.0004)	-0.0002 (0.0003)
	Efficiency Ratio	-0.0022 ** (0.0007)	-0.0022 ** (0.0007)	-0.0020 ** (0.0007)	-0.0020 ** (0.0007)	-0.0020 ** (0.0007)	-0.0019 ** (0.0007)	-0.0019 ** (0.0007)
Independent variable		-0.1090 * (0.0484)	-0.1176 * (0.0525)	-0.1047 * (0.0528)	-0.1084 ** (0.0411)	-0.1088 * (0.0437)	-0.1469 *** (0.0370)	
Moderator variables	Slack		0.0122 + (0.0065)	0.0348 *** (0.0092)	0.0185 ** (0.0071)	0.0379 *** (0.0087)	0.0495 *** (0.0088)	
	Value proposition			(base)	(base)	(base)	(base)	
	1 - Commercial banks			-0.0002 (0.0024)	-0.0010 (0.0024)	-0.0003 (0.0023)	-0.0008 (0.0022)	0.0025 (0.0028)
	2 - Commercial & Investment banks			0.0112 + (0.0062)	0.0101 + (0.0059)	-0.0024 (0.0053)	-0.0037 (0.0050)	-0.0018 (0.0037)
	3 - Investment banks			-0.0020 * (0.0008)	-0.0010 (0.0007)	0.0005 (0.0006)	0.0006 (0.0006)	0.0011 (0.0007)
	4 - Specialist banks by statutory mandate			0.0009 (0.0015)	0.0004 (0.0014)	-0.0002 (0.0015)	-0.0004 (0.0015)	0.0007 (0.0016)
Interaction variables	Risk-taking behavior x Slack			-0.4978 *** (0.1412)		-0.4712 ** (0.1828)	1.4162 *** (0.3761)	
	Risk-taking behavior x Value proposition					(base)	(base)	
	1 - Commercial banks					-0.0123 (0.0915)	-0.1402 (0.0869)	
	2 - Commercial & Investment banks					-0.8358 + (0.4308)	-0.3301 (0.2705)	
	3 - Investment banks					0.0935 * (0.0390)	0.1203 *** (0.0346)	
	4 - Specialist banks by statutory mandate					-0.1506 + (0.0900)	0.0432 (0.0937)	
	5 - Niche banks							
	Risk-taking behavior x Slack x Value proposition						(base)	
	1 - Commercial banks						2.5823 * (1.1171)	
	2 - Commercial & Investment banks						-9.1943 *** (2.1189)	
3 - Investment banks						-1.0361 (0.7751)		
4 - Specialist banks by statutory mandate						-2.2528 *** (0.4122)		
5 - Niche banks								
Number of banks	143	143	143	143	143	143	143	
Number of observations	1,430	1,430	1,430	1,430	1,430	1,430	1,430	
R ²	0.1028	0.1619	0.1700	0.1813	0.1796	0.1899	0.3559	
χ ²	25.68 ***	27.80 ***	82.55 ***	102.15 ***	257.38 ***	269.70 ***	1771.19 ***	

Standard errors in parentheses.

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Source: Own representation.

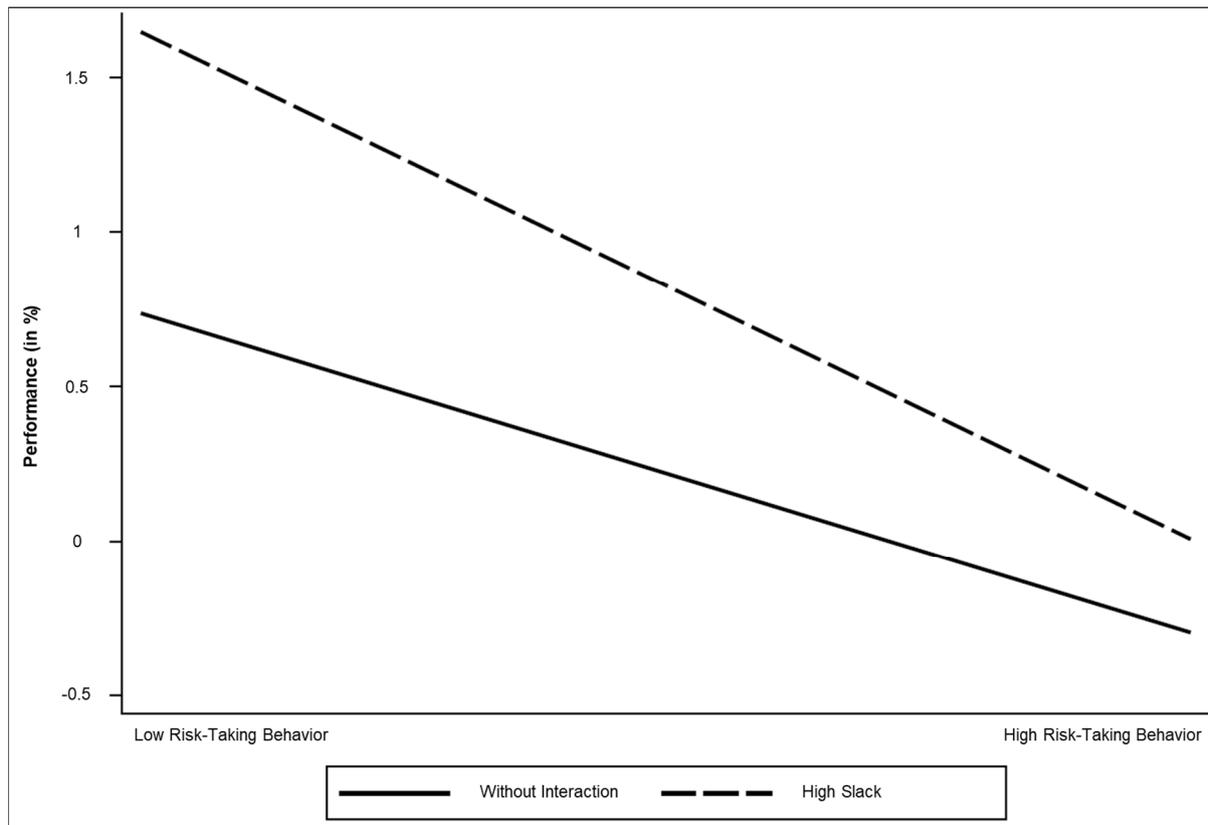
The significant results of the interaction term of risk-taking behavior and slack suggest further study of the interaction effect. To this end, we visualized the interaction of slack on the relationship of risk-taking behavior and performance in Figure 4.11 (compare variable risk-taking behavior x slack in Table 4.12), defining low and high risk-taking behavior by 1.5 standard deviations below and above the mean in this context. Likewise, this definition was applied to the characterization of high slack, which we defined by 1.5 standard deviations above the mean. For illustration purposes, we plotted the relationship without interaction effect and the moderation of the relationship by high slack (relatively high equity), perceived as excess. The plot shows that the negative relationship between risk-taking behavior and performance is significantly steeper for a high level of slack resources. As a result, a low risk-taking behavior in the presence of high slack resources leads to significantly better performance. In contrast, a high level of risk-taking behavior reduces performance. Overall, the results provide a sufficient basis to support Hypothesis 12a that slack moderates the risk-taking behavior and performance relationship, so that the negative relationship between them is strengthened and steepened when a sufficiently high level of slack resources is present.

In Model 5, the interaction effect of value proposition and risk-taking behavior was tested. An examination of the interaction effects of the individual value proposition categories concerning the reference category of commercial banks shows a slight significance of the interaction effects investment banks, specialist banks by statutory mandate slightly, and niche banks (investment banks: $\beta = -0.8358$, $p < 0.1$; specialist banks by statutory mandate: $\beta = 0.1203$, $p < 0.01$; niche banks: $\beta = -0.1506$, $p < 0.1$). The findings support the assumption that the value proposition influences the relationship between risk-taking behavior and performance.

The inclusion of the two interaction variables characterizes Model 6 of Study 3, and the results are consistent with the previous models. However, compared to Model 5, the interaction effect of the value proposition with risk-taking behavior is no longer significant in the niche bank category. Nevertheless, this model shows an increase in the R-squared and Chi-squared values.

Finally, the last Model 7 of Study 3 contains the entire model. This model examines whether the moderating effect of slack and risk-taking behavior varies as a function of the value proposition. In this way, we examine whether the moderating effect of slack on the relationship between risk-taking behavior and performance is itself moderated by, and thus depends on, a bank's value proposition. After inserting the multiple interaction variable by multiplying risk-

Figure 4.11: Interaction Plot for Risk-Taking Behavior and High Slack



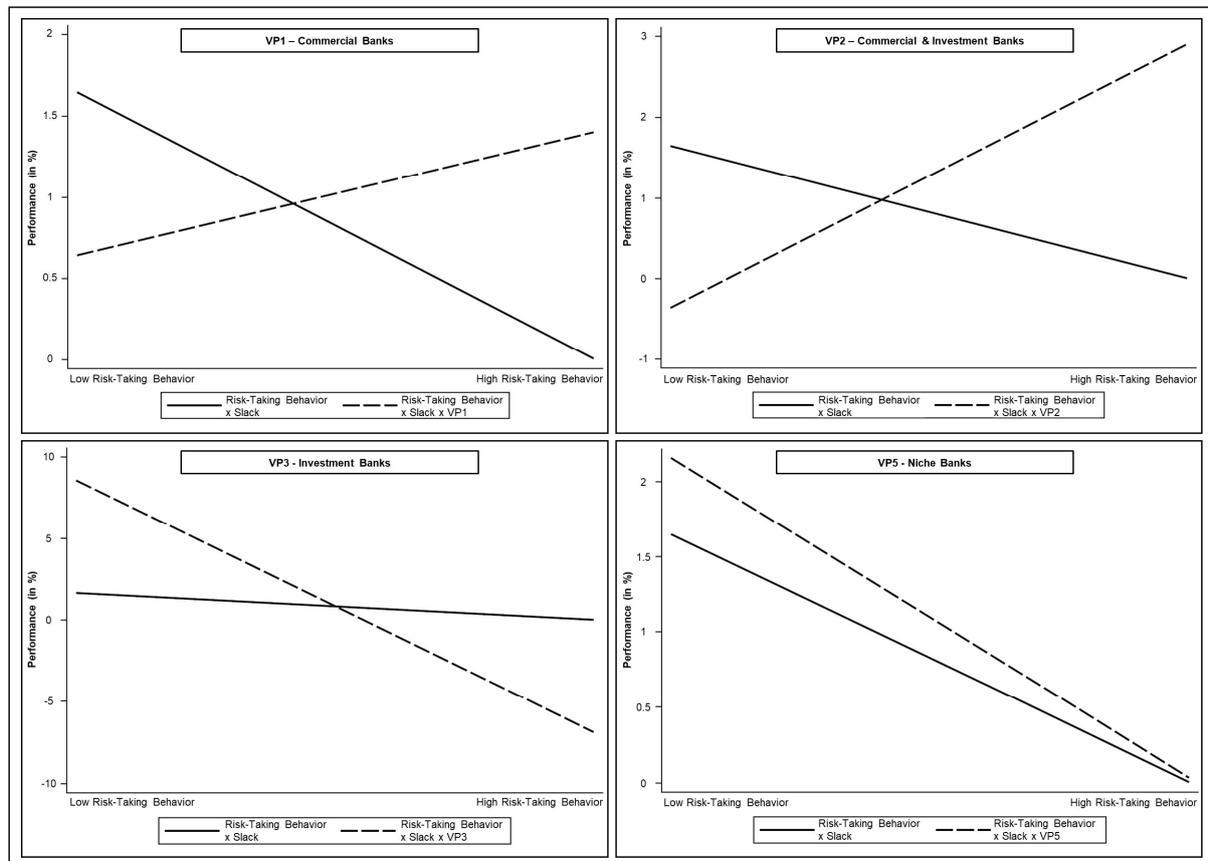
Notes: Low and high risk-taking behavior are plotted by 1.5 standard deviations below and above the mean. 1.5 standard deviations above the mean define high slack. See Table 4.12 for the coefficients of the variables.

Source: Own representation.

taking behavior, slack, and value proposition into the model, the results show a significant change in the relationship's direction of the simple moderation of slack and risk-taking behavior ($\beta = 1.4162$, $p < 0.001$). Furthermore, the three-way interaction term indicates significant moderation in the categories of commercial & investment banks, investment banks, and niche banks relative to the reference category (commercial & investment banks: $\beta = 2.5823$, $p < 0.05$; investment bank: $\beta = -9.1943$, $p < 0.001$; niche banks: $\beta = -2.2528$, $p < 0.001$). In particular, the significant increase in R-squared and Chi-squared values in the full model supports our assumption of moderation of the interaction effect of risk-taking behavior and slack by a bank's value proposition.

We plotted the three-way interaction in Figure 4.12 to further study the significant moderating relationship of the value proposition on the interaction effect of risk-taking behavior and slack (compare variable risk-taking behavior x slack x value proposition in Table 4.12). The plot shows the value propositions of Commercial banks (VP1) as the reference category as well as Commercial & Investment banks (VP2), Investment banks (VP3), and Niche banks (VP5). The value proposition of Specialist banks by statutory mandate (VP4) was

Figure 4.12: Three-Way Interaction Plots for Risk-Taking Behavior, High Slack and Value Proposition



Notes: Low and high risk-taking behavior are plotted by 1.5 standard deviations below and above the mean. 1.5 standard deviations above the mean define high slack. See Table 4.12 for the coefficients of the variables.
Source: Own representation.

not considered, as this category did not show significance in our results of the three-way interaction. Furthermore, by visualizing the three-way interaction, we can also regard and analyze the reference category of commercial banks. To represent the interaction effect, we focused on slack resources perceived as excess capacity, so we defined high slack as defined by 1.5 standard deviations above the mean. We defined low and high risk-taking behavior by 1.5 standard deviations below and above the mean.

The three-way interaction plot in Figure 4.12 supports the assumption that the relationship between risk-taking behavior and performance moderated by slack (high level of slack resources) is itself moderated by the design of the value proposition. For banks with a strong specialization and focus within the value proposition, the moderated relationship of slack and risk-taking behavior on performance remains significantly negative. In contrast, the relationship direction changes for commercial banks and commercial & investment banks, also called universal banks, due to their broad range of value proposition. Thus, the presentation of

the results provides sufficient support for Hypothesis 12b that a diversified value proposition design positively moderates the interaction effect of slack on the relationship between risk-taking behavior and performance. Therefore, the direction of the interaction effect between slack and risk-taking behavior varies depending on the design of a bank's value proposition.

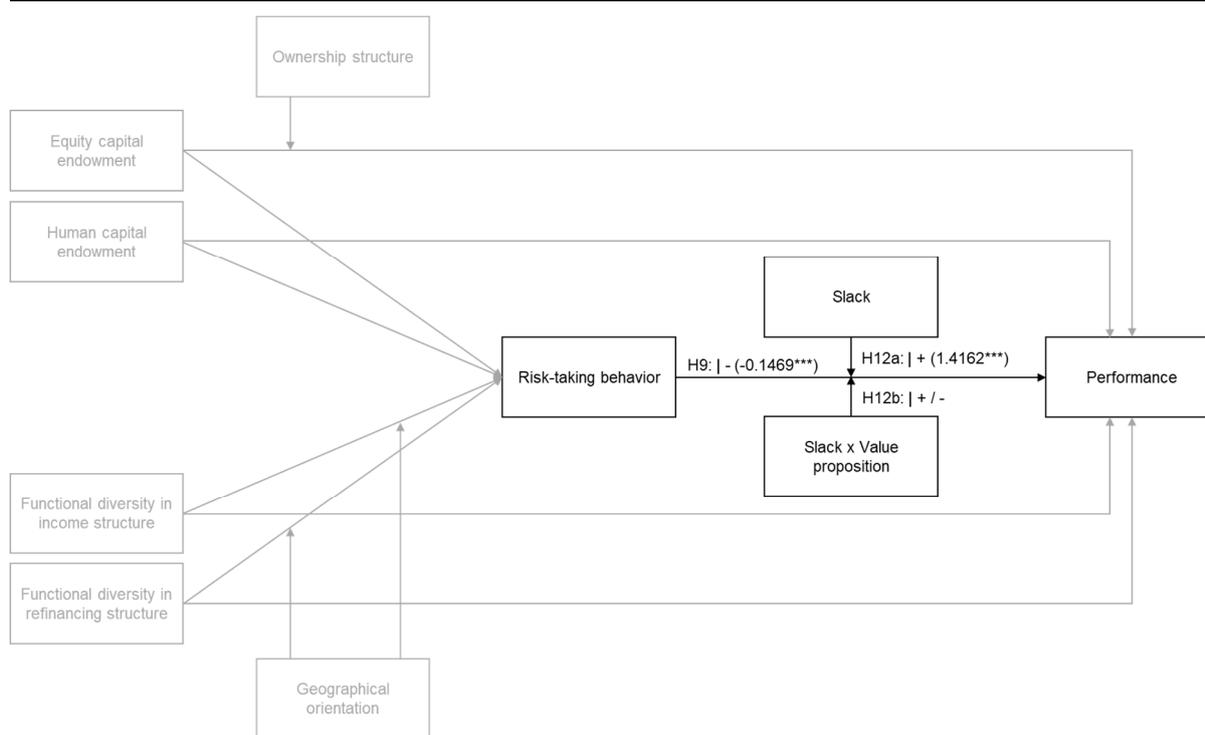
Interim Discussion

Study 3 contributes to the general discussion on the relationship between risk-taking behavior and performance. In this context, Figure 4.13 illustrates the study's significant hypotheses. Depending on how risk is defined and measured, previous studies have reached mixed results, as presented before. However, our study confirms the results of the behavioral risk perspective, and the analysis highlights a significant direct and robust negative relationship between risk-taking behavior and performance, confirming Hypothesis 9.

Good management and conscious risk-taking behavior as part of a behavioral approach are two possible explanations for the negative correlation between risk and performance, which seems very surprising from a financial perspective, as the paradigm of high risk/high return prevails. As stated in the risk-return paradox described by Bowman (1980), this negative correlation is related to the behavior of a company's managers. Bowman (1980, p. 18) offered two explanations for this. First, he saw a negative correlation based on good management, resulting in lower risk (variance) and higher returns. Second, he pointed to the possibility of a specific risk appetite of managers, which manifests itself in taking higher risks with low returns. Although the conscious and intentional taking of higher risks seems unlikely, as Bowman (1980) himself acknowledged, from a behavioral science perspective, this view indicates a different perception of the situation based on personal experiences and values that are decisive in the decision-making situation, as Kahneman and Tversky (1979) and (1992) pointed out with (cumulative) prospect theory.

Our results generally reveal that considering the impact of different business models on performance without considering the associated risk seems insufficient. Business model research is still a relatively young discipline and offers primarily qualitatively designed tools for analyzing and refining business models. However, our findings suggest that these perspectives need to be supplemented by the risk factor from a behavioral science perspective to gain significance over the corresponding performance.

Figure 4.13: Significant Hypotheses of Study 3



+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Note: Coefficients and significance in parentheses. Differentiation of relationship type through the following symbols “|” for a linear relationship and “∩” for a curvilinear relationship.

Source: Own illustration.

In addition, the results from Study 3 support efforts to explore the influencing factors of the relationship between risk and return. We found that slack has a moderating effect on the relationship between risk-taking behavior and performance. Slack, conceptualized as potential slack, takes future resources into account. With a view to our use case of banks, potential slack represents banks' additional lending capacity, or what they could potentially lend to their customers. Accordingly, a low equity ratio to liabilities represents a low level of slack, while a high equity ratio to liabilities characterizes a high level of slack.

We looked at the influence of a high level of slack as perceived excess on the risk-performance relationship as an additional capacity. In this context, we showed that slack as a driver amplifies the negative relationship (H12a). We see a possible explanation that a high level of TMT's risk-taking behavior, already present, combined with the perception of additional free resources, further increases risk-taking behavior. Following this explanatory approach, a high level of slack is understood as an incentive to take additional risks.

Furthermore, we were interested in whether company factors that are largely stable over time influence the interaction effect of risk-taking behavior and slack on performance. In this

respect, the scope of the offered value propositions and distinguished different value propositions of a bank were differentiated. As a result, the simple interaction effect of the value proposition with slack shows significant effects in the individual categories. Moreover, we also found a significant moderation for the three-way interaction term in the categories of commercial & investment banks, investment banks, and niche banks concerning the reference category of commercial banks. By illustrating this in the context of the three-way interaction plot in Figure 4.12, it was shown that a diversified value proposition positively moderates the interaction effect of slack on the relationship between risk-taking behavior and performance. The results thus support our Hypothesis 12b and indicate that the direction of the interaction effect between slack and risk-taking behavior varies depending on the design of a bank's value proposition.

In detail, the corresponding three-way interaction plot shows that the interaction effect for banks with a specialized value proposition, such as investment banks or niche banks with a product or customer specialization, is negative in the presence of a relatively high level of slack resources. Under the condition that there is a perceptible excess of slack resources, a negative relationship between risk and performance persists. In contrast, for commercial banks and commercial & investment banks, the interaction effect is significant and positive. In other words, for the bank types with a business orientation characterized as universal, performance increases with increasing risk under the condition that a high level of potential slack is perceivable. Consequently, the paradigm of high risk/high return, well known from financial economics, gains support in these cases.

We did not find a significant triple interaction effect for the category of specialist banks by statutory mandate. However, unlike the other categories, a significant and positive effect in the simple interaction of risk-taking behavior and value proposition in the different models for this bank type was consistently identified. Since the business activities of these banks are strongly determined by the legal framework based on which they operate, it is also reasonable to conclude that perceived high slack resources do not influence the relationship between risk-taking behavior and performance. Therefore, it is more likely that the legal mandate underpinning the business activity influences the extent of risk-taking behavior and, in this case, is essentially not an expression of the cognition of the members of the TMT since the range of free decision-making is extremely limited.

In general, we see one possible explanation for the divergent direction of the moderating effect of slack on the relationship between risk-taking behavior and performance

as a function of a specific or more universally aligned value proposition in the scope for additional activities available for banks based on their value proposition alignment. Universal banks can draw on a much higher options' range for additional activities and choose between activities with high risk and simultaneously high or lower expected returns, which proves to be a competitive advantage in this context. In contrast, specialized banks have a more limited radius for additional activities due to their strong focus on a niche market. Hence, a usually high-risk-taking behavior is reinforced against the backdrop of additional slack resources – even if these activities are associated with lower expected returns. The additional capacity may be perceived as a kind of buffer, which is why less return-promising activities may well be entered into in the absence of diverse options. At this point, further research needs to start delving into even deeper details about the impact of different value propositions on the risk-performance relationship moderated by slack.

CHAPTER 5

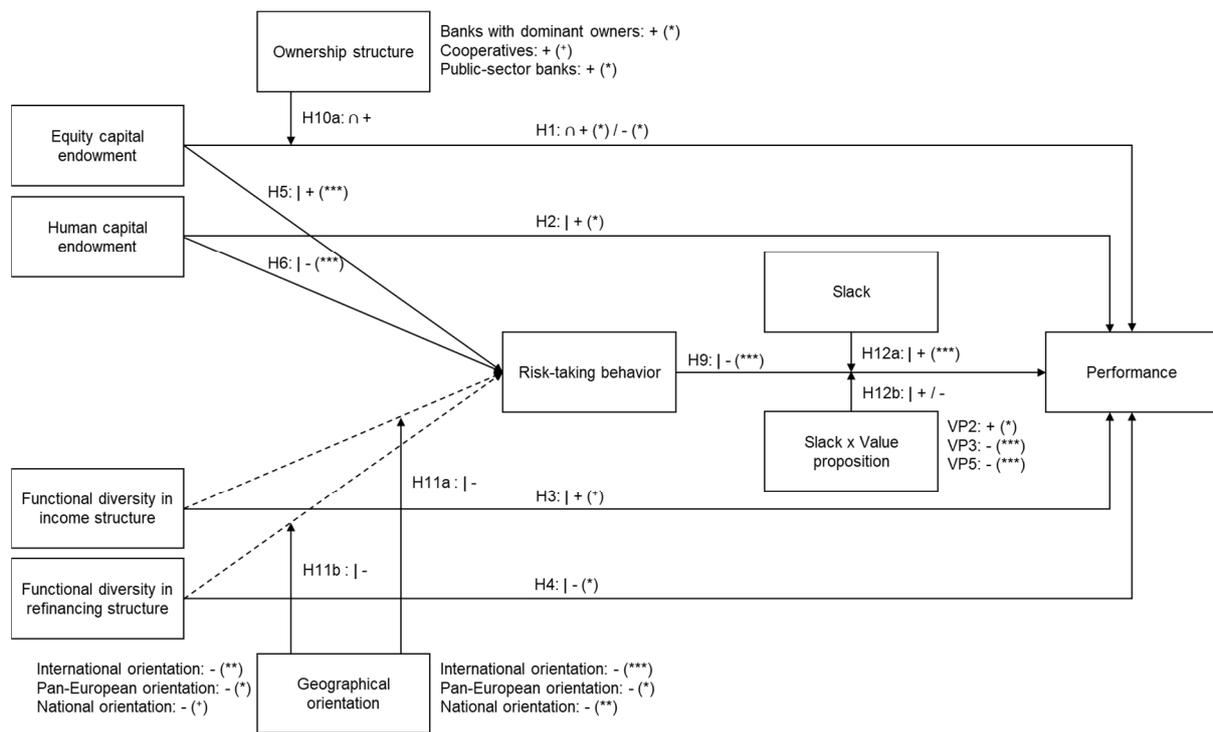
GENERAL DISCUSSION

This dissertation aims to add insights into business model positioning decisions on the risk-taking inherent in the business model and the impact on overall performance and to answer the hypotheses of the conceptual framework. As Teece (2010) clarified, the core of a business model is “in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit” (p. 172). Accordingly, the decision-making of the top management team as the central decision-making body of a company is the focus of our analyses. The negotiated decisions rest on the individual’s perception of the decision-making situation of the decision-makers based on their internal subjective framing through factors such as experience, norms, habits, and knowledge that determine the orientation toward value creation and steer the company.

Our efforts focus on a better understanding of the various business model elements and their direct impact on generating a competitive advantage translating into superior performance. For this purpose, we assembled the concepts of business model, risk-taking behavior, and performance into one conceptual model for the first time. The aim was to examine the overall picture consisting of the individual relationships integrated into our comprehensive RBPB model, of which only individual relationships have previously been examined separately.

In detail, our model differentiates business models along the dimensions of infrastructure traits and diversity degree characteristics as essential components to describe business models. It also addresses the hidden factor of risk-taking behavior inherent in the business model design as a significant mediator for the relationship between business model and performance. Even if the alignment of the business model leads to an improvement in performance, the improvement has its limits if it does not consider the risk as an explanatory

Figure 5.1: Significant Hypotheses of the RBPB Model



+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

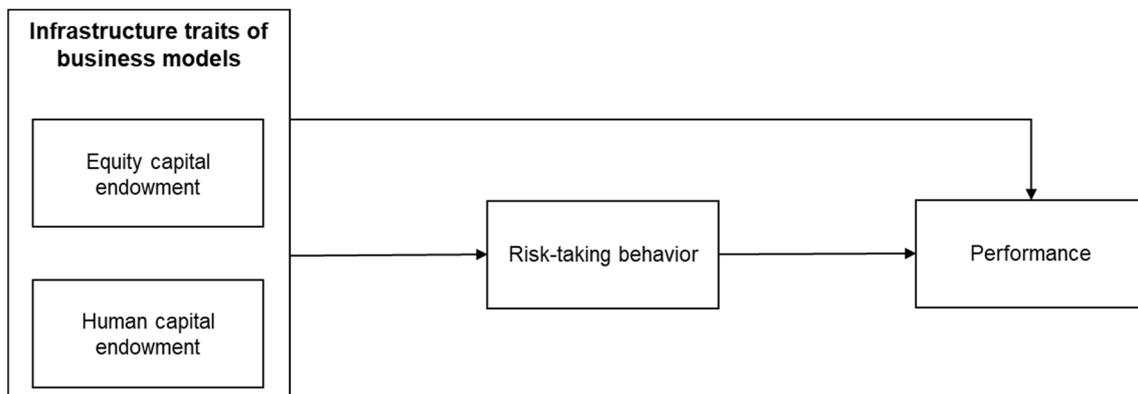
Note: Significance in parentheses. Differentiation of relationship type through the following symbols “|” for a linear relationship and “ \cap ” for a curvilinear relationship.

Source: Own illustration.

link inherent in the business alignment along with its effect on performance, which can subsequently lead to undesirable results.

The global importance of the business model concept for the competitive success of companies and management theory (Wirtz et al., 2016) has not yet been reflected in comprehensive empirical studies. Instead, it primarily rests upon qualitative analysis supplemented by isolated quantitative studies. For this reason, the results of our empirical studies based on the comprehensive research perspective provide a valuable theoretical contribution in the still relatively young research area of business model research. Furthermore, they are also crucial for strategic decision-making from a business management perspective. Institutions can use this as a basis for developing a solid understanding of how to best assemble and develop firm-specific resources as an expression of “business resourcefulness and creativity” (Teece, 2010, p. 186), thereby increasing the chance of long-term competitive advantage and superior performance. Figure 5.1 provides a summarizing overview of the significant hypotheses of our three studies that examined separate parts of the RBPB model as our conceptual framework for this research.

Figure 5.2: Critical Relationships Within the RBPB Model



Note: The figure illustrates the critical relationships between the components of infrastructure traits' element of business models, risk-taking behavior, and performance within the RBPB model.

Source: Own illustration.

The risk-taking-behavior-performance business model (RBPB model) presented here is intended to provide a deeper and more reliable understanding of the relationships between the design of critical elements of business models, their impact on risk and performance, and the influence of moderating factors. Specifically, in addition to the significant business model elements, the moderating role of ownership structure, geographical orientation, and value proposition as largely stable company characteristics over time will be evaluated. These factors are not subject to constant change and, as contextual factors, shape the decision-making situation. We also analyze the moderating influence of potential slack as perceived additional excess capacity on the risk-return relationship.

Based on the results to answer our research questions, we can emphasize the relationships between the components of infrastructure traits' element of business models, risk-taking behavior, and performance as the most critical parts of our RBPB model, as seen in Figure 5.2. TMT's risk perception expressed in the infrastructure traits design as a critical component of business models influences firm performance in two ways at once. On the one hand, the infrastructure traits of business models directly influence performance and, on the other, indirectly through the mediating factor of the TMT's actual risk-taking behavior, expressed through organizational risk-taking. In the following paragraphs, we evaluate the most important relationships of the whole model individually and present the corresponding findings.

5.1 Summary of Results

The purpose of conducting the three individual studies in this thesis was to test different aspects of the conceptual framework. Therefore, the division of the studies rests on the different central relationships. The varying focus of relationships is also the reason for dependent variables' switch within the studies. Studies 1 and 3 focused on the effects on organizational performance, while Study 2 focused on the TMT's risk-taking behavior, visible in firm risk. The four independent variables of the first two studies were equity capital endowment and human capital endowment as infrastructural traits and functional diversity in income and refinancing structure as diversity degree characteristics of business models. The moderating variables were ownership structure, geographical orientation, slack, and value proposition. The following paragraphs will answer the research questions raised in Chapter 1 by summarizing the results of the three studies.

RQ 1: How do infrastructure traits and diversity degree characteristics of a business model relate to performance?

Study 1 shows that equity and human capital endowment as infrastructure traits dimension of business models both have a significant relationship with performance. For equity capital endowment, we highlight an inverted U-shaped relationship with performance (H1) and simultaneously point to a positive and linear relationship of human capital endowment and performance (H2). These results suggest an optimal endowment of equity capital for institutions, which turns out to be essential as an infrastructure for providing a value proposition to the customer in the context of the business model. This fact underlines that neither a markedly low nor a high level of equity capital leads to the highest performance. The linear and positive correlation for human capital endowment also underscores that staff reductions to increase performance via cost increases are misguided when they are not analyzed considering the impact of providing the value proposition to customers. On the contrary, based on our results, such measures to increase performance in the short term appear counterproductive. Service-oriented industries, such as the banking sector, are based on customer contact for providing a value proposition, and superior performance in customer interaction simultaneously contributes to superior overall business performance.

Moreover, Study 1 finds a significant linear and positive relationship with performance for functional diversity in income structure and refinancing structure as diversity degree characteristics of a business model (H3 and H4). Accordingly, diversification of both income

and refinancing sources is associated with increased performance. Therefore, an increased diversity degree of business models can be perceived as beneficial for performance.

RQ 2: How does ownership structure influence the infrastructure traits and performance relationship?

Study 1 also confirms the moderating influence of ownership structure on the relationship between equity capital endowment and performance in a way that stretches the inverted U-shape and almost linearizes the relationship when concentrated ownership structures with dominant owners and clear ownership identity are present (H10a). The results reveal that the inverted U-shaped relationship between equity capital endowment and performance holds for banks with a decentralized control structure in the form of a plurality of owners without a clear ownership identity. In contrast, the relationship appears to linearize for institutions with a centralized ownership structure or formed by members for a common purpose (cooperatives). These findings allow us to conclude that for institutions with centralized forms of ownership, a high equity capital endowment also leads to higher performance. On the other hand, an equity capital endowment exceeding the optimal point for institutions with a decentralized ownership structure and low ownership identity is associated with lower performance. Notwithstanding, the moderating effect on the relationship of human capital endowment and performance (H10b) was not significant.

RQ 3: How do infrastructure traits and diversity degree characteristics of a business model relate to risk-taking behavior?

The results of Study 2 underline that equity and human capital endowment as infrastructure traits have a direct linear relationship with risk-taking behavior, both of which are significant. Accordingly, a high equity capital endowment is associated with increased risk-taking behavior (H5). This finding suggests that especially banks with a high equity capital endowment enable a high degree of risk-taking behavior. On the other hand, there is a negative relationship between human capital endowment and risk-taking behavior (H6). Based on these findings, we can conclude that especially banks with a low human capital endowment show an increased risk-taking behavior, while banks with an increased human capital endowment show less risk-taking behavior. In contrast, the coefficients for functional diversity in income and refinancing structure as diversity degree characteristics exhibit no significant relationships (H7 and H8).

RQ 4: How does the geographical orientation influence the diversity degree characteristics and performance relationship?

Study 2 also underscores that geographical orientation moderates the relationship between functional diversity in income and refinancing structure of a bank and risk-taking behavior at high levels of geographical diversification (H11a and H11b). While the main effects of functional diversity do not show significance, the interaction terms show significant results that the relationships between the characteristics of functional diversity and performance vary as a function of geographical orientation. Correspondingly, high functional diversity in income and refinancing structure coupled with a geographic concentration on specific target markets favors increased risk-taking behavior. This relationship contrasts with the negative correlation for geographically diversified banks. This analysis adds insights to the discussion on the advantages and disadvantages of diversification and focuses on the framework conditions that influence the relationship between functional diversity and performance.

RQ 5: How does risk-taking behavior relate to performance?

Study 3 highlights the importance of the extent of risk-taking behavior of TMT, visible in the entrepreneurial decisions for risk-taking, business model design, and performance analysis. The TMT's risk perception in uncertain and complex decision-making situations, reflected in business model design, influences risk-taking behavior, which, in turn, influences performance. Our study shows strong evidence for a negative relationship between risk-taking behavior and performance (H9). This insight means that a high level of risk-taking behavior negatively impacts performance. These findings underline the need to consider risk-taking behavior as a mediating variable in the relationship between business model and performance in business model analysis.

RQ 6: How do slack and value proposition as contextual factors of decision situations influence the risk-performance relationship?

Study 3 exhibits that the perception of high levels of potential slack as excess capacity strengthens the negative relationship between risk-taking behavior and performance (H12a). Thus, the effect of slack is more beneficial for institutions with a low level of risk-taking behavior. If, on the other hand, risk-taking behavior is already pronounced, performance declines.

Furthermore, Study 3 indicates that a diversified value proposition design positively moderates the interaction effect of slack on the relationship between risk-taking behavior and

performance (H12b). Thus, the moderation of potential slack on the relationship between risk-taking behavior and performance is itself moderated by the type of value proposition and thus depends on the value proposition. For universal banks (commercial banks and commercial & investment banks), the interaction effect of high levels of potential slack and risk-taking behavior is positive. Moreover, a high level of risk-taking behavior is also associated with increased performance. On the other hand, the interaction term for specialized banks (investment banks and niche banks) correlates negatively. These findings add insights into the slack research and emphasize the relevance of considering contextual factors of decision situations when analyzing the effects of risk-taking behavior on performance.

5.2 Theoretical Contribution

This dissertation contributes to theory in a threefold manner. The theoretical contributions of this thesis result from the analysis of the relationships of business model-performance and business model-risk-taking behavior, as well as the relationship between risk-taking behavior and performance. Our conceptual model focus adds new insights to the literature dealing with the previously mentioned relationships and does seminal work for business model research through the proposed RBPB model. In particular, the RBPB model contributes to a more general and comprehensive understanding of the interplay between positioning decisions for business model alignment, risk-taking behavior as a hidden factor, and performance.

The motivation of the dissertation rests on the recently increased attention for the business model concept in theory and practice as an emerging research area with highly fragmented approaches and perspectives. The rise of the business model concept is mainly due to the new economy and the widespread use of conceptual tools for business model analysis like the BMC as one of the best-known guidelines in practice. In this respect, the highly fragmented differentiation of the business model concept along different perspectives is striking. In our research, we attempt to unite the static and dynamic perspectives in business model research and provide fundamental insights for the differentiation of the construct with our comprehensive analysis based on a quantitative approach in panel design.

Firms are constantly challenged to adapt and provide appropriate resources for sustainable competitive advantage and superior performance to secure their existence in the market in these fast-changing times characterized by complexity and uncertainty. As shown before, the banking sector is affected by these challenges and changes in two ways at once:

first, directly as banks operate independently as ordinary firms in the market and second, indirectly in their macroeconomic role as financial intermediaries with the central task of financing the economy through necessary considering the changing requirement profiles of their customers due to environmental challenges and changes. For this reason, the banking sector represents a remarkable object of analysis to study the impact of different elements of business models as an operationalization of strategic positioning in terms of generating competitive advantage and performance.

However, despite its immense importance and dependencies with the real economy, the banking industry is given little importance in the strategy and management literature, although facing enormous challenges due to being affected by the dynamically changing environment in two ways at once. Thus, by taking a closer look at the banking sector as the use case of our research efforts, it is possible to contribute significantly to a more comprehensive understanding by transforming current insights of strategy and management theories from other industries through conceptualization and hypothesis testing. Furthermore, profound insights into current issues can be contributed both on a general, industry-independent level and a specific level of the banking sector.

Efforts in business model research have so far focused primarily on young, often newly founded companies with high growth potential and therefore ignore a closer look at the banking sector. This fact is surprising, given that it is regularly asked whether banks are not already dead (e.g., Boyd & Gertler, 1995), and the developments in the business environment of banks present them with considerable difficulties. Digitization, new technologies, data management, continuously changing and expanding regulatory requirements increase competitive pressures and raise the question of generating a sustainable competitive advantage and superior performance. In this environment, to the best of our knowledge, this dissertation is the first to use the BMC structure as a guideline and operationalize various BMC elements and their interaction and test them using a sample of banks of the eurozone and Switzerland as the use case for our research. Consequently, we apply our proposed RBPB model to the banking sector and propose a necessary extension of the business model view to include the hidden risk factor as an explanatory link in the relationship between business model and performance.

Answering our research questions has introduced a range of new knowledge into business model research. It thus meets the demand for future research on the interfaces of business models and combines the business model concept with established concepts in strategy and management research (e.g., Wirtz et al., 2016). We thus contribute to a more in-

depth analysis of the frequently used but little analyzed interdisciplinary concept of the business model (Teece, 2010). Thus, equity and human capital endowment as infrastructure traits and functional diversity of income and refinancing structure as diversity degree characteristics represent critical features of business models' positioning that enable a quantitative analysis of interrelationships and effects. The central messages of the studies are that the infrastructure traits of business models influence performance and risk-taking behavior as organizational outcomes, while risk-taking behavior itself influences performance. For the diversity degree characteristics of business models, we found only a direct relationship with performance. In addition, the studies introduce several new moderating effects that influence the relationships with organizational outcomes. Thus, they direct the analysis to the boundary conditions of performance and risk-taking behavior that may influence the perception of the decision situation.

Even though this dissertation is initially a first step in the deeper quantitative analysis of the business model concept, it fits into contemporary strategic management approaches. The significant results complement the literature of resource-based theory, prospect theory, and upper echelons theory as an overarching approach to decision-making in TMTs and other behavioral science approaches. The thesis conceptualizes the design of business models as positioning decisions of the TMT as an upper decision-making body. We understand the competitive positioning decisions as an expression of the perceptions of the members of the TMT based on their subjective framing influenced by their values, norms, expectations, experiences, attitudes, and knowledge. Hence, managers are a critical resource because they bring to the steady decision-making process the determinants for generating a sustainable competitive advantage based on their hard-to-imitate experiences, norms, values, and knowledge. Also, their dynamic capabilities matter in (re)shaping the company to the rapidly changing environmental conditions. In addition, we integrate risk-taking behavior as a behavioral component that determines the decision situation and its outcome and is influenced by the perceptions of the TMT members. This context proves helpful that the analysis distinguishes between dynamic components of business modeling, which are within the TMT's direct sphere of influence, and framework conditions of business models, which can instead be described as static and essentially constant over time.

Business Model and Performance

The upper echelons theory considers the organization as a reflection of the top management team (Hambrick & Mason, 1984), so personal experiences, values, and norms shape the perception of the strategic decision situation (Hambrick, 2007). In this context, the uncertainty characteristic of the decision situation leads decision-makers to use simplifying heuristics to make decisions even based on limited information (Tversky & Kahneman, 1974). Therefore, the dynamic managerial capabilities consisting of “managerial human capital, managerial social capital, and managerial cognition” (Adner & Helfat, 2003, p. 1020) influence the heterogeneity of firms through decisions.

Previous business model literature has linked the decision for business model orientation and the resulting consequences for business operations and firm performance (Casadesus-Masanell & Ricart, 2010; Zott & Amit, 2010). However, as an expression of the TMT’s decision situation, the different positioning and its consequences for performance have not been explored in-depth and understood in the context of divergent perceptions of the business situation. By focusing on the relationship between business model orientation as a TMT’s positioning decision and performance, our results are pioneering in elevating the relationship from the qualitative to the quantitative level of analysis. As such, they complement other results that have examined individual components of the elements of our business model dimensions.

Overall, our study demonstrates that equity and human capital endowment as infrastructure traits and functional diversity in income structure as diversity degree characteristics of business models are crucial and direct preconditions for business performance. We highlight equity capital endowment as a crucial physical factor to operate a banking business. We show a significant inverted U-shaped relationship to performance, suggesting an optimal equity capital endowment level and contradicting previous results on a linear relationship. This relationship is moderated by the design of the ownership structure, which has not received sufficient attention in previous literature. It appears that stable firm characteristics over time have a moderating influence on certain TMT strategic decisions, which may help clarify the mixed results of earlier research.

In addition, we highlight human capital endowment as a central performance influencing criterion, especially in a service-oriented industry. While other literature regards human capital endowment as employee density degree as a significant factor for cost savings

and searches for an optimal cost/income ratio, our results show a positive correlation between human capital endowment and performance. We highlight the importance of employees as the interface between the company and its customers and point to the need to know the customer's needs and wishes to create added value for the customers. Something that has often been ignored in previous argumentations.

Furthermore, this dissertation fills a gap within the discussion on the advantages and disadvantages of diversification. This context emphasizes the differentiation of various diversification types to analyze the effects on performance in a structured way. Our results clearly show that diversification at any cost is not associated with improved performance, but that the diversification type determines the impact on performance. Consequently, we can emphasize the benefits of raising the diversity degree of income sources while expanding the diversity degree of refinancing sources negatively impacts performance.

Business Model and Risk-Taking Behavior

The central role of the top management team in shaping and molding the organizations' way to create value and the consequences of these decisions for performance (Teece, 2007) is undisputed. In the decision-making situation, prospect theory emphasizes that uncertain situations are judged differently depending on individual perceptions (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). Depending on the individual processing and simplification of the decision situation, the different perceptions of various alternatives can lead to different outcomes despite an identical initial situation (Hillson & Murray-Webster, 2005). This circumstance has been analyzed across disciplines, especially in experimental studies – like Schoemaker and Kunreuther (1979) or Elliot and Archibald (1989) – which confirmed the findings of prospect theory. However, there has not yet been a study that has understood positioning within the business model as an expression of TMT members' perceptions and examined its effects on risk-taking behavior.

This dissertation addresses this shortcoming by taking a new approach thinking about the business model and the decisions made to align it as a proxy for the TMT's perception of the situation of how best to achieve competitive advantage. This perception, in turn, influences the willingness to make decisions that involve the possibility of an adverse consequence. This study builds on the research findings of resource-based theory and prospect theory. It provides foundational work on how equity and human capital endowment as components of infrastructure traits' element of business models influence risk-taking behavior in the context

of risk-related decisions under uncertainty. In particular, it contributes to the question raised by Nickel and Rodriguez (2002) as to whether specific business characteristics lead to differences in risk-taking, which in turn may contribute to differences in performance.

In particular, the results highlight the significant influence of the infrastructure traits of a business model on risk-taking behavior. The positive correlation between equity capital endowment and risk-taking behavior confirms positions in research that increased equity capital is perceived as a buffer, which becomes visible based on a greater degree of risk-taking behavior. Thus, we can contribute to further clarification of mixed results. We also point to a negative relationship between human capital endowment and risk-taking behavior. Hence, companies with higher customer centricity (lower assets per employee) show lower risk-taking behavior. This study draws particular attention to the effects of functional diversity on risk-taking behavior, which vary as a function of a bank's geographical orientation. These findings again emphasize the relevance of taking into account contextual factors that characterize the decision-making situation but – being largely time-invariant – are not subject to constant change.

Risk-Taking Behavior and Performance

The relationship of risk to performance is a much-studied construct in the literature. In the early debate, this relationship was mainly examined against the background of a deviation from the expected value (Markowitz, 1952). Against this background, the financial economics literature argues that increased risk in the form of an uncertain outcome also leads to better performance. However, Bowman (1980) demonstrated with his risk-return paradox that increased risk is not necessarily associated with better performance and emphasized the behavioral component of risk-taking behavior.

Despite the recognition that decisions under uncertainty always involve the assumption of risk (Mishra, 2014), the construct of risk-taking behavior has so far taken a subordinate role in business model research. Usually, the direct effects of business model designs on performance are considered without analyzing the risk inherent in decisions as a mediator in the relationship with performance. We take up this shortcut of the relationship considered in many other research contexts and analyze the impact of risk-taking behavior on performance. Our research thus ties in with the recommendation of Hoskisson et al. (2017) for further research on the relationship between managerial risk-taking and its consequences on organizational outcomes.

Considering the relationship between risk and performance in the context of business model research is consistent with our understanding of a TMT deciding based on limited information and uncertainty and is guided in the decision-making situation by individual perceptions shaped by personal experience, values, knowledge, and beliefs. To this end, the results of our study support the behavioral science view of the relationship between risk-taking behavior and performance and highlight a negative relationship between risk-taking behavior and performance. Thus, the study fills the gap in understanding the relationship between risk and performance over time through a longitudinal view of the relationship, which Nickel and Rodriguez (2002) pointed out was necessary. In this way, our study also underpins the literature on risk-taking behavior and performance overall.

Our research responds to the call of previous research whose findings emphasized that the framework for the relationship between risk-taking and performance should be examined, as suggested, for example, by Nickel and Rodriguez (2002), Bromiley et al. (2005), or Hoskisson et al. (2017). We use slack and value proposition to analyze firm attributes that may characterize the decision-making situation and thus influence the relationship between risk-taking behavior and performance. With this background, the study provides insights into how firm characteristics of high slack resources and the value proposition moderate the relationship between risk-taking behavior and performance. Thus, we make a valuable contribution to a better understanding of the boundary condition that helps explain the mixed results on the relationship between risk and performance from the past.

The study provides new approaches to pay attention to the moderating role of slack in the decision-making situation. Some research has focused on the impact of slack resources in the organization. Nevertheless, to date the moderating role of potential slack on the relationship between risk-taking behavior and performance has not been studied. The results underline that slack significantly impacts the relationship between risk-taking behavior and performance. Notably, we examined the impact of high levels of potential slack, perceived as excess capacity. Specifically, our results show that the negative relationship between risk-taking behavior and performance is amplified to a high degree by perceived additional free resources.

Likewise, we considered the moderating influence of the value proposition as an assumption about what the company stands for (Drucker, 1994) as a company characteristic that is largely stable over time. By integrating slack and the value proposition as contextual factors of decision situations in our analysis, we contributed to the literature in two ways at once and extend the literature on the effects of slack resources by finding that high levels of

potential slack have a reinforcing effect on the negative relationship between risk-taking behavior and performance. Furthermore, we show that the direction of the association between risk-taking behavior and performance, moderated by slack resources, is a function of the value proposition.

We conclude that the mixed results in the research on risk and performance inevitably depend on external contextual factors characterizing the decision situation. Considering behavioral science approaches for assessing the perception of decision situations and the resulting risk-taking behavior, the results of this dissertation highlight that the moderating effect of risk-taking behavior and performance depends on the degree of specialization or diversification in the provision of services. Thus, banks with a diversified value proposition (universal orientation) against a background of high levels of potential slack benefit from a high degree of risk-taking behavior in the form of improved performance, while the opposite effect exists for specialized banks.

In summary, our RBPB model contributes to a more holistic understanding of the research on the different elements of business models and their impact on organizational outcomes. Notably, we highlight the need to consider the risk inherent in business model alignment decisions, which indirectly influence organizational performance. Looking at business models without considering the hidden factor of risk-taking behavior proved insufficient, as we can demonstrate with our model. In addition to clarifying complex relationships, this dissertation simultaneously provides starting points for future research and contributes to practical applications in the management world.

5.3 Managerial Contributions

Members of the top management team (TMT) in banks, as the central decision authority body, face challenges posed by a dynamically changing environment, often characterized by ambiguity and a high degree of complexity and uncertainty. In this environment, ensuring economic performance in the present and the future is their definitive duty. Meeting this requirement necessitates decisions about how the business will operate and satisfy customer needs, associated with a high degree of uncertainty. In this initial situation, business model alignment and its empirical testing and classification for generating competitive advantage and enabling superior performance as best practice approaches are in managers' interest.

Superior performance based on a sustainable competitive advantage is a matter of concern of various stakeholders such as top managers, shareholders, supervisory boards, or employees. To secure their future viability while maintaining current profitability, companies must have a clear idea of what they stand for, what their tasks are, operate sustainably, and especially value people and their ideas. Thus, while the strategy contains statements of a fundamental nature, the business model concept serves the concrete entrepreneurial implementation. Therefore, the business model concept is of great importance, above all since the risk concept has not yet been considered in conceptual tools for business model analysis often used in practice. Against this background, the managerial contributions of this dissertation must be considered in three ways.

First, equity and human capital endowment as infrastructure traits of a business model significantly impact performance. Equity capital endowment has an inverted U-shaped relationship with performance, with the relationship moderated by ownership structure. Thus, this finding contributes to a better understanding that equity capital endowment is more than just a regulatory requirement of institutions to be met. While high equity capital endowment emerges as performance-reducing for institutions with a diversified ownership structure, the results incentivize higher equity capital endowment for institutions with a centralized ownership structure and high ownership identity. For human capital endowment, we find a positive relationship with performance. This result concludes that increased human capital endowment as employee density proves to be a game-changer for performance in a service-oriented industry. Accordingly, we can derive recommendations for institutions that put on the low human capital endowment to run their business.

Second, the functional diversity of institutions' business models, generalized, is not the holy grail for superior performance. This finding contributes to a better understanding of the advantages and disadvantages of functional diversity, where the diversification type is critical in assessing the impact on performance. A high diversity of income sources proves positive for institutions with increased performance, whereas the diversity of refinancing sources shows a negative effect. Therefore, a high diversification of institutions' structures does not seem advisable in every case. Instead, managers are urged to consider the type and its consequences for performance when deciding to diversify.

Finally, risk-taking behavior is closely related to performance in the banking sector. Managers must consider the risk factor inherent in their decisions when making business decisions to implement strategy through a business model. So, the mediating relationship

between risk-taking behavior and performance should be considered in management decision-making situations to improve performance. As an expression of the situation definition, the decisions on the entrepreneurial implementation of the strategy in the form of a business model impact risk-taking behavior, which in turn influences performance. The study contributes to the understanding that a high equity capital endowment is perceived as a buffer for increased risk-taking behavior. Similarly, a high human capital endowment acts as a mitigating factor concerning risk-taking behavior. In addition, contextual factors such as geographical orientation are crucial for establishing the relationship and influencing risk-taking behavior through the manifestations of functional diversity in income and refinancing structure.

5.4 Limitations and Future Research

The RBPB model that this dissertation proposes has certain limitations, but at the same time, it offers space for future research. Four areas are particularly noteworthy in this regard. First, the RBPB model derives from the scientific literature that equity and human capital endowment as infrastructure traits and functional diversity of income and refinancing structure as diversity degree characteristics as mutable measures can describe the orientation of banks' business models. This assumption rests on substudies on each of these measures and examines the impact on performance and risk-taking behavior. However, because statistical analysis of the alignment of various elements of business models to organizational outcomes is in its infancy, no previous research has used the measures in aggregate to describe business models. For this reason, future research should examine whether these characteristics are also valuable for describing business model alignment in recent studies and other research contexts. The conceptual derivation of the RBPB represents the first draft for a more in-depth quantitative analysis of different business model concepts. Therefore, it provides a good starting point for the development of hypotheses about different indicators that can be used as characteristics of business model alignment.

Second, the RBPB model tests the relationship to only one accounting-based performance measure. However, the multi-layered nature and complexity of companies is also reflected in performance measurement, so that different indicators appear to be adequate. Thus, in addition to examining the relationships to other accounting-based financial performance measures, such as return on equity, market- or growth-based performance measures are also suitable for future research. At the same time, an alternative view of risk-taking behavior is

also possible, which can be illustrated by many organizational decisions. Thus, a market-based view is another possibility to explore the relationships mentioned above. As a result, an extension and possible specification of the measurement approaches appears to be a starting point for future research.

Third, in our three empirical studies with ownership structure, geographical orientation, slack, and value proposition, we examined firm characteristics that influence individual relationships of our RBPB model. The firm characteristics indicate the importance of contextual factors of the decision situation. Future research can start from this point and test other moderating factors of the different effects of business model positioning. Moreover, further analyses of moderating factors of the relationship between risk-taking behavior and performance also offer to explore additional boundary conditions of the relationship from a behavioral perspective. In this context, the moderating effect of a high degree of potential slack resources represents a possible starting point to be detailed, whose relationship may depend not only on the value proposition but also on other company characteristics that are largely stable over time.

Finally, future research can use the findings and hypotheses of the RBPB model, which focuses on the banking sector as our use case of research and apply them to other industries, extending them if necessary. Even though banks are ordinary businesses, at the same time, they also have some peculiarities in their role as financial intermediaries. For this reason, the next step is to test the generalizability of the results. On the one hand, this check must include a different sample composition of banks from other geographical areas. Therefore, an analysis of the model's hypotheses for a sample of banks outside the eurozone and Switzerland is also conceivable. Furthermore, on the other, the RBPB model must also be applied to other industries outside the banking sector to check the generalizability. In this context, we particularly need to check whether our highlighted components and elements of business models are also suitable for characterizing business models in other industries.

In general, each industry has its peculiarities, yet the RBPB model for banks can motivate them to use the quantitative approach of business model research for other industries. Moreover, because even if banks have unique characteristics in some areas due to their role as financial intermediaries and are subject to special regulation, they are still companies with classically performance-oriented goals exposed to similar challenges and problems, as illustrated, that can endanger their existence and current and long-term profitability. Thus, the RBPB model provides a good starting point for further research efforts.

CHAPTER 6

CONCLUSION

This dissertation aims to better understand the business model concept regarding its determinants and relationships to performance and risk-taking behavior. As a translation of strategy into practice, the components of business models influence performance (Richardson, 2008). The alignment of individual business model components expresses TMT members' perceptions of situations shaped by personal values, experiences, expectations, beliefs, attitudes, and knowledge used to explain the coexistence and heterogeneity of different business model concepts. This research conceptualization responds to the call for progress in the area of more complex, multivariate empirical studies of business models, of which none or only a few exist (Wirtz et al., 2016), as much of the research to date has focused on the theoretical derivation of individual components of business models.

In this dissertation, we developed the risk-taking-behavior-performance business model (RBPB model). It links the hypotheses about the impact of individual business model components in the dimensions of infrastructure traits and diversity degree characteristics on performance and risk-taking behavior and the relationship between risk-taking behavior and performance to an overall model. Based on this model, it is possible to gain a better understanding of how different business model characteristics affect performance. Furthermore, considering the additional factor of risk-taking behavior, the RBPB model also underscores the limited contribution of focusing exclusively on the direct relationship between business model components and performance if the inherent risk is not regarded. In total, we underline that the business model-performance relationship is always a function of risk-taking behaviors, which previous literature has not been expressed.

From a theoretical perspective, the results of this dissertation extend the literature on business models by being one of a few studies to statistically analyze various business model

components in different dimensions and their impact on performance. In particular, the RBPB model points to the need not to regard the relationship to performance without considering the risk concept, which influences performance. Thus, the work provides new ways of assessing business models by understanding them as antecedents of the TMT's risk-taking behaviors concerning decisions under uncertainty.

The main contributions of this research are that equity and human capital endowment are crucial indicators for describing the performance relationship of business models. Besides, they also have a direct relationship with risk-taking behavior, which in turn has a strong performance relationship. Specifically, there is an inverted U-shaped relationship between equity capital endowment and performance, moderated by ownership structure as a stable company characteristic over time. In addition, the relationship with risk-taking behavior is linear and positive. Human capital endowment, in turn, is positively related to performance and negatively related to risk-taking behavior. Thus, both variables show a strong relationship to performance and risk-taking behavior, whose relationship to performance is moderated by slack. Also, we were able to show that the effect of risk-taking behavior and a high level of slack resources is itself a function of the value proposition. Finally, we underline that performance depends on the type of functional diversity of a business model. As a result, we provide clarification to the multitude of mixed results on the advantages and disadvantages of diversification for performance.

With the multiple challenges managers face in today's business environment, the business model concept as a critical company's architecture appears significant for generating a competitive advantage and superior performance. Therefore, the results of this dissertation help the different stakeholders (managers, owners, supervisory board members) analyze the core logic of business operations. As a result, it is possible to create a shared understanding of how the business works and identify approaches for further development. At the same time, the results can be the starting point for changes in business model adjustments.

Companies in general and banks in particular are facing major challenges: They are confronted with the increase in new competitors, a resulting intensification of competition, and the development of groundbreaking technologies, some of which threaten their very existence. Against the background of this challenging environment, TMTs are asked to rethink their strategies as long-term goals and implementation within the framework of a business model and adapt them if necessary. Business model analysis can help to classify core business logic and, at the same time, provide recommendations to decision-makers on whether specific

actions should be taken. It is up to management to decide whether the existing concept for value creation is viable and performance sustainable against a backdrop of intense competition and low margins.

The changes triggered by disruptive technologies are shifting boundaries and relationships in many ways, highlighting new and innovative ideas for business models as sources of sustainable competitive advantage. Given the numerous groundbreaking developments in the corporate environment, the banking sector needs managers who recognize the signs of a rapidly-changing environment, who are creative and courageous in analyzing, rethinking, and designing existing structures – even if this means uncertainty. In fact, they should embrace this uncertainty as an integral part of their jobs, following the insight of Steve Jobs, the long-time CEO of Apple: “you can’t connect the dots looking forward; you can only connect them looking backward. So you have to trust that the dots will somehow connect in your future” (Jobs, 2005).

Management must accept uncertainty and act decisively to shape their business model as an alternative to existing ones. So “action is the message. Success is found in the process” (House, 2009). They have to take paths that make the difference and accept an uncertain outcome in the absence of alternatives. Compared to the Himalayas expedition on Nanga Parbat, this includes taking action, “planning new routes, taking crazy ideas and hoping to make them work. It was certainly not just a case of bagging as many summits as possible; it was more a question of how we got there” (Messner, 2003, p. 97).

It may seem paradoxical to analyze and further develop existing business models – even if they are successful – while simultaneously experimenting with new ideas and driving innovation forward; even when this activity involves risks. However, to secure their future market survival, banks are forced to analyze their business models to understand what they stand for and how they can develop their actions in a forward-looking manner. Therefore, managers must accept uncertainty and take risks; they must be border crossers and yet only accept the risks necessary for the organization’s survival if there is no other way.

Thus, we end our own research expedition with the words of Reinhold Messner recapitulated in retrospect his expedition to Nanga Parbat in 1970:

Nevertheless, I was afraid of the descent, very afraid. It was fear of the unknown mostly; straight down the Diamir Face, a 4000m precipice of rock and ice full of unseen dangers and pitfalls. It was certainly a big risk we were taking. For sure, we were young but we were also experienced enough to be scared. We only accepted the risk because there was no other way out and because it would be easier to die trying than do nothing and wait for certain death.

(Messner, 2003, p. 224)

REFERENCES

- Aareal Bank. (2019). *Annual report 2019: Prepared for tomorrow*. Author.
- Abatecola, G., Belussi, F., Breslin, D., & Filatotchev, I. (2016). Darwinism, organizational evolution and survival: Key challenges for future research. *Journal of Management & Governance*, 20(1), 1–17. <https://doi.org/10.1007/s10997-015-9310-8>
- Acedo, F. J., Barroso, C., & Galan, J. L. (2006). The resource-based theory: Dissemination and main trends. *Strategic Management Journal*, 27(7), 621–636.
- Acharya, V. V., Hasan, I., & Saunders, A. (2006). Should banks be diversified? Evidence from individual bank loan portfolios. *Journal of Business*, 79(3), 1355–1412.
- Acquaah, M., & Chi, T. (2007). A longitudinal analysis of the impact of firm resources and industry characteristics on firm-specific profitability. *Journal of Management & Governance*, 11(3), 179–213. <https://doi.org/10.1007/s10997-007-9031-8>
- Admati, A. R., DeMarzo, P. M., Hellwig, M. F., & Pfleiderer, P. C. (2013). *Fallacies, irrelevant facts, and myths in the discussion of capital regulation: Why bank equity is not socially expensive*. Preprints of the Max Planck Institute for Research on Collective Goods (No. 2013/23). Max Planck Institute for Research on Collective Goods, Bonn.
- Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, 24(10), 1011–1025. <https://doi.org/10.1002/smj.331>
- Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking & Finance*, 36(12), 3213–3226.
- Afuah, A., & Tucci, C. L. (2003). *Internet business models and strategies: Text and cases* (2nd ed.). McGraw-Hill.
- Agresti, A., & Agresti, B. F. (1978). Statistical analysis of qualitative variation. *Sociological Methodology*, 9(1978), 204–237.

- Agusman, A., Monroe, G. S., Gasbarro, D., & Zumwalt, J. K. (2008). Accounting and capital market measures of risk: Evidence from Asian banks during 1998-2003. *Journal of Banking & Finance*, 32(4), 480–488. <https://doi.org/10.1016/j.jbankfin.2006.06.018>
- Agusti-Perez, M., Galan, J. L., & Acedo, F. J. (2020). Relationship between slack resources and performance: Temporal symmetry and duration of effects. *European Journal of Management and Business Economics*, 29(3), 255–275. <https://doi.org/10.1108/EJMBE-10-2019-0177>
- Aiyar, S. (2012). From financial crisis to great recession: The role of globalized banks. *The American Economic Review*, 102(3), 225–230.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Allais, M. (1953). Le comportement de l'homme rationnel devant le risque: Critique des postulats et axiomes de l'école américaine. *Econometrica*, 21(4), 503–546.
- Allen, F., & Carletti, E. (2010). The roles of banks in financial systems. In A. N. Berger, J. O. S. Wilson, & P. Molyneux (Eds.), *The Oxford handbook of banking* (pp. 37–57). Oxford University Press.
- Allen, F., Carletti, E., & Marquez, R. (2011). Credit market competition and capital regulation. *Review of Financial Studies*, 24(4), 983–1018. <https://doi.org/10.1093/rfs/hhp089>
- Allen, F., & Santomero, A. M. (1998). The theory of financial intermediation. *Journal of Banking & Finance*, 21(11-12), 1461–1485.
- Allison, P. D. (1977). Testing for interaction in multiple regression. *American Journal of Sociology*, 83(1), 144–153.
- Altunbas, Y., Carbo, S., Gardener, E. P., & Molyneux, P [Phillip] (2007). Examining the relationships between capital, risk and efficiency in European banking. *European Financial Management*, 13(1), 49–70.
- Altunbas, Y., Evans, L., & Molyneux, P [Phillip] (2001). Bank ownership and efficiency. *Journal of Money, Credit and Banking*, 33(4), 926–954.
- Amah, E., Daminabo-Weje, M., & Dosunmu, R. (2013). Size and organizational effectiveness: Maintaining a balance. *Advances in Management & Applied Economics*, 3(5), 115–123.
- Ambrosini, V., Bowman, C., & Collier, N. (2009). Dynamic capabilities: An exploration of how firms renew their resource base. *British Journal of Management*, 20, S9–S24.
- Amit, R., & Schoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33–46.

-
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, 22(6-7), 493–520. <https://doi.org/10.1002/smj.187>
- Anderson, B. S., Covin, J. G., & Slevin, D. P. (2009). Understanding the relationship between entrepreneurial orientation and strategic learning capability: An empirical investigation. *Strategic Entrepreneurship Journal*, 3(3), 218–240. <https://doi.org/10.1002/sej.72>
- Andreeva, T. E., & Chayka, V. A. (2006). *Dynamic capabilities: What they need to be dynamic?* Working Papers 846. Graduate School of Management, St. Petersburg State University.
- Anginer, D., & Demirgüç-Kunt, A. (2014). *Bank capital and systemic stability*. Policy Research Working Paper No. 6948. The World Bank, Washington, DC.
- Ansoff, H. I. (1965). *Corporate strategy: An analytic approach to business policy for growth and expansion*. McGraw-Hill.
- Ansoff, H. I., Kipley, D., Lewis, A. O., Helm-Stevens, R., & Ansoff, R. (2019). *Implanting strategic management* (3rd ed.). Springer International Publishing. <https://doi.org/10.1007/978-3-319-99599-1>
- Aragón-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *The Academy of Management Review*, 28(1), 71. <https://doi.org/10.2307/30040690>
- Arend, R. J. (2006). Tests of the resource-based view: Do the empirics have any clothes? *Strategic Organization*, 4(4), 409–421. <https://doi.org/10.1177/1476127006070309>
- Argyris, C. (1957). *Personality and organization: The conflict between system and the individual*. Harper & Row.
- Armstrong, C. E., & Shimizu, K. (2007). A review of approaches to empirical research on the resource-based view of the firm. *Journal of Management*, 33(6), 959–986. <https://doi.org/10.1177/0149206307307645>
- Arthur, W. B. (1995). Complexity in economic and financial markets. *Complexity*, 1(1), 20–25.
- Ashby, W. R. (1956). *An introduction to cybernetics*. Chapman and Hall.
- Aspara, J., Hietanen, J., & Tikkanen, H. (2010). Business model innovation vs replication: Financial performance implications of strategic emphases. *Journal of Strategic Marketing*, 18(1), 39–56. <https://doi.org/10.1080/09652540903511290>
-

- Axinn, C. N., & Matthyssens, P. (2002). Limits of internationalization theories in an unlimited world. *International Marketing Review*, 19(5), 436–449. <https://doi.org/10.1108/02651330210445275>
- Baele, L., Jonghe, O. de, & Vander Venet, R. (2007). Does the stock market value bank diversification? *Journal of Banking & Finance*, 31(7), 1999–2023.
- Bain, J. S. (1956). *Barriers to new competition: Their character and consequences in manufacturing industries*. Harvard University Press.
- Bantel, K. A. (1993). Strategic clarity in banking: Role of top management-team demography, 73(3), 1187–1201. <https://doi.org/10.2466/pr0.1993.73.3f.1187>
- Bar-Hillel, M. (1980). The base-rate fallacy in probability judgments. *Acta Psychologica*, 44(3), 211–233. <https://doi.org/10.21236/ADA045772>
- Barnard, C. I. (1938). *The functions of the executive*. Harvard University Press.
- Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management Science*, 32(10), 1231–1241.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, 27(6), 643–650. <https://doi.org/10.1177/014920630102700602>
- Barney, J. B., & Clark, D. N. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. Oxford University Press.
- Barney, J. B., & Hesterly, W. S. *Strategic management and competitive advantage: Concepts and cases* (5th ed.). Pearson Education.
- Barney, J. B., Ketchen, D. J., & Wright, M. (2011). The future of resource-based theory: Revitalization or decline? *Journal of Management*, 37(5), 1299–1315. <https://doi.org/10.1177/0149206310391805>
- Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, 36(1), 256–280. <https://doi.org/10.1177/0149206309350776>
- Basel Committee on Banking Supervision. (2011). *The transmission channels between the financial and real sectors: A critical survey of the literature*. Working Paper No. 18 (February 2011). Bank for International Settlements (BIS).
- Basel Committee on Banking Supervision. (2015). *Corporate governance principles for banks: Guidelines*. BCBS d328 (July 2015). Bank for International Settlements (BIS).

-
- Baum, C. F. (2001). Residual diagnostics for cross-section time series regression models. *The Stata Journal*, 1(1), 101–104. <https://doi.org/10.1177/1536867X0100100108>
- Baum, C. F. (2006a). *An introduction to modern econometrics using Stata*. Stata Press.
- Baum, C. F. (2006b). Stata tip 38: Testing for groupwise heteroskedasticity. *The Stata Journal*, 6(4), 590–592. <https://doi.org/10.1177/1536867X0600600412>
- Baumol, W. J. (1962). On the theory of expansion of the firm. *The American Economic Review*, 52(5), 1078–1087.
- Beaver, W., Kettler, P., & Scholes, M. (1970). The association between market determined and accounting determined risk measures. *The Accounting Review*, 45(4), 654–682.
- Beccalli, E., Casu, B., & Girardone, C. (2006). Efficiency and stock performance in European banking. *Journal of Business Finance & Accounting*, 33(1-2), 245–262. <https://doi.org/10.1111/j.1468-5957.2006.01362.x>
- Beck, N., & Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *The American Political Science Review*, 89(3), 634–647.
- Beck, U., Bonss, W., & Lau, C. (2003). The theory of reflexive modernization: Problematic, hypotheses and research programme. *Theory, Culture & Society*, 20(2), 1–33.
- Beck, U., & Lau, C. (2005). Second modernity as a research agenda: Theoretical and empirical explorations in the 'meta-change' of modern society. *The British Journal of Sociology*, 56(4), 525–557.
- Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*, 76(2), 169–217.
- Bedeian, A. G., & Wren, D. A. (2001). Most influential management books of the 20th century. *Organizational Dynamics*, 29(3), 221–225.
- Behn, R. D. (2003). Why measure performance? Different purposes require different measures. *Public Administration Review*, 63(5), 586–606.
- Bell, D. (1976). The coming of the post-industrial society. *The Educational Forum*, 40(4), 574–579. <https://doi.org/10.1080/00131727609336501>
- Benston, G. J. (1994). Universal banking. *The Journal of Economic Perspectives*, 8(3), 121–143.
- Benston, G. J., & Smith, C. W. (1976). A transactions cost approach to the theory of financial intermediation. *The Journal of Finance*, 31(2), 215–231.
- Berchicci, L., & King, A. (2007). Postcards from the edge: A review of the business and environment literature. *The Academy of Management Annals*, 1(1), 513–547.
-

- Berger, A. N. (1995). The relationship between capital and earnings in banking. *Journal of Money, Credit and Banking*, 27(2), 432–456.
- Berger, A. N., & Bouwman, C. H. (2013). How does capital affect bank performance during financial crises? *Journal of Financial Economics*, 109(1), 146–176. <https://doi.org/10.1016/j.jfineco.2013.02.008>
- Berger, A. N., & Di Bonaccorsi Patti, E. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry, 30(4), 1065–1102.
- Berger, A. N., & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiencies of financial institutions? *Journal of Banking & Finance*, 21(7), 895–947.
- Berger, A. N., Miller, N. H., Petersen, M. A., Rajan, R. G., & Stein, J. C. (2005). Does function follow organizational form? Evidence from the lending practices of large and small banks. *Journal of Financial Economics*, 76(2), 237–269. <https://doi.org/10.1016/j.jfineco.2004.06.003>
- Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of Financial Economics*, 37(1), 39–65.
- Bergh, D. D., & Holbein, G. F. (1997). Assessment and redirection of longitudinal analysis demonstration with a study of the diversification and divestiture relationship. *Strategic Management Journal*, 18(7), 557–571. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<557::AID-SMJ911>3.0.CO;2-6](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<557::AID-SMJ911>3.0.CO;2-6)
- Berglund, T., & Mäkinen, M. (2019). Do banks learn from financial crisis? The experience of nordic banks. *Research in International Business and Finance*, 47(C), 428–440. <https://doi.org/10.1016/j.ribaf.2018.09.004>
- Bernanke, B. S., Gertler, M., & Gilchrist, S. (1996). The financial accelerator and the flight to quality. *The Review of Economics and Statistics*, 78(1), 1–15.
- Bernanke, B. S., & Lown, C. S. (1991). The credit crunch. *Brookings Papers on Economic Activity*(2), 205–239.
- Berrington, A., Smith, P. W., & Sturgis, P. (2006). *An overview of methods for the analysis of panel data*. NCRM Methods Review Papers, NCRM/007. Southampton, UK. National Centre for Research Methods, School of Social Sciences, University of Southampton.
- Bertalanffy, K. L. von. (1968). *The organismic psychology and systems theory*. Clark University Press.

-
- Bharadwaj, A. S., Bharadwaj, S. G., & Konsynski, B. R. (1999). Information technology effects on firm performance as measured by Tobin's q. *Management Science*, *45*(6), 1008–1024.
- Biemann, T., & Kearney, E. (2010). Size does matter: How varying group sizes in a sample affect the most common measures of group diversity. *Organizational Research Methods*, *13*(3), 582–599. <https://doi.org/10.1177/1094428109338875>
- Bitar, M., Saad, W., & Benlemlih, M. (2016). Bank risk and performance in the MENA region: The importance of capital requirements. *Economic Systems*, *40*(3), 398–421.
- Blackwell, J. L., III (2005). Estimation and testing of fixed-effect panel-data systems. *The Stata Journal*, *5*(2), 202–207.
- Blau, P. M. (1977). *Inequality and heterogeneity*. Free Press.
- Bloom, N., & van Reenen, J. (2010). Why do management practices differ across firms and countries? *Journal of Economic Perspectives*, *24*(1), 203–224. <https://doi.org/10.1257/jep.24.1.203>
- Boeker, W. (1997). Strategic change: The influence of managerial characteristics and organizational growth. *The Academy of Management Journal*, *40*(152-170).
- Bolle, F., & Ockenfels, P. (1990). Prisoners' dilemma as a game with incomplete information. *Journal of Economic Psychology*, *11*(1), 69–84.
- Börner, C. J. (2005). Konzeptioneller Rahmen: Strategisches Management und Strategieparameter. In C. J. Börner, H. Maser, & T. C. Schulz (Eds.), *Bankstrategien im Firmenkundengeschäft: Konzeption - Management - Dimensionen. Mit Beispielen aus der Praxis* (pp. 31–63). Gabler.
- Boubakri, N., Cosset, J.-C., Fischer, K., & Guedhami, O. (2005). Privatization and bank performance in developing countries. *Journal of Banking & Finance*, *29*(8-9), 2015–2041.
- Bourgeois, L. J. (1981). On the measurement of organizational slack. *Academy of Management Journal*, *6*(1), 29–39. <https://doi.org/10.1093/gmo/9781561592630.article.50735>
- Bourgeois, L. J., & Eisenhardt, K. M. (1988). Strategic decision processes in high velocity environments: Four cases in the microcomputer industry. *Management Science*, *34*(7), 816–835.
- Bourgeois, L. J., & Singh, J. V. (1983). Organizational slack and political behavior among top management teams. *Academy of Management Proceedings*, 43–47. <https://doi.org/10.5465/ambpp.1983.4976315>
-

- Bowen, H. P., & Wiersema, M. F. (1999). Matching method to paradigm in strategy research: Limitations of cross-sectional analysis and some methodological alternatives. *Strategic Management Journal*, 20(7), 625–636. [https://doi.org/10.1002/\(SICI\)1097-0266\(199907\)20:7<625::AID-SMJ45>3.0.CO;2-V](https://doi.org/10.1002/(SICI)1097-0266(199907)20:7<625::AID-SMJ45>3.0.CO;2-V)
- Bowman, E. H. (1980). A risk/return paradox for strategic management. *Sloan Management Review*, 21(3), 17–31.
- Bowman, E. H. (1982). Risk seeking by troubled firms. *Sloan Management Review*, 23(4), 33–42.
- Boyd, J. H., & Gertler, M. (1995). *Are banks dead? Or are the reports greatly exaggerated?* Working Paper No. 5045. NBER Working Paper Series.
- Boyd, J. H., & Runkle, D. E. (1993). Size and performance of banking firms: Testing the predictions of theory. *Journal of Monetary Economics*, 31(1), 47–67. [https://doi.org/10.1016/0304-3932\(93\)90016-9](https://doi.org/10.1016/0304-3932(93)90016-9)
- Braillard, P. (1988). *Switzerland as a financial centre: Structures and policies*. A comparison at the international level. Kluwer Academic Publishers.
- Brandon-Jones, E., Squire, B., Autry, C. W., & Petersen, K. J. (2014). A contingent resource-based perspective of supply chain resilience and robustness. *Journal of Supply Chain Management*, 50(3), 55–73. <https://doi.org/10.1111/jscm.12050>
- Bray, R. M., Kerr, N. L., & Atkin, R. S. (1978). Effects of group size, problem difficulty, and sex on group performance and member reactions. *Journal of Personality and Social Psychology*, 36(11), 1224–1240.
- Brehmer, B. (1992). Dynamic decision making: Human control of complex systems. *Acta Psychologica*, 81(3), 211–241.
- Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica*, 47(5), 1287–1294.
- Brewer III, E., & Lee, C. F. (1986). How the market judges bank risk. *Economic Perspectives*, 10(November), 25–31.
- Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theoretical progress. *Academy of Management Review*, 17(1), 39–61. <https://doi.org/10.5465/amr.1992.4279568>
- Bromiley, P. (1991). Testing a causal model of corporate risk taking and performance. *Academy of Management Journal*, 34(1), 37–59.
- Bromiley, P., Miller, K. D., & Rau, D. (2005). Risk in strategic management research. In M. A. Hitt, R. E. Freeman, & J. S. Harrison (Eds.), *Handbooks in management. The*

-
- Blackwell handbook of strategic management* (1st ed., pp. 255–283). Blackwell Publishing.
- Brush, T. H., & Artz, K. W. (1999). Toward a contingent resource-based theory: The impact of information asymmetry on the value of capabilities in veterinary medicine. *Strategic Management Journal*, 20(3), 223–250. [https://doi.org/10.1002/\(SICI\)1097-0266\(199903\)20:3<223::AID-SMJ14>3.0.CO;2-M](https://doi.org/10.1002/(SICI)1097-0266(199903)20:3<223::AID-SMJ14>3.0.CO;2-M)
- Burgoyne, J. (1989). Creating the managerial portfolio: Building on competency approaches to management development. *Management Education and Development*, 20(1), 56–61. <https://doi.org/10.1177/135050768902000109>
- Burke, R. H. (2009). *An introduction to criminological theory* (3rd ed.). Willan Publishing.
- Buttle, F., & Maklan, S. (2015). *Customer relationship management: Concepts and technologies* (3rd ed.). Routledge.
- Buyl, T., Boone, C., Hendriks, W., & Matthyssens, P. (2011). Top management team functional diversity and firm performance: The Moderating Role of CEO Characteristics. *Journal of Management Studies*, 48(1), 151–177. <https://doi.org/10.1111/j.1467-6486.2010.00932.x>
- Cabral, L. M. B. (2000). *Introduction to industrial organization*. MIT Press.
- Cameron, A. C., & Trivedi, P. K. (2009). *Microeconometrics using Stata*. Stata Press.
- Campbell, T. S., & Kracaw, W. A. (1980). Information production, market signalling, and the theory of financial intermediation. *The Journal of Finance*, 35(4), 863–882.
- Cannella, A. A., & Hambrick, D. C. (1993). Effects of executive departures on the performance of acquired firms. *Strategic Management Journal*, 14(Special Issue), 137–152.
- Cannella, A. A., & Monroe, M. J. (1997). Contrasting perspectives on strategic leaders: Toward a more realistic view of top managers. *Journal of Management*, 23(3), 213–237. <https://doi.org/10.1177/014920639702300302>
- Capon, N., Farley, J. U., & Hoenig, S. (1990). Determinants of financial performance: A meta-analysis. *Management Science*, 36(10), 1143–1159.
- Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, 30(6), 749–778. <https://doi.org/10.1016/j.jm.2004.06.001>
- Carrefour Banque. (2017). *Financial report 2017*. Author.
-

- Carroll, G. R. (1987). Organizational approaches to strategy: An introduction and overview. *California Management Review*, 30(1), 8–10. <https://doi.org/10.2307/41165262>
- Carroll, G. R. (1994). Organizations... The smaller they get. *California Management Review*, 37(1), 28–41.
- Carroll, J. S. (1976). The effect of imagining an event on expectations for the event: An interpretation in terms of the availability heuristic. *Journal of Experimental Social Psychology*, 14(1), 88–96.
- Casadesus-Masanell, R., & Ricart, J. E. (2010). From strategy to business models and onto tactics. *Long Range Planning*, 43(2-3), 195–215. <https://doi.org/10.1016/j.lrp.2010.01.004>
- Castanias, R. P., & Helfat, C. E. (1991). Managerial resources and rents. *Journal of Management*, 17(1), 155–171.
- Cavalcante, S., Kesting, P., & Ulhøi, J. (2011). Business model dynamics and innovation: (Re)establishing the missing linkages. *Management Decision*, 49(8), 1327–1342. <https://doi.org/10.1108/00251741111163142>
- Certo, S. T., Lester, R. H., Dalton, C. M., & Dalton, D. R. (2006). Top management teams, strategy and financial performance: A meta-analytic examination. *Journal of Management Studies*, 43(4), 813–839. <https://doi.org/10.1111/j.1467-6486.2006.00612.x>
- Certo, S. T., & Semadeni, M. (2006). Strategy research and panel data: Evidence and implications. *Journal of Management*, 32(3), 449–471. <https://doi.org/10.1177/0149206305283320>
- Chamberlin, E. (1933). *The theory of monopolistic competition*. Harvard University Press.
- Chandler, A. D. (1962). *Strategy and structure: Chapters in the history of the industrial enterprise*. MIT Press.
- Chandler, A. D. (1977). *The visible hand: The managerial revolution in American business*. Harvard University Press.
- Chen, N.-K. (2001). Bank net worth, asset prices and economic activity. *Journal of Monetary Economics*, 48(2), 415–436. [https://doi.org/10.1016/S0304-3932\(01\)00076-9](https://doi.org/10.1016/S0304-3932(01)00076-9)
- Cheng, Joseph L.C., Kesner, & Idalene F. (1997). Organizational slack and response to environmental shifts: The impact of resource allocation patterns. *Journal of Management*, 23(1), 1–18.
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off

-
- companies. *Industrial and Corporate Change*, 11(3), 529–555.
<https://doi.org/10.1093/icc/11.3.529>
- Chmielewski, D. A., & Paladino, A. (2007). Driving a resource orientation: Reviewing the role of resource and capability characteristics. *Management Decision*, 45(3), 462–483.
- Clarivate. (2021a, May 12). *Web of Science Core Collection*.
<https://clarivate.com/webofsciencegroup/solutions/web-of-science-core-collection/>
- Clarivate. (2021b, May 12). *Web of Science Core Collection: Basic search*.
<https://www.webofscience.com/wos/woscc/basic-search>
- Clark, K. B., & Fujimoto, T. (1991). *Product development performance: Strategy, organization, and management in the world auto industry*. Harvard Business School Press.
- Clarke, H. D., & Granato, J. (2005). Autocorrelation. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement* (pp. 111–119). Elsevier.
- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of Accounting and Public Policy*, 30(2), 122–144.
- Clinton, W. J. (1999). *Remarks at the D.C. Central Kitchen* | *The American Presidency Project*. The American Presidency Project [Miscellaneous Remarks, <https://www.presidency.ucsb.edu/documents/remarks-the-dc-central-kitchen>]. 22 December 1999
- Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16), 386–405.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Lawrence Erlbaum Associates.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–152.
- Collis, D. J. (1991). A resource-based analysis of global competition: The case of the bearings industry. *Strategic Management Journal*, 12(Special Issue), 49–68.
- Conner, K. R. (1991). A historical comparison of resource-based theory and five schools of thought within industrial organization economics: Do we have a new theory of the firm? *Journal of Management*, 17(1), 121–154.
- Conner, K. R., & Prahalad, C. K. (1996). A resource-based theory of the firm: Knowledge versus opportunism. *Organization Science*, 7(5), 477–501.
-

- Conrath, D. W. (1967). Organizational decision making behavior under varying conditions of uncertainty. *Management Science*, *13*(8), B487-B500.
- Cook, D. R., & Weisberg, S. (1983). Diagnostics for heteroscedasticity in regression. *Biometrika*, *70*(1), 1–10.
- Cooper, D. J., & Kagel, J. H. (2005). Are two heads better than one? Team versus individual play in signaling games. *The American Economic Review*, *95*(3), 477–509.
- Cornett, M. M., & Tehranian, H. (1992). Changes in corporate performance associated with bank acquisitions. *Journal of Financial Economics*, *31*(2), 211-234.
- Cortina, J. M. (1993). Interaction, nonlinearity, and multicollinearity: Implications for multiple regression. *Journal of Management*, *19*(4), 915–922.
<https://doi.org/10.1177/014920639301900411>
- Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, *10*(1), 75–87.
- Crédit Mutuel Arkéa. (2017). *Registration Document 2017*. Author.
- Crook, T. R., Ketchen, D. J., Combs, J. G., & Todd, S. Y. (2008). Strategic resources and performance: A meta-analysis. *Strategic Management Journal*, *29*(11), 1141–1154.
<https://doi.org/10.1002/smj.703>
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Prentice-Hall.
- D’Aveni, R. A. (1990). Top managerial prestige and organizational bankruptcy. *Organization Science*, *1*(2), 121–142.
- D’Aveni, R. A. (1994). *Hypercompetition: Managing the dynamics of strategic maneuvering*. Free Press.
- Darwin, C. R. (1859). *On the origins of species by means of natural selection*. Murray.
- Das, T. K., & Teng, B.-S. (1999). Cognitive biases and strategic decision processes: An integrative perspective. *Journal of Management Studies*, *36*(6), 757–778.
<https://doi.org/10.1111/1467-6486.00157>
- Davies, P. L., & Hopt, K. J. (2013). Corporate boards in Europe—Accountability and convergence. *The American Journal of Comparative Law*, *61*(2), 301–375.
- Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology*, *29*(1), 1–19. <https://doi.org/10.1007/s10869-013-9308-7>
- DeCarolis, D. M., & Deeds, D. L. (1999). The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry. *Strategic Management Journal*, *20*(10), 953–968.

- [https://doi.org/10.1002/\(SICI\)1097-0266\(199910\)20:10<953::AID-SMJ59>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1097-0266(199910)20:10<953::AID-SMJ59>3.0.CO;2-3)
- Deeds, D. L., DeCarolis, D. M., & Coombs, J. (2000). Dynamic capabilities and new product development in high technology ventures: An empirical analysis of new biotechnology firms. *Journal of Business Venturing, 15*(3), 211–229.
- Deleuze, G., & Guattari, F. (1994). *What is philosophy?* Columbia University Press.
- Demil, B., & Lecocq, X. (2010). Business model evolution: In search of dynamic consistency. *Long Range Planning, 43*(2-3), 227–246. <https://doi.org/10.1016/j.lrp.2010.02.004>
- Demirgüç-Kunt, A., & Huizinga, H. (2010). Bank activity and funding strategies: The impact on risk and returns. *Journal of Financial Economics, 98*(3), 626–650. <https://doi.org/10.1016/j.jfineco.2010.06.004>
- Demsetz, H. (1967). Toward a theory of property rights. *The American Economic Review, 57*(2), 347–359.
- Demsetz, H. (1983). The structure of ownership and the theory of the firm. *The Journal of Law & Economics, 26*(2), 375–390.
- Demsetz, R. S., & Strahan, P. E. (1997). Diversification, size, and risk at bank holding companies. *Journal of Money, Credit and Banking, 29*(3), 300–313.
- Deng, S. (., & Elyasiani, E. (2008). Geographic diversification, bank holding company value, and risk. *Journal of Money, Credit and Banking, 40*(6), 1217–1238.
- Derksen, M. (2014). Turning men into machines? Scientific management, industrial psychology, and the "human factor". *Journal of the History of the Behavioral Sciences, 50*(2), 148–165. <https://doi.org/10.1002/jhbs.21650>
- Deutsche Bank. (2019). *Annual report 2019*. Author.
- Deutsche Pfandbriefbank. (2017). *Annual report 2017*. Author.
- DeYoung, R., & Roland, K. P. (2001). Product mix and earnings volatility at commercial banks: Evidence from a degree of total leverage model. *Journal of Financial Intermediation, 10*(1), 54–84. <https://doi.org/10.1006/jfin.2000.0305>
- Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The Review of Economic Studies, 51*(3), 393–414.
- Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science, 35*(12), 1504–1511.
- Døving, E., & Gooderham, P. N. (2008). Dynamic capabilities as antecedents of the scope of related diversification: The case of small firm accountancy practices. *Strategic Management Journal, 29*(8), 841–857. <https://doi.org/10.1002/smj.683>

- Dretske, F. (1981). *Knowledge and the flow of information*. MIT Press.
- Drucker, P. F. (1955). "Management science" and the manager. *Management Science*, 1(2), 115–126.
- Drucker, P. F. (1986). *Management: Tasks, responsibilities, practices* (1st ed.). Truman Talley Books.
- Drucker, P. F. (1994). The theory of the business. *Harvard Business Review*(September-October), 95–106.
- Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *The Stata Journal*, 3(2), 168–177.
- Dutton, J. E., & Duncan, R. B. (1987). The creation of momentum for change through the process of strategic issue diagnosis. *Strategic Management Journal*, 8(3), 279–295.
- Edwards, K. D. (1996). Prospect theory: A literature review. *International Review of Financial Analysis*, 5(1), 19–38. [https://doi.org/10.1016/S1057-5219\(96\)90004-6](https://doi.org/10.1016/S1057-5219(96)90004-6)
- Edwards, W. (1954). The theory of decision making. *Psychological Bulletin*, 51, 380–417.
- Eggers, J. P., & Kaplan, S. (2009). Cognition and renewal: Comparing CEO and organizational effects on incumbent adaptation to technical change. *Organization Science*, 20(2), 461–477.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10/11 (Special Issue)), 1105–1121.
- Eisenhardt, K. M., & Santos, F. M. (2002). Knowledge-based view: A new theory of strategy? In A. Pettigrew, H. Thomas, & R. Whittington (Eds.), *Handbook of strategy and management* (pp. 139–164). SAGE Publications.
- Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational Growth: Linking founding team, strategy, environment, and growth among U.S. semiconductor Ventures, 1978-1988. *Administrative Science Quarterly*, 35(3), 504–529.
- Elliot, C. S., & Archibald, R. B. (1989). Subjective framing and attitudes towards risk. *Journal of Economic Psychology*, 10(3), 321–328.
- Ellsberg, D. (1961). Risk, ambiguity, and the savage axioms. *The Quarterly Journal of Economics*, 75(4), 643–669.
- Erikson, K. T. (1962). Notes on the sociology of deviance. *Social Problems*, 9(4), 307–314.
- European Banking Federation. (2021, November 24). *Switzerland's banking sector: Facts & figures*. <https://www.ebf.eu/switzerland/>
- Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions

- and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC, Official Journal of the European Union (2013).
- Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012, Official Journal of the European Union (2013).
- European Union. (2021, November 24). *The Euro: Countries using the euro*. https://european-union.europa.eu/institutions-law-budget/euro/countries-using-euro_en
- Eurostat. (2021, May 29). *Real GDP growth rate - volume*. <https://ec.europa.eu/eurostat/web/products-datasets/product?code=TEC00115>
- Fahlenbrach, R., & Stulz, R. M. (2011). Bank CEO incentives and the credit crisis. *Journal of Financial Economics*, 99(1), 11–26.
- Farnè, M., & Vouldis, A. T. (2021). Banks' business models in the euro area: A cluster analysis in high dimensions. *Annals of Operations Research*, 1–35. <https://doi.org/10.1007/s10479-021-04045-9>
- Faysal, S., Salehi, M., & Moradi, M. (2020). The impact of ownership structure on the cost of equity in emerging markets. *Management Research Review*, 43(10), 1221–1239.
- Fiengenbaum, A., Hart, S., & Schendel, D. (1996). Strategic reference point theory. *Strategic Management Journal*, 17(3), 219–235.
- Fiengenbaum, A., & Thomas, H. (1988). Attitudes toward risk and the risk-return paradox: Prospect theory explanations. *Academy of Management Journal*, 31(1), 85–106.
- Finkelstein, S., & Hambrick, D. C. (1996). *Strategic leadership: Theory and research on executives, top management teams, and boards*. West Publishing.
- Finkelstein, S., Hambrick, D. C., & Cannella, A. A. (2009). *Strategic leadership: Theory and research on executives, top management teams, and boards*. Oxford University Press.
- Fiol, C. M. (1991). Managing culture as a competitive resource: An identity-based view of sustainable competitive advantage. *Journal of Management*, 17(1), 191–211.
- Firebaugh, G., Warner, C., & Massoglia, M. (2013). Fixed effects, random effects, and hybrid models for causal analysis. In S. L. Morgan (Ed.), *Handbooks of sociology and social research* (pp. 113–132). Springer Science+Business Media Dordrecht.
- Fischhoff, B. (1975). Hindsight \neq Foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance*, 1(3), 288–299. <https://doi.org/10.4324/9780203141939-14>
- Fischhoff, B., Slovic, P., & Lichtenstein, S. (1977). Knowing with certainty: The appropriateness of extreme confidence. *Journal of Experimental Psychology: Human*

- Perception and Performance*, 3(4), 552-564. <https://doi.org/10.4324/9780203141939-19>
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Addison-Wesley.
- Fisher, I. N., & Hall, G. R. (1969). Risk and corporate rates of return. *The Quarterly Journal of Economics*, 83(1), 79–92.
- Flannery, M. J., & Nikolova, S. (2004). Market discipline of U.S. financial firms: Recent evidence and research issues. In W. C. Hunter, G. G. Kaufman, C. Borio, & K. Tsatsaronis (Eds.), *Market discipline across countries and industries*. MIT Press.
- Ford, H. (1922). *My life and work*. Doubleday, Page & company.
- Foss, N. J. (1998). The resource-based perspective: An assessment and diagnosis of problems. *Scandinavian Journal of Management*, 14(3), 133–149.
- Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation. *Journal of Management*, 43(1), 200–227. <https://doi.org/10.1177/0149206316675927>
- Foss, N. J., & Stieglitz, N. (2012). Modern resource-based theory(ies). In M. Dietrich & J. Krafft (Eds.), *Handbook on the economics and theory of the firm*. Edward Elgar.
- Fox, C. R., & Poldrack, R. A. (2009). Prospect theory and the brain. In P. W. Glimcher, C. F. Camerer, E. Fehr, & R. A. Poldrack (Eds.), *Neuroeconomics: Decision making and the brain* (pp. 145–173). Elsevier.
- Freedman, D. H. (1992). Is management still a science? *Harvard Business Review*, 70(6), 26–38.
- Freeman, R. E [Robert Edward]. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press. (Original work published 1984).
- Frees, E. W. (2004). *Longitudinal and panel data: Analysis and applications for the social sciences*. Cambridge University Press.
- Freiling, J. (2004). A competence-based theory of the firm. *Management Revue*, 15(1 (Special Issue)), 27–52.
- Frey, J. P. (1913). The relationship of scientific management to labor. *Journal of Political Economy*, 21(5), 400–411.
- Friedman, M. (1970, September 13). A Friedman doctrine - The social responsibility of business is to increase its profits. *The New York Times*, 32-33, 122, 124, 126.
- Funtowicz, S. O., & Ravetz, J. R. (1990). *Uncertainty and quality in science for policy*. Kluwer Academic Publishers.

-
- Furrer, O., Thomas, H., & Goussevskaia, A. (2008). The structure and evolution of the strategic management field: A content analysis of 26 years of strategic management research. *International Journal of Management Reviews*, 10(1), 1–23. <https://doi.org/10.1111/j.1468-2370.2007.00217.x>
- Gale, B. T. (1972). Market share and rate of return. *The Review of Economics and Statistics*, 54(4), 412–423.
- Gamache, D. L., McNamara, G., Mannor, M. J., & Johnson, R. E. (2015). Motivated to acquire? The impact of CEO regulatory focus on firm acquisitions. *Academy of Management Journal*, 58(4), 1261–1282.
- García-Granero, A., Llopis, Ó., Fernández-Mesa, A., & Alegre, J. (2015). Unraveling the link between managerial risk-taking and innovation: The mediating role of a risk-taking climate. *Journal of Business Research*, 68(5), 1094–1104. <https://doi.org/10.1016/j.jbusres.2014.10.012>
- García-Marco, T., & Robles-Fernández, M. D. (2008). Risk-taking behaviour and ownership in the banking industry: The Spanish evidence. *Journal of Economics and Business*, 60(4), 332–354.
- Geeraerts, G. (1984). The effect of ownership on the organization structure in small firms. *Administrative Science Quarterly*, 29(2), 232–237.
- George, G. (2005). Slack resources and the performance of privately held firms. *The Academy of Management Journal*, 48(4), 661–676.
- Gerdoçi, B., Bortoluzzi, G., & Dibra, S. (2018). Business model design and firm performance. *European Journal of Innovation Management*, 21(2), 315–333. <https://doi.org/10.1108/EJIM-02-2017-0012>
- Geus, A. P. de (1997). The living company. *Harvard Business Review*, 75(2), 51–59.
- Geus, A. P. de (1998). The living company: A recipe for success in the New Economy. *The Washington Quarterly*, 21(1), 197–205. <https://doi.org/10.1080/01636609809550303>
- Ghemawat, P. (1986). Sustainable advantage. *Harvard Business Review*, 64(September-October), 53–58.
- Ghemawat, P., & Rivkin, J. W. (1999). Creating competitive advantage. In P. Ghemawat (Ed.), *Strategy and the business landscape: Text and cases* (pp. 49–74). Addison-Wesley.
- Goddard, J., Liu, H., Molyneux, P [Phil], & Wilson, J. O. (2013). Do bank profits converge? *European Financial Management*, 19(2), 345–365. <https://doi.org/10.1111/j.1468-036X.2010.00578.x>
-

- Goddard, J., Molyneux, P [Phil], & Wilson, J. O. S. (2004). The profitability of European banks: A cross-sectional and dynamic panel analysis. *The Manchester School*, 72(3), 363–381. <https://doi.org/10.1111/j.1467-9957.2004.00397.x>
- Godfrey, P. C., & Hill, C. W. (1995). The problem of unobservables in strategic management research. *Strategic Management Journal*, 16(7), 519–533.
- Goffman, E. (1959). *The presentation of self in everyday life*. Doubleday & Company.
- Gooding, R. Z., Goel, S., & Wiseman, R. M. (1996). Fixed versus variable reference points in the risk-return relationship. *Journal of Economic Behavior & Organization*, 29(2), 331–350. [https://doi.org/10.1016/0167-2681\(95\)00067-4](https://doi.org/10.1016/0167-2681(95)00067-4)
- Gooding, R. Z., & Wagner III, J. A. (1985). A meta-analytic review of the relationship between size and performance: The productivity and efficiency of organizations and their subunits. *Administrative Science Quarterly*, 30(4), 462–481.
- Goodman, P. S., Ravlin, E. C., & Argote, L. (1986). Current thinking about groups: Setting the stage for new ideas. In P. S. Goodman (Ed.), *Designing effective work groups* (pp. 1–33). Jossey-Bass.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford University Press.
- Grant, C., & Osanloo, A. (2014). Understanding, selecting, and integrating a theoretical framework in dissertation research: Creating the blueprint for your “house”. *Administrative Issues Journal Education Practice and Research*, 4(2), 12–26. <https://doi.org/10.5929/2014.4.2.9>
- Grant, R. M. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review*, 33(3), 114–135. <https://doi.org/10.2307/41166664>
- Grant, R. M. (1996a). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science*, 7(4), 375–387. <https://doi.org/10.1287/orsc.7.4.375>
- Grant, R. M. (1996b). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122. <https://doi.org/10.1002/smj.4250171110>
- Greene, W. H. (2003). *Econometric analysis* (5th ed.). Prentice-Hall.
- Greve, H. R. (2003). A behavioral theory of R&D expenditures and innovations: Evidence from shipbuilding. *The Academy of Management Journal*, 46(6), 685–702.
- Grossman, S. J., & Hart, O. D. (1986). The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy*, 94(4), 691–719. <https://doi.org/10.1086/261404>

-
- Guerras-Martín, L. Á., Madhok, A., & Montoro-Sánchez, Á. (2014). The evolution of strategic management research: Recent trends and current directions. *BRQ Business Research Quarterly*, 17(2), 69–76. <https://doi.org/10.1016/j.brq.2014.03.001>
- Gwinner, K. P., Gremler, D. D., & Bitner, M. J. (1998). Relational benefits in services industries: The customer's Perspective. *Journal of the Academy of Marketing Science*, 26(2), 101–114.
- Hafeez, K., Zhang, Y [YanBing], & Malak, N. (2002). Determining key capabilities of a firm using analytic hierarchy process. *International Journal of Production Economics*, 76(1), 39–51. [https://doi.org/10.1016/S0925-5273\(01\)00141-4](https://doi.org/10.1016/S0925-5273(01)00141-4)
- Hagel III, J., Brown, J. S., & Davison, L. (2010, March 4). *The best way to measure company performance*. Harvard Business Review. Digital Article. <https://hbr.org/2010/03/the-best-way-to-measure-compan>
- Hagel III, J., Brown, J. S., Samoylova, T., & Lui, M. (2013). *Success or struggle: ROA as a true measure of business performance*. Report 3 of the 2013 Shift Index series (Deloitte Development LLC, Ed.). Deloitte University Press.
- Hakenes, H., & Schnabel, I. (2011). Bank size and risk-taking under Basel II. *Journal of Banking & Finance*, 35(6), 1436–1449.
- Hall, R. (1992). The strategic analysis of intangible resources. *Strategic Management Journal*, 13(1), 135–144.
- Hall, R. (1993). A framework linking intangible resources and capabilities to sustainable competitive advantage. *Strategic Management Journal*, 14(8), 607–618.
- Hambrick, D. C. (2007). Upper echelons theory: An update. *The Academy of Management Review*, 32(2), 334–343.
- Hambrick, D. C., Cho, T. S., & Chen, M.-J. (1996). The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly*, 41(4), 659–684.
- Hambrick, D. C., & D'Aveni, R. A. (1992). Top team deterioration as part of the downward spiral of large corporate bankruptcies. *Management Science*, 38(10), 1445–1466.
- Hambrick, D. C., & Finkelstein, S. (1987). Managerial discretion: A bridge between polar views of organizational outcomes. *Research in Organizational Behavior*(9), 369–406.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *The Academy of Management Review*, 9(2), 193–206.
-

REFERENCES

- Hambrick, D. C., & Snow, C. C. (1977). A contextual model of strategic decision making in organizations. *Academy of Management Proceedings*, 109–112. <https://doi.org/10.5465/ambpp.1977.4977040>
- Hamel, G., & Heene, A. (1994). *Competence-based competition*. Wiley.
- Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review*, 49(2), 149–164.
- Hansson, S. O. (1996). Decision making under great uncertainty. *Philosophy of the Social Sciences*, 26(3), 369–386.
- Harris, M., Kriebel, C. H., & Raviv, A. (1982). Asymmetric information, incentives and intrafirm resource allocation. *Management Science*, 28(6), 604–620.
- Harrison, D. A., & Klein, K. J. (2007). What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *The Academy of Management Review*, 32(4), 1199–1228.
- Harrison, D. A., Price, K. H., & Bell, M. P. (1998). Beyond relational demography: Time and the effects of surface- and deep-level diversity on work group cohesion. *The Academy of Management Journal*, 41(1), 96–107.
- Harrison, J. S., Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1991). Synergies and post-acquisition performance: Differences versus similarities in resource allocations. *Journal of Management*, 17(1), 173–190.
- Hart, O. D., & Moore, J. (1990). Property rights and the nature of the firm. *Journal of Political Economy*, 98(6), 1119–1158. <https://doi.org/10.1086/261729>
- Hart, S. L. (1995). A natural-resource-based view of the firm. *The Academy of Management Review*, 20(4), 986–1014.
- Hart, S. L., & Ahuja, G. (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Business Strategy and the Environment*, 5(1), 30–37. [https://doi.org/10.1002/\(SICI\)1099-0836\(199603\)5:1<30::AID-BSE38>3.0.CO;2-Q](https://doi.org/10.1002/(SICI)1099-0836(199603)5:1<30::AID-BSE38>3.0.CO;2-Q)
- Hart, S. L., & Dowell, G. (2011). Invited editorial: A natural-resource-based view of the firm. *Journal of Management*, 37(5), 1464–1479. <https://doi.org/10.1177/0149206310390219>
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251–1271.
- Hayden, E., Porath, D., & Westernhagen, N. v. (2007). Does diversification improve the performance of German banks? Evidence from individual bank loan portfolios. *Journal of Financial Services Research*, 32(3), 123–140.

-
- Hayek, F. A. von. (1974). *The Pretence of knowledge: Prize Lecture, Lecture to the memory of Alfred Nobel, December 11, 1974*.
- Hayek, F. A. von. (1994). The theory of complex phenomena. In M. Martin & L. C. McIntyre (Eds.), *Readings in the Philosophy of Social Science* (pp. 55–70). MIT Press.
- Hayes, R. H., Wheelwright, S. C., & Clark, K. B. (1988). *Dynamic manufacturing: Creating the learning organization*. Free Press.
- Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. (2007). *Dynamic capabilities: Understanding strategic change in organizations*. Blackwell Publishing.
- Helfat, C. E., & Peteraf, M. A. (2009). Understanding dynamic capabilities: Progress along a developmental path. *Strategic Organization*, 7(1), 91–102. <https://doi.org/10.1177/1476127008100133>
- Helmich, D. L., & Brown, W. B. (1972). Successor type and organizational change in the corporate enterprise. *Administrative Science Quarterly*, 17(3), 371–381.
- Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, 15(Special Issue), 63–84.
- Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly*, 35(1), 9. <https://doi.org/10.2307/2393549>
- Herfindahl, O. C. (1950). *Concentration in the steel industry* [Doctoral dissertation, published on archive.org with consent of his heirs in June 2021]. Columbia University, New York, NY.
- Herring, R. J., & Santomero, A. M. (2000). What is optimal financial regulation? In B. E. Gup (Ed.), *The new financial architecture: Banking regulation in the 21st century* (pp. 51–84). Quorum Books.
- Hershey, J. C., & Schoemaker, P. J. H. (1980). Risk taking and problem context in the domain of losses: An expected utility analysis. *The Journal of Risk and Insurance*, 47(1), 111. <https://doi.org/10.2307/252685>
- Hill, G. W. (1982). Group versus individual performance: Are N+1 heads better than one? *Psychological Bulletin*, 93(1), 517–539.
- Hillson, D., & Murray-Webster, R. (2005). *Understanding and managing risk attitude*. Gower Publishing.
- Hirschman, A. O. (1945). *National power and the structure of foreign trade*. University of California Press.
-

- Hitt, M. A., Xu, K., & Carnes, C. M. (2016). Resource based theory in operations management research. *Journal of Operations Management*, 41(1), 77–94. <https://doi.org/10.1016/j.jom.2015.11.002>
- Hodgkinson, G. P., & Healey, M. P. (2011). Psychological foundations of dynamic capabilities: Reflexion and reflection in strategic management. *Strategic Management Journal*, 32(13), 1500–1516. <https://doi.org/10.1002/smj.964>
- Hodgson, G. M. (2013). Understanding organizational evolution: Toward a research agenda using generalized darwinism. *Organization Studies*, 34(7), 973–992. <https://doi.org/10.1177/0170840613485855>
- Hofer, C. W., & Schendel, D. (1978). *Strategy formulation: Analytical concepts*. West Publishing.
- Holmes, R. M., Bromiley, P., Devers, C. E., Holcomb, T. R., & McGuire, J. B. (2011). Management theory applications of prospect theory: Accomplishments, challenges, and opportunities. *Journal of Management*, 37(4), 1069–1107. <https://doi.org/10.1177/0149206310394863>
- Homberg, F., & Bui, H. T. M. (2013). Top management team diversity. *Group & Organization Management*, 38(4), 455–479. <https://doi.org/10.1177/1059601113493925>
- Hoopes, D. G., & Madsen, T. L. (2008). A capability-based view of competitive heterogeneity. *Industrial and Corporate Change*, 17(3), 393–426. <https://doi.org/10.1093/icc/dtn008>
- Hoskisson, R. E., Chirico, F., Zyung, J., & Gambeta, E. (2017). Managerial risk taking: A multitheoretical review and future research agenda. *Journal of Management*, 43(1), 137–169. <https://doi.org/10.1177/0149206316671583>
- Hoskisson, R. E., & Hitt, M. A. (1990). Antecedents and performance outcomes of diversification: A review and critique of theoretical perspectives. *Journal of Management*, 16(2), 461–509.
- Hoskisson, R. E., Hitt, M. A., Wan, W. P., & Yiu, D. (1999). Theory and research in strategic management: Swings of a pendulum. *Journal of Management*, 25(3), 417–456. <https://doi.org/10.1177/014920639902500307>
- House, S. (2009). *Beyond the mountain*. Vertebrate Publishing.
- Hsiao, C. (2007). Panel data analysis—advantages and challenges. *TEST*, 16(1), 1–22. <https://doi.org/10.1007/s11749-007-0046-x>
- Hughes, J. P., Lang, W., Mester, L. J., & Moon, C.-G. (1996). *Safety in numbers? Geographic diversification and bank insolvency risk* (Working Paper No. 96-14). Federal Reserve Bank of Philadelphia.

-
- Hughes, J. P., Lang, W. W., Mester, L. J., & Moon, C.-G. (1999). The dollars and sense of bank consolidation. *Journal of Banking & Finance*, 23(2-4), 291–324.
- Hunt, S. D. (1971). The morphology of theory and the general theory of marketing. *Journal of Marketing*, 35(2), 65–68.
- Hunt, S. D. (1991). *Modern marketing theory: Critical issues in the philosophy of marketing science*. South-Western Publishing.
- Hutchison, D., & Cox, R. A. (2006). The causal relationship between bank capital and profitability. *Annals of Financial Economics (AFE)*, 3(1), 1–11. <https://doi.org/10.2139/ssrn.956396>
- Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking & Finance*, 31(7), 2127–2149.
- ING Group. (2019). *Annual report 2019*. Author.
- Iyer, D. N., & Miller, K. D. (2008). Performance feedback, slack, and the timing of acquisitions. *The Academy of Management Journal*, 51(4), 808–822.
- Jabareen, Y. (2009). Building a conceptual framework: Philosophy, definitions, and procedure. *International Journal of Qualitative Methods*, 8(4), 49–62.
- Jackson, S. E. (1992). Consequences of group composition for the interpersonal dynamics of strategic issue processing. *Advances in Strategic Management*, 8(3), 345–382.
- Jamshidian, M., & Mata, M. (2007). Advances in analysis of mean and covariance structure when data are incomplete. In S.-Y. Lee (Ed.), *Handbook of latent variable and related models* (pp. 21–44). Elsevier.
- Jaspersen, J. G., & Peter, R. (2017). Experiential learning, competitive selection, and downside risk: A new perspective on managerial risk taking. *Organization Science*, 28(5), 915–930. <https://doi.org/10.1287/orsc.2017.1149>
- Jeffers, P. I., Muhanna, W. A., & Nault, B. R. (2008). Information technology and process performance: An empirical investigation of the interaction between IT and non-IT resources. *Decision Sciences*, 39(4), 703–735.
- Jensen, A. B. (2014). Do we need one business model definition? *Journal of Business Models*, 1(1), 61–84.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323–329.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
-

- Jobs, S. (2005, June 14). 'You've got to find what you love,' Jobs says. Stanford University. Prepared text of the Commencement address. <https://news.stanford.edu/2005/06/14/jobs-061505/>
- Johnsen, T. E., Miemczyk, J., & Howard, M. (2014). *Purchasing and supply chain management: A sustainability perspective*. Routledge.
- Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard Business Review*, 86(December), 59–68.
- Josefy, M., Kuban, S., Ireland, R. D., & Hitt, M. A. (2015). All things great and small: Organizational size, boundaries of the firm, and a changing environment. *The Academy of Management Annals*, 9(1), 715–802.
- Jungmann, C. (2006). The effectiveness of corporate governance in one-tier and two-tier board systems: Evidence from the UK and Germany. *European Company and Financial Law Review (ECFR)*, 3(4), 426-474.
- Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *The American Economic Review*, 93(5), 1449–1475 (Revised version of the lecture Daniel Kahneman delivered in Stockholm, Sweden, on December 8, 2002, when he received the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel).
- Kahneman, D., & Lovallo, D. (1993). Timid choices and bold forecasts: A cognitive perspective on risk taking. *Management Science*, 39(1), 17–31.
- Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology*, 3(3), 430–454.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–291.
- Kale, P., & Singh, H. (2007). Building firm capabilities through learning: The role of the alliance learning process in alliance capability and firm-level alliance success. *Strategic Management Journal*, 28(10), 981–1000. <https://doi.org/10.1002/smj.616>
- Kanto, A. J., Rosenqvist, G., & Suvas, A. (1992). On utility function estimation of racetrack bettors. *Journal of Economic Psychology*, 13(3), 491–498.
- Katz, D., & Kahn, R. L. (1966). *The social psychology of organisations*. John Wiley & Sons.
- Kaufmann, D., & Kraay, A. (2019). *Worldwide Governance Indicators (WGI)*. The World Bank, Washington, DC. <https://info.worldbank.org/governance/wgi/>
- Kennedy, P. (2008). *A guide to econometrics* (6th ed.). Blackwell Publishing.
- Kimball, R. C. (1997). Specialization, risk, and capital in banking. *New England Economic Review*(November/December), 51–73.

-
- Kimberly, J. R. (1976). Organizational size and the structuralist perspective: A review, critique, and proposal. *Administrative Science Quarterly*, 21(4), 571–597.
- Klein, M. A. (1971). A theory of the banking firm. *Journal of Money, Credit and Banking*, 3(2 (Part 1)), 205–218.
- Klein, M. A. (1973). The economics of security divisibility and financial intermediation. *The Journal of Finance*, 28(4), 923–931.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383–397.
- Köhler, M. *Does non-interest income make banks more risky? Retail- versus investment-oriented banks*. Discussion paper No 17/2013. Frankfurt am Main. Deutsche Bundesbank.
- Köhler, M. (2015). Which banks are more risky? The impact of business models on bank stability. *Journal of Financial Stability*, 16, 195–212. <https://doi.org/10.1016/j.jfs.2014.02.005>
- Koonce, L. L., McAnally, M. L. L., & Mercer, M. (2005). How do investors judge the risk of financial items? *Accounting Review*, 80(1), 221–241. <https://doi.org/10.2139/ssrn.438281>
- Kraaijenbrink, J., Spender, J.-C., & Groen, A. J. (2010). The resource-based view: A review and assessment of its critiques. *Journal of Management*, 36(1), 349–372. <https://doi.org/10.1177/0149206309350775>
- Kraatz, M. S., & Zajac, E. J. (2001). How organizational resources affect strategic change and performance in turbulent environments: Theory and evidence. *Organization Science*, 12(5), 632–657.
- Kreikebaum, H., Gilbert, D. U., & Behnam, M. (2011). *Strategisches management*. Kohlhammer.
- Kuglanski, A. W., & Ajzen, I. (1983). Bias and error in human judgment. *European Journal of Social Psychology*, 13(1), 1–44.
- Lado, A. A., & Wilson, M. C. (1994). Human resource systems and sustained competitive advantage: A competency-based perspective. *The Academy of Management Review*, 19(4), 699–727.
- Laeven, L., & Levine, R. (2007). Is there a diversification discount in financial conglomerates? *Journal of Financial Economics*, 85(2), 331–367. <https://doi.org/10.1016/j.jfineco.2005.06.001>
-

REFERENCES

- Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of Financial Economics*, 93(2), 259–275.
- Laeven, L., Ratnovski, L., & Tong, H. (2016). Bank size, capital, and systemic risk: Some international evidence. *Journal of Banking and Finance*, 69(Supplement 1), S25-S34.
- Lambert, S. C., & Davidson, R. A. (2013). Applications of the business model in studies of enterprise success, innovation and classification: An analysis of empirical research from 1996 to 2010. *European Management Journal*, 31(6), 668–681. <https://doi.org/10.1016/j.emj.2012.07.007>
- Lamont, O. (1997). Cash flow and investment: Evidence from internal capital markets. *The Journal of Finance*, 52(1), 83–109.
- Lane, R. E. (1966). The decline of politics and ideology in a knowledgeable society. *American Sociological Review*, 31(5), 649–662.
- Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32(2), 311–328.
- Lawrence, B. S. (1997). Perspective—The black box of organizational demography. *Organization Science*, 8(1), 1–22. <https://doi.org/10.1287/orsc.8.1.1>
- Lawrence, P. R., & Lorsch, J. W. (1967a). Differentiation and integration in complex organizations. *Administrative Science Quarterly*, 12(1), 1–47.
- Lawrence, P. R., & Lorsch, J. W. (1967b). *Organization and environment: Managing differentiation and integration*. Division of Research, Graduate School of Business Administration, Harvard University.
- Learned, E. P., Christensen, R. C., Andrews, K. R., & Guth, W. D. (1965). *Business policy: Text and cases*. Richard D. Irwin.
- Leavitt, H. J. (1975). Suppose we took groups seriously ... In E. L. Cass, F. G. Zimmer, & F. A. Zimmer (Eds.), *Man and work in society: A report on the symposium held on the occasion of the 50th anniversary of the original Hawthorne studies* (pp. 67–77). Van Nostrand Reinhold.
- Lee, C.-C., & Hsieh, M.-F. (2013). The impact of bank capital on profitability and risk in Asian banking. *Journal of International Money and Finance*, 32, 251–281.
- Leland, H. E., & Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, 32(2), 371–387.
- Leonard, R. D., Jones, & George T. (1989). *Quantifying diversity in archaeology*. Cambridge University Press.

-
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13(Special Issue), 111–125.
- Leong, S. M., Busch, P. S., & John, D. R. (1989). Knowledge bases and salesperson effectiveness: A script-theoretic analysis. *Journal of Marketing Research*, 26(2), 164–178.
- Levy, J. S. (1992). An introduction to prospect theory. *Political Psychology*, 13(2 (Special Issue)), 171–186.
- Lewellen, W. G. (1971). A pure financial rationale for the conglomerate merger. *The Journal of Finance*, 26(2), 521–537.
- Liang, J. N., & Rhoades, S. A. (1991). Asset diversification, firm risk, and risk-based capital requirements in banking. *Review of Industrial Organization*, 6(1), 49–59. <https://doi.org/10.1007/BF00428000>
- Liang, N., & Rhoades, S. A. (1988). Geographic diversification and risk in banking. *Journal of Economics and Business*, 40(4), 271–284.
- Likert, R. (1961). *New patterns of management*. McGraw-Hill.
- Lin, J.-R., Chung, H., Hsieh, M.-H., & Wu, S. (2012). The determinants of interest margins and their effect on bank diversification: Evidence from Asian banks. *Journal of Financial Stability*, 8(2), 96–106.
- Lin, X., & Zhang, Y [Yi] (2009). Bank ownership reform and bank performance in China. *Journal of Banking & Finance*, 33(1), 20–29.
- Lindley, D. V., Tversky, A., & Brown, R. V. (1979). On the reconciliation of probability assessments. *Journal of the Royal Statistical Society. Series a (General)*, 142(2), 146–180.
- Little, R. J. A., & Rubin, D. B. (2020). *Statistical analysis with missing data* (3rd ed.). John Wiley & Sons.
- Littlepage, G. E. (1991). Effects of group size and task characteristics on group performance: A test of Steiner's model. *Personality and Social Psychology Bulletin*, 17(4), 449–456.
- Lockett, A. (2005). Edith Penrose's legacy to the resource-based view. *Managerial and Decision Economics*, 26(2), 83–98. <https://doi.org/10.1002/mde.1214>
- Lockett, A., Thompson, S., & Morgenstern, U. (2009). The development of the resource-based view of the firm: A critical appraisal. *International Journal of Management Reviews*, 11(1), 9–28. <https://doi.org/10.1111/j.1468-2370.2008.00252.x>
- Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational Behavior and Human Decision Processes*, 65(3), 272–292.
-

- Luhmann, N. (2000). *Organisation und Entscheidung*. Westdeutscher Verlag.
- Luhmann, N. (2009). Zur Komplexität von Entscheidungssituationen. *Soziale Systeme*, 15(1), 3–35 (Bislang unveröffentlichtes Manuskript von Niklas Luhmann aus dem Jahr 1973).
- Ma, H. (2000). Competitive advantage and firm performance. *Competitiveness Review*, 10(2), 15–32.
- Maassen, G. F. (1999). *An international comparison of corporate governance models: A study on the formal independence and convergence of one-tier and two-tier corporate boards of directors in the United States of America, the United Kingdom and the Netherlands* (Doctoral dissertation). Rotterdam School of Management, The Netherlands.
- Maassen, G. F., & van den Bosch, F. (1999). On the supposed independence of two-tier boards: Formal structure and reality in the Netherlands. *Corporate Governance*, 7(1), 31–37. <https://doi.org/10.1111/1467-8683.00126>
- Magjuka, R. J., & Baldwin, T. T. (1991). Team-based employee involvement programs: Effects of design and administration. *Personnel Psychology*, 44(4), 793–812. <https://doi.org/10.1111/j.1744-6570.1991.tb00699.x>
- Mahadevan, B. (2000). Business models for internet-based e-commerce: An anatomy. *California Management Review*, 42(4), 55–69.
- Mahoney, J. T. (2001). A resource-based theory of sustainable rents. *Journal of Management*, 27(6), 651–660. <https://doi.org/10.1177/014920630102700603>
- Mahoney, J. T., & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic Management Journal*, 13(5), 363–380. <https://doi.org/10.1002/smj.4250130505>
- Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, 22(5), 387–401.
- Malone, T., Weill, P., Lai, R., D’Urso, V., Herman, G., Apel, T., & Woerner, S. (2006). *Do some business models perform better than others?* MIT Sloan Research Paper No. 4615-06. MIT Sloan School of Management.
- Mao, J. C. T. (1970). Survey of capital budgeting: Theory and practice. *The Journal of Finance*, 25(2), 349–360.
- March, J. G., & Shapira, Z. (1987). Managerial perspectives on risk and risk taking. *Management Science*, 33(11), 1404–1418. <https://doi.org/10.1287/mnsc.33.11.1404>
- March, J. G., & Simon, H. A. (1958). *Organizations*. John Wiley & Sons.
- Marcus, A. A., & Nichols, M. L. (1999). On the edge: Heeding the warnings of unusual events. *Organization Science*, 10(4), 482–499. <https://doi.org/10.1287/orsc.10.4.482>

-
- Margretta, J. (2002). Why business models matter? *Harvard Business Review*, 80(May), 86–92.
- Maritan, C. A., & Peteraf, M. A. (2011). Invited editorial: Building a bridge between resource acquisition and resource accumulation. *Journal of Management*, 37(5 (Special Issue)), 1374–1389. <https://doi.org/10.1177/0149206310387675>
- Markides, C. C., & Williamson, P. J. (1994). Related diversification, core competencies and corporate performance. *Strategic Management Journal*, 15(Special Issue), 149–165.
- Markowitz, H. M. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77–91.
- Markowitz, H. M. (1959). *Portfolio selection: Efficient diversification of investments*. John Wiley & Sons.
- Marris, R. (1963). A model of the "managerial" enterprise. *The Quarterly Journal of Economics*, 77(2), 185–209.
- Marshall, D., McCarthy, L., Heavey, C., & McGrath, P. (2015). Environmental and social supply chain management sustainability practices: Construct development and measurement. *Production, Planning and Control*, 26(8), 673–690.
- Martignon, L. (2001). Algorithms. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social & behavioral sciences* (pp. 382–385). Elsevier.
- Martinez-Vazquez, J., Harwood, G. B., & Larkins, E. R. (1992). Withholding position and income tax compliance: Some experimental evidence. *Public Finance Quarterly*, 20(2), 152–174.
- Mason, E. S. (1939). Price and production policies of large-scale enterprise. *The American Economic Review*, 29(1), 61–74.
- Matthews, R. C. O. (1986). The economics of institutions and the sources of growth. *The Economic Journal*, 96(384), 903–918.
- Mayo, E. (1930). The human effect of mechanization. *The American Economic Review*, 20(1), 156–176.
- Mayo, E. (1949). Hawthorne and the Western Electric Company. *Public Administration: Concepts and Cases*, pp. 149–158.
- Mayring, P. (2014). *Qualitative content analysis: Theoretical foundation, basic procedures and software solution*. Beltz.
- McAllister, P. H., & McManus, D. (1993). Resolving the scale efficiency puzzle in banking. *Journal of Banking & Finance*, 17(2-3), 389–405.
-

- McEvily, S. K., & Chakravarthy, B. (2002). The persistence of knowledge-based advantage: An empirical test for product performance and technological knowledge. *Strategic Management Journal*, 23(4), 285–305. <https://doi.org/10.1002/smj.223>
- McGregor, D. M. (1960). *The human side of enterprise*. McGraw-Hill.
- Mediobanca. (2018). *Annual accounts and report as at 30 June 2018*. Author.
- Meinshausen, N. (2008). Hierarchical testing of variable importance. *Biometrika*, 95(2), 265–278.
- Ménard, C., & Shirley, M. M. (Eds.). (2008). *Handbook of new institutional economics*. Springer.
- Menezes, C., Geiss, C., & Tressler, J. (1980). Increasing downside risk. *The American Economic Review*, 70(5), 921–932.
- Merton, R. K. (1938). Social structure and anomie. *American Sociological Review*, 3(5), 672–682.
- Merton, R. K. (1989). On the application of the continuous-time theory of finance to financial intermediation and insurance. *The Geneva Papers on Risk and Insurance*, 14(52), 25–261.
- Meslier, C., Morgan, D. P., Samolyk, K., & Tarazi, A. (2016). The benefits and costs of geographic diversification in banking. *Journal of International Money and Finance*, 69, 287–317. <https://doi.org/10.1016/j.jimonfin.2016.07.007>
- Messner, R. (2003). *The naked mountain: Nanga Parbat – brother, death and solitude*. The Crowood Press.
- Messner, R. (2014). *My life at the limit*. Mountaineers Book.
- Meyer, M. W. (1972). Size and the structure of organizations: A causal analysis. *American Sociological Review*, 37(4), 434-440.
- Micco, A., Panizza, U., & Yanez, M. (2004). *Bank ownership and performance*. Working Paper, No. 518. Inter-American Development Bank, Research Department, Washington, DC.
- Mihaylova, M. (2013). Morphology of the economic category of dynamic capabilities. *Izvestiya*(1), 86–97.
- Miles, M. B., & Huberman, A. M. *Qualitative data analysis: An expanded sourcebook* (2nd ed.). SAGE Publications.
- Miller, D., & Friesen, P. H. (1982). The longitudinal analysis of organizations: A methodological perspective. *Management Science*, 28(9), 1013–1034.

-
- Miller, D., & Shamsie, J. (1996). The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965. *The Academy of Management Journal*, 39(3).
- Miller, K. D., & Chen, W.-R. (2004). Variable organizational risk preferences: Tests of the March-Shapira model. *Academy of Management Journal*, 47(1), 105–115. <https://doi.org/10.5465/20159563>
- Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *The Academy of Management Review*, 21(2), 402–433.
- Mintzberg, H. (1978). Patterns in strategy formation. *Management Science*, 24(9), 934–948. <https://doi.org/10.1287/mnsc.24.9.934>
- Mintzberg, H. (1990). The manager's job: Folklore and fact. *Harvard Business Review*, 68(March-April), 1–13.
- Mintzberg, H. (1994). Rounding out the manager's job. *Sloan Management Review*, 31(1), 11–26.
- Mintzberg, H., Ahlstrand, B., & Lampel, J. (1998). *Strategy safari: A guided tour through the wilds of strategic management*. The Free Press.
- Mirza, S. S., Safdar, R., Yu, Y., & Gulzar, M. A. (2019). Managerial empowerment and firm risk-taking. *SAGE Open*, 9(2), 1-13. <https://doi.org/10.1177/2158244019856963>
- Mishra, S. (2014). Decision-making under risk: Integrating perspectives from biology, economics, and psychology. *Personality and Social Psychology Review*, 18(3), 280–307. <https://doi.org/10.1177/1088868314530517>
- Moldaschl, M., & Fischer, D. (2004). Beyond the management view: A resource-centered socio-economic perspective. *Management Review*, 15(1), 122–151. <https://doi.org/10.5771/0935-9915-2004-1-122>
- Molloy, J. C., Chadwick, C., Ployhart, R. E., & Golden, S. J. (2011). Making intangibles “tangible” in tests of resource-based theory: A multidisciplinary construct validation approach. *Journal of Management*, 37(5), 1496–1518. <https://doi.org/10.1177/0149206310394185>
- Morgan, D. P., & Samolyk, K. (2003). *Geographic diversification in banking and its implications for bank portfolio choice and performance*. Federal Reserve Bank of New York.
-

- Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: Toward a unified perspective. *Journal of Business Research*, 58(6), 726–735. <https://doi.org/10.1016/j.jbusres.2003.11.001>
- Moundigbaye, M., Rea, W. S., & Reed, W. R. (2018). Which panel data estimator should I use? A corrigendum and extension. *Economics: The Open-Access, Open-Assessment E-Journal*, 12(2018-4), 1–31.
- Mueller, J. H., & Schuessler, K. F. (1961). *Statistical reasoning in sociology*. Houghton Mifflin.
- Münchener Hypothekenbank. (2019). *Annual report 2019*. Author.
- Murray, A. I. (1989). Top management group heterogeneity and firm performance. *Strategic Management Journal*, 10(Special Issue), 125–141.
- Muthuveloo, R., Shanmugam, N., & Teoh, A. P. (2017). The impact of tacit knowledge management on organizational performance: Evidence from Malaysia. *Asia Pacific Management Review*, 22(4), 192–201. <https://doi.org/10.1016/j.apmr.2017.07.010>
- Neisen, M., & Schulte-Mattler, H. (2020). CRD V/CRR II: A comprehensive synopsis of the first European step towards implementing Basel IV (Part II). *Journal of Risk Management in Financial Institutions*, 13(3), 224–241.
- Neisen, M., & Schulte-Mattler, H. (2021). The effectiveness of IFRS 9 transitional provisions in limiting the potential impact of COVID-19 on banks. *Journal of Banking Regulation*, 22(4), 342–351.
- Nelson, R. R. (1991). Why do firms differ, and how does it matter? *Strategic Management Journal*, 12(Special Issue 2 (S2)), 61–74.
- Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Harvard University Press.
- Newbert, S. L. (2007). Empirical research on the resource-based view of the firm: An assessment and suggestions for future research. *Strategic Management Journal*, 28(2), 121–146. <https://doi.org/10.1002/smj.573>
- Newman, D. A. (2003). Longitudinal modeling with randomly and systematically missing data: A simulation of ad hoc, maximum likelihood, and multiple imputation techniques. *Organizational Research Methods*, 6(3), 328–362. <https://doi.org/10.1177/1094428103254673>
- Ng, J., & Roychowdhury, S. (2014). Do loan loss reserves behave like capital? Evidence from recent bank failures. *Review of Accounting Studies*, 19(3), 1234–1279. <https://doi.org/10.1007/s11142-014-9281-z>

-
- Nickel, M. N., & Rodriguez, M. C. (2002). A review of research on the negative accounting relationship between risk and return: Bowman's paradox. *Omega*, 30(1), 1–18. [https://doi.org/10.1016/S0305-0483\(01\)00055-X](https://doi.org/10.1016/S0305-0483(01)00055-X)
- Nickerson, J. A., & Zenger, T. R. (2004). A knowledge-based theory of the firm—The problem-solving perspective. *Organization Science*, 15(6), 617–632. <https://doi.org/10.1287/orsc.1040.0093>
- Nisbett, R. E., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment*. Prentice-Hall.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14–37.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company*. Oxford University Press.
- North, D. C. (1992). *Transaction costs, institutions, and economic performance*. ICS Press.
- Oddo BHF. (2017). *Financial report 2017*. Author.
- Oliver, C. (1997). Sustainable competitive advantage: Combining institutional and resource-based views. *Strategic Management Journal*, 18(9), 697–713. [https://doi.org/10.1002/\(SICI\)1097-0266\(199710\)18:9<697::AID-SMJ909>3.0.CO;2-C](https://doi.org/10.1002/(SICI)1097-0266(199710)18:9<697::AID-SMJ909>3.0.CO;2-C)
- Opp, K.-D. (1985). Sociology and economic man. *Zeitschrift Für Die Gesamte Staatswissenschaft / Journal of Institutional and Theoretical Economics*, 141(H. 2), 213–243.
- Ordanini, A., & Rubera, G. (2008). Strategic capabilities and internet resources in procurement. *International Journal of Operations & Production Management*, 28(1), 27–52. <https://doi.org/10.1108/01443570810841095>
- O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, 28, 185–206.
- Osterwalder, A. (2004). *The business model ontology: A proposition in a design science approach* (Doctoral dissertation). Université de Lausanne, Switzerland, Lausanne, Switzerland.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. John Wiley & Sons.
- Pablo, A. L., Reay, T., Dewald, J. R., & Casebeer, A. L. (2007). Identifying, enabling and managing dynamic capabilities in the public sector. *Journal of Management Studies*, 44(5), 687–708. <https://doi.org/10.1111/j.1467-6486.2006.00675.x>
-

- Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1991). Understanding customer expectations of service. *Sloan Management Review*, 32(Spring), 39–48.
- Park, H. M. (2011). *Practical guides to panel data modeling: A step-by-step analysis using Stata* (Tutorial Working Paper). Graduate School of International Relations, International University of Japan.
- Parker, C. (2000). Performance measurement. *Work Study*, 49(2), 63–66.
- Paulos, J. A. (2003). *A mathematician plays the stock market*. Basic Books.
- Pavitt, K. (1991). Key characteristics of the large innovating firm. *British Journal of Management*, 2(1), 41–50. <https://doi.org/10.1111/j.1467-8551.1991.tb00014.x>
- Payne, J. W., Laughhunn, D. J., & Crum, R. (1984). Multiattribute risky choice behavior: The editing of complex prospects. *Management Science*, 30(11), 1350–1361.
- Pearce II, J. A. (1983). The relationship of internal versus external orientations to financial measures of strategic performance. *Strategic Management Journal*, 4(4), 297–306.
- Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. (1999). Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly*, 44(1), 1–28.
- Pemberton, J. D., & Stonehouse, G. H. (2000). Organisational learning and knowledge assets – an essential partnership. *The Learning Organization*, 7(4), 184–194.
- Penrose, E. T. (2009). *The theory of the growth of the firm* (4th ed., Rev. ed.). Oxford University Press. (Original work published 1959).
- Peshkin, A. (1993). The goodness of qualitative research. *Educational Researcher*, 22(2), 23–29.
- Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, 34(12), 1389–1410. <https://doi.org/10.1002/smj.2078>
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14(3), 179–191.
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, 24(4), 309–323. <https://doi.org/10.1002/mde.1126>
- Peters, T. J., & Waterman, R. H. (1982). *In search of excellence: Lessons from America's best-run companies*. Harper & Row.
- Peterson, M. (2017). *An introduction to decision theory* (2nd ed.). Cambridge University Press.
- Pettus, M. L., Kor, Y. Y., & Mahoney, J. T. (2009). A theory of change in turbulent environments: The sequencing of dynamic capabilities following industry deregulation.

-
- International Journal of Strategic Change Management*, 1(3), Article 24509, 186.
<https://doi.org/10.1504/IJSCM.2009.024509>
- Pfeffer, J. (1983). Organizational demography. *Research in Organizational Behavior*, 5, 299–357.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Phelan, S. E., & Lewin, P. (2000). Arriving at a strategic theory of the firm. *International Journal of Management Reviews*, 2(4), 305–323. <https://doi.org/10.1111/1468-2370.00044>
- Pilloff, S. J., & Rhoades, S. A. (2000). Do large, diversified banking organizations have competitive advantages? *Review of Industrial Organization*, 16(3), 287–302.
- Pisano, G. P. (1994). Knowledge, integration, and the locus of learning: An empirical analysis of process development. *Strategic Management Journal*, 15(Special Issue), 85–100.
- Pisano, G. P. (1996). Learning-before-doing in the development of new process technology. *Research Policy*, 25(7), 1097–1119.
- Pisano, G. P. (2017). Toward a prescriptive theory of dynamic capabilities: Connecting strategic choice, learning, and competition. *Industrial and Corporate Change*, 26(5), 747–762. <https://doi.org/10.1093/icc/dtx026>
- Porter, M. E. (1980a). *Competitive strategy: Techniques for analyzing industries and competitors*. Free Press.
- Porter, M. E. (1980b). Industry structure and competitive strategy: Keys to profitability. *Financial Analysts Journal*, 36(4), 30–41.
- Porter, M. E. (1981). The contributions of industrial organization to strategic management. *Academy of Management Review*, 6(4), 609–620.
- Porter, M. E. (1983). Industrial organization and the evolution of concepts for strategic planning: The new learning. *Managerial and Decision Economics*, 4(3), 172–180.
- Porter, M. E. (1996). What is strategy? *Harvard Business Review*, 74(6), 61–78.
- Porter, M. E. (1997). Competitive strategy. *Measuring Business Excellence*, 1(2), 12–17.
- Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68(May-June), 79–91. <https://doi.org/10.4324/9781912281077>
- Prahalad, C. K., & Hamel, G. (1994). Strategy as a field of study: Why search for a new paradigm? *Strategic Management Journal*, 15(S2), 5–16.
- Prelec, D. (1998). The probability weighting function. *Econometrica*, 66(3), 497–527.
-

- Priem, R. L., & Butler, J. E. (2001a). Is the resource-based "view" a useful perspective for strategic management research? *The Academy of Management Review*, *16*(1), 22–40.
- Priem, R. L., & Butler, J. E. (2001b). Tautology in the resource-based view and the implications of externally determined resource value: Further comments. *The Academy of Management Review*, *26*(1), 57–66.
- Rajan, R., Servaes, H., & Zingales, L. (2000). The cost of diversity: The diversification discount and inefficient investment. *The Journal of Finance*, *55*(1), 35–80.
- Ramdani, B., Binsarif, A., & Boukrami, E. (2019). Business model innovation: A review and research agenda. *New England Journal of Entrepreneurship*, *22*(2), 89–108. <https://doi.org/10.1108/NEJE-06-2019-0030>
- Rawley, E. (2010). Diversification, coordination costs, and organizational rigidity: Evidence from microdata. *Strategic Management Journal*, *31*(8), 873–891. <https://doi.org/10.1002/smj.838>
- Reed, R., & DeFillippi, R. J. (1990). Causal ambiguity. *Academy of Management Review*, *15*(1), 88–102. https://doi.org/10.1057/978-1-349-94848-2_462-1
- Reed, R., & Luffman, G. A. (1986). Diversification: The growing confusion. *Strategic Management Journal*, *7*(1), 29–35.
- Reed, W. R., & Ye, H. (2011). Which panel data estimator should I use? *Applied Economics*, *43*(8), 985–1000.
- Rentmeister, J., & Klein, S. (2003). Geschäftsmodelle – ein Modebegriff auf der Waagschale. In H. Albach & J. Hummel (Eds.), *Zeitschrift für Betriebswirtschaft (ZfB) Ergänzungsheft: 1/2003. Die Zukunft des Electronic Business* (pp. 17–30). Gabler.
- Richard J Arend (2013). The business model: Present and future-beyond a skeumorph. *Strategic Organization*, *11*(4), 390–402.
- Richardson, J. (2008). The business model: An integrative framework for strategy execution. *Strategic Change*, *17*(5-6), 133–144. <https://doi.org/10.1002/jsc.821>
- Rindova, V. P., & Kotha, S. (2001). Continuous "morphing": Competing through dynamic capabilities, form, and function. *The Academy of Management Journal*, *44*(6), 1263–1280.
- Ringe, W.-G. (2016). German versus Nordic board models: Form, function, and convergence. *Nordic Journal of Business*, *65*(1), 27–40.
- Robinson, J. V. (1933). *The economics of imperfect competition*. Macmillan.
- Roethlisberger, F. J., & Dickson, W. J. (1939). *Management and the worker*. Harvard University Press.

-
- Rose, P. S. (1996). The diversification and cost effects of interstate banking. *The Financial Review*, 31(2), 431–452.
- Rossiter, J. R. (2019). A critique of prospect theory and framing with particular reference to consumer decisions. *Journal of Consumer Behaviour*, 18(5), 399–405. <https://doi.org/10.1002/cb.1779>
- Roth, J.-P. (2003, June 16). *Switzerland in the EU environment*. Speech by Mr Jean-Pierre Roth, Chairman of the Governing Board of the Swiss National Bank, at the Polish-Swiss Chamber of Industry and Commerce. Bank for International Settlements (BIS). Central Bank Articles and Speeches, Warsaw.
- Roth, P. L. (1994). Missing data: A conceptual review for applied psychologists. *Personnel Psychology*, 47(3), 537–560. <https://doi.org/10.1111/j.1744-6570.1994.tb01736.x>
- Row, W. D. (1994). Understanding uncertainty. *Risk Analysis*, 14(5), 743–750.
- Royston, P. (2004). Multiple imputation of missing values. *The Stata Journal*, 4(3), 227–241.
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. John Wiley & Sons.
- Rubin, D. B. (1996). Multiple imputation after 18+ years. *Journal of the American Statistical Association*, 91(434), 473–489.
- Rubin, P. H. (1973). The expansion of firms. *Journal of Political Economy*, 81(4), 936–949.
- Rudner, R. S. (1966). *Philosophy of social science*. Prentice-Hall.
- Rumelt, R. P. (1984). Towards a strategic theory of the firm. In R. B. Lamb (Ed.), *Competitive strategic management* (pp. 556–570). Prentice-Hall.
- Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic management and economics. *Strategic Management Journal*, 12(Special Issue: Fundamental Research Issues in Strategy and Economics), 5–29.
- Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *The Academy of Management Journal*, 40(3), 534–559.
- S&P Global Market Intelligence. (2021, May 27). *SNL Financial Institutions Data*. <https://www.spglobal.com/marketintelligence/en/client-segments/academia#snl-financial-institutions-data>
- Salvato, C. (2003). The role of micro-strategies in the engineering of firm evolution. *Journal of Management Studies*, 40(1), 83–108. <https://doi.org/10.1111/1467-6486.t01-2-00005>
- Sanchez, R., & Heene, A. (1997). Managing for an uncertain future. *International Studies of Management & Organization*, 27(2), 21–42. <https://doi.org/10.1080/00208825.1997.11656706>
-

- Sanders, K., & Kianty, A. (2006). *Organisationstheorien: Eine Einführung. Lehrbuch*. VS Verlag für Sozialwissenschaften.
- Santomero, A. M. (1984). Modeling the banking firm: A survey. *Journal of Money, Credit and Banking*, 16(4 (Part 2: Bank Market Studies)), 576–602.
- Saunders, A., Strock, E., & Travlos, N. G. (1990). Ownership structure, deregulation, and bank risk taking. *The Journal of Finance*, 45(2), 643–654.
- Savory, A., & Butterfield, J. (1999). *Holistic management: A new framework for decision making*. Island Press.
- Scharfstein, D. S. (1998). *The dark side of internal capital markets II: Evidence from diversified conglomerates*. Working Paper 6352. National Bureau of Economic Research (NBER) Working Paper Series.
- Schendel, D., & Hofer, C. W. (1979). *Strategic management: A new view of business policy and planning*. Little, Brown.
- Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, 35(2), 179–203. <https://doi.org/10.1002/smj.2099>
- Schmalensee, R. (1985). Do markets differ much? *The American Economic Review*, 75(3), 341–351.
- Schoemaker, P. J. H., & Kunreuther, H. C. (1979). An experimental study of insurance decisions. *The Journal of Risk and Insurance*, 46(4), 603–618.
- Schulte-Mattler, M. M. (2019). *Top management team, ambidexterity, and performance of banks: The moderating role of slack, risk orientation and TMT change* (Doctoral dissertation no. 4919). University of St. Gallen, Switzerland.
- Schumpeter, J. A. (1911). *Theorie der wirtschaftlichen Entwicklung*. Duncker & Humblot.
- Schumpeter, J. A. (1939). *Business cycles: A theoretical, historical and statistical analysis of the capitalist process*. McGraw-Hill.
- Schumpeter, J. A. (1943). *Capitalism, socialism & democracy* (2003 ed.). Routledge.
- Selznick, P. (1957). *Leadership in administration: A sociological interpretation*. University of California Press.
- Senge, P. M. (1997). The fifth discipline. *Measuring Business Excellence*, 1(3), 46–51.
- Senge, P. M., Roberts, C., Ross, R. B., & Smith, B. J. (1994). *The fifth discipline fieldbook: Strategies and tools for building a learning organization*. Nicholas Brealey Publishing.
- Sharfman, M. P., Wolf, G., Chase, R. B., Tansik, & David A. (1988). Antecedents of organizational slack. *The Academy of Management Review*, 13(4), 601–614.

-
- Sharma, A., & Levy, M. (1995). Categorization of customers by retail salespeople. *Journal of Retailing*, 71(1).
- Sharma, S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable capabilities. *Strategic Management Journal*, 19(8), 729–753.
- Shaw, M. E. (1976). *Group dynamics* (2nd ed.). Tata McGraw Hill.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737–783.
- Simon, H. A. (1947). *Administrative behavior: A study of decision-making processes in administrative organizations*. Macmillan.
- Simon, H. A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, 69(1), 99–118.
- Simon, H. A. (1957a). *Administrative behavior: A study of decision-making processes in administrative organizations* (2nd ed.). Free Press.
- Simon, H. A. (1957b). *Models of man: Social and rational*. Mathematical essays on rational human behavior in a social setting. John Wiley & Sons.
- Simon, H. A. (1959). Theories of decision-making in economics and behavioral science. *The American Economic Review*, 49(3), 253–283.
- Simon, H. A. (1972). Theories of bounded rationality. In C. B. McGuire & R. Radner (Eds.), *Decision and organization* (pp. 161–176). North-Holland Publishing Company.
- Simon, H. A. (1978). Rationality as process and as product of thought. *The American Economic Review*, 68(2), 1–16.
- Simon, H. A. (1987). Making management decisions: The role of intuition and emotion. *Academy of Management Perspectives*, 1(1), 57–64.
- Simon, H. A. (1991). Bounded rationality and organizational learning. *Organization Science*, 2(1), 125–134.
- Simon, M., & Houghton, S. M. (2003). The relationship between overconfidence and the introduction of risky products: Evidence from a field study. *The Academy of Management Journal*, 46(2), 139–149.
- Singh, J. V. (1986). Performance, slack, and risk taking in organizational decision making. *Academy of Management Journal*, 29(3), 562–585.
- Smith, A. (1976). *An inquiry into the nature and causes of the wealth of nations*. Oxford University Press. (Original work published 1776).

- Smith, K. A., Vasudevan, S. P., & Tanniru, M. R. (1996). Organizational learning and resource-based theory: An integrative model. *Journal of Organizational Change Management*, 9(6), 41–53. <https://doi.org/10.1108/09534819610150512>
- Smith, K. G., Smith, K. A., Olian, J. D., Sims, H. P., O'Bannon, D. P., & Scully, J. A. (1994). Top management team demography and process: The role of social integration and communication. *Administrative Science Quarterly*, 39(3), 412–438.
- Snow, C. C., & Hrebiniak, L. G. (1980). Strategy, distinctive competence, and organizational performance. *Administrative Science Quarterly*, 25(2), 317–336.
- Spender, J.-C. (1989). *Industry recipes: The nature and sources of managerial judgment*. Basil Blackwell.
- Spender, J.-C. (1996). Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal*, 17(S2), 45–62.
- Srivastava, R. K., Fahey, L., & Christensen, H. K. (2001). The resource-based view and marketing: The role of market-based assets in gaining competitive advantage. *Journal of Management*, 27(6), 777–802.
- Stein, J. C. (1997). Internal capital markets and the competition for corporate resources. *The Journal of Finance*, 52(1), 111–133. <https://doi.org/10.3386/w5101>
- Steiner, I. D. (1972). *Group process and productivity*. Academic Press.
- Sterman, J. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. McGraw-Hill.
- Stirling, A. (2007). A general framework for analysing diversity in science, technology and society. *Journal of the Royal Society, Interface*, 4(15), 707–719. <https://doi.org/10.1098/rsif.2007.0213>
- Stiroh, K. J. (2006). A portfolio view of banking with interest and noninterest activities. *Journal of Money, Credit and Banking*, 38(5), 1351–1361.
- Stiroh, K. J., & Rumble, A. (2006). The dark side of diversification: The case of US financial holding companies. *Journal of Banking & Finance*, 30(8), 2131–2161. <https://doi.org/10.1016/j.jbankfin.2005.04.030>
- Stonehouse, G. H., & Pemberton, J. D. (1999). Learning and knowledge management in the intelligent organisation. *Participation and Empowerment: An International Journal*, 7(5), 131–144.
- Subramanian, R., Kamalesh, K., & Strandholm, K. (2009). The role of organizational competencies in the market-orientation-performance relationship: An empirical analysis. *International Journal of Commerce and Management*, 19(1), 7–26.

-
- Sutherland, E. H. (1949). *White collar crime*. Dryden Press.
- Taleb, N. N. (2007). *The black swan: The impact of the highly improbable*. Random House.
- Taris, T. W., & Kompier, M. A. J. (2014). Cause and effect: Optimizing the designs of longitudinal studies in occupational health psychology. *Work & Stress*, 28(1), 1–8. <https://doi.org/10.1080/02678373.2014.878494>
- Taylor, F. W. (1914). *The principles of scientific management*. Harper & Brothers Publishers.
- Taylor, S. E. (1982). The availability bias in social perception and interaction. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under Uncertainty: Heuristics and biases* (pp. 190–200). Cambridge University Press.
- Teece, D. J. (1982). Towards an economic theory of the multiproduct firm. *Journal of Economic Behavior & Organization*, 3(1), 39–63.
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. <https://doi.org/10.1002/smj.640>
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2-3), 172–194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Teece, D. J., & Pisano, G. (1994). The dynamic capabilities of firms: An Introduction. *Industrial and Corporate Change*, 3(3), 537–556. <https://doi.org/10.1093/icc/3.3.537-a>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- Thaler, R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior and Organization*, 1(1), 39–60.
- Thomas, E. J., & Fink, C. F. (1963). Effects of group size. *Psychological Bulletin*, 60(4), 371–384.
- Thomas, L. G. (1986). The economics of strategic planning: A survey of the issues. In L. G. Thomas (Ed.), *The economics of strategic planning: Essays in honor of Joel Dean* (pp. 1–27). Lexington Books.
- Thompson, J. D. (1967). *Organizations in action: Social science bases of administrative theory*. McGraw-Hill.
- Thomsen, S., & Pedersen, T. (2000). Ownership structure and economic performance in the largest European companies. *Strategic Management Journal*, 21(6), 689–705. [https://doi.org/10.1002/\(SICI\)1097-0266\(200006\)21:6<689::AID-SMJ115>3.0.CO;2-Y](https://doi.org/10.1002/(SICI)1097-0266(200006)21:6<689::AID-SMJ115>3.0.CO;2-Y)
-

- Thomson, J. D. (1967). *Organizations in action*. McGraw-Hill.
- Tikkanen, H., Lamberg, J.-A., Parvinen, P., & Kallunki, J.-P. (2005). Managerial cognition, action and the business model of the firm. *Management Decision*, *43*(6), 789–809. <https://doi.org/10.1108/00251740510603565>
- Timmers, P. (1998). Business models for electronic markets. *Electronic Markets*, *8*(2), 3–8.
- Todd, P. M. (2001). Heuristics for decision and choice. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social & behavioral sciences* (pp. 6676–6679). Elsevier. <https://doi.org/10.1016/B0-08-043076-7/00629-X>
- Tsoukas, H. (1996). The firm as a distributed knowledge system: A constructionist approach. *Strategic Management Journal*, *17*(S2), 11–25. <https://doi.org/10.1002/smj.4250171104>
- Tversky, A. (1975). A critique of expected utility theory: Descriptive and normative considerations. *Erkenntnis*, *9*(2), 163–173.
- Tversky, A. (1977). Features of similarity. *Psychological Review*, *84*(4), 327–352.
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207–232.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131 (Biases in judgments reveal some heuristics of thinking under uncertainty).
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*(4481), 453–458.
- Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, *5*(4), 297–323. <https://doi.org/10.1017/CBO9780511803475.004>
- UBS Group. (2017). *Annual report 2017*. Author.
- van de Ven, Andrew H., & Poole, M. S. (1995). Explaining development and change in organizations. *The Academy of Management Journal*, *20*(3), 510–540.
- van Putten, B.-J., & Schief, M. (2012). The relation between dynamic business models and business cases. *The Electronic Journal Information Systems Evaluation*, *15*(1), 138–148. https://doi.org/10.1007/978-3-658-01171-0_8
- Vander Venet, R. (2002). Cost and profit efficiency of financial conglomerates and universal banks in Europe. *Journal of Money, Credit and Banking*, *34*(1), 254–282.
- Venkatraman, N., & Henderson, J. C. (1998). Real strategies for virtual organizing. *Sloan Management Review*, *40*(1), 33–48.

-
- Vijayamohanan, P. N. (2016). *Panel data analysis with Stata part 1: Fixed effects and random effects models*. Munich Personal RePEc Archive (MPRA Paper No. 76869). University Library of Munich, Germany.
- Voelpel, S. C., Leibold, M., & Tekie, E. B. (2004). The wheel of business model reinvention: How to reshape your business model to leapfrog competitors. *Journal of Change Management*, 4(3), 259–276. <https://doi.org/10.1080/1469701042000212669>
- von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior*. Princeton University Press.
- Wahl, J. E., & Broll, U. (2005). Value at risk, bank equity and credit risk. In M. Frenkel, U. Hommel, & M. Rudolf (Eds.), *Risk management: Challenge and opportunity* (2nd ed., pp. 159–168). Springer.
- Wakker, P. P. (2010). *Prospect theory: For risk and ambiguity*. Cambridge University Press.
- Waldrop, M. M. (1992). *Complexity: Life at the edge of chaos*. Simon and Schuster.
- Walker, W. E., Harremoës, P., Rotmans, J., van der Sluijs, J. P., van Asselt, M., Janssen, P., & Krayer von Krauss, M. P. (2003). Defining uncertainty: A conceptual basis for uncertainty management in model-based decision support. *Integrated Assessment*, 4(1), 5–17.
- Walter, I. (2004). *Mergers and acquisitions in banking and finance: What works, what fails, and why*. Oxford University Press.
- Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management*, 7(4), 303–313. <https://doi.org/10.1108/14601060410565056>
- Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31–51. <https://doi.org/10.1111/j.1468-2370.2007.00201.x>
- Webber, S. S., & Donahue, L. M. (2001). Impact of highly and less job-related diversity on work group cohesion and performance: A meta-analysis. *Journal of Management*, 27(2), 141–162. <https://doi.org/10.1177/014920630102700202>
- Weber, M. (1922). *Grundriss der Sozialökonomik: III. Abteilung, Wirtschaft und Gesellschaft*. Mohr Siebeck.
- Weick, K. E. (1969). *The social psychology of organizing*. Addison-Wesley.
- Weick, K. E. (1995). *Sensemaking in organizations*. SAGE Publications.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180.
-

REFERENCES

- Wernerfelt, B. (2011). Invited editorial: The use of resources in resource acquisition. *Journal of Management*, 37(5 (Special Issue)), 1369–1373. <https://doi.org/10.1177/0149206310371693>
- Wernerfelt, B., & Montgomery, C. A. (1988). Tobin's q and the importance of focus in firm performance. *The American Economic Review*, 78(1), 246–250.
- Whitehill, M. (1997). Knowledge-based strategy to deliver sustained competitive advantage. *Long Range Planning*, 30(4), 621–627.
- Wiener, N., & Mahoney, T. A. (1981). A model of corporate performance as a function of environmental, organizational, and leadership influences. *The Academy of Management Journal*, 24(3), 453–470.
- Wiersema, M. F., & Bantel, K. A. (1992). Top management team demography and corporate strategic change. *The Academy of Management Journal*, 35(1), 91–121.
- Williamson, O. E. (1963). Managerial discretion and business behavior. *The American Economic Review*, 53(5), 1032–1057.
- Williamson, O. E. (1975). *Markets and hierarchies: Analysis and antitrust implications*. The Free Press.
- Williamson, O. E. (1999). Strategy research: Governance and competence perspectives. *Strategic Management Journal*, 20(12), 1087–1108. [https://doi.org/10.1002/\(SICI\)1097-0266\(199912\)20:12<1087::AID-SMJ71>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199912)20:12<1087::AID-SMJ71>3.0.CO;2-Z)
- Williamson, O. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, 38(3), 595–613.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991–995. <https://doi.org/10.1002/smj.318>
- Winton, A. (1999). *Don't put all your eggs in one basket? Diversification and specialization in lending*. Wharton School Center for Financial Institutions, University of Pennsylvania.
- Wirtz, B. W., Pistoia, A., Ullrich, S., & Göttel, V. (2016). Business models: Origin, development and future research perspectives. *Long Range Planning*, 49(1), 36–54. <https://doi.org/10.1016/j.lrp.2015.04.001>
- Wiseman, C. (1988). *Strategic information systems*. McGraw-Hill.
- Wiseman, R. M., & Bromiley, P. (1996). Toward a model of risk in declining organizations: An empirical examination of risk, performance and decline. *Organization Science*, 7(5), 524–543.

- Wiseman, R. M., & Gomez-Mejia, L. R. (1998). A behavioral agency model of managerial risk taking. *The Academy of Management Review*, 23(1), 133–153.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.
- Wooldridge, J. M. (2016). *Introductory econometrics: A modern approach* (6th ed.). Cengage Learning.
- Wu, L.-Y. (2010). Applicability of the resource-based and dynamic-capability views under environmental volatility. *Journal of Business Research*, 63(1), 27–31. <https://doi.org/10.1016/j.jbusres.2009.01.007>
- Zahra, S. A. (1990). Increasing the board's involvement in strategy. *Long Range Planning*, 23(6), 109–117. [https://doi.org/10.1016/0024-6301\(90\)90108-G](https://doi.org/10.1016/0024-6301(90)90108-G)
- Zaim, H., Gürcan, Ö. F., Tarım, M., Zaim, S., & Alpkan, L. (2015). Determining the critical factors of tacit knowledge in service industry in turkey. *Procedia - Social and Behavioral Sciences*, 207, 759–767. <https://doi.org/10.1016/j.sbspro.2015.10.156>
- Zajac, E. J., Kraatz, M. S., & Bresser, R. K. F. (2000). Modeling the dynamics of strategic fit: A normative approach to strategic change. *Strategic Management Journal*, 21(4), 429–453.
- Zhang, M. J., & Lado, A. A. (2001). Information systems and competitive advantage: A competency-based view. *Technovation*, 21(3), 147–156. [https://doi.org/10.1016/S0166-4972\(00\)00030-4](https://doi.org/10.1016/S0166-4972(00)00030-4)
- Zogning, F. (2017). Comparing financial systems around the world: Capital markets, legal systems, and governance regime. *Economics, Management, and Financial Markets*, 12(4), 43–58. <https://doi.org/10.22381/EMFM12420172>
- Zollom, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339–351.
- Zott, C., & Amit, R. (2007). Business model design and the performance of entrepreneurial firms. *Organization Science*, 18(2), 181–199. <https://doi.org/10.1287/orsc.1060.0232>
- Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. *Long Range Planning*, 43(2-3), 216–226. <https://doi.org/10.1016/j.lrp.2009.07.004>
- Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, 37(4), 1019–1042. <https://doi.org/10.1177/0149206311406265>