Value Creation and Value Appropriation in Interfirm Alliances using Coopetitive Strategy – A study of the Indian Pharmaceutical Industry

THESIS

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DECLARATION

I declare that the thesis entitled "**Value Creation and Value Appropriation in Interfirm Alliances using Coopetitive Strategy – A study of the Indian Pharmaceutical Industry**" has been prepared by me under the guidance of **Prof. Neetu Yadav**, Associate Professor and **Prof. Anil K. Bhat**, Professor at Department of Management, BITS Pilani, Pilani Campus. No part of this thesis has formed the basis for the award of any degree or fellowship previously.

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CERTIFICATE

This is to certify that the thesis entitled "**Value Creation and Value Appropriation in Interfirm Alliances using Coopetitive Strategy – A Study of the Indian Pharmaceutical Industry",** submitted by **Mr. Roopesh Kumar, ID No. 2018PHXF0104P** for award of Ph.D. of the Institute embodies original work done by him under our supervision.

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Dedicated to
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Abstract

As a growing number of businesses are turning to partnerships with rivals to hasten the creation of new products and drive innovation, coopetition is rapidly evolving in management practice. The dualism of competition and collaboration in coopetitive alliances has inspired a large base of coopetition research on value creation and value appropriation in strategic coopetitive alliances. Despite the variety of contexts in which coopetition has been researched, and the range of theoretical perspectives taken, there is still no integrated frameworks defining how value is created and what determines value appropriation in coopetitive alliances.

This study starts with a detailed literature review and bibliometric analysis of research done on the topic of coopetition over last decade (2010-2020) and follows it with proposing and validating integrated frameworks for value creation and value appropriation in coopetitive alliances.

The bibliometric analysis maps the intellectual structure of the coopetition field by identifying key concepts, themes, and their relationships based on co-citation and co-occurrence patterns and provides a visual representation of the coopetition field's knowledge structure. This could help researchers gain a comprehensive understanding of the major subfields and research clusters within the area of coopetition.

To propose and empirically test an integrated framework of value creation using coopetitive strategy, an integrated framework was creating using a through literature review. Further this framework was empirically validated for the Indian pharmaceutical industry based on a survey of 121 senior-level managers involved in alliance management. To ensure robustness of the data as well as measurement models, an adequate number of tests were performed to check for common method variance, dimensionality, content validity, construct reliability and validity before testing the framework. The study investigated the impact of eight higher-order constructs on value creation using the PLS-SEM technique. The cross-sectional empirical investigations validate top management commitment, alliance experience, alliance management capability, and relation-based governance as determinants of value creation in interfirm dyadic alliances involving coopetition. The study findings validate relationship tension as a moderator between realized competitive advantage and value creation. However, it does not support the

relationship between knowledge-sharing routines and realized competitive advantage, given that Indian managers are reluctant to share technical know-how and sensitive information because of lack of trust and opportunistic behaviour.

To identify the determinants of value appropriation, a conceptual integrated framework based on literature review was created. This framework was validated using a qualitative research design. In-depth context interviews with experts and senior leaders in Indian pharmaceutical firms were conducted to identify the determinants of value appropriation and strengthen the conceptual framework. Using the NVivo 12.0 software to evaluate the information gleaned from these interviews, the study identifies key factors that influence value appropriation and validate a conceptual framework that synthesizes the determinants of value appropriation in interfirm coopetitive dyadic alliances. Overall, the value appropriation study results provide unique insights to how pharmaceutical firms in a coopetitive dyadic alliance perceive value appropriation, how different factors influence the value appropriation and provide guidance to managers on what factors or mechanisms can help in appropriating value in a coopetitive alliance.

The study has important implications for alliance managers and coopetition researchers that are elaborated on in the last chapter of the study. These implications may help the pharmaceutical industry leaders and alliance managers to come up with various strategies to have sustainable collaborations with rivals while generating more value from the partnership and appropriating greater value for their own firm.

The study has its own limitations in terms of the scope and methods but has also identified various opportunities for future researchers.

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Abbreviations

ABC	Absorptive capacity
AC	Acquisition
AE	Alliance experience
AMC	Alliance management capability
ANDA	Abbreviated New Drug Application
AP	Alliance proactiveness
API	Active Pharmaceutical Ingredients
AS	Assimilation
AT	Alliance Transformation
AVE	Average Variance Extracted
BD&L	Business Development and Licencing
BPA	Business Planning and Analysis
CAGR	Compound Annual Growth Rate
CBV	Competence Based View
CFA	Confirmatory Factor Analysis
CFO	The Chief Financial Officer
CMV	Common Method Variance
CP	Communication between Partners
CR	Composite Reliability
CVS	Cardiovascular
DCV	Dynamic Capabilities View
DOC	Degree of Centrality
DT	Degree of Trust
EC	Eigen Centrality
EFA	Exploratory Factor Analysis
EP	Exploitation
FDF	Finished Dosage Form
FL	Fornell and Larcker
GM, BD&AM	General Manager of Business Development and Alliance Management
HCPs	Healthcare Practitioners
HIV	Human Immunodeficiency Virus
IC	Interorganisational coordination
IL	Interorganisational Learning
IP	Intellectual Property
IPI	Indian Pharmaceutical Industry
IS	Information Sharing Readiness
ISI	Institute for Scientific Information
JV	Joint Venture
KBV	Knowledge Based View
KS	Knowledge Sharing readiness
KSR	Knowledge Sharing routine
LC	Level of Conflict
LCD	Liquid Crystal Display
LT	*Leadership Teams*
MNCs	Multinational Corporations

NCE	New Chemical Entity
PBAC	Pharmaceutical Benefits Advisory Committee
PCA	Principal Component Analysis
PLS	Partial Least Squares
PLS-SEM	Partial Least Squares Structural Equation Modelling
R&D	Research and Development
RBV	Resource Based View
RC	Degree of Relational Commitment
RCA	Realized Competitive Advantage
RDT	Resource Dependence Theory
RLT	Relationship Tension
SET	Social Exchange Theory
SFM	Strategic Factor Markets
TCE	Transaction Cost Economics
TCO	Total Co-occurrence
TGC	Total Global Citations
TLC	Total Local Citations
TMC	Top Management commitment
TO	Total Occurrence
TP	Total Publications
TR	Transformation
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TT	Technology Transfer
USFDA	United States Food and Drug Administration
VCR	Value creation
WDOC	Weighted Degree of Centrality
WoS	Web-of-Science
WTO	World Trade Organization

CHAPTER 1: INTRODUCTION

1.1 Introduction

The involvement of organisations in various strategic alliances has become a prevalent occurrence in the contemporary corporate environment (Olivares, 2023; West & Bogers, 2014; Wassmer, 2010). Due to the dynamic and volatile nature of the contemporary business landscape, organisations are progressively embracing collaborative efforts in order to foster innovation by leveraging both internal and external expertise, hence expediting their innovation endeavours (West & Bogers, 2014). Organisations collaborate by pooling their resources, capabilities, and competencies in order to collectively create, produce, and distribute goods and services that align with their shared objectives (Townsend, 2003). Alliances, defined as collaborative agreements between companies that involve the exchange, sharing, and co-development of products, services, and knowledge, are currently being actively pursued as a strategy to enhance a firm's value. These are widely recognized as an essential component of a firm's strategic approach (Contractor & Lorange, 2002a; Chia-Ling 'Eunice'Liu, 2009; Kandemir et al., 2006). Frequently, organisations establish strategic alliances as a means to penetrate unfamiliar territories, thereby diminishing expenses associated with developing new products, distributing risks and resources, and ultimately providing added value to their consumer base (Hitt et al., 2000). According to Prahalad and Hamel (1990), alliances have the ability to serve as a durable competitive advantage. Additionally, they have become a fundamental aspect of value creation for numerous organisations, as highlighted by Cravens et al. (2000) and Hitt et al. (2000). Furthermore, it is worth noting that contemporary alliances are increasingly characterized by a high level of knowledge intensity, frequently encompassing enterprises that are in direct competition with each other (Duysters et al., 1999).

Notwithstanding this advancement, the predominant focus of strategic management researchers remained on examining the connections of organisations as either competitive or cooperative. It was assumed that interactions founded on competition and cooperation cannot coexist concurrently (Bengtsson & Kock, 2000). Ray Noorda, the Chief Executive Officer of Novell, is credited with introducing the term 'coopetition' during the early 1990s (Dagnino, 2007). However, this concept was met with criticism and was seen to be of questionable legitimacy (Dagnino, 2009), resulting in limited adoption and usage. The key contribution by Brandenburger and Nalebuff (1996) had a pivotal role in establishing the credibility of coopetition within the realm of strategic management. Consequently, it developed as a novel

paradigm for examining inter-firm relationships.

One of the primary benefits of such an inter-firm alliance between competitors is its ability to facilitate the management of partially overlapping and converging interests and objectives and enabling them to generate value through a combination of cooperation and competition activities (Dagnino & Padula, 2002). Therefore, it may be argued that these alliances transcend the conventional binary framework of cooperation and competition, which are often perceived as mutually exclusive options (Bengtsson et al., 2010).

Organisations from a variety of industry sectors demonstrate a strong desire to realize the advantageous outcomes resulting from collaborative partnerships with their competitors. Consequently, there is a growing inclination among firms to use coopetition as a strategic business approach (Crick & Crick, 2020; Czakon et al., 2020). There exists a plethora of instances wherein coopetition partnerships have been developed in recent times. The COVID-19 pandemic has prompted numerous global pharmaceutical companies to collaborate with smaller pharmaceutical corporations in order to facilitate the development and manufacturing of medicines targeting the novel coronavirus (Bloomberg Law, 2020). Some of the other prominent examples where large competitors have managed such coopetitive arrangements in other industries are:

- Samsung Electronics and Sony Corporation established a collaborative Joint venture partnership with the objective of manufacturing liquid crystal display (LCD) panels exclusively for television sets (Gnyawali & Park, 2011).
- The collaboration between Ford and Mazda in addressing design difficulties led to an improvement in their competitive advantage within the automobile sector (Lado et al., 1997).
- Toyota and General Motors, two prominent global automakers, engaged in a collaborative effort to build cars powered by fuel cells (Chin et al., 2008).

1.2 Contextual Background

Firms have been compelled to transition from cooperating solely with buyers and suppliers to engaging in collaboration with their competitors due to a variety of factors, including heightened environmental unpredictability, increasingly discerning customers, rapid technical advancements, elevated risk associated with research and development investments, and escalating capital expenses (Zacharia et al., 2019). The necessity for inter-firm coopetitive interactions was also recognised by Indian commercial firms, particularly after 1991, when the

environment became more competitive, complex, and dynamic as a result of extensive economic reforms as well as organisational and structural changes. In this new corporate environment, multinational corporations (MNCs) were a fierce competitor for indigenous firms, particularly in high-technology, research-intensive sectors. These industries faced challenges in maintaining competitiveness due to the presence of short product life cycles, technology convergence, and high research and development (R&D) costs (Gnyawali & Park, 2009). Also, the rapid pace of globalisation and the removal of trade obstacles resulted in the coexistence of resource asymmetries and market commonalities (Luo, 2004), which forced Indian businesses to form alliances with their rivals. The Indian Patent Act underwent revisions in 2005 to align with the trade-related aspects of intellectual property rights (TRIPS) agreement of the World Trade Organisation (WTO), which India had ratified in 1995 (Babovic & Wasan, 2011). The introduction of TRIPS had a significant impact on Indian pharmaceutical companies, as it compelled them to make strategic decisions on the type of innovation they would prioritize under the new intellectual property (IP) framework. Additionally, it created opportunities for multinational corpora to enter the market with less concerns regarding the safeguarding of their patented innovative medicines. This also led to many coopetitive alliances. For instance, to manufacture and market generic medications in developing nations, Merck and Sun Pharmaceutical Industries Ltd. formed a joint venture. While this JV supported Sun Pharma's aim of teaming up to launch drugs using incredibly cutting-edge delivery methods, Merck benefited from Sun Pharma's cost advantage by utilising Merck's unique, research-driven capabilities. In another excellent illustration to increase productivity and reduce rising operational expenses, In July 2010, Lupin Pharmaceuticals, Aurobindo Pharma, Zydus Cadila, Orchid Chemicals and Pharmaceuticals, and Ranbaxy (now a subsidiary of Sun Pharma) convened to share their most effective strategies for enhancing productivity and mitigating escalating operational costs. Despite severe competition and the fact that each of these companies is indeed a behemoth in its own right (with yearly revenues aggregating more than $10 billion), they teamed together to exchange their best practices in an effort to increase productivity and reduce escalating operational expenses. Their alliance was known as LAZOR, with each letter standing for each firm’s name. When Dr. Reddy's Laboratories joined them in July 2011, the acronym of the partnership was changed to LAZORR. The potential for cost savings and value creation happened through inter-company knowledge transfer. For instance, during visits to Orchid Chemicals' manufacturing facilities, representatives from other companies observed the implementation of a condensate recovery system in Orchid's boilers. This system effectively minimized steam loss and subsequently reduced water consumption.

The companies actively participated in the alliance and, following established methodologies, managed to reduce their collective water use by 200 million litres in the initial year. Additionally, they achieved cost savings in terms of energy expenditures and procurement of raw materials (Shukla, 2012).

According to a number of systematic literature reviews, it has been found that the factors leading to coopetition are specific to the industry in question (Czakon et al., 2014a) and are influenced by the setting in which they occur (Bengtsson & Raza-Ullah, 2016). The factors that may be considered include the extent of change, rivalry within the industry, the stage of the industry life cycle, and the presence and influence of regulatory authorities (Dorn et al., 2016). The present study has made an attempt to investigate the value creation and value appropriation in coopetitive interfirm alliances in one of the key industry sectors of India i.e., the Indian Pharmaceutical Industry (IPI). Please refer to section 1.4 to see why IPI was selected for the study. The next section indicates the need and motivation for the study.

1.3 Need for the study

Strategic coopetitive alliances are becoming more and more common in many industries, especially in those that are both fiercely competitive and undergoing rapid change, like high-tech and pharmaceuticals owing to factors like high investment needs for R&D, risk of molecules failing in clinical trials, rapidly changing technology, limited period of market exclusivity in ever-increasing competition in the market. The field of coopetition has experienced significant growth in recent years, as evidenced by multiple systematic literature reviews (Bengtsson & Kock, 2014; Bouncken et al., 2015; Chim-Miki & Batista-Canino, 2017; Czakon et al., 2014a; Devece & Ribeiro-Soriano, 2019; Dorn et al., 2016), position papers (Ritala and Saino, 2014; Gnyawali & Charleton, 2018), and comprehensive anthologies (Fernandez et al., 2018). Although there have been notable advancements in research and growing interest in the concept of coopetition across management, business literature, and other disciplines, the field of study remains fragmented. Further systematic investigation reveals several gaps that necessitate additional research to foster a comprehensive and nuanced comprehension of the coopetition phenomenon.

The emergence of insights can be facilitated by the juxtaposition of many theoretical viewpoints. This approach proves valuable in enhancing comprehension of the factors, processes, and consequences associated with phenomena such as the formation and appropriation of coopetition. Numerous empirical studies have been conducted to examine the phenomenon of value creation in collaborative alliances through the integration of several

theoretical frameworks (e.g., Lambe et al., 2002; Wittmann et al., 2009). However, such efforts in the context of coopetition alliances need to be addressed more adequately. Prior research has also been limited by its tendency to see value creation as a one-dimensional concept. Hence, it is imperative to address the knowledge gap pertaining to the conception of value creation as a multi-dimensional construct, as well as the development and empirical validation of a corresponding model.

Further, coopetition studies have looked at value creation and value appropriation largely through anecdotal evidence where they discuss examples of relationships in which processes such as control of resources without their ownership, and the motivation for competitors to cooperate with each other (Bengtsson & Kock, 2000; Gnyawali & Park, 2011; Rusko, 2011; Walley, 2007). The theory built through case-study approach in coopetition literature is neither normative nor descriptive (for example, the case studies of Swedish brewery and lining industries (Bengtsson & Kock, 2000) and Finnish forest industry (Rusko, 2011)). However, where survey-based techniques have been used (e.g., Dittrich & Duysters, 2007; Gnyawali et al., 2006; Ritala, 2012), they are more context specific such as those in the ICT sector (Dittrich & Duysters, 2007), steel industry (Gnyawali et al., 2006) or R&D related activities (Ritala, 2012). Furthermore, upon conducting a thorough analysis of the existing literature on coopetition, it is apparent that a significant section of research in this particular sector has significantly depended on the utilization of single or multiple case studies (Gnyawali & Song, 2016). Furthermore, it is worth noting that survey-based studies have emerged as the second most prevalent form of study within this particular field. The current state of academic literature reveals a persistent dearth of research projects that incorporate extensive sample sizes, as highlighted by Lan et al. (2019), Liu et al. (2019), Park et al. (2014a,b), and Vanyushyn et al. (2018). The existing body of literature suggests that it is necessary to employ rigorous empirical approaches in order to provide more complete and refined answers to longstanding issues.

Further, several scholars suggest that since strategic management is a multi-disciplinary subject, further development of the subject could be achieved by integration of key constructs of different theoretical perspectives (e.g., Bowman & Hurry, 1993; Chakravarthy & Doz, 1992). Thus, empirical efforts have been made to integrate different theoretical perspectives to study value creation in collaborative alliances (e.g., Lambe et al., 2002; Wittmann et al., 2009). However, such efforts in the context of Inter firm coopetitive alliances need to be addressed more adequately. Also, the focus of most of the

studies have been only on a few determinants such as coopetition alignment, risk and cost-sharing, and integration of supplementary resources (e.g., Fjeldstad et al., 2004; Mione, 2009; and Bengtsson & Kock, 2000), and they ignore several other important determinants of value creation. Bengtsson et al. (2016) assert that the coopetitive research domain has been subject to criticism due to its theoretical incompleteness. Scholars have consistently described this field as fragmented and lacking coherence in the application of its theories (Bengtsson & Kock, 2014; Bengtsson et al., 2010; Walley, 2007). Further, Bengtsson et al. 2016, states Instead of establishing new theoretical ideas and applying them to coopetition, scholars should focus, deepen, and close knowledge gaps. There is a need to integrate theories on the organisational and individual levels of analysis more tightly into the field and adopting new and creative research methods and contexts to unify and advance traditional macro-level theories (Bengtsson et al., 2016).

The phenomenon of coopetition is defined by the coexistence of competition and collaboration. Therefore, studying coopetition requires the creation of a theoretical framework that combines both competitive and cooperative aspects. This presents a significant challenge for researchers in this field. Nevertheless, it is important to acknowledge that the present study recognizes several theoretical frameworks that have been widely utilized in coopetitive research as robust theoretical foundations (e.g., refer to the comprehensive review conducted by Bouncken et al., 2015). These frameworks include game theory, resource based view and transaction cost economics, and the study aims to provide an integrated framework that elucidates the process of value creation and appropriation in dyadic coopetitive alliances.

1.4 Motivation for the study in the pharmaceutical industry

An issue that has been receiving a lot of attention in light of the rise in strategic interfirm alliances is how firms can improve their performance through these alliances, considering the conflicts and trade-offs that the coopetition entails (Chiambaretto et al., 2020(a); Gnyawali et al., 2006; Gulati, 1998; Wassmer, 2010). Most scholars who have studied this fundamental issue have focused on one, or often two crucial issues: (a) how firms create value; and (b) how firms derive private benefit and appropriate value from strategic partnerships. Despite the fact that both value creation and value appropriation influence how strategic alliances will turn out, these are seen as separate ideas and procedures (Rai et al., 2022; Coff, 1999; Lepak et al., 2007).

The findings of literature reviews indicate that the factors leading to coopetition are contingent

upon the industry in question (Czakon et al., 2014b) and are influenced by the specific setting in which the firms operate (Bengtsson & Raza-Ullah, 2016). This study focuses on one of the key industry sectors in India i.e., Indian pharmaceutical industry (IPI).

Generally external factors induce formation of alliance between companies in Industries that face high regulations, have high risk in R&D, are undergoing restructuring or are highly regulated. Such industry offers the opportunity to study inter-organisational relationships and value creation and value appropriation. The Pharmaceutical industry is a perfect example portraying such traits where companies need strategic alliances to grow and minimize risk. The industry incurs high cost in terms of high research and development cost (USD 2.5 billion to develop and commercialize one molecule (DiMasi, 2014)), and time (10+ years to develop (Mullin, 2014)) investment. Further the industry faces other market-entry barriers like such as need of large sales teams, highly-domain intensive resources to generate sales. The situation is compounded by changes in regulatory and intellectual property regimens. For instance, the implementation of the TRIPS agreement in 2005 resulted in a shift in India's patent regime, transitioning from a process patent system to a product patent system. The implementation of this alteration has resulted in a significant equilibrium challenge for pharmaceutical companies operating within the nation. The challenge of balance has prompted numerous enterprises to establish partnerships with both domestic and foreign companies, so creating a valuable reservoir of coopetitive interactions. An example of a collaborative effort in the pharmaceutical industry is the establishment of a Joint Venture (JV) between Merck and Sun Pharmaceutical Industries Ltd. This partnership aims to manufacture and distribute generic medications specifically targeted towards developing nations. The joint venture between Sun Pharma and Merck exemplified Sun Pharma's strategic approach of collaborating to provide novel products through advanced delivery technologies, while simultaneously benefiting from Merck's research-driven capabilities. Additionally, Merck capitalized on the cost advantage provided by Sun Pharma. A few other examples by part of value chain area are:

- Drug development: Dr. Reddy's Laboratories and EMD Serono, Amgen and Jubilant, Merck and Sun pharma
- Manufacturing and Supply Chain: Sanofi and Hetero, Roche and Emcure
- Marketing and Distribution: Abbott and Cadilla, Lilly and Lupin

In order to gain a deeper understanding of the role of coopetitive interactions within interfirm alliances and their impact on value creation and appropriation in the Indian pharmaceutical

industry, it is imperative to do focused study in this subject.

The pharmaceutical industry is seen as an appropriate area for investigating coopetitive alliances as it is a unique industry which is driven by R&D but is highly regulated owing to its profound impact on the lives and well-being of all individuals. With a market value of USD 42 billion in 2021, the pharmaceutical business holds significant importance in India. With over 10,500 manufacturing units (IBEF, 2022), India is widely recognized as the leading global supplier of generic drugs, renowned for its provision of cost-effective vaccines and generic pharmaceuticals. As of 2022, the IPI occupies the third place in terms of pharmaceutical manufacturing volume across the globe. IPI has experienced significant growth, with a Compound Annual Growth Rate (CAGR) of 9.43% for the preceding nine-year period and is projected to attain a value of USD 65 billion by 2024 and USD 120-130 billion by the year 2030. India is responsible for approximately 20% of the global supply in terms of volume and caters to around 60% of the global demand for vaccinations. Further it is home to the largest number of United States Food and Drug Administration (USFDA) approved pharmaceutical production facilities outside the US.

Various external factors have induced formation of alliance between rival firms in IPI and hence this industry offers the opportunity to study inter-organisational relationships and value creation and value appropriation. For example: The Agreement on TRIPS 2005 implementation led to patent regime change from process to product patent in India. This change has created a balancing issue for pharmaceutical firms in the country and companies have entered into diversified kinds of coopetitive alliances as below:

- Alliances between small and large pharmaceutical companies
- Alliance between domestic and multinational companies
- Alliance across lifecycle of products to bring innovation and reduce risk i.e., coopetitive alliance focused on discovery, co-development and comarketing etc.

All the above indicates that the study of coopetition in IPI enables industry managers to gain insights into the complexities involved in efficiently managing coopetitive partnerships.

The examination of value creation and value appropriation in coopetitive alliances shall offer valuable insights for successful and effective collaboration with competitors, while also ensuring the capture and realization of the generated value. By doing so, the objective is to provide a comprehensive understanding of the theoretical foundations that elucidate the

primary mechanisms of value creation and value appropriation. Additionally, this study seeks to propose holistic frameworks for both value creation and value appropriation within coopetitive alliances.

1.5 Objectives of the study

The primary aim of this dissertation is to enhance comprehension of strategic alliances, with a particular emphasis on the creation of value and the appropriation of value within dyadic inter-firm coopetitive alliances, in accordance with the research inquiries. In more detail, the purpose of the dissertation is multi-fold:

1) To identify the determinants of value creation and value appropriation in Interfirm coopetitive alliances.
2) To propose an integrated framework for value creation and value appropriation in coopetitive alliances.
3) To empirically validate the proposed frameworks in the context of Interfirm coopetitive alliances in the Indian pharmaceutical industry

One of the main intents of this thesis is to conduct a comprehensive examination into the current body of research on value creation and provide a clearer understanding of the factors that contribute to value creation by proposing and empirically testing an integrated framework. Furthermore, the study also focuses on to enhance existing research by examining value appropriation through the analysis of real-world case studies from the Indian pharmaceutical industry. This will contribute to the development of a comprehensive conceptual framework of value appropriation within cooperative and competitive interfirm alliances.

1.6 Scope of the study

The objective of this study is to provide insight into the theoretical foundations that elucidate the primary factors influencing value creation and value appropriation in coopetitive alliances. The study is focused on dyadic alliances and excludes network coopetitive alliances.

It intends to develop and empirically test an integrated framework for value creation. To empirically test the integrated framework of value creation, the data was collected from senior leaders of different medium and large-sized domestic and international pharmaceutical firms operating in India. The rationale for taking IPI as the scope of the study was, that it provides a wide assortment of dyadic coopetitive alliances that could help in the identification and validation of determinants of value creation.

Further, the study aims to propose a conceptual framework for value appropriation based on real-world case examples from IPI. The determinants of value proposition involve a different set of variables and for many of such variables, psychometrically valid scales do not exist, and scale development for them would have to be undertaken separately.

1.7 Organisation of the thesis

The thesis work is divided and organized into six different chapters. The brief description of each chapter is given below.

Chapter 1 (current chapter):

Provides a brief description of background of the study, spells the objectives and scope of the study.

Chapter 2: Literature review

This chapter provides a thorough review of the literature covering the concept of coopetition, type of coopetition and its importance/benefits. This chapter also provides a bibliometric analysis of studies on coopetition between 2010 and 2020 and identifies key themes emerging from literature review. Further, the chapter conceptualises value creation and value appropriation in coopetitive inter-firm dyadic alliances.

All the remaining chapters are divided into two phases/sections. The first phase focuses on value creation while the latter focuses on value appropriation.

Chapter 3: Proposed research models and hypotheses

This chapter is divided into two phases. The first phase focuses on developing a theoretical integrated framework of value creation in interfirm dyadic coopetitive alliances based on extant literature. The conceptual framework of value creation is proposed where the hypotheses regarding the determinants of value creation based on resource based, knowledge based, and competence-based view are framed that are empirically testable. Further, the hypotheses are framed for explaining the moderating role of relationship tension between realized competitive advantage and value creation.

The second phase of the chapter is on the identification of key determinants pertaining to the appropriation of value within interfirm dyadic coopetitive alliance. These determinants are constructed by drawing upon existing literature.

Chapter 4: Research methodology

In first phase of this chapter, the study has detailed the methodology followed to empirically test the integrated framework for value creation in the coopetitive interfirm dyadic alliances. The research approach and the research design adopted, development of the questionnaire, data collection methods, sampling method, sampling frame, sampling unit, sample size determination and various techniques used for preliminary data analysis and final data analysis are discussed.

Second phase of chapter details the methodology to conceptualise an integrated framework of value appropriation in the coopetitive interfirm dyadic alliance. It talks about research design, discussion guide, data collection, and techniques used for qualitative data analysis.

Chapter 5: Data analysis

First Phase of the chapter provides a detailed account of the statistical analysis conducted to test the conceptual framework. With a sample of 207 respondents, this study has empirically tested the proposed integrated framework using Exploratory Factor Analysis (EFA), and Structured Equation Modelling (SEM).

Second phase of the chapter provides a detailed account of qualitative analysis to back-up conceptual framework of value appropriation in coopetitive dyadic interfirm alliances. It analyses 5 detailed case studies using NVIVO 12.0 software to derive themes and identify relationship of determinants of value appropriation.

Chapter 6: Discussion and findings

This chapter provides a comprehensive discussion of the outcomes derived from the conducted statistical analysis. The initial stage of the study focusses on establishing robust theoretical foundations for both accepting and rejecting the hypotheses. The second phase of the study focusses on the examination and analysis of empirical case studies in order to discuss the obtained conclusions. In conclusion, this paper presents the primary discoveries, followed by an enumeration of the contributions and consequences for both theoretical frameworks and practical applications. Additionally, the study acknowledges its limitations and identifies potential areas for future research in order to provide a comprehensive conclusion.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

An in-depth analysis of the literature has been conducted and given in this chapter to provide a thorough understanding of the topic. Research articles from reputable national and international journals were evaluated. A five-step methodology outlined by Rowley & Slack's (2004), which involved scanning relevant materials, taking notes, organizing the literature review, writing the literature review, and constructing the bibliography. Further, a bibliometric analysis was performed to identify emerging research trends, popular research topics as well as research gaps in the coopetition area. The present chapter begins by explaining the concept of coopetition, followed by findings from bibliometric analysis and focuses on theoretical underpinnings of value creation and value appropriation in coopetitive alliances. This thesis aims to establish the foundational components, specifically coopetition, and its interconnectedness with value creation and value appropriation, by building upon existing theoretical frameworks. Further, the current chapter provides overview of different definitions and dimensions of the constructs to be studied.

2.2 Overview and conceptualisation of coopetition

Dowling et al. (1996) assert that the term "Coopetition" was originally introduced by Ray Noorda, the Chief Executive Officer of Novell, to delineate the underlying factors that foster constructive interdependence among rival firms operating within the IT and software sectors. However, the credit for bringing the term to academia go to Brandenburger & Nalebuff (1996), who introduced the term in their book “Coopetition Strategy”. According to them, “If "business-as-war" is wrong, and "business-as-peace" is too simplistic, what is the right mindset? It is War and Peace—simultaneously. Using game theory as a tool, they proposed the term “coopetition” (Brandenburger & Nalebuff, 1996). According to Gnyawali et al. (2006), Coopetition encompasses, the two traditionally countervailing forces of cooperation and competition in a single backbone that require more attention and comprehensive analytical treatment. The existing body of research on coopetition frequently fails to acknowledge the potential inclusion of cooperation within the relationship, instead perceiving it as a flaw within the market that impedes a firm's ability to attain a competitive advantage (Bengtsson et al., 2010). In a similar vein, the concept of pure competition has been extensively examined, often overlooking the potential beneficial outcomes that can result from rivalry (Fernandez et al., 2018). Numerous scholarly articles highlight the complex nature of coopetition across different

industries and a wide range of business sizes and organisational structures. Furthermore, the phenomenon of collaborating with competitors takes place across various dimensions, encompassing the individual, organisational, and inter-firm/network levels. The extensive domain of inquiry and the rise of coopetition have resulted in the absence of a definitive definition for this concept (Bengtsson et al., 2010; Gnyawali & Park, 2009; Gnyawali & Madhavan, 2001). The literature contains diverse interpretations of the concept of coopetition. Table 2.1 presents a compilation of key definitions pertaining to the notion of coopetition, as formulated by different researchers at different historical periods. The definitions are arranged in chronological order, providing insights into the evolving perspectives on coopetition.

Table 2.1: Definitions indicating the evolution of coopetition.

Year	Researcher(s)	Description/definition
1996	Brandenburger and Nalebuff	Expert in game theory coined the term "coopetition" and defined coopetition as simultaneous cooperation and competition.
1997	Lado, Boyd, and Hanlon	Highlights the concept of syncretic rent-seeking behaviour that pertains to a firm's strategic orientation aimed at attaining a dynamic equilibrium between competitive and cooperative strategies.
1999	Bengtsson & Kock	A dyadic and paradoxical relationship arises when two organisations engage in cooperative endeavours for certain activities, while concurrently engaging in competitive behaviour for the other activities.
2000	Bengtsson & Kock	Simultaneous coexistence of competition and cooperation is possible among organisations. The phenomenon of coopetition arises when a company engages in both cooperative and competitive contacts with a particular competitor within the same product domain.
2001	Gnyawali and Madhavan	Simultaneous cooperative and competitive behaviour.
2002	Dagnino and Padula	Concept of coopetition enables organisations to generate value by concurrently engaging in cooperative and competitive activities, particularly when their interests and objectives partially cross and converge.
2006	Gnyawali, He, and Madhavan	The concept of coopetition integrates the opposing dynamics of cooperation and competition into a unified framework. Given the rapidly evolving nature of contemporary contexts, there is a growing need for increased focus and extensive analysis of these intertwined forces.
2007	Padula and Dagnino	Firms engage in interactions with one another, driven by a partially convergent structure of interests.
2007	Luo	Simultaneous competition and cooperation between global rivals.
2011	Gnyawali and Park	Coopetition refers to the strategic management of dyadic and horizontal supply chain relationships among suppliers, with the

		aim of effectively addressing competitive pressures arising from both expanding and contracting markets.
2012	Oxford Dictionary	"Coopetition is collaboration between business competitors, in the hope of mutually beneficial results".
2012	Ritala	The practice of coopetition involves including certain competitors into a firm's portfolio of alliance partners in order to effectively pursue its strategic objectives.
2013	Hsieh, Lin and Yuan	A business strategy founded on the principles of combining cooperation and competition and based on the understanding that firms and their competitors can benefit if they cooperate.
2015	Bouncken, Gast, Kraus and Bogers	Coopetition refers to a strategic and dynamic process wherein economic players engage in cooperative contact to jointly produce value, while concurrently engaging in competition to secure a portion of that value.
2018	Gnyawali and Charleton	The concept of coopetition pertains to the concurrent engagement in competitive and cooperative activities by enterprises with the objective of creating value.
2018	Umachandran, Jurčić, Della Corte, and Ferdinand-James	A symbiotic relationship characterized by the simultaneous pursuit of competition and cooperation among agents, resulting in reciprocal benefits; the emergence of cohesive behaviour within a system is a consequence of the interplay between competition and cooperation among the agents.

A common theme in all the definitions is collaboration and competition simultaneously between the firms. Hence, a generic definition of coopetition (or co-opetition) is cooperation between competing firms.

2.3 Types of coopetition

On the basis of count of rival firms involved in the relationship, Coopetition can be categorized under following coopetition forms: (Dagnino & Padula, 2002 and 2007):

- **Dyadic Coopetition**: This refers to a relationship between two-firm in a Coopetitive relationship.
    - Simple Dyadic Coopetition: If the two firms operate inside the same level of the value chain, it is termed as simple dyadic coopetition for e.g., R & D collaboration between two pharmaceutical firms.
    - Complex Dyadic Coopetition: If the relationships between both firms are at multiple levels of the value chain, e.g., two companies cooperating on R & D as well as manufacturing/production and then competing in distribution and supply chain of the product indicates a complex Dyadic relationship.
- **Network coopetition:** This concerns a structure of complex relationships among more than two competing firms collaborating at the same time and may involve interactions

spread across value network. emerges within an industry, unique by the consequences of simultaneous collaboration and competition between its members (Sanou et al., 2016)

Similarly, researchers categorize coopetition as horizontal or vertical depending on the direction of the relationships between organisations. Vertical coopetition entails concerns with buyer and seller negotiation, whereas horizontal coopetition happens when direct competitors form an alliance in the market (Tidström, 2009). Vertical coopetition is mostly investigated from the standpoint of value appropriation (Ritala, 2011), whilst horizontal coopetition is explored more from the perspective of value creation (Vonortas, 2000). This research focuses on fundamental dyadic relationships and investigate value creation and value appropriation. The multiform complex network coopetition is out of scope for the purpose of this study.

2.4 Bibliometric analysis of coopetition research[1]

Bibliometric analysis has been employed to elucidate the intellectual framework of research on coopetition during the period spanning from 2010 to 2020. Bibliometric analysis has gained its popularity among business and management researchers in recent times (Andersen, 2019; Bhatt et. al, 2020; Donthu et al., 2021a; Khanra et al. 2021; Tandon et al., 2021).

The study of coopetition has had a substantial growth in research activity over the past decade. However, it is important to note that the field still lacks a cohesive framework and has a fragmented nature. In order to discern the primary domains and contemporary trends within the realm of coopetition research, it is important to construct an intellectual framework by delineating pivotal concepts, themes, and their interconnections through the analysis of co-citation and co-occurrence patterns. A comprehensive examination was conducted, employing a balanced combination of literature review, bibliometric analysis, and content analysis, to investigate the phenomenon of coopetition during the timeframe of 2010 to 2020. The duration was chosen from 2010 to 2020 because of the following two reasons:

- 2010 to 2020 period has seen a significant increase in research on the coopetition area (see Figure 2.1 - Publications were scarce initially, but increased ~8 fold between 2010 and 2020), and
- Bibliometric analysis as well as SLRs were already available for period before 2010

[1] This part of the chapter has been published in Journal of Business Research (See: Yadav, N., Kumar, R., & Malik, A. (2022). Global developments in coopetition research: A bibliometric analysis of research articles published between 2010 and 2020. Journal of Business Research, 145, 495-508.)

(Czachon & Mucha-Kuś, 2014; Bouncken et al., 2015; Gast et al., 2015).

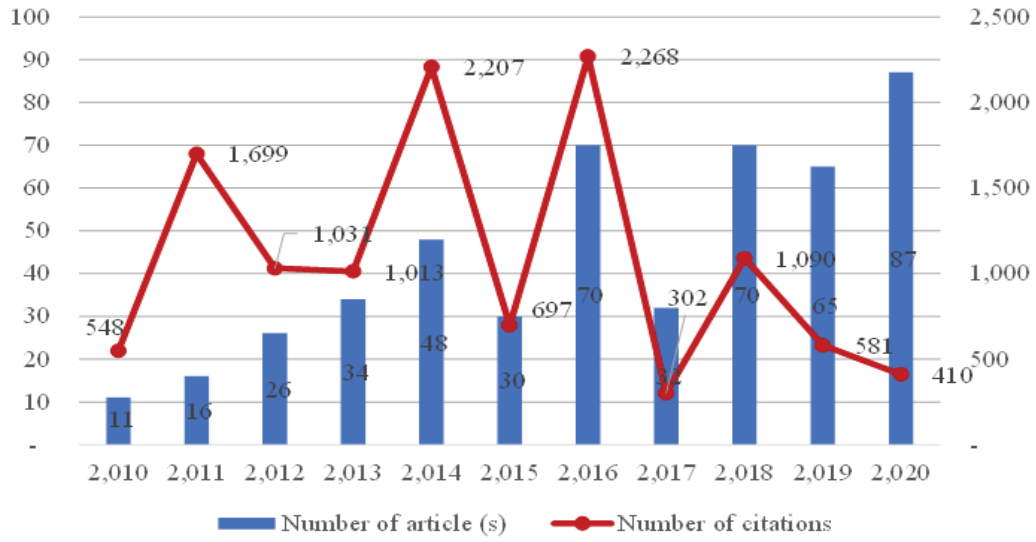


Figure 2.1: Year-wise article distribution and citations in coopetition research (2010-2020)

While several articles have been published in the last decade, including systematic literature reviews, bibliometric analyses, and review articles, their focus has been fragmented, especially given the breadth of the subject (J´ambor, 2018). For example, between 2010 and 2020, review articles have focused on developing definitional and theoretical foundations of coopetition (Bouncken, et al., 2015; Crick, 2018; Gast et al., 2019; Min`a & Dagnino, 2016; Stein, 2010). Previous studies have investigated the correlation between innovation and coopetition (Della Corte, 2018; Liu, 2013), the influence of coopetition on team/entrepreneurship performance (Baruch & Lin, 2012; Pret & Cogan, 2019), and its implications for knowledge management (Ilvonen & Vuori, 2013; Bouncken et al., 2015). Czakon et al. (2014b) examine the theoretical underpinnings and connections with other domains, while also demonstrating the patterns in the development of coopetition strategies as conscious planned and emergent learning. Further, earlier reviews focus on a specific industry, such as tourism (Chim-Miki & Batista-Canino, 2017, 2018) or concepts, such as safety and security (Shvindina, 2019).

2.5 Methodology of bibliometric analysis

A six-step approach to conduct literature review and perform bibliometric analysis was followed. Figure 2.2 depicts a flow chart of literature review and refinement of search results. The selection of the Scopus database for bibliometric analysis was based on its status as the biggest abstract and citation database, encompassing more than 20,000 peer-reviewed publications. The literature encompasses publications from several publishing houses, such as

Elsevier, Emerald, Informs, Taylor and Francis, Springer, and Inderscience. These sources offer comprehensive coverage of a wide range of disciplines including science, technology, medical, social sciences, and the humanities (Fahimnia et al., 2015). In a study conducted by Yong-Hak (2013), a comparison was made between the Scopus and Web-of-Science (WoS) databases. The findings of the study indicated that the Scopus database demonstrated a greater level of comprehensiveness in comparison to WoS. This was attributed to the fact that WoS solely incorporates the Institute for Scientific Information (ISI) indexed journals, which amounts to a total of 12,000 titles. A comprehensive search was conducted for specific keywords, namely "coopetition," "co-opetition," and "simultaneous cooperation and competition," inside the designated sections of articles (i.e., title, abstract, and keywords) in two prominent academic databases, Scopus and WoS. The purpose of this search was to retrieve relevant publications published throughout the timeframe of 2010 to 2020. The Scopus database generated a total of 1968 research findings, whereas the WoS database provided only 1,159 articles for the identical search query. This discrepancy in numbers supports the assertion that Scopus is a more thorough database. The purpose of this study was to conduct research in order to determine the keywords inside the article title, abstract, and keywords search fields of the Scopus database. This was done to ensure that any pertinent publications are not overlooked.

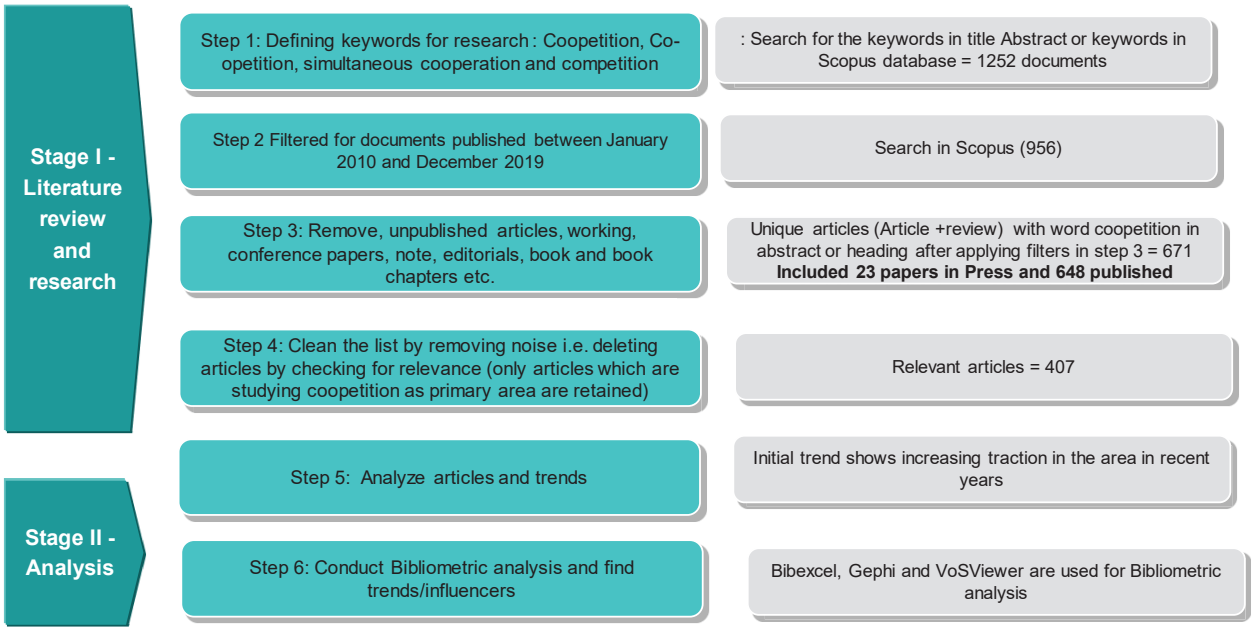
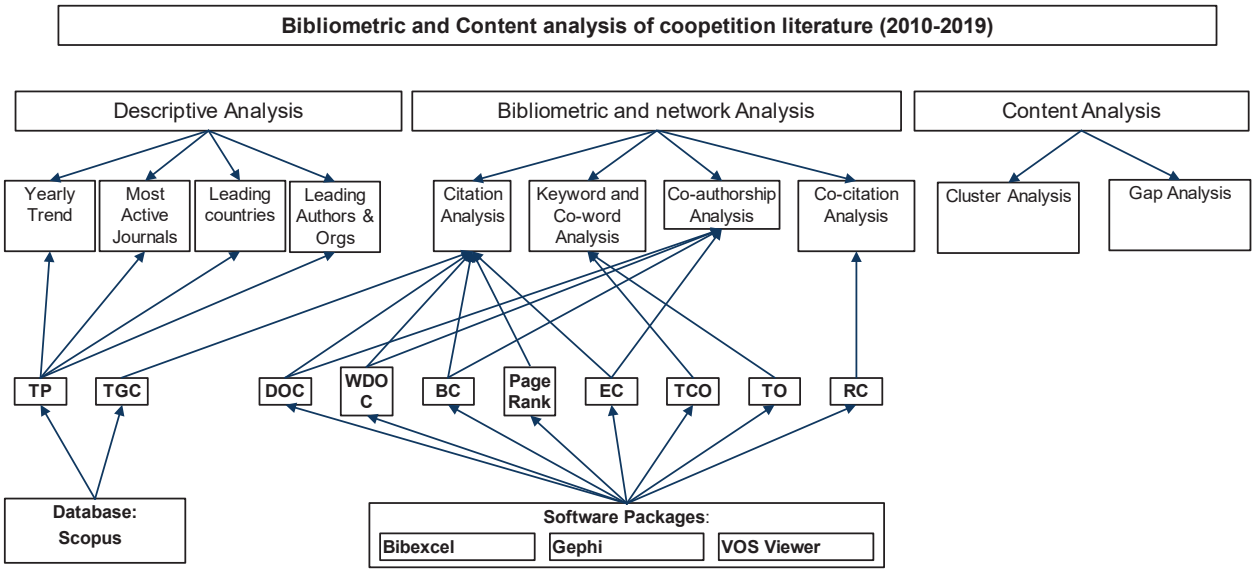


Figure 2.2: Overview of the literature review and refinement of search results

2.5.1 Analysis methodology

Bibliometric analysis was conducted following the guidelines of Donthu et al. (2021a). The

final list of 489 articles was processed for bibliometric analysis using software packages BibExcel, Gephi, and VOSviewer. Donthu et al. (2021a) recommend two categories of bibliometric analysis, performance analysis, which presents the performance of different research constituents (e.g., authors, institutions, countries, and journals) and science mapping, which reveals the intellectual interactions and structural connections among research constituents (citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co-authorship analysis). Key parts of science mapping are included in this section. Figure 2.3 depicts our methodology, and the following section presents the findings and analysis.



TP: Total Publications; TGC – Total Global Citations, TLC – Total Local Citations, DOC – Degree of centrality, WDOC – Weighted degree of Centrality; BC – Betweenness Centrality; EC – Eigen Centrality; TCO – Total Co-occurrence; TO- Total Occurence; RC – Research Clustering

Figure 2.3: Bibliometric and content analysis methodology

2.5.2 Intellectual structure of coopetition research

According to Donthu et al. (2021b), the intellectual structure of coopetition research is uncovered through science mapping that examines the relationships between research constituents (e.g., authors, countries, institutions, topics). The techniques as another keyword and co-occurrence analysis, co-authorship analysis, and bibliographic coupling are used for science mapping. The software packages Gephi and VOSviewer are used for co-authorship network visualization, keyword co-occurrence network, PageRank, centrality, and bibliographic coupling. First, BibExcel was used to prepare a .net file and a thesaurus file that could be inputted to Gephi and VOSviewer. Next, Gephi was used (which is another open-source software) that makes it easy to generate beautiful layouts of graphs and networks (Bastian et al., 2009). The following sections provide an analysis using the tools mentioned

above.

Bibliographic coupling is a method employed in the field of science mapping, which posits that when two publications have a significant overlap in their cited references, they are likely to exhibit similarity in their content. In addition, it is worth noting that the default modularity tool utilized in Gephi is founded upon the Louvain algorithm. This technique is an iterative optimization model that seeks to ascertain the most advantageous number of partitions that can maximize the modularity index (Blondel, Guillaume, Lambiotte, & Lefebvre, 2008). Hence, the utilization of the bibliographic coupling approach emerges as a very suitable methodology for unveiling a diverse range of topics and advancements within a particular temporal and domain-specific context (Donthu et al., 2021a). The feature of VoSviewer was utilized to conduct bibliographic coupling of documents. A threshold limit of 20 citations per article was imposed, leading to the identification of 146 acceptable articles out of a total of 489. The data was exported into the .net format, which was subsequently utilized to generate a network map and do additional statistical analysis within the Gephi software. Consequently, the analysis yielded three distinct modularity clusters, which accounted for 95.89% of the total 146 articles included in the study. It is worth noting that the network under investigation comprised 146 nodes and 8,470 edges. Figure 2.4 depicts the three clusters. The identification of the overarching subject of the clusters discussed in the subsequent sub-sections was facilitated by doing a content analysis of the most highly referenced articles within each cluster.

2.5.2.1 Cluster 1: Coopetition strategies and nature of alliances

Cluster 1 (Purple Colour) captures 56 articles (41.4%) of chosen articles for bibliographic coupling. This is the largest cluster covering coopetition dynamics, coopetition as strategy, coopetition for small firms, coopetition networks, and game-theoretical modelling. The most cited articles in this cluster are Bouncken et al. (2015) (TC = 224); Wu et al. (2010) (TC = 178); and Bengtsson et al. (2010) (TC = 163). Bouncken et al. (2015) article on "Coopetition: a systematic review, synthesis, and future research directions" present the synthesis of high-quality contribution in this area and propose a new definition of coopetition as "a strategic and dynamic process in which economic actors jointly create value through cooperative interaction, while they simultaneously compete to capture part of that value" (pg. 590). The other highly cited article, "Coopetition dynamics - an outline for further inquiry" by Bengtsson et al. (2010) demonstrate four coopetitive forces- over-embedding, distancing, confronting and colluding and argue that these forces drive development towards situations without dynamics, and suggest that the strength of the interactions on competition-cooperation continua needs to

be relatively moderate to enable dynamic coopetition. A few studies also focus on managing coopetition in small firms (Kock et al., 2010; Thomason et al., 2013; Bengtsson & Johansson, 2014).

2.5.2.2 Cluster 2: Relationship and paradox management

Cluster 2 (Green colour) covers the second largest number of articles (28.08%) that captures the theme of relationship and tension management in coopetition. The broad topics covered in this cluster are coopetition and competition paradox, tension management, trust-building, and tensions in the R&D network. More than 50 % of articles (25 articles) found in this cluster are published in the "Industrial Marketing Management" journal. The highly cited articles are Raza-Ullah et al. (2014) (TC = 197), Fernandez et al. (2014) (TC = 173), and Gnyawali et al. (2016) (TC = 123). Raza-Ullah et al. (2014) argue that organisations involved in coopetition are rife with emotional ambivalence as actors experience an emotional state of inconsistency due to their engagement in simultaneous contradictory logics of interaction tension simultaneously constitutes positive and negative emotions and thus differs from a paradox. Fernandez et al. (2014) article defines the nature and source of tension in coopetition, create a theoretical framework combining separation and integration to allow more effective management of coopetitive tensions, and analyse inter-and intra-organisation tensions in coopetitive relationships. Their research conveys that managers will confront a higher level of tension in managing coopetitive relationships due to high competitive tension, high risk of knowledge loss, and partners' potential to become more robust competitors.

2.5.2.3 Cluster 3: Innovation-led alliances and knowledge management

Cluster 3 (Orange colour) covers 26.71% of the articles and covers the theme of innovation-led alliances and knowledge management in alliances. The broad topics covered in this cluster are coopetition for innovation, different types of innovation in coopetition, product innovation through coopetition, value appropriation, knowledge sharing mechanism, and knowledge protection mechanism. The articles in this cluster focus on organizing coopetition for technological, product, and open innovation. Additionally, knowledge management is also one focus area of this cluster. The most cited articles are Gnyawali et al. (2011) (TC = 486), Ritala et al. (2013) (TC = 288), Ritala (2012) (TC = 238), and Bouncken et al. (2013) (TC = 223). Gnyawali et al. (2011) illustrate Sony Corporation and Samsung Electronics joint venture (S-LCD) to develop 7th generation LCD panels for smart TVs. The case demonstrates that coopetition between giants causes subsequent coopetition among other firms and results in

advanced technological development for the industry. Ritala & Sainio (2014) empirically validate that coopetition might be more beneficial in incremental technology development than radical innovation, and technological coopetition helps firms differentiate and radically change their business models and gain competitive advantage. Yami & Nemeh (2014) highlight that while coopetition with multiple players successfully pursues radical innovation, dyadic coopetition is more suitable for incremental innovation. Ritala & Hurmelinna-Laukkanenet (2013) examine why some firms are better able than others to benefit from collaborating with their competitors. The study indicates that a firm's ability to acquire knowledge from external sources (potential absorptive capacity) and protect its innovations and core knowledge against imitation (appropriability regime) are relevant in increasing the innovation outcomes of collaborating with its competitors. Figure 2.4 highlights the core themes identified via bibliographic coupling and visualised by Gephi.

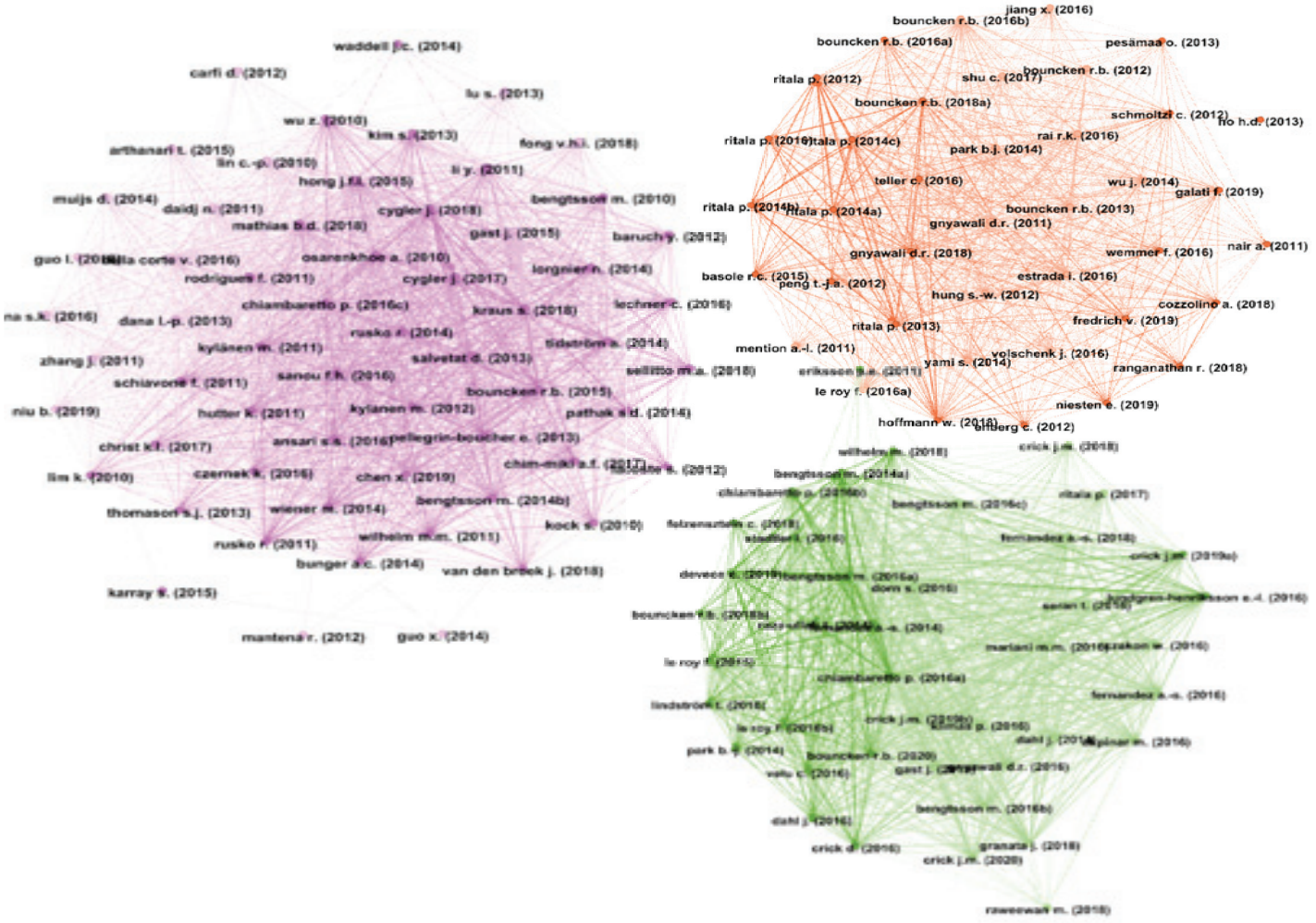


Figure 2.4: Research themes clusters based on bibliographic coupling using Gephi*

*Threshold of a minimum 20 citations of the article

2.6 Theoretical foundations of coopetition

During the last two decades of intense research about the concept of coopetition, different theories have been applied to explain the phenomenon of simultaneous cooperation and competition of rivals. The utilized theories are diverse and range from game theory, resource-based view (RBV), transaction cost economics (TCE), social exchange theory (SET) and resource-dependence theory (RDT), and game theory to mention just a few.

Initially, coopetition was suggested to apply game theory to study interfirm relationships. Nalebuff & Brandenburger, (1997) elucidates the reasonable behaviours, delineates the characteristics of their interconnections, and enables researchers to precisely determine the overall value generated by the organisations involved. Coopetition is a term used to describe a type of game that is characterized as a "nonzero-sum game," wherein players have the ability to generate additional advantages that would otherwise be unattainable. The theoretical underpinnings of the notion are drawn from the resource-based view, dynamic capabilities view, and competence-based view (Barney & Cleark, 2007; Teece et al., 1997). Another theoretical framework, social exchange theory, provides an explanation of how organisations acquire and effectively employ the knowledge of their alliance partners in a manner that adds value (Dyer & Singh, 1998; Lavie, 2006). Lado et al. (1997) elucidates the process of fostering and cultivating collaborative benefit, which then engenders collaborative behaviour. The theory of transaction cost economics (Williamson, 1985) and the resource-advantage theory (Hunt & Morgan, 1996; Wittmann, Hunt, & Arnett, 2009) provide explanations for firms engaging in competition to attain a competitive advantage by effectively utilizing resources, resulting in improved market positions and superior financial performance (Hunt & Morgan, 1995).

The fundamental justification for selecting the aforementioned theories is to concentrate on coopetition as a strategic approach and on elements pertaining to the creation of value and appropriation of value at the level of individual firms. The selected theories serve to enhance comprehension of the underlying logic underpinning coopetition (game theory), the fundamental principles for creating and appropriating value in coopetition (resource-based view), and the inherent uncertainties involved (transaction cost economics). According to existing research, it has been suggested that the practice of coopetition allows enterprises to engage in the pursuit of advanced technological advancement (Gnyawali & Park, 2011) as well as disruptive innovation (Ansari et al., 2016). In their study, Gnyawali & Charleton (2018) conducted an analysis of the fundamental consequences of competition and collaboration in

isolation, and subsequently examined their interplay when they occur simultaneously. This juxtaposition of competition and cooperation provides theoretical insights into the creation of universal value for enterprises engaged in alliances.

As evident, numerous theories have been employed in attempts to elucidate the concept of coopetition. Nevertheless, it is important to acknowledge that each of these theoretical frameworks is accompanied by its own distinct constraints and shortcomings. As an illustration, the utilization of Coase's work (1937) in the literature on TCE emphasizes the capacity of alliances to mitigate the transaction costs that arise from exclusive reliance on the market for price determination (Zajac & Olsen, 1993). Nevertheless, the TCE framework has certain limitations. It assumes that alliance partners inherently engage in opportunistic behaviour (Dyer & Singh, 1998), focuses on individual transactions rather than the overall relationship (Madhok & Tallman, 1998), and fails to adequately address the complexities of viewing alliances as an extension of hierarchical or market-based choices at the firm level (Zajac & Olsen, 1993).

On the contrary, the Resource-Based View (RBV) theory argues that a firm's competitive advantage is derived from its collection of resources that are collected over time (Dierickx & Cool, 1989). These resources are considered to be internal to the firm and are emphasized by scholars such as Barney (1991) and Wernerfelt (1984). The aforementioned perspective is expanded to include alliances as a means for enterprises to obtain and amass important resources when market-based acquisition proves to be wasteful (Eisenhardt & Schoonhoven, 1996). One limitation of the RBV in the context of alliance literature is its exclusive emphasis on cooperative behaviour, thereby disregarding the potential consequences of excessive cooperation that may result in collusive-monopolistic arrangements (Porter, 1980). Such arrangements tend to generate significantly lower rents compared to other types of alliance relationships (Lado et al., 1997).

The Social Exchange Theory (SET) places emphasis on the dimensions of trust, commitment, and collaboration within the context of a reciprocal relationship between partners (Blau, 1964). Dyer & Singh (1998) propose a definition of the relational view that extends this idea. They argue that as dependence on relation-based governance is increased, alliance partners have the potential to create larger rents. One limitation of the SET is its perspective on competition and cooperation as contradictory processes, as noted by Bengtsson & Kock (2000), Brandenburger & Nalebuff (1996), and Gnyawali et al. (2008). Another perspective is that competition is seen as opportunistic behaviour, which undermines the benefits of cooperation due to potential

dangers including leakage and negative spillovers (Hamel, 1991; Hennart et al., 1999; Lavie, 2006).

Upon further scrutiny, it becomes evident that these ideas posit the notion that competition and cooperation are strategies that are inherently incompatible and antagonistic to one another. As a result, they fail to consider the potential for both cooperative and competitive behaviours among alliance partners to occur simultaneously. The perspective that alliance partners should refrain from competing with each other, in order to focus solely on cooperative behaviour, is flawed because it overlooks the distinct nature of the value created through cooperation and competition. It is possible for alliance partners to pursue both cooperative and competitive strategies simultaneously (Burt, 1991; Gnyawali et al., 2006) and hence the thesis dives into these theories in detail while studying the theoretical underpinnings of value creation and value appropriation in the respective sections.

2.7 Theoretical underpinning of value creation in coopetitive alliances

According to systematic literature reviews (Meena et al., 2023; Minerbo & Brito, 2022; Gernsheimer et al., 2021) and bibliometric analysis (Yadav et al., 2022), value creation and performance of coopetitive alliance has seen increasing number of publications over the last decade. For example, behavioural aspects of managing coopetitive alliances like alliance tension management (Raza-Ullah, 2020; Tidstrom et al., 2018; Virtanen and Kock, 2022, 2016), role of learning (Bouncken & Fredrich, 2016), knowledge integration (Chen et al., 2021, 202, factors affecting innovation (Navío-Marco et al., 2021), and company performance (Crick, 2019). Further, prior studies reveal that an industry-specific (Czakon et al., 2014a), contextual (Bengtsson & Raza-Ullah, 2016), and country-sensitive (Luo, 2005, 2007) phenomenon is worth studying that might change depending on intra-industry coopetition, degree of change, power of regulatory agencies (Dorn et al., 2016) etc.

There are several theoretical and empirical frameworks providing insightful analyses into the value creation phenomenon in alliances between non-competitors (Dyer & Singh, 1998; Madhok & Tallman, 1998; Lavie, 2006, 2007; Wassmer & Dussauge, 2011). However; these frameworks do not explain value creation associated with coopetitive interfirm alliances. For example, an early and influential perspective is the relational view (Dyer & Singh, 1998). This suggests that the primary sources of value creation in alliances are their relation-specific assets, knowledge-sharing practices, complementary resources and competencies, and efficient governance structures.

Value creation, according to Ritala & Hurmelinna-Laukkanen (2009), is the overall value generated through alliance activities. They reiterate that value creation is a collective endeavour in which firms work together to create a foundation for maximizing alliance potential. According to research on the interdependencies among alliance partners (Haksever et al., 2004; Lavie, 2007; Mindruta, 2013; Wassmer & Dussauge, 2011), strategic alliances provide value when these interdependencies result in shared or common benefits.

Prominent theoretical approaches to value creation in coopetitive interfirm alliances include those from resource-based view (RBV), Dynamic Capabilities View (DCV), transaction cost economics (TCE), resource advantage theory, game theory, absorptive capacity, knowledge-based view (KBV), and social exchange theory (SET). A high-level summary of key theoretical underpinnings for value creation in coopetitive alliances is shown in Figure 2.5

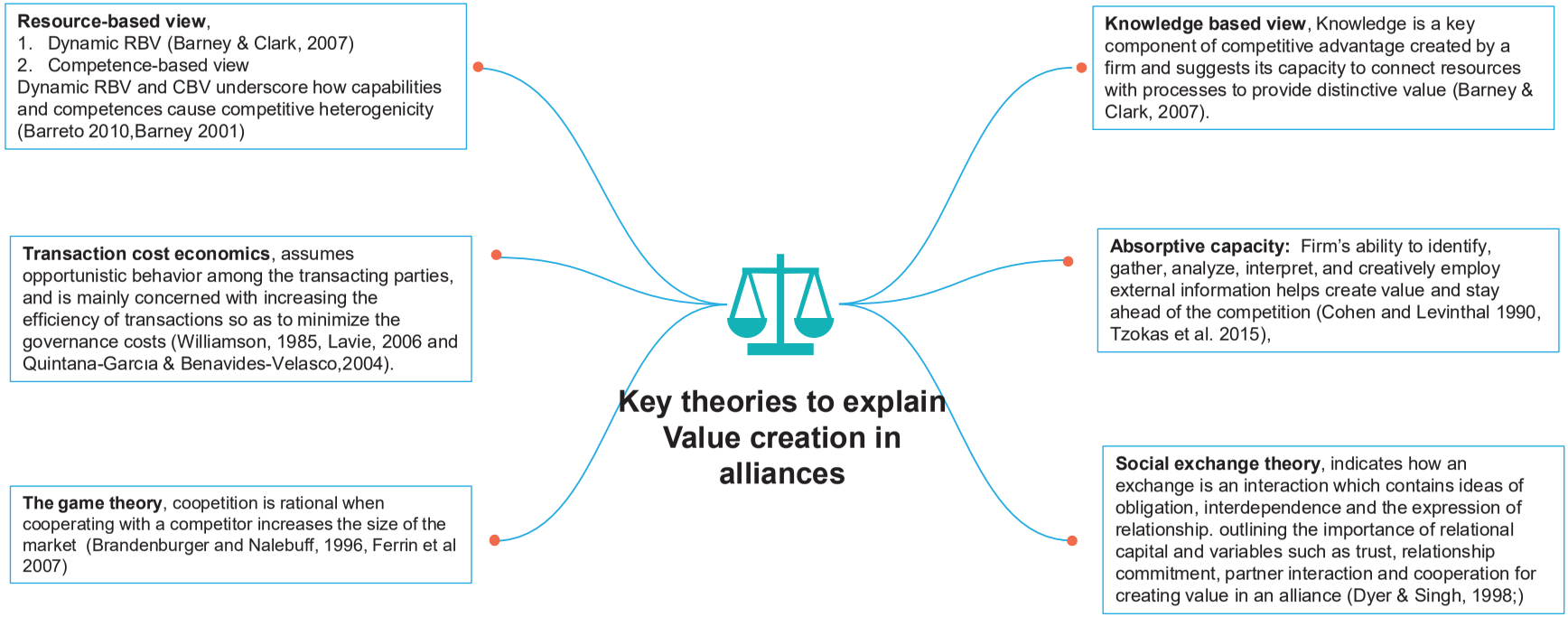


Figure 2.5: Theoretical Underpinning of value creation

2.7.1 Resource-based view (RBV)

There are two viewpoints within the Resource-Based View (RBV) framework that have been developed based on the generation and sustainability of rents. The first perspective, known as the static perspective/ traditional RBV (Barney, 1986; Wernerfelt, 1984); and the second perspective, referred to as the dynamic perspective (Schulze, 1992). In addition to the static resource-based view (RBV), the dynamic RBV encompasses the concepts of dynamic capabilities view (DCV) and competence-based view (CBV).

2.7.1.1 Static Resource-based view

The traditional RBV theory argues that enterprises own distinct sets of resources and skills that account for their variations in resource deployment and transformation into tangible products and services for market release (Barney & Clark, 2007). The RBV also argues that the variation (heterogenicity) in business performance can be attributed to the fact that firms are unable to duplicate the resource and capability patterns of other firms, thereby resulting in the development of durable competitive advantage (Barney, 1991; Tallman, 2005). The primary objective of numerous alliances is not solely focused on reducing transaction costs, but rather on generating value through the strategic anticipation of synergistic resource combinations among potential partners. This proactive approach results in the development of unique resource patterns that surpass the mere aggregation of individual resources (Kogut & Zander, 1993). The RBV contributes to the existing literature on alliances in two distinct ways. Firstly, it emphasizes the importance of acquiring and combining resources through alliances when the opportunity costs associated with alternative market-based arrangements for resource acquisition are relatively high. This perspective is supported by various scholars such as Das & Teng (2000a), Eisenhardt & Schoonhoven (1996), and Hamel et al. (1989). Secondly, RBV highlights the significance of committing a specific subset of resources within an alliance, as the combination of these resources has the potential to generate economic rents. This viewpoint is supported by scholars such as Das & Teng (2000a), Dyer & Singh (1998), Harrison et al. (2001), Lavie (2006), and Madhok & Tallman (1998). Nevertheless, the RBV fails to consider important relational factors such as trust, commitment, and cooperation (Dyer & Singh, 1998; Gulati, 1995; 1998). It also overlooks issues related to information asymmetry and the inherent risks involved in forming alliances (Lavie, 2006). Additionally, RBV does not account for asymmetric learning (Hamel, 1991) and the potential imbalances in cost-benefit ratios that may arise due to delays in resource deployment and the associated maintenance costs.

2.7.1.2 Dynamic resource-based view

The dynamic RBV encompasses the concepts of dynamic capabilities view (DCV) and competence-based view (CBV). In contrast to the static RBV, the dynamic capabilities view (DCV) posits that companies engage in interactions with their environment in order to effectively mobilize, reconfigure, and deploy their resources. This is done with the aim of adapting to the dynamic nature of the environment and ultimately attaining sustained competitive advantage (Amit & Schoemaker, 1993; Makadok, 2001). The concept of DCV highlights the importance of recognizing the influence of past decisions on the availability and utilization of resources. It emphasizes the need for organisations to continuously adapt their learning mechanisms in order to effectively utilize resources in various ways. Failure to do so may result in resources becoming stagnant and ineffective due to a lack of learning and understanding of their value-adding potential (Makadok, 2001; Spanos & Lioukas, 2001). A dynamic capability refers to the process of integrating a resource into an activity network, thereby enhancing its unique usefulness and making it an integral part of organisational routines and processes that encompass resource systems (Eisenhardt & Martin, 2000; Kogut & Zander, 1992; Markides & Williamson, 1994; Teece, 1982; Teece et al., 1997). In the realm of alliances, the concept of DCV proves to be advantageous in examining the progression of alliance capacities that empower them to generate value. The performance of alliances is influenced by the capabilities of the partners, as they are able to utilize their experience in alliances to integrate their internal processes with the resources obtained through alliances, resulting in enhanced value creation (Anand & Khanna, 2000; Kale et al., 2002; Kale & Singh, 1999; Nault & Tyagi, 2001). One drawback of the DCV lies in its emphasis on established resource linkages, neglecting alternative resource transformations that could have resulted in distinct value propositions.

CBV can be understood as a conceptual framework that builds upon the foundations of RBV and DCV (Hamel & Prahalad, 1994; Sanchez & Heene, 1997). Competence is defined as “an ability to sustain the coordinated deployment of assets in a way that helps a firm to achieve its goals” (Sanchez et al., 1996,). A competence can be defined as a framework that encompasses the intersection of resources, processes, and capabilities within a firm, resulting in a distinctive capacity that contributes to the firm's long-term sustainable competitive advantage (Barney, 2002; Prahalad & Hamel, 1990; Sanchez & Heene, 1997; Sanchez et al., 1996; Wittmann et al., 2009). The contribution of CBV to the existing body of literature on alliances is characterized by its ability to offer a multi-faceted and thorough perspective on alliance

capabilities, ultimately resulting in enhanced value creation (Dyer, 2000; Lambe et al., 2002; Simonin, 1997; Spekman et al., 1999). Additionally, the concept of CBV places significant importance on human resources and highlights the necessity of enabling managers to utilize their expertise in the establishment of alliances, ultimately resulting in the attainment of long-term competitive advantage (Hambrick & Mason, 1984; Lado et al., 1992). One limitation of the CBV is its tendency to emphasize the positive features of competences, while overlooking the potential development of inertia within human resources when it comes to replacing superfluous competencies with more relevant ones. The limitation of CBV is that while it focuses on the positive aspects of competencies, it neglects the fact that the involvement of human resources may develop a sense of inertia in substituting redundant competencies with relevant ones.

2.7.2 Transaction-cost economics (TCE)

TCE provides an explanation for inter-organisational interactions, wherein the related transaction costs are influenced by governance decisions, opportunity costs, and the costs embedded in alliance management (Dyer & Singh, 1998; Lavie, 2006). According to Williamson (1985), transaction costs in inter-firm alliances are influenced by many factors such as opportunism, constrained rationality, asset specificity, frequency of trade, and uncertainty. The objective TCE is to reduce transaction costs by selectively allocating transactions, which vary in their characteristics, to governance structures that possess different adaptive capacities and associated costs (Williamson, 1985). In order to mitigate the risk of opportunistic behaviour, firms often engage in the establishment of legal contracts with one another. These contracts serve to prohibit partners from engaging in actions such as attempting to acquire resources beyond the agreed-upon alliance boundary or failing to adhere to the terms and conditions of the sharing of the value generated (Williamson, 1975). The inclusion of resource-sharing modalities is an integral component within alliance governance systems (Dyer & Singh, 1998; Lavie, 2006). Additional approaches for reducing transaction costs in alliances involve the implementation of fair and just behaviour, as well as the establishment of procedures to address and simplify complicated tasks (White & Lui, 2005).

Nevertheless, it is important to note that the TCE does not adequately consider the variations and differences that exist among organisations. This limitation arises from the fundamental assumption made by TCE that all firms are homogeneous in nature (Hansen & Schütter, 2009). In a similar vein, while TCE offers a valuable justification for the establishment of inter-firm

partnerships, it is subject to several significant constraints: (i) The focus is primarily on minimizing costs for individual firms rather than minimizing costs for the entire alliance (Zajac & Olsen, 1993). (ii) The approach tends to view markets and hierarchies as distinct governance modes (Williamson, 1985). (iii) It does not take into account the interdependence in the exchange decisions made by partner firms. (iv) There is an excessive emphasis on contractual aspects of transactions, neglecting the importance of process issues (Zajac & Olsen, 1993). (v) The framework does not consider the resources of partner firms (Das & Teng, 2000a). (vi) It fails to acknowledge the differences in capabilities that influence the organisational structure of firms (Richardson, 1972), and overlooks issues of power and trust asymmetry (Ghoshal & Moran, 1996; Perrow, 1986), the capacity for collective learning (Hodgson, 1998), and other forms of social embeddedness (Granovetter, 1985). The TCE framework has faced criticism for presenting the concept of opportunism as an excessively pessimistic perspective on human motivation (Hansen & Schütter, 2009). According to Ghoshal & Moran (1996), they suggest that the strategy of mitigating opportunistic behaviour through monitoring and exerting control leads to a decline in employee performance, resulting in an outcome contrary to the stated objective. In Hill's (1990) analysis, game-theory logic is employed to assert that the significance of opportunism within the TCE framework is overstated.

2.7.3 Game theory

According to the principles of game theory, the strategic decision to engage in both cooperative and competitive behaviours simultaneously is considered to enhance the overall value or "size of the pie" and broaden the market scope, allowing alliance participants to allocate the benefits among themselves (Brandenburger & Nalebuff, 1996). While Lado et al. (1997) utilizes the tit-for-tat approach proposed by Axelrod (1984), the rationale for corporations considering inter-firm alliances as a favourable strategic choice for enhancing value creation may also be elucidated by the stag hunt game.

The stag hunt game elucidates the potential for generating a larger economic surplus, so incentivizing rivals to engage in cooperative behaviour in order to maximize the collective benefits available for distribution (Brandenburger & Nalebuff, 1996). According to Skyrms (2004), a stag hunt refers to a scenario wherein two individuals engage in a hunting expedition. The individuals are faced with a decision, as they are presented with the option to pursue either a stag or a hare. When making this decision, individuals lack access to information regarding the choice made by the other party involved. The selection made by either individual does not

influence the likelihood of hunting a hare. The value of a stag surpasses that of a hare. While an individual may be capable of independently hunting a hare, the pursuit of a stag necessitates the collaboration of multiple individuals. Without such cooperation, the successful hunting of a stag is unattainable. This elucidates the underlying justification for engaging in social cooperation. The stag hunt game serves as a valuable illustration of scenarios in which collaboration yields greater rewards compared to competition or alternative strategic decisions.

2.7.4 Knowledge based view

According to KBV, knowledge is the fundamental element that underlies processes, routines, and capacities in generating value by creating resources that are rare, precious, difficult to imitate, and not easily marketable (Leonard-Barton, 1992; Grant, 1996). The KBV framework argues that tacit knowledge, which refers to a firm's capacity to connect resources with routines in order to generate distinctive value, plays a significant role in the development of a firm's competitive advantage (Barney, 1991; Barney & Clark, 2007; Kogut, 1988). Regarding alliances, KBV provides valuable insights such as the utilization of unique expertise, the integration of diverse knowledge bases, the transfer and assimilation of knowledge, the protection of valuable knowledge, and the identification of opportunities and challenges for establishing sustainable competitive advantage (Hamel, 1991; Inkpen, 1996; Inkpen & Beamish, 1997; Kale et al., 2000; Khanna et al., 1998; Kogut & Zander, 1992). The concept of KBV is used to explain the development of assets and skills that are distinctive to a particular relationship. This is achieved through the process of alliance partners obtaining knowledge and expertise from each other (Mesquita et al., 2008). According to Macduffie & Helper (1997), KBV argues that alliances can result in a competitive advantage by facilitating joint learning through the exchange and integration of ideas and systems. One weakness of the KBV is its failure to consider the potential obstacles that knowledge may pose to the adoption of risk-taking behaviour. Although information is sometimes incomplete, it can occasionally lead to a perception of predictive generalizability, which may restrict the analytical intuition required to take risks.

2.7.5 Absorptive capacity (organisational learning Theory)

Cohen & Levinthal (1990) define absorptive capacity as the inherent potential of a corporation to effectively acquire, assimilate, and integrate novel knowledge into its existing knowledge base, with the ultimate goal of leveraging this knowledge to generate value. The scholarly discourse within the absorptive capacity literature revolves around the contrasting perspectives

of absolute absorptive capacity, as proposed by Cohen & Levinthal (1990), and relative absorptive capacity, as discussed by Lane & Lubatkin (1998) and Mowery et al. (1996). The advancement of the notion of relative absorptive capacity has proven to be advantageous in expanding the existing body of knowledge on alliances within the realm of study (Hamel, 1991; Spekman et al., 1998). This line of research examines the asymmetries that arise due to variations in relative absorptive capacity. It aims to enhance inter-organisational learning, internalize knowledge gained from alliances, and leverage prior alliance experience to enhance organisational learning processes (Doz & Hamel, 1998; Dyer & Singh, 1998; Hamel, 1991; Sanchez & Heene, 1997; Simonin, 1997; Spekman et al., 1998). One of the drawbacks inherent in absorptive capacity perspectives is the absence of explicit links with resources. For example, corporations with limited absorptive ability might nevertheless generate value by outsourcing certain services instead of internalizing information or developing in-house capabilities.

2.7.6 Social exchange theory

The concept of 'collaborative' or 'relational' advantage, as described by Lado et al. (1997), pertains to the process of fostering and cultivating cooperative or collaborative rent seeking behaviour. The concept of SET is rooted in the fundamental role of human contact in facilitating social and material transactions, which in turn solidify social relationships within various structures and systems (Cook & Emerson, 1978). The concept of social exchange can be described as the deliberate activities undertaken by individuals, driven by the anticipated benefits they expect to receive from others, which are typically realized in practice (Moore & Cunningham, 1999). The concept of SET draws from the principles of reciprocity as proposed by Gouldner (1960). SET posits that an exchange is a dynamic interaction that encompasses notions of duty, dependency, and the manifestation of interpersonal connections. The literature on alliances has been enriched by the contributions of the SET, which has emphasized the significance of relational capital and many factors such as trust, relationship commitment, partner engagement, and collaboration in generating value within an alliance (Dyer & Singh, 1998; Gulati, 1995; 1998). SET contributes to the existing body of scholarship on alliance governance by suggesting that governance structures based on relationships can effectively reduce transaction costs (Dyer & Singh, 1998; Gulati, 1995; Lavie, 2006). According to Das & Teng (2002a), this perspective suggests that inter-firm alliances can be seen as reciprocal interactions between partner firms that cannot be well explained by market-based transactions conducted at a distance. The relational approach of inter-firm alliances proposed by Dyer & Singh (1998) is based on the SET and asserts that trust, commitment, and collaboration play

crucial roles in governing alliances. These aspects are helpful in reducing transaction costs and enhancing efficiency. While the primary focus of inter-firm alliances lies in economic transaction between alliance members, it is important to acknowledge that social exchanges also play a significant role within these relationships. This is due to many factors. Firstly, it is important to note that the majority of alliance agreements can be characterized as incomplete contracts (Macneil, 1980; Poppo & Zenger, 2002), hence leaving numerous concerns unresolved. Hence, in order to ensure the effective functioning of the inter-firm alliance, it is imperative to exhibit specific cooperative behaviours (Macenil, 1980). Furthermore, it is imperative for alliance partners to demonstrate adaptability in response to unforeseen, dynamic, and evolving circumstances in order to effectively manage alliances. This may entail making adjustments to the alliance agreement or revising the expectations of the alliance partners (Das & Teng, 2002a). Cooperative behaviour within alliances is frequently characterized by reciprocity and reliance on the positive and reinforcing actions of the other partner (Larson, 1992).

The SET protocol also possesses certain restrictions. Within the realm of high social interchange, it is plausible for enterprises to encounter challenges in discerning genuine cooperative and trustworthy partners from those who are inclined towards opportunistic behaviour (Frank, 1988). Furthermore, it has been suggested by Bengtsson et al. (2010) that engaging in collaborative rent-seeking activity could potentially result in strategic rigidity. In a similar vein, Uzzi (1997) posits that an excessive dependence on cooperative conduct can have detrimental effects on the performance of a firm. This is due to the diminished ability of the firm to effectively adapt to unexpected changes in its environment, as well as the heightened imbalance of information between the firm and external sources.

2.8 Theoretical underpinning of value appropriation in coopetitive alliances

Coopetition, owing to its dualism of cooperating and competing behaviours (Bengtsson & Kock, 2000; Lado et al.,1997), is anticipated to provide better outcomes and create more value compared to other relational modes (Bouncken & Kraus, 2013; Robert et al., 2018; Wu et al., 2015). However, it is often suggested that firms then compete with one another for the co-created value (Bengtsson & Kock, 2000; Walley, 2007, Gnyawali et al., 2006; Gnyawali & Madhavan, 2001). Although this logic is generally true, various empirical investigations have shown that value creation and appropriation can sometimes occur simultaneously and that their

relative emphasis can change within a coopetitive relationship (Gnyawali & Park, 2011; Ritala et al., 2009). According to research by Raza-Ullah et al. (2014), Ritala & Hurmelinna-Laukkanen (2018), Ritala & Tidström (2014), Zhang et al. (2010), firms engaged in coopetition must deal with coopetition partners who have competing goals and who likewise wish to succeed at the expense of the other as the advantages of a particular collaborative partnership might not always perfectly coincide with the strategic goals of the individual organisation (Dyer et al., 2008; Khanna et al., 1998). Firms that enter a coopetitive alliance will most likely use their capabilities and strategically try to capture more value from the alliance (Czakon, 2009; Le Roy & Czakon, 2016; Lavie, 2009; Le Roy and Guilletreau, 2010; Ritala and Tidström, 2014). However not every partner in the alliance generates same value, nor they are able to capture equal value from the alliance leading to disengagement or failure of alliance (Bouncken et al. 2020b; Volschenk et al., 2016). However, in order to remain competitive, firms must also follow their own strategic value appropriation (or value capture) objectives while taking into account the relational contexts that maximise the value created in their collaborative relationships. This brings the value appropriation part of a coopetitive alliance in the picture.

Value appropriation prioritises the sharing of common value among partners while also considering their capacity to produce private benefits (Janssen et al., 2013). According to Janssen et al. (2013), Khanna et al. (1998), Ritala, and Tidström (2014), "common benefits" refers to the combined value produced by the parties collaborating. Khanna et al. (1998) directly links value appropriation to private benefits in a coopetitive alliance. According to Khanna et al. (1998), Ritala & Tidström (2014), and Park et al. (2014), private advantages are those that a company can gain unilaterally by acquiring knowledge or resources from the partnering firm and applying them elsewhere or to its own operations in areas unrelated to the alliance activities. Consequently, the concept of value appropriation emphasises following two aspects:

- Common benefits distribution among the partnering firms; and
- The ability of the partner firm to leverage the skills and capabilities of other partner, learn from it and use the learnings outside the alliance's boundaries.

This study adheres to this broadened definition of value appropriation, which is also very comparable to previous notions of value appropriation in a number of contexts, including strategic alliances (Di Minin & Faems, 2013). In light of this, value appropriation methods are

seen as strategies that decide how shared benefits are split among the alliance partners as well as how partners unilaterally extract private benefits that are not available to other partners (Lavie, 2007). The dualism of competition and collaboration has inspired a large base of coopetition research, and there are multiple views on how value is appropriated.

Literature indicates that firms in alliance will have different abilities to capture value that is explained by key theories like resource dependence theory, bargaining power theory, strategic factor market (SFM) theory, and organisational learning theory etc.

2.8.1 Resource dependence theory

Resource dependence theory advances different yet complementary arguments to those emphasized above. Given its focus on dependence as source of power for the alliance partner controlling key resources (Pfeffer, 1987), this theory asserts that the contribution of critical resources credits power in the alliance, thereby claiming that what each partner brings to the alliance is also a relevant factor determining a strong bargaining ability (Harrigan & Newman, 1990). Furthermore, RDT pinpoints that a partner who contributes resources that are very costly or impossible for other partners to replace (Root, 1988, p. 76), and critical to the alliance success (Harrigan & Newman,1990), benefits a strong bargaining power. Albeit its valuable contributions, this theory assumes that there are no changes leading to obsolescence in bargaining power. However, bargaining power shifts are regular (Inkpen & Beamish, 1997), lower the need for cooperation between the partners, and are a source of instability, often leading to the dissolution of the alliance (Das & Teng, 2000b).

According to Yan and Grey (1994), the ability to positively impact the parameters of an agreement, obtain concessions from partners, and affect the results of alliance discussions is known as bargaining power. Bargaining power theory (Bacharach & Lawler, 1984) and Resource dependence theory/RDT (Pfeffer & Salancick, 1978) are two theoretical frameworks that can be used to explain effective negotiation and bargaining power in an alliance. Relative bargaining power in an alliance can be influenced by the availability of alternatives for the partner firms i.e., scarcity premium and superior complementarity. According to the RDT, a partner who contributes resources that are essential to the alliance's success and are very expensive or scarce and impossible for other partners to replace has a powerful negotiating position (Root, 1988) termed as “scarcity premium”. Scarcity premium gives the partner with essential resources a strong bargaining power to appropriate more value in the alliance. In contrast, partner firm's bargaining power is greater than that of the other alliance partner(s) if

it has a wide range of options or alternatives with same goal and are available to pursue an alliance (Lavie, 2007). Therefore, eventually relative bargaining ability and power determines how much value each firm will appropriate based on scarcity premium, as value will be split according to the relative intra-pair bargaining positions of alliance partners (Adegbesan, 2009). Another similar parameter is superior complementarity that influences bargaining power. Resources are said to be complementary when the marginal returns to one resource increases in the presence of the other (Milgrom and Roberts, 1995; Hess and Rothaermel, 2011). According to Adegbesan & Higgins (2009), the magnitude of this increase/ surplus is proportional to the degree of complementarity between the resources, and the split of surplus will depend on relative degree of complementarity. The greater the amount of surplus it can create with the target resource relative to its partner (superior complementarity), the greater its bargaining ability relative to its partner to capture value. Further, RDT asserts that the contribution of critical resources credits power in the alliance, thereby claiming that what each partner brings to the alliance is also a relevant factor determining a strong bargaining power (Harrigan & Newman, 1990). Further the bargaining perspective' based on Strategic factor market theory (SFM) indicates that intra-pair split of value is driven by intergroup, intragroup, and intra-pair competition over surplus, acting through relative scarcity, superior complementarity, and bargaining ability, respectively (Adegbesan, 2009; Dyer et al., 2018).

2.8.2 Bargaining power theory

Bargaining power theory suggests that a strong bargaining ability depends on availability of alternatives. Specifically, when the alliance partner has more alternatives (Lavie, 2007) to pursue similar objectives with other firms, its bargaining power is stronger than that one of the other(s) alliance partner. Additionally, this theory claims that the control of bigger stakes in the alliance is a negative indicator of the bargaining ability as it reveals the attachment and the dependence of the partner on the alliance and its outcomes (Inkpen & Beamish, 1997). Put it simply, if a firm has more stakes than its partner in the alliance, then its bargaining power is weaker since the outcomes of the alliance are more critical to its performance. In spite of its persuading arguments, this theory does not consider the extent to which each partner contributes to the alliance. Moreover, this theory takes for granted that partners possess and bring similar resources to the alliance.

2.8.3 Strategic factor market theory

The predominant focus of scholarly discussion pertaining to SFM in alliances has centred on

Barney's (1986) idea concerning Strategic Factor Markets. As to his assertion, the expenditure associated with obtaining strategic resources is expected to closely align with the economic worth of those resources, unless buyers possess a persistent advantage in terms of their knowledge regarding the prospective value of these resources or are plain lucky. The prevailing perspective posits that enterprises are unable to fully capture the benefits derived from the utilisation of valuable resources, unless they possess superior forecasts regarding the future worth of those resources or simply happen to be fortunate (Ahuja et al., 2005; Barney, 2001). Adegbesan (2009) applied Lippman and Rumelt's (2003) methodology to SFM (Barney, 1986; Makadok & Barney, 2001) by focusing on factor markets characterized by acquiring firms that display heterogeneous complementarity to target resources. He demonstrated that when firm accesses resources in an alliance, the distribution of surplus with resource suppliers will be determined by the combined effects of seller and buyer groups' relative supply and demand, the degree to which individual buyers' needs complement those of target resources, and the degree to which individual buyers' bargaining power is greater than that of individual resource suppliers.

So, in a nutshell, according to SFM, a partner who can negotiate well will receive a larger portion of the control rights when the pie is split (Adegbesan & Higgins, 2010).

2.8.4 Organisational learning theory (and Absorptive capacity)

According to Lane et al. (2001), every organisation possesses a distinct capacity to acquire knowledge from other companies (organisational learning). The optimal utilization of knowledge derived from alliance is achieved because of the trade-off between the learning requirements associated with firms' latitudinal and longitudinal absorptive capacities. According to Cohen & Levinthal (1990), a firm's capability to recognise the value of new knowledge, assimilate it, and use it for economic purposes is known as its absorptive capacity. According to Tzokas et al. (2015), absorptive capacity is the ability for businesses to identify, gather, analyse, interpret, and creatively employ external information that helps the firm to stay ahead of the competition. As per previous studies (Jansen et al., 2005; Tu et al., 2006; Cohen & Levinthal, 1990; Zahra & George, 2002), absorptive capacity is a dynamic skill that influences the nature and longevity of a firm's competitive advantage. According to Peltokorpi (2017), absorptive capacity facilitates organisations to rapidly realize and assimilate outside knowledge and to dynamically shift that know-how into leading offerings. Thus, the transition of knowledge sharing into better firm performance can only materialize if there was a positive absorption capacity for innovative thoughts (Levitt & March, 1988). A partner firm's ability to

absorb information depends on the strength of its associates, knowledge management platforms, and resources (Lyles & Salk 1996; Hamel 1991). The greater the absorptive capacity of a partner firm, the more knowledge it can appropriate from a given amount of total knowledge generated in the partnership, giving it greater leverage.

2.9 Key observations and Research gaps

While the topic of coopetition has gained interest in management and business literature as well as in other areas, the research field is still fragmented, and various gaps require further research. Based on the extensive literature review and bibliometric analysis, the following key research gaps were identified:

2.9.1 Lack of theoretical integrated frameworks for value creation and value appropriation

According to (Bengtsson et al., 2016), the coopetitive research field has been argued to suffer from incompleteness in terms of theory and has been characterized by numerous scholars as fractured and lacking coherence in the adoption of its theories (Bengtsson & Kock 2014, Bengtsson et al. 2010; Walley, 2007). Further, Bengtsson et al. (2016), states that

"rather than continuously developing novel theoretical approaches and applying them to coopetition, scholars need to focus, deepen and fully close the existing knowledge gaps that currently exist in the field. In order to unify and advance the traditional theories generally adopted on macro-levels of analysis, we suggest that theories focusing on the organisational and individual levels of analysis should be more tightly integrated into the field than they are now, and that new and creative research methods and contexts should be adopted".

2.9.2 Considering value creation as a unidimensional construct

Empirical efforts have been made to study value creation in collaborative alliances by integrating different theoretical perspectives (e.g., Lambe et al. 2002; Wittmann et al. 2009). However, such efforts in the context of coopetition alliances need to be addressed more adequately. Previous studies also suffer from the limitation of considering value creation as a unidimensional construct. Thus, conceptualization of value creation as a multi-dimensional construct, and building and testing such a framework is one of the critical knowledge gaps that needs to be addressed. For example, the relational perspective of the RBV contends that resources that produce competitive advantage can transcend firm borders and be integrated into interfirm relationships. As a result, the sources of competitive advantages for partners include both their internal and external resources in relational networks (Arya & Lin, 2007;

Dyer & Singh, 1998; Lavie, 2006; Crick, 2021). However, these frameworks are mostly derived from mainstream economics and managerial studies and focus on the dichotomy between competition and cooperation (Lado et al., 1997). Coopetitive interfirm relationships, on the other hand, are defined by inclusive interdependence, with collaboration and competition as two distinct though related continuums (Bengtsson & Kock, 2000).

2.9.3 Methodological polarity

Coopetition studies have looked at value creation and value appropriation largely through anecdotal evidence where they discuss examples of relationships in which processes such as control of resources without their ownership, and the motivation for competitors to cooperate with each other (Bengtsson & Kock, 2000; Gnyawali & Park, 2011; Rusko, 2011; Walley, 2007). The theory built through case-study approach in coopetition literature is neither normative nor descriptive (for example, the case studies of Swedish brewery and lining industries (Bengtsson & Kock, 2000) and Finnish forest industry (Rusko, 2011)). However, where survey-based techniques have been used (e.g., Dittrich & Duysters, 2007; Gnyawali et al., 2006; Ritala, 2012), they are more context specific such as those in the Information and communications technology (ICT) sector (Dittrich & Duysters, 2007), steel industry (Gnyawali et al., 2006) or R&D related activities (Ritala, 2012). Besides, their focus is only on a few determinants such as coopetition alignment, risk and cost sharing, and integration of supplementary resources (e.g., Fjeldstad et al., 2004; Mione, 2009; Bengtsson & Kock, 2000), and they ignore several other important determinants of value creation. Table 2.2 highlights research areas identified by clusters that were created using co-cited articles via bibliometric analysis of publications between 2010 and 2020.

Table 2.2: Future research scope identified via analysis of clusters created using bibliometric coupling.

Cluster	Research stream	Future research directions	Authors
1	Coopetition strategies and nature of alliances	1. How can firms optimize the balance between cooperation and competition, and what factors determine the optimal balance for positive outcomes? 2. How can coopetition business models be implemented where mutual and individual goal-oriented activities are aligned? 3. What are the challenges that SMEs face in fast-paced industries, managing coopetitive relationships and opportunity creation in this context?	Bengtsson & Kock (2014)

Cluster	Research stream	Future research directions	Authors
		1. It is worthwhile investigating cross-level interactions and how coopetition "at higher levels of analysis" emerge from lower-level entities and interactions, as well as the outcomes of causal effects at higher levels of analysis. 2. There is scope to develop an index that captures both the intensity and similarity dimensions of cooperation and competition. 3.There is scope for developing new scales using a coopetition-based approach for tension, capability, and value creation. 4. From a methodological perspective, there is a need to conduct longitudinal studies to understand coopetition aspects, such as tension and interaction between firms affected by cognitions and emotions.	Bengtsson & Raza-Ullah (2016)
		1. Future research can investigate the differences between emerging and deliberate coopetition, as the characteristics of relationships in terms of structure, governance, and mechanism might differ in both cases. 2. What is the optimal balance between competition and cooperation in inter-firm alliances, and how to achieve and maintain this? Factors that influence the balance of cooperation and competition, both at the individual and industry levels, must be explored in order to create a more comprehensive picture of coopetition dynamics.	Dorn, Schweiger, & Albers (2016)
2	Relationship and paradox management	How would a joint team between a small and medium-sized enterprise and a multinational company, or, between an emerging market and a developed market firm be designed? In these cases, how is the power to be distributed between coopetitors? How are teams to be governed?	Le Roy et al. (2018)
		1. Future research on coopetition should investigate different mixed outcomes of tensions, and whether it is possible to turn these mixed outcomes into mutually positive outcomes. Future research should also develop and adapt various conflict management styles for these alliances. 2. Future researchers should investigate more deeply those conditions under which separation and integration will work separately, when combination is necessary, and how to achieve such a combination in	Tidström (2014)

Cluster	Research stream	Future research directions	Authors
		order to manage tensions in a coopetition alliance.	
		1. How can tension in managing collaboration and competition in coopetition alliances impact firms' performance? 2. What is the role of coopetition capability in enhancing firms' performance?	Bengtsson, et al. (2015)
3	Innovation-led alliances and knowledge management	Combining analyses of technology similarity and complementarity with three-dimensional measurement of innovation radicalness (technological, market, business-model) could enhance understanding of the interconnectedness between coopetition, nature of innovation, and firm capabilities.	Ritala & Sainio (2014)
		Whether the high level of trust between partners in coopetition or pure cooperation leads to higher innovation success can be studied in greater detail.	Bouncken & Kraus (2013)
		Future research could empirically investigate the nature and effects of tension, various aspects of balance between collaboration and competition, and their impact on innovation and other performance aspects.	Park, Srivastava, & Gnyawali (2014)
		Understanding the influence of coopetition on firms' ability to innovate is relevant for policymakers and would provide them with insight into whether to extend this policy or not, how to implement it, and what benefits can be expected.	Mention (2011)
		Future research can examine mechanisms that can prevent accidental and intentional knowledge leakage while simultaneously enabling shared collaboration-related knowledge. Researchers can also look for deeper insights into knowledge sharing. An in-depth qualitative study could also be conducted to understand the reasons for knowledge leakage.	Ritala et al. (2015)
		In addition to formal knowledge protection mechanisms, future research can examine the role of informal knowledge protection mechanisms in mitigating knowledge misappropriation risks in coopetition alliances.	Estrada et al. (2016)
4	Miscellaneous	What are various antecedents of coopetition? How does coopetition relate to corporate	Bouncken & Fredrich (2012)

Cluster	Research stream	Future research directions	Authors
		strategy, and can coopetition be part of formal or emergent strategy process?	
		Existing research talks about the benefits of coopetition for partners; however, future research should also examine the negative effect on firm performance.	Peng et al. (2011, 2012)
		There is a need to conduct quantitative studies focusing on the effectiveness of including coopetition as part of the firm's overall business model and examine potential performance implications.	Ritala, Golnam, & Wegmann (2014)

2.9.4 Lack of studies in a high tech yet regulated industry

Although researchers have studied coopetition in the pharmaceutical industry, value creation in a dyadic interfirm alliance for coopetition in the pharmaceutical industry has not received much academic attention. Pitelis et al. (2015) studied collaboration between pharmaceutical firms from advanced and emerging countries, while Santos (2021) analysed two multi-partner alliances in the Portuguese pharmaceutical industry for links between value creation and simultaneous coopetition. Studies based on geographical clustering and cooperation networks have been conducted on the innovation performance of biotechnology enterprises (Quintana-Garca & Benavides-Velasco, 2005), the influence of behavioural traits on the success of strategic alliances (Vanpoucke & Vereecke, 2010), and value appropriation in interfirm alliances in the pharmaceutical industry (Higgins, 2006; Hughes-Morgan et al., 2015). Also, there are studies based on geographical clustering and cooperation networks effect on innovation in biotechnology firms (Quintana-García & Benavides-Velasco, 2005), impact of behavioural attributes on the success of strategic alliances (Vanpoucke & Vereecke, 2010), and value appropriation in interfirm alliances in the pharmaceutical industry (Hughes-Morgan et al., 2015). However, during literature review, the study did not come across any existing research on value creation in dyadic pharmaceutical coopetitive alliances in India.

2.10 Conclusion

Although coopetition has been studied in the pharmaceutical industry, value creation in a dyadic interfirm alliance for coopetition in the pharmaceutical industry has not received much scholarly attention. Further, empirical efforts have been made to study value creation in collaborative alliances by integrating different theoretical perspectives (e.g., Lambe et al. 2002; Wittmann et al. 2009), yet such efforts in the context of coopetition alliances need to be addressed adequately. Previous studies also suffer from limitation of considering value

creation as a unidimensional construct (Rai, 2016; Rai et al., 2022) and using single indicators to investigate coopetition (Crick & Crick 2019). Thus, conceptualization of value creation as a multi-dimensional construct and building and testing the framework is critical knowledge gap that needs to be addressed.

Similarly, the extent literature review shows that determinants of value creation and value appropriation are complex and entwined. Understanding and putting these drivers into practice can help businesses improve their capacity to generate and capture value from coopetitive relationships. Hence, identification of constructs and conceptualization of an integrated framework of value creation and appropriation is another critical knowledge gap that needs to be addressed.

The next chapter (chapter 3) focuses on developing hypothesis and conceptual frameworks for value creation and value appropriation in coopetitive alliances that would be further validated using quantitative and qualitative research methodologies.

CHAPTER 3: PROPOSED RESEARCH FRAMEWORKS AND HYPOTHESES DEVELOPMENT

3.1 Introduction

This chapter discusses the underlying theoretical background for the proposed research frameworks. To address some of the research gaps identified in section 2.6, this chapter proposes integrated research models that aim to shed light on the factors influencing value creation and value appropriation in coopetitive alliances. By integrating perspectives from various existing theories, along with insights from strategic management and alliance literature, this research framework seeks to provide a comprehensive understanding of the underlying dynamics and processes that drive value creation in coopetitive dyadic alliances.

The present thesis chapter is organized into two separate sections, each of which focuses on a critical element of dyadic coopetitive alliances. The first part explores value creation within dyadic coopetitive alliances, while the subsequent section examines the equally significant aspect of value appropriation.

The initial section of the chapter focuses on the concept of value creation by exploring determinants of value creation using various theories and studies to propose an integrated framework of value creation in dyadic alliances. The primary objective of this section of the chapter is to offer a thorough comprehension of the dynamics and determinants of value creation in dyadic coopetitive partnerships through the incorporation of pertinent literature research.

The subsequent section of the chapter centres its attention on the concept of value appropriation. This section examines the literature to identify determinants of value appropriation and conceptualize an integrated framework comprising factors like bargaining power, isolation mechanisms, contractual governance, pie splitting rights etc.

3.2 Value creation in interfirm alliance: An integrated theoretical framework

Numerous theoretical and empirical frameworks have been developed to offer comprehensive analyses of the value creation phenomenon in alliances formed between non-competitors (Dyer & Singh, 1998; Madhok & Tallman, 1998; Lavie, 2006, 2007; Wassmer & Dussauge, 2011). However, these frameworks do not provide an explanation for the value creation that occurs in coopetitive interfirm alliances. The analysis of value creation in alliances has been the focus

of academic inquiry in various fields, including finance, supply chain management, and innovation management. As anticipated, various areas exhibit variations in their conceptualization of value creation. Originating in the realm of finance, and subsequently embraced in some studies across several disciplines, the concept of an alliance is believed to generate value when there is a beneficial impact on the stock price of the parent company. Therefore, the examination of value creation is approached from the perspective of shareholders (Hanvanich et al., 2005; Merchant & Schendel, 2000). However, from a financial standpoint that value creation is typically linked to the profits obtained by both firms involved in the alliance (Anand & Khanna, 2000). From a supply chain perspective, strategic alliances are regarded as a mechanism for creating value through the enhancement of pre-existing relationships among entities positioned at various levels of the value chain (e.g., supplier-customer relationships) or among entities operating within the same stage of the value chain (e.g., horizontal alliances) (Butler & Batt, 2014; Murphy & Schindler, 2011). Commonly used indicators include metrics related to the quality of outcomes, satisfaction in interpersonal relationships, and diverse manifestations of mutually beneficial outcomes.

In the context of innovation, it is argued that alliances are deemed valuable when they are linked to the facilitation of innovation that would otherwise be unattainable. The measurement of this phenomenon is exemplified by the production of patents, both in terms of quantity and quality, that would not have been possible for enterprises to develop without the existence of the alliance. It is important to highlight that the aforementioned benefits can be evaluated at the dyadic level, as exemplified by the studies conducted by Belderbos et al. (2014) as well as Ritala & Hurmelinna Laukkanen (2009). One of the initial and significant viewpoints in this field is the relational approach, as proposed by Dyer & Singh (1998). This implies that the main drivers of value generation in alliances are the assets specific to the relationship, methods of sharing information, resources and abilities that complement each other, and effective governance structures. Based on scholarly investigations on the interdependencies of alliance partners (Lavie, 2007; Mindruta, 2013; Wassmer & Dussauge, 2011), it has been observed that strategic alliances yield value when these interdependencies lead to the attainment of shared or mutual advantages. The RBV's relational perspective argues that resources capable of generating competitive advantage have the potential to extend beyond the boundaries of a single business and become integrated into interfirm connections. Consequently, the competitive advantages of partners are derived from a combination of their internal and external resources within relational networks, as evidenced by scholarly publications such as

Arya & Lin (2007), Dyer & Singh (1998), and Lavie (2006).

Nevertheless, the majority of these frameworks are primarily based on conventional economics and managerial research, emphasizing the contrast between competition and collaboration (Lado et al., 1997). Coopetitive interfirm relationships, however, are characterized by a state of comprehensive interdependence, where collaboration and rivalry are two separate but interconnected dimensions (Bengtsson & Kock, 2000). In this thesis, an integrated framework of value creation in dyadic coopetition-based interfirm alliances is proposed after integrating the relational and knowledge management perspectives. The relational view of RBV and DCV are integrated to explain how interfirm coopetition can generate sustainable competitive advantage and create value. It is proposed that alliance success and value creation can be explained by an integrated framework based on:

- Resource-based view (absorptive capacity, idiosyncratic resources, etc.)
- Relational view (trust, communication between partners, knowledge-sharing routines, complementary resources and capabilities, effective governance, etc.)
- Competence-based view (top management support, alliance management capability/competence)

Based on existing literature, an integrated framework of value-creation was conceptualized (see Figure 3.1) followed by postulating hypotheses to test and validate the framework.

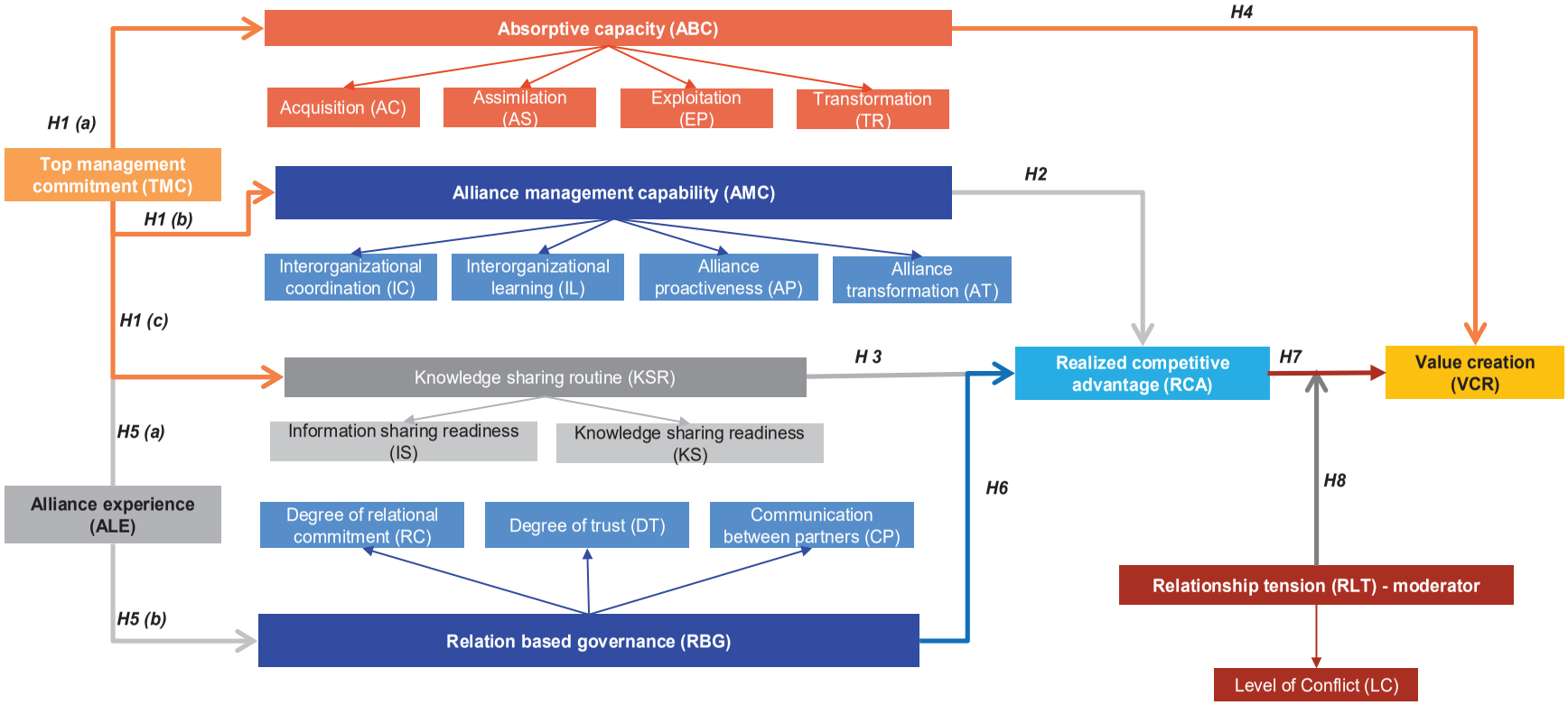


Figure 3.1: An integrated conceptual framework/ model for value creation in coopetitive inter-firm alliances

3.2.1 Hypotheses development

This section provides a description of the hypothesised relationships that are demonstrated in the conceptual framework.

3.2.1.1 Top management commitment

Lambe et al. (2002) suggest that alliances not only require attention from top management during their development, but also for their smooth and effective functioning. The success of the alliance ultimately depends on the commitment from top management of the partner firms to overcome potential conflict and resolving tensions while building trust (Vahlne & Johanson, 2021; Elmuti & Kathawala, 2001). The upper echelon theory (Hambrick & Mason, 1984) contends that top management is the primary driver for a company's strategic decision-making (Lado et al., 1997; Souitaris & Maestro, 2010). Top management is generally responsible for creating an enabling environment in the organisation to identify appropriate alliance partners who possess complementary resources, commit its own resources, develop capable alliance managers and practices, develop absorptive capacity for utilization of knowledge gained from prior experiences, as well as to allow partners to use complementary resources and minimize conflicts (Lado et al., 1992; Parkhe, 1993; Hamel & Prahalad, 1994; Day, 1995; Aulakh et al., 1996; Eisenhardt & Schoonhoven, 1996; Dyer & Singh, 1998; Henderson & Cockburn, 1998; Lambe et al., 2002). Top management focus is needed to achieve synergistic benefits among partners to bring informal coordination mechanisms for generating trust, which mitigates opportunistic behaviour and enhances knowledge-sharing routines (Dyer & Singh, 1998; Gulati & Singh, 1998). In a nutshell, the stronger senior management commitment to organisational learning, enhancing partner competitiveness through knowledge sharing routines, and alliance formation and management competencies, the more value the alliance might potentially provide. Therefore, it is proposed to test the following hypotheses:

- **H1(a).** Top management commitment (TMC) to the alliance is positively related to absorptive capacity (ABC).
- **H1(b).** TMC to alliances is positively related to alliance management capability (AMC).
- **H1(c).** TMC positively influences knowledge-sharing routines between alliance partners.

3.2.1.2 Alliance management capability

Several scholars have proposed various conceptualizations of how firms establish and oversee alliances. These conceptualizations include collaborative knowhow (Simonin, 1997), collaborative advantage (Dyer, 2000), alliance competence (Spekman et al., 1999), Alliance management capability (Schilke & Goerzen, 2010), and alliance capabilities (Harbison & Pekar, 1998; Anand & Khanna, 2000; Kale et al., 2002; Draulans et al., 2003). In this thesis, alliance management capability (AMC) is modelled as a four-dimensional reflective second-order construct borrowing primarily from Schilke & Goerzen's (2010) alliance management capability model, which is a widely adopted scale on alliance management capability.

AMC can be conceptualized as a form of dynamic function that aligns with the definition of dynamic capabilities put forth by Eisenhardt & Martin (2000) and is in line with the notion of relational capabilities as described by Helfat et al. (2007). This perspective suggests that AMC possesses the capacity to generate, expand, or alter the firm's resource base, which is further enhanced by the inclusion of assets from its partners (Schilke & Goerzen, 2010). Schilke & Goerzen (2010) employed the framework of dynamic capabilities to conceptualize the notion of AMC, which is built upon a set of organisational routines and should be comprehended as a multidimensional construct (Winter, 2003). The dimensions of dynamic capacities are represented by a collection of rule-based behavioural patterns for interconnected corporate behaviours, as described by Nelson & Winter (1982). Teece et al. (1997) underscore the significance of coordination, learning, and reconfiguration routines while discussing various types of routines. Several scholars have built upon the notions introduced by Teece et al. (1997) and have underscored the importance of coordination, learning, sensing, and transformation in their discussions on dynamic capacities. Notable examples include the works of Zahra et al. (2006), Helfat et al. (2007), and O'Reilly & Tushman (2007). The measurement scale developed by Schilke & Goerzen (2010) for assessing AMC is adopted in this study. They conceptualized AMC as a higher-order construct, while interorganisational cooperation, interorganisational learning, alliance proactiveness, and alliance transformation are considered as lower-order constructs.

Routines that enable efficient and effective alliance administration are present in organisations with strong alliance management capabilities. More benefits are anticipated for the firm's alliance partners, the more knowledge and expertise it has in this area. Therefore, it is proposed that there is a direct, favourable relationship between AMC and the realized competitive

advantage that generates value in interfirm relationships. Thus, it is suggested to examine the following hypothesis:

- **H2.** Alliance management capability is positively related to realized competitive advantage.

3.2.1.3 Knowledge-sharing routine between alliance partners

Partner firms' knowledge management and processes are increasingly seen as crucial factors in determining their ability to innovate and succeed (Frost & Zhou, 2005). Knowledge is commonly acknowledged as a significant reservoir of power and a distinguishing factor that confers a competitive edge (Lorange, 1996; Levinson & Asahi, 1996). Inter-organisational information sharing may play a significant role in the development of value, according to Toylan et al. (2020). According to Dyer & Singh (1998), by creating efficient knowledge-sharing routines, value can be generated through the interchange of essential knowledge components as alliance partners are significant suppliers of novel ideas and information. A knowledge-sharing routine refers to a continuous and recurring sequence of interactions between firms that facilitates the exchange, combination, or creation of specialized information (Dyer & Singh, 1998). KBV of alliances offers a fresh perspective on interfirm cooperation by obtaining and using information to create cutting-edge products (Capaldo & Petruzzelli, 2014). Grant & Baden-Fuller (2000) argue that the primary objective of alliances is to enhance the efficiency of knowledge utilization for each partner by means of information integration. Knowledge sharing routine is indicated by two first-order/lower-order constructs viz., information-sharing readiness, and knowledge-sharing readiness.

In the context of interfirm coopetitive alliances, the greater the knowledge and information sharing between partnering firms, the ability to build co-created value and stay ahead of the competition is stronger. Therefore, it is posited that:

- **H3.** Knowledge-sharing routines positively influence realized competitive advantage.

3.2.1.4 Absorptive capacity

In interfirm alliances, value creation results from the capability of the partner firms to acquire new expertise and competences and use these for activities relating to alliance activities as well as to unrelated activities outside the alliance boundary. This competency is contingent upon an organisation's capacity to assimilate, analyse, consistently implement, and get value from novel information, subsequently leveraging it for business objectives (Cohen & Levinthal, 1990; Khanna, 1998; Zahra & George, 2002; Lavie, 2006).

According to Inkpen (1998) and Tzokas et al. (2015), without partners' ability to assimilate new knowledge for commercial objectives and identify its worth, firms cannot use external knowledge to gain a competitive edge. Absorptive capacity allows organisations to efficiently identify and assimilate external knowledge, subsequently facilitating the process of converting this knowledge into innovative and market-leading products (Peltokorpi, 2017). Opportunism to exploit partners firms' knowledge outside the scope of coopetitive activity may affect incentives to pursue coopetitive alliances (Chávez-Bustamante & Troncoso-Valverde, 2023). Therefore, knowledge exchange can only lead into improved business performance if there is a favourable aptitude for new ideas to be absorbed (Levitt & March, 1988). According to Flatten et al. (2011), four first-/lower-order constructs, including acquisition, assimilation, transformation, and exploitation, are indicators to demonstrate absorptive capacity as a higher-order construct.

Together, these four components of absorptive capacity allow businesses to capitalize on fresh breakthroughs and knowledge (Cohen & Levinthal, 1994), and they act as a vital intangible resource that can enhance business performance and offer a significant competitive advantage (Teece et al., 1997). The competitive advantage of firms is primarily enhanced by absorptive capacity, which is achieved through the implementation of incremental and radical innovation (Bouncken et al., 2018; Ritala & Hurmelinna-Laukkanen, 2013) as well as the adoption of strategic flexibility (Zahra & George, 2002). As explained by Hamel (1991) using example of a joint venture between General Motors and Toyota, the greater the absorptive capacity, the greater is the propensity of the firm to gather new knowledge and skills from the alliance partner, and apply them in value creating manner inside and outside the alliance boundary. Therefore, it is hypothesized that:

- **H4.** Absorptive capacity positively influences value creation in an interfirm alliance.

3.2.1.5 Alliance experience

Prior alliance experience is a resource that may is considered as crucial for future collaboration with competitors (Gnyawali & Park, 2011; Chiambaretto et al., 2019). The experience and skill of the top management in understanding the characteristics of partners help in mitigating appropriation-related tensions (Ingram and Yue, 2008). Additionally, senior management experience in fostering organisational culture for collaboration engagements with rivals is crucial and can result in higher value creation (Kotzab & Teller, 2003).Grant & Baden-Fuller (2004) assert that alliance experience also has a significant impact on the quality of both intra-

and inter-firm learning and knowledge sharing since it enable firms to build a shared knowledge base that could support future cooperative projects (Bouncken et al., 2015).With roots in SET, Dyer & Singh's (1998) relational approach of interfirm alliances asserts that cooperation, commitment, and trust are essential components of alliance governance that reduce transaction costs and boost efficiency. Prior alliance experience likely helps firms building a tacit skill to identify more suitable alliance prospects, design, bargain and enter into an alliance and effectively govern it. According to Lee et al. (2015), who drew on the AMC literature, companies with more alliance experience are better equipped to protect their interests under any alliance form, which makes the choice of structure less important to them. By helping businesses to manage alliances better, the consequent relationship-based governance agility gives them an edge over the competition. Therefore, it is hypothesized that:

- **H5(a).** Prior alliance experience positively influences knowledge-sharing routines.
- **H5(b).** Prior alliance experience positively influences relation-based governance.

3.2.1.6 Relation-based governance

Firms form cooperative alliances with rivals to lessen the concern of escalating R&D expenses, adverse outcomes, technological uncertainty, and competitive innovation (Hung & Chang, 2012). However, businesses engaged in coopetitive agreements frequently encounter significant obstacles when it comes to safeguarding their own technological know-how. To cut expenses associated with technical and intellectual loss and loss of control, effective governance is necessary (Gnyawali & Park, 2009). Formal governance mechanisms and relational governance mechanisms are two popular methods to reduce opportunism (Martinez & Jarillo, 1989; Dekker, 2004). Although formal governance mechanisms hinge on the execution of formal contracts (Ferguson et al., 2005), relational governance mechanisms are generally understood to include human and/or social-based processes that endorse open dialogue, sharing of information, trust, reliance, and cooperation (Eisenhardt, 1985). Consequently, certain cooperative behaviours are required for the coalition between firms to operate well (Macneil, 1980). Therefore, research scholars contend that relational governance frameworks based on SET reduce the transaction costs associated with creating and enforcing formal contracts (Gulati, 1995; Dyer & Singh, 1998; Gulati & Singh, 1998). Additionally, study contend that informal governance structures based on relational elements like trust, relationship commitment, and open communication greatly limit alliance partners' opportunistic conduct and increase value generation (e.g., Uzzi, 1997; Dyer & Singh, 1998; Gulati & Singh, 1998). Degree of relational commitment, degree of trust, and communication

between partners are three lower-order constructs that Morgan and Hunt (1994) proposed as indicators for relation-based governance as a higher-order construct.

Despite the fact that cooperation in alliances is frequently taken for granted, it must be actively pursued by all parties involved (Parkhe, 1993). According to Varadarajan & Cunningham (1995), alliance partners who work well together can achieve both their own and shared goals and make more progress as a group than they could individually (Anderson & Narus, 1990).Therefore, a high level of cooperation within a partnership is not simply a means of coordination; it is a crucial component that increases the possibility that the alliance will gain realized competitive advantage by allowing the partners to deliver services in a more effective and efficient manner (Madhok & Tallman, 1998; Hunt, 2000). The development and accomplishment of alliance partners' joint targets are facilitated by trust, open dialogue/ communication, relationship commitment, and cooperation, which in turn enables alliance partners to obtain realized competitive advantage. Hence, it is hypothesized that:

- **H6.** Relation-based governance orientation positively influences realized competitive advantage.

3.2.1.7 Realized competitive advantage

The pursuit of competitive advantages is one of the principal reasons firms participate in alliance activities (e.g., better access to assets, lower supply and inventory costs, and creation of novel technological process). The partnering firms spend considerable time and energy to plan, work and develop these activities. As a result, the special, close bond formed between the interfirm alliance partners is a significant advantage that enables them to compete more successfully with other market competitors (Jap, 1999). Strategic advantages over rival companies that help the focal firm compete more successfully in the market are known as competitive advantages. Competitors who want to replicate the collaborative process used by the focal firm must put in a lot of time and energy to do so, as well as progress along a learning curve in order to achieve a similar and efficient process.

Sharing information, expertise, and resources is a fundamental tenet of coopetition tactics, which can provide opportunities and lessen hazards and threats to partnering firms (Zacharia et al., 2019; Bengtsson & Kock, 2000). Resource advantage theory builds on the general concept of “competitive advantage” and outlines the comparative advantages due to their intangible and tangible resources and capabilities that provide them efficiency, with effective advantages leading to improved market offering and competitive advantage (Hunt & Morgan,

1995). A high degree of cooperation enables the alliance of achieving realized competitive advantage by enhancing the partners' ability to be productive and cost-effective in their products and services. (Madhok & Tallman, 1998; Hunt, 2000). Such efficiency and effectiveness help in creating competitive advantage and more value creation by increasing the pie. Due to this, alliance partners can effectively deal with market and technological fluctuations thanks to their competitive edge, which leads to higher cocreated value (Hagedoorn & Schakenraad, 1994; Vasudeva & Anand, 2011). Thus, it is posited that:

- **H7.** Realized competitive advantage is positively related to value creation in interfirm alliances.

3.2.1.8 Relationship tension as moderator

Relationship tensions result from the concurrent presence of collaboration and competitiveness, two ideas that are inherently incompatible (Yami et al., 2010). Firms pursuing such relationships with competitors have to make a choice between potentially high-return alliances and possible risks of resource capture by alliance partners. As a result, strategies that might reduce the tension brought on by the interplay of cooperation and competition in coopetitive partnerships are crucial for the success of these kind of alliances (Crick 2019; Fernandez & Chiambaretto, 2016; Lado et al., 1997; Gnyawali & Park, 2011). According to SET, trust is the cornerstone of interpersonal and interfirm relationships and the underlying premise of social exchange (Khalid & Ali, 2017). Intense exchanges produce a remedy to the trust-conflict conundrum in that an effective improvement in exchange would increase cooperative performance (Das & Teng, 2002b; Ertürk & Vurgun, 2015; Khalid & Ali, 2017). Therefore, in exchange-based coalitions, maintaining a balance between conflict and trust is crucial (Celuch et al., 2011; Crick 2020; Rajala and Tidström, 2021;Wu et al., 2017).

Ingram & Yue (2008) contend that competitiveness and collaboration, are formed from the same links to resources, and the very qualities of allies that are essential for seizing prospects can also lead to relationship tension. As the rival partners may be aware of, driven to pursue, as well as capable of confronting one another, tension increases (Chen et al., 2007) and any unscrupulous activities by the one or both of the rival partners could cause substantial economic and knowledge loss. Such tension and instability underline the necessity for balancing competitiveness and collaboration in the alliance. Therefore, managing coopetition and producing positive results in interfirm alliance would depend on managers' capacity to foresee and address the perplexing aspects of coopetitive alliance (Gnyawali et al., 2006; Leite

et al., 2018). Therefore, it is proposed that:

- **H8.** The positive relationship between realized competitive advantage and value creation will be limited when relationship tension is higher.

3.3 Value appropriation in interfirm alliance: An integrated theoretical framework

Scholars have consistently expressed their support for the investigation of how firms can generate value through strategic alliances (Dyer & Singh, 1998; Oxley & Silverman, 2008). However, previous research has predominantly focused on the creation of value rather than its appropriation (Lavie, 2007). As a result, the study of alliances has only recently begun to focus on the process of value appropriation. Hence, the notion of value appropriation exhibits a lesser degree of definitional diversity compared to that of value production. The existing literature assessment demonstrates that the factors influencing value appropriation are intricate and interconnected. Gaining comprehension and actively engaging in these practices can enhance firms' ability to enhance their capacity for generating and capturing value from cooperative and competitive interactions. A brief overview of these determinants, based on the extant literature, is presented below:

3.3.1 Relative bargaining power

The concept of bargaining power has been acknowledged as significant within the body of work on value appropriation in alliances. Bargaining power, as defined by Yan & Grey (1994), refers to the capacity to exert a favourable influence on the parameters of an agreement, secure concessions from partners, and shape the outcomes of alliance negotiations. Based on the SFM theory, it has been suggested that a partner who possesses effective negotiation skills will be allocated a greater share of control rights during the division of resources (Adegbesan & Higgins, 2010). The bargaining power theory, as proposed by Bacharach & Lawler (1984), and the resource dependence theory (RDT), as developed by Pfeffer & Salancick (1978), are theoretical frameworks that can be employed to elucidate the dynamics of effective negotiation and the distribution of bargaining power within an alliance.

According to the bargaining power theory, the strength of one's bargaining capacity is contingent upon the presence of viable alternatives. According to Lavie (2007), the negotiating power of an alliance partner is stronger when they have a greater number of alternative options to pursue comparable objectives with other enterprises, compared to the other alliance partner(s). Furthermore, it is posited under this theory that the possession of larger stakes within an alliance serves as a detrimental indicator of bargaining power, as it signifies the partner's commitment and reliance on the alliance and its results (Inkpen & Beamish, 1997). In essence, when a firm possesses a greater proportion of stakes in an alliance compared to its partner, its bargaining leverage is diminished due to the heightened significance of the alliance

results for its overall performance.

RDT presents distinct and supplementary reasons to those highlighted in bargaining power theory. It indicates that the alliance partner's control over critical resources, as highlighted by Pfeffer (1987), is a significant factor in its power dynamics and reliance. The relative bargaining power within an alliance can be modified by the presence of alternative options for partner firms, such as the scarcity premium and superior complementarity.

Based on the RDT, a partner who provides resources that are crucial for the success of the alliance, and are both costly and rare, creating a scarcity premium, possesses significant negotiating power (Root, 1988). This allows them to extract a greater share of value from the alliance through effective bargaining. On the contrary, the bargaining power of a partner firm surpasses that of the other alliance partner(s) when it possesses a diverse array of possibilities or alternatives with a shared objective that may be pursued through an alliance (Lavie, 2007). Hence, the allocation or appropriation of value among firms in an alliance is ultimately determined by their respective negotiating abilities and power, which is influenced by the scarcity premium. Consequently, the distribution of value is contingent upon the relative bargaining positions of the partners within the alliance (Adegbesan, 2009).

Another related measure is known as superior complementarity, which has an impact on the distribution of bargaining power. According to Hess & Rothaermel (2011) and Milgrom & Roberts (1995), resources are considered complementary when the marginal returns of one resource are shown to increase in the presence of another. Adegbesan & Higgins (2009) claim that the extent of the aforementioned augmentation or surplus is directly correlated with the level of complementarity exhibited by the resources, and the allocation of such surplus is contingent upon the relative level of complementarity. The bargaining power of an entity to capture value is directly proportional to the surplus it can generate with the target resource in comparison to its partner, indicating a higher level of superior complementarity. Moreover, the RDT posits that the allocation of vital resources confers power within an alliance, therefore asserting that the individual contributions of each partner to the alliance are also significant factors that influence bargaining power (Harrigan & Newman, 1990). Moreover, the bargaining perspective, as outlined by the SFM theory, suggests that the division of value within a pair is influenced by competition among different groups, within the same group, and within the pair itself. This competition is driven by factors such as relative scarcity, superior complementarity, and bargaining ability (Adegbesan, 2009; Dyer et al., 2018). According to the extant literature, a higher level of relative bargaining power inside an alliance is associated

with a greater ability to appropriate value. In other words, when a business possesses stronger relative bargaining power, it is more likely to successfully appropriate a larger share of the value generated through the alliance.

3.3.2 Absorptive capacity

The concept of absorptive capacity, as defined by Cohen & Levinthal (1990), pertains to a firm's ability to identify and comprehend the significance of novel knowledge, integrate it into existing knowledge structures, and effectively use it for economic gain. According to the findings of Tzokas et al. (2015), absorptive capacity refers to the organisational capability of firms to effectively recognize, acquire, analyse, interpret, and strategically utilize external information, hence enabling them to maintain a competitive advantage. According to prior research conducted by Cohen & Levinthal (1990), Jansen et al. (2005), Tu et al. (2006), and Zahra & George (2002), absorptive capacity is a dynamic capability that has a significant impact on the characteristics and sustainability of a firm's competitive advantage. Peltokorpi (2017) posits that absorptive capacity plays a crucial role in facilitating firms' ability to efficiently acquire and integrate external knowledge, subsequently leveraging this knowledge to effectively develop and alter their products. Consequently, the realization of improved firm performance through the transfer of information is contingent upon the presence of a favourable aptitude to assimilate new ideas (Levitt & March, 1988). For example, Cohen & Levinthal (1990) posit that pharmaceutical companies that possess a higher level of absorptive capacity demonstrate an enhanced ability to identify the significance of novel knowledge, integrate it into their existing knowledge base, and effectively utilize it for commercial purposes. Therefore, they are more proficient in making valuable contributions to the knowledge base of the pharma organisation and are also capable of effectively participating in problem-solving activities (George et al., 2001; Helfat, 1997; Henderson & Cockburn, 1998). Therefore, pharmaceutical companies that possess advanced absorptive capacity demonstrate enhanced complementarity in late-stage research endeavours. The capacity of a partner firm to assimilate information is contingent upon the competence of its associates, the effectiveness of its knowledge management platforms, and the availability of resources (Hamel, 1991; Lyles & Salk, 1996). It is postulated that firms with more absorptive capacity in an alliance have the ability to appropriate a larger portion of the information generated inside the partnership, hence granting them increased leverage.

3.3.3 Isolating mechanisms

Isolating mechanisms encompass a collection of hurdles that hinder the transfer of information among firms (Lippman & Rumelt, 1992), thereby resulting in enhanced value appropriation through coalitions. In a more precise manner, isolating mechanisms encompass several factors such as information barriers, physical barriers, and legal barriers that can impede the process of imitation and hinder the replication of knowledge, assets, and activities conducted by other firms (Lepak et al., 2007). Lawson et al. (2012), identified and studied the following four categories of isolating mechanisms prevalent in the innovation driven industries in Australia: (1) safeguarding knowledge through mechanisms such as patents and secrecy; (2) possessing technological capabilities, which include technical expertise and the complexity of products; (3) possessing market-based assets, such as a strong brand name, effective marketing capabilities, and efficient distribution systems; and (4) capitalizing on the first-mover advantage, which involves the benefits gained from being the first to enter a market and the subsequent learning curve effects. According to Lawson et al. (2012), isolating mechanisms such as technological capabilities, market-based assets, and knowledge protection, play a significant role in influencing an organisation's returns from their innovation activities and have positive effects on business returns. However, being the first-to-market has been found to have a negative moderating effect on the returns achieved or appropriated by the organisation.

The establishment of formal governance processes is of considerable importance in the development of isolation mechanisms (Das & Teng, 2000a; Zobel et al., 2017). The establishment and implementation of governance frameworks play a crucial role in the process of value appropriation within coopetitive coalitions. In many instances, corporations commonly establish a contractual agreement at the onset of a collaborative endeavour, wherein both entities delineate the anticipated deliverables, associated expenses, projected revenues, and respective entitlements that each side may assert. Furthermore, the contract delineates the distribution of ownership pertaining to all intellectual property and knowledge that arises as a result of the collaborative effort. In the context of alliances, it is common for partners to refrain from directly engaging in negotiations over the allocation of potential future value. This is mostly owing to the inherent uncertainty associated with future outcomes. Instead, alliance partners establish agreements regarding the ownership and control of decision-making processes, actions, and intermediate outputs that contribute to the creation of value. The allocation of control rights is a crucial factor in determining the distribution of value generated

by a strategic alliance. This issue poses a significant challenge during alliance negotiation, as highlighted by Lerner & Merges (1998). The firm that possesses greater control over the situation will have the capacity to isolate the alliance partner and extract greater value from the relationship. Based on a thorough analysis of scholarly articles, it is hypothesised that firms possessing stronger isolating rights will exhibit a higher potential to get advantages from the partnership.

Drawing upon analysis of scholarly articles and the identified determinants, the following conceptual framework depicting determinants of value appropriation in coopetitive alliances is proposed (See Figure 3.2).

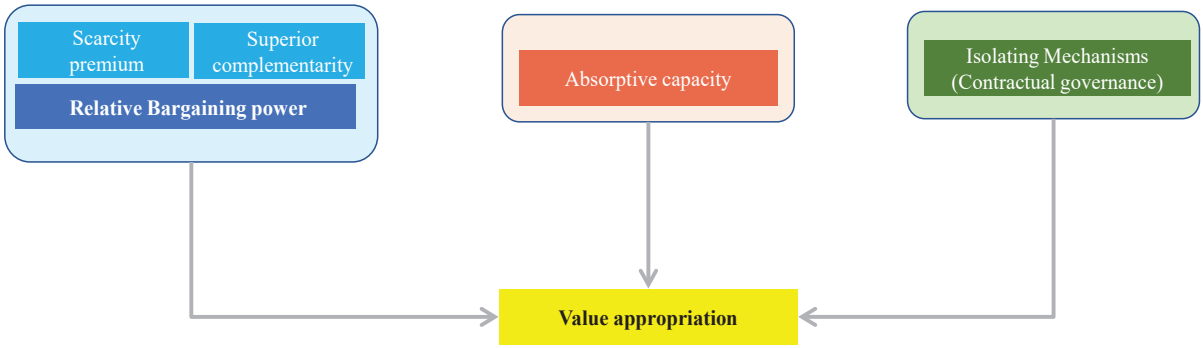


Figure 3.2: An integrated conceptual framework for value Appropriation in coopetitive inter-firm alliances

Based on an examination of existing scholarly works, this section of thesis aims to conceptualise a theoretical framework that encompasses the process of value appropriation in coopetitive alliances. The efficacy of this framework is examined and enhanced through the utilization of real-world qualitative case studies conducted in IPI in subsequent chapters.

3.4 Concluding remarks

This chapter provided an explanation of the theories that connect the identified antecedents and drivers of value creation in coopetitive alliances, supported by theoretical foundations and relevant literature. Moreover, previous research has also hypothesized the moderating role of interpersonal conflict in value creation. As a result, there emerged a conceptual framework that encompasses the process of value creation within cooperative alliances characterized by both cooperation and competition between two entities. The subsequent section (section 3.3) of the chapter involved the identification of determinants of value appropriation, which was done by drawing upon existing literature and constructing a conceptual framework.

The subsequent chapter delineates the methods employed to substantiate the integrated framework for value creation and further enhance the framework for value appropriation in dyadic coopetitive partnerships within the Indian pharmaceutical industry.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

The chapter presents a comprehensive description of the research process and methodology employed in order to accomplish the study's objectives as outlined in section 1.5. This chapter provides an overview of the investigation's nature, the research design(s), and the data collection and analysis procedures necessary to meet the proposed research objectives. The chapter provides an overview of the study's scope, including a description of the sampling methods, sampling frames, sampling unit, and sample size.

This thesis chapter is divided into two separate sections, wherein section 4.2 focuses on research design for developing and evaluating an integrated framework for value creation in coopetitive alliances, while section 4.3 focuses on value appropriation framework. The selection of the research design was influenced by:

- The availability of validated scales and measures: Fragmented but well-defined scales were available for value creation, enabling surveys to collect information on numerous determinants. However, value appropriation determinants involve a distinct set of determinants and for many of such determinants, psychometrically valid scales do not exist.
- Further, only recently has alliance research started to dedicate attention to the value appropriation process. Therefore, the concept of value appropriation presents less definitional variety in comparison to that of value creation (Lavie, 2007). A qualitative research design was selected to understand determinants and validate the proposed frameworks as this will help to gain a deeper understanding of the underlying value appropriation determinants and explore novel factors not captured by existing scales.

This chapter also provides a detailed explanation of the pilot studies that were conducted in preparation for the investigation of determinants of value creation and value appropriation in coopetitive alliances. The upcoming sections provide a comprehensive description of the data collection procedure, apart from the obstacles encountered during data collection. Finally, the chapter wraps up by presenting a comprehensive overview of the suitable statistical methodologies that have been taken into account for the analysis of the data in this research study.

4.2 Research design for developing integrated framework for value creation in coopetitive alliances

This section provides an overview of the overall research process, research design, sampling, data collection apart from a brief description of the software and tool used for analysis.

4.2.1 Overview of the research process

The research process followed to carry out the study on integrated framework for value creation is presented in Figure 4.1.

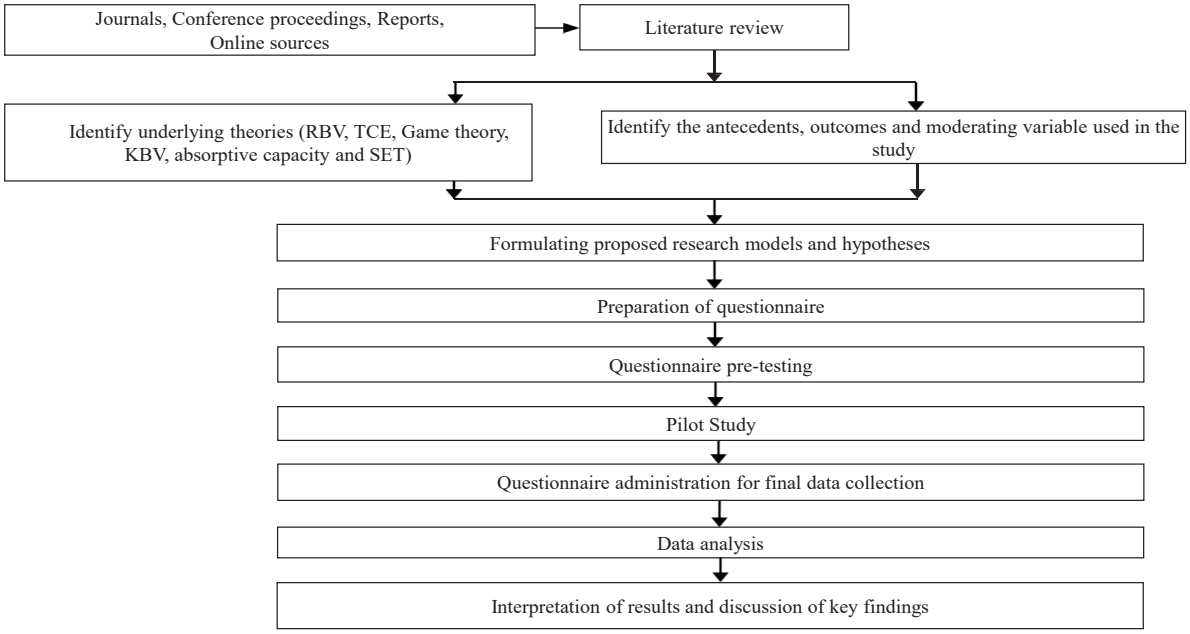


Figure 4.1: Research process overview to study value creation in coopetitive alliances

The conceptual framework of value creation proposed in section 3.2 is based on an extensive literature review and to test the proposed model, a survey method has been used. A questionnaire was developed to collect responses regarding determinants of value creation, and their impact on value creation in coopetitive alliances.

The questionnaire underwent a pre-testing phase including six respondents. Based on the results of this pre-test, adjustments were made to refine the questionnaire. The questionnaire was personally administered using the Alchemer survey software. The participants of the survey were industry leaders who possess substantial expertise in the management of coopetitive partnerships. Both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) have been utilised for data analysis. The upcoming section captures further details on the research design, data collection and preliminary analysis.

4.2.2 Research design

This part of the study follows a quantitative survey analytic approach to empirically validate the conceptual framework. The data for this assessment was obtained through self-reported responses from alliance leaders/managers working in pharmaceutical companies functioning within the Indian context. The adoption of a descriptive research design is justified when the aim of the study is to ascertain the correlations between several variables under investigation (Dunlock, 1993).

The primary objective of descriptive research is to uncover inferences or establish causal correlations. Descriptive research methods are commonly employed for the purpose of providing a comprehensive depiction of various situations. A conventional descriptive study is organized by the creation of specific hypotheses in advance and the implementation of a pre-planned and structured research methodology. The research design employed in this study involves the administration of questionnaires, which are subsequently subjected to quantitative data analysis. The survey method is employed as a means of data collection, utilising a standardised questionnaire (Cooper & Schindler, 2014). The data collection instrument was constructed by drawing upon established scales found in the current literature. This study employed a quantitative survey analysis to assess the conceptualized framework using self-reported data from alliance leaders/managers in pharmaceutical firms operating in India. The primary data collected through the survey method is used for empirically testing the hypotheses in the study. Hypotheses testing was carried out using inferential statistics and confirmatory factor analysis (CFA).

4.2.3 Sampling

This section discusses the sampling method, sampling frame and sample unit, considered for the study.

4.2.3.1 Sampling Method

The study has employed snowball-sampling method for collecting the data. It is a non-probability sampling technique used by researchers to identify potential subjects when the subjects are hard to access.

To mitigate the potential influence of non-response bias, it is recommended to accurately define the scope of the study, which in this instance pertained to the entire population of alliance managers involved in coopetitive coalitions. Subsequently, a random sample should

be drawn from this pool, as suggested by Lambe et al. (2002). Nevertheless, it is exceedingly challenging to compile an exhaustive list of alliance managers in the Indian pharmaceutical sector due to the absence of a comprehensive database specifically dedicated to alliances, much alone one that includes information on alliance managers (Lambe et al., 2002). The research methodology employed in this study was based on the procedure outlined by Lambe et al. (2002). This procedure involved two main steps: (i) selecting a sample of managers, including Vice Presidents, Directors and CEOs, who were anticipated to be willing to participate in the study; and (ii) conducting a pre-screening process to ensure that these managers possessed relevant experience in various aspects of alliance management, such as initiating, negotiating, managing, or disengaging from alliances.

The business leaders were subsequently requested to furnish the names of 3-5 peers who possess both alliance responsibilities and experience. Consequently, a snowball sampling technique was employed to ascertain the identities of the respondents. Snowball sampling is a method that allows researchers to gain access to social groups that are fragile or difficult to reach (Browne, 2005). Given the limited pool of such respondents and their constraints in terms of time and resources, the utilization of snowball sampling was considered suitable for the acquisition of participants.

4.2.3.2 Sampling Frame

While many studies have examined alliances, they primarily focus on the distinction between equity alliances and non-equity alliances (Gulati, 1995). Additionally, researchers have organised equity and non-equity alliances in several ways (Mowery et al., 1996; Yoshino & Rangan, 1995). However, this research adopts Das & Teng's (2002a) typology of inter-firm alliances, which proposes that inter-firm alliances can be classified into different forms such as joint ventures, bilateral contract-based alliances, and unilateral contract-based alliances.

The sampling frame utilised in this study consisted of both private and public enterprises operating within the Indian pharmaceutical industry (IPI). The high-technology and research-intensive industries, such as pharmaceuticals, are organised by the presence of dynamic and extensive intra-firm alliances (Garrette et al., 2009; Gnyawali et al., 2006, Luo, 2007), as discussed in section 1.4. As a result, the study effectively addresses biases associated with the size and age of enterprises by including a diverse range of firms with varying size and age characteristics. This approach enhances the representativeness of the sample, as noted by Lavie (2007). Moreover, alliances within pharma industry are established with various significant

objectives including exploration, knowledge and technology exchange, research and development, production, marketing, sales, distribution, and others (Lambe et al., 2002; Spekman et al., 1999; Varadarajan & Cunningham, 1995). These diversified purposes contribute to the overall applicability of the findings.

The data utilised in this study was obtained from survey conducted among alliances based in India. Alliances within India were selected for two specific rationales, (i) there exist potential variations in the attributes of foreign and domestic alliances, as discussed by scholars such as Harrigan (1988), Kogut & Singh (1988), and Parkhe (1993); (ii) furthermore, the challenge of locating contact details for international companies posed a significant obstacle, impeding their involvement in the research (Saxton, 1997).

4.2.3.3 Sampling Unit

In the realm of quantitative research, scholars typically prefer adopting a more comprehensive perspective when investigating alliances, focusing on the network or portfolio level alliances. However, this study has chosen to focus on dyadic alliances as the unit of analysis due to two distinct advantages over the network or portfolio level approach. Firstly, dyadic alliance allows for a better understanding of the intricate dynamics that arise when two rival firms engage in simultaneous cooperation and competition with each other, as highlighted by previous studies (Bengtsson et al., 2010; Gnyawali et al., 2008). Secondly, it enables the examination of cooperation and competition as interconnected components within a single dyadic relationship (Bengtsson & Kock, 2000).

4.2.4 Scales and measures for data collection

The study's questionnaire was created using pre-existing measurement scales that were mostly used in the non-pharmaceutical industry context. During the literature study, it was found that multiple set of measurement instruments have been used based in different study context and across disciplines. A total of seventy-three scale items of all the variables in the proposed framework (including first- and second-order constructs) were generated from an extensive literature review. Table 4.1 depicts the number of scale items used for measurement of constructs. Further, Appendix-I sets out all the scales, items, and references from where measurement scales were borrowed.

Table 4.1: Scales of measures used in the study.

First-order Construct	Second-order constructs	Scale derived/adopted from	# of scale items
Top Management Commitment (TMC)	-	Lambe et al. (2002)	4
Absorptive capacity (AC)	Absorptive capacity – Acquisition	Flatten et al. (2011)	3
	Absorptive capacity – Assimilation	Flatten et al.(2011)	4
	Absorptive capacity – Transformation	Flatten et al.(2011)	4
	Absorptive capacity – Exploitation	Flatten et al.(2011)	3
Alliance Management Capability	Inter-organisational coordination	Mohr and Spekman (1994); and Pavlou and El Sawy (2006)	3
	Inter-organisational learning	Matusik and Heeley (2005) and Pavlou and El Sawy (2006)	4
	Alliance pro-activeness	Sarkar, Echambadi, and Harrison (2001)	4
	Alliance transformation	Johnson (1999); and Young-Ybarra and Wiersema (1999)	3
Alliance Experience	-	Jarvis et al. (2003); and Lambe et al. (2002)	4
Knowledge Sharing routine	Knowledge Sharing Readiness	Glynn et al. (1994); Huber (1991); Nonaka (1994); Seely Brown and Duguid (1991); Senge (1997); Nevis et al. (1995); Crossan et al. (1999)	5
	Information Sharing Readiness	Mohr and Spekman (1994)	5
Relation-based Governance (RBG)	Degree of relational commitment	Morgan and Hunt (1994)	5
	Degree of trust	Morgan and Hunt (1994)	6
	Communication between the partners	Morgan and Hunt (1994); and Mohr and Spekman (1994)	4
Realized competitive advantage	-	Jap (1999)	4
Relationship tension – Level of conflict	-	Zaheer, McEvily, & Perrone (1998)	2
Value creation	-	Rai, R. K. (2016)	6

A five-point Likert type scale with a range of 1 (strongly disagree) to 5 (strongly agree) was used to collect responses on the items. Though these scales have been widely used across disciplines in different study contexts, it is important to determine the reliability and validity

of the chosen scales. Hence, the questionnaire was pre-tested and refined before the final data collection as described in the upcoming section.

4.2.5 Pre-testing

The pre-testing of the survey was conducted with a sample of six senior alliance managers from the pharmaceutical industry in order to assess the content validity and analyse the face validity of the questionnaire. The utilisation of pre-testing was crucial in the identification and removal of confusing statements within the questionnaire. This was achieved through a comprehensive examination of the respondents' interpretation of the questionnaire, as outlined by Converse & Presser (1986). The respondents' feedback played a crucial role in the revision of the questionnaire. Considering their suggestions, small alterations were made to the survey instruments in order to improve the substance, readability, structure, and layout of the survey. The intent was to ensure that the respondents do not face any difficulty in understanding and filling the questionnaire. Subsequently, the validity and reliability of the questionnaire was assessed.

4.2.6 Data collection

The data collection was carried out for a duration of seven months, spanning from January 2022 to August 2022. The survey was conducted using an online survey platform called Alchemer (formerly known as SurveyGizmo), which is commonly used for research endeavours. The initial investigation revealed that senior leaders in the sector exhibit a reluctance to disclose information pertaining to their professional roles. Therefore, it was sensible to continue with the effort following the establishment of a fundamental basis of confidence. All participants were contacted via telephone in order to provide a concise overview of the study's purpose and develop a sense of confidence that helped in ensuring a greater response rate. The survey participants were assured that they would receive a copy of the survey results, and their responses will be used in aggregated manner and not shared in isolated manner. They were given the option to disclose their email addresses if they desired to receive the aforementioned results.

The method proposed by Lambe et al. (2002) was employed for data collection. A sample of managers deemed relevant, specifically those in positions of authority within business partnerships (such as vice presidents and heads expected to cooperate), were selected. The key informant methodology, as outlined by Campbell (1955) and Philips (1981), was used. The reason for this approach was the challenge of conducting a research survey using a random

sample from the entire population of alliance managers, as there was a notable absence of a comprehensive database containing information on alliances and a list of alliance managers (Lambe et al., 2002). Using a snowball random sampling technique, the respondent pharmaceutical executives were asked to provide the identities of three to five colleagues from the industry who held comparable positions and shared similar duties. Using this approach, a total of 207 alliance managers were contacted for the study, and after two follow-ups, a total 146 responses were received (response rate of ~70.5%).

4.2.7 Preliminary data analysis

The filled survey responses were exported from Alchemer and thereafter subjected to a processing procedure in order to identify any discrepancies or inaccuracies included within the responses. The data was entered into a Microsoft Excel spreadsheet through manual input, with incomplete responses being excluded. Missing values were addressed, and responses were coded and reverse coded according to the scales employed. Hair et al. (1998) univariate method criteria were used to identify outliers because the sample size was more than eighty. The findings indicated that there were no notable outliers. In accordance with Newman (2003), responses to questionnaires with more than 10% missing values were disregarded, and the remaining missing values were substituted using a series mean. By this method, twenty-five responses were found to be incomplete or irrelevant, and hence, 121 completed responses were considered for the analysis.

4.2.8 Overview of statistical techniques and software used

The data analysis process followed the three-step approach proposed by Anderson and Gerbing (1988). Firstly, preliminary data analysis was conducted, which involved examining missing values, identifying outliers, estimating non-response bias, and assessing common method variance (CMV). Secondly, exploratory data analysis was performed to assess the dimensionality and reliability of the measures used. Finally, the integrated framework was empirically tested using partial least squares structural equation modelling (PLS-SEM). PLS-SEM was selected because it can predict the complicated model (Akter et al., 2017) and can produce reliable results even with small sample numbers (Chin, 1998). PLS Path Modeling was conducted using the R package PLS-PM.

4.3 Research design for developing integrated framework for value appropriation in coopetitive alliances

This section is aimed at providing details of research design, data collection, preliminary

analysis and tools used to validate integrated framework for value appropriation in coopetitive alliances.

4.3.1 Overview of the research process

The research process followed to carry out the study on integrated framework for value appropriation is presented in Figure 4.2. The conceptual integrated framework of value appropriation proposed in section 3.2 is based on an extensive literature review and to assess the proposed framework, a qualitative, case study methodology is used. A discussion guide (interview script) was prepared based on desk research and key research questions. The discussion guide focused on collecting responses regarding determinants of value appropriation, and their impact on value appropriation in coopetitive alliances.

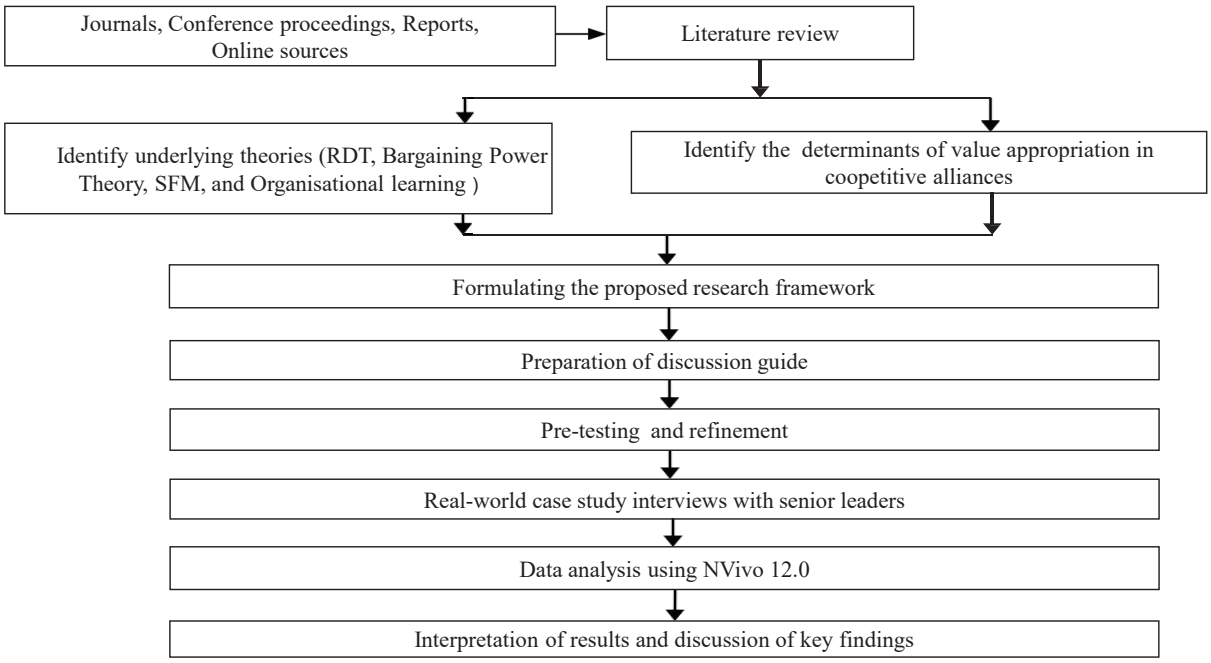


Figure 4.2: Overview of the research process to study value appropriation in coopetitive alliances

The data obtained through contextual interviews on real-world coopetitive alliance case studies from IPI firms was augmented with publicly accessible material sourced from the internet. The data underwent organisation and testing via NVivo 12.0 software. The subsequent part provides additional information regarding the research design, data collection, and preliminary analysis.

4.3.2 Research Design

This portion of the study employed a qualitative research design using an exploratory-

descriptive case study approach, as outlined by Flick (2018). The primary aim was to uncover the factors that influence value appropriation. The utilisation of the qualitative methodology was deemed suitable due to its ability to provide a comprehensive depiction of the process and an in-depth analysis of the dynamic capacities revealed within the context of coopetition. Given the intricate, ever-changing nature of the value appropriation relationship, the utilisation of the case study approach is very appropriate for this purpose.

4.3.3 Sampling

This section discusses the sampling method, sampling frame and sample unit considered for studying value appropriation in coopetitive alliances.

4.3.3.1 Sampling Method

According to Panico (2017), it is advisable to consider the diverse power dynamics among partners in an alliance while selecting the study participants. Recent scholarly papers have brought attention to the growing prevalence of coopetitive alliances among firms of various scales (Chiambaretto, et al., 2020; Hora, et al., 2018). Thus, this study considers alliance partner firms that exhibit variations in size, as well as the type of their alliances, among other factors. Respondents employed by companies operating in research and development (R&D) intensive industries often exhibit reluctance to engage in research studies due to many factors. These factors include the presence of non-disclosure agreements, the sensitivity of the data involved, the absence of consent from partnering entities, the dissolution of alliances, and the absence of public information regarding those alliances. Due to the challenges associated with data collection from both alliance members, this study employs a "proxy-report" strategy (Menon et al., 1995). In this approach, a respondent responds to questions on behalf of the dyadic alliance, and data is obtained solely from one partner in the dyadic alliance. Previous studies have also gathered data from a single partner, as evidenced by the works of Anderson and Weitz (1992), Buchanan (1992), and Jap (1999), etc.

4.3.3.2 Sampling Frame

For this study, Chen's (1996) definition of competitors: “firms operating in the same industry, ordering similar products, and targeting similar customers” has been used. Similar to section 4.2.3.2, the present study utilises the typology of inter-firm alliances proposed by Das & Teng (2002a) and categorises inter-firm alliances into distinct forms: (i) joint ventures, bilateral contract-based alliances, and unilateral contract-based alliances.

4.3.3.3 Sampling Unit

Similar to section 4.2.3.3, dyadic alliance as the unit of analysis has been considered for this part of research. Not only study of dyadic alliance allows better grasp over the complexity of coopetitive alliances (e.g., Bengtsson et al., 2010; Bengtsson & Kock, 2000; Gnyawali et al., 2008), it is also easier for respondents to consider a dyadic relationship from their experience and share details versus a network alliance where they might have less visibility on appropriation objectives of partner rival firms.

4.3.4 Discussion guide for data collection

An interview script to guide the discussions with respondents was prepared. The discussions covered need of coopetitive alliance (strategic objective), and determinants of value appropriation in the alliance. Appendix-III sets out the discussion guide that was used for phase-II of the interviews. Further, publicly available information related to firms being studied and their alliances was also analysed in order to obtain a broader perspective to better understand nature of the collaboration. The respondents included Business development & licencing (BD&L) Heads/Regional Head or Directors leading the alliances who had experience of managing multiple coopetitive alliances.

4.3.5 Pre-testing

The first data collection stage consisted in-depth interview of two business leaders (one regional BD&L head of an Indian subsidiary of Global MNC and another one being a VP, BD of a medium-sized Indian Pharmaceutical company). These interviews were exploited to gain a richer contextual understating of the alliances and to further refine the interview script for second phase of interviews. The second phase consisted of five interviews and followed a semi-structured interview guide.

4.3.6 Data collection

Two data collection strategies were employed in this study: context interviews and analysis of publicly accessible information. The context interviews provided valuable insights into the discussed alliance, while the evaluation of publicly available material involved sources such as firms' websites, news websites, and other publications that analysed the same alliance announcements. The pre-test phase encompassed semi-structured interviews conducted with top executives from two identified pharmaceutical firms. The purpose of these interviews was to gather information regarding the alliance's objectives, strategic goals for value

appropriation, and factors influencing the process of value appropriation, among other relevant aspects.

A total of seven interviews were performed, with five being conducted via phone and two being conducted in person. The interviews were recorded with the explicit consent of the participants and then documented by transcription. The utilisation of a semi-structured interview was employed with the intention of acquiring valuable insights and attaining a more profound comprehension of the enterprises involved, as well as their strategies for capturing value inside coopetitive alliances. First, broad questions were asked about the firm's alliance with competitors and then respondents were asked to identify coopetitive alliances which they have led for a significant duration and asked to focus on alliances that lasted over 5 years. After that, a list of specific questions about the partnering firms such as the strategic intent for the alliance, value delivered (products and services developed) and appropriated in the collaboration were asked.

The respondents were also asked specific questions about how the involvement of their competitors in the alliance has influenced their position versus overall competition. In order to gain additional insights and understand how and why the observations were important from an alliance viewpoint, follow-up questions were posed to the respondents as they expressed their findings during the interviews. The first phase of the two interviews lasted for ~2 hours each, while the second phase of interviews lasted between 75 and 90 minutes. All interviews were recorded and transcribed for the analysis. To avoid bias, the transcripts of the interviews along with preliminary analysis were shared with the respondents, and they were asked to confirm accuracy as well as the understanding of the positioning of the statements.

4.3.7 Preliminary data analysis and software used

Being subjective, and text-based information, qualitative data analysis is frequently a complex, hazy, and time-consuming procedure. The utilisation of content analysis techniques facilitated the extraction of knowledge. The analysis of qualitative data was conducted using a three-step approach as outlined by Bardin (2011). The three stages include pre-analysis; investigation of the material, and coding; analysis, inference, and interpretation.

In order to establish a systematic approach to coding and categorising the data, the qualitative analysis software programme NVivo 12.0 from QSR International was utilized. NVivo speeds up analysis times, offer more detailed interpretation, and help researchers manage their data more effectively. It can arrange and analyse data from a variety of sources, including

interviews or focus group transcripts / diary notes, audio recording etc. (Hilal & Alabri, 2013; Wong, 2008). After the interviews were finished, focused coding was performed once the transcripts and diary notes from interviews were input into NVivo12.0 ® software for qualitative analysis.

4.4 Conclusion

In summary, the decision to employ different research designs in this thesis on coopetitive alliances was driven by the need to effectively capture the distinct aspects of value creation and value appropriation. The survey method was chosen for value creation due to its quantitative nature and the availability of validated scales. On the other hand, a qualitative research design was selected for value appropriation to gain a deeper understanding of the underlying determinants and explore novel factors not captured by existing scales.

This chapter has provided the overview of the research methodology adopted for both parts of the study. Consequently, the data analysis is conducted as shown in the next chapter of data analysis.

CHAPTER 5: DATA ANALYSIS AND RESULTS

5.1 Introduction

This chapter describes the statistical analysis conducted to test the hypotheses relevant to the conceptual integrated frameworks defined in Chapter 3. This chapter follows an overview of the steps in the data preparation, followed by the description of preliminary data analysis and then the final analysis. Figure 5.1 represents the schematic flow of data analysis performed for value creation and value appropriation integrated frameworks in interfirm alliances respectively.

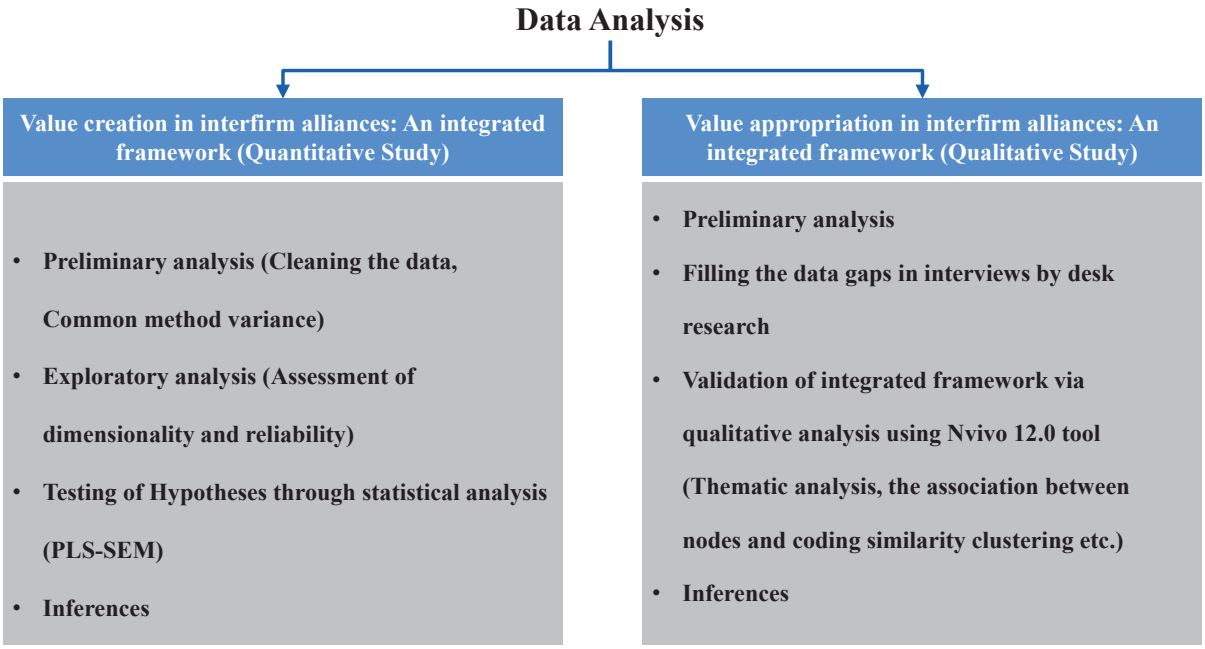


Figure 5.1: Schematic flow of data analysis

5.2 Data analysis for value creation integrated theoretical framework in interfirm alliances

A quantitative survey method that uses standardized scales and statistical analysis enables accurate measurement and analysis of the correlations between variables and can be a viable strategy for testing a framework. Such research is less prone to subjective interpretation or bias because of use of standardised scales and statistical analysis. This enables the variables to be measured and analysed more objectively. Hence, this study employed a quantitative survey analysis to assess the conceptualized framework using self-reported data from alliance managers in pharmaceutical firms operating in India.

The data analysis in this study followed the three-step approach proposed by Anderson and Gerbing (1988). The first step involved conducting preliminary data analysis, which encompassed various procedures such as analysing missing values, identifying outliers, estimating non-response bias, assessing common method variance (CMV), and evaluating the assumptions of multivariate regression analysis. The second step involved performing exploratory data analysis, which focused on assessing the validity, dimensionality and reliability of the measures used in the study. Finally, the third step involved hypothesis testing using partial least squares (PLS) path modelling.

5.2.1 Sample characteristics

A total of 207 alliance managers were contacted for the study, and after two follow-ups, a total 146 responses were received and a total of 121 completed surveys (response rate ~59%) are used for the final analysis. Out of 121 complete respondents, over 90% respondents (n=110) were part of medium and large size pharmaceutical firms in India. Given that the selection of respondents was non-random, the sample pool exhibited a significant range of variability in the coopetitive relationships between partnering firms in the alliance. The study's sample pool encompassed several types of collaborative arrangements, such as joint ventures, licencing agreements, co-production agreements, apart from research and development programs including co-development of innovative molecules as well as the development of finished dosage forms or active pharmaceutical ingredients. Figure 5.2 illustrates functional research domains of the alliances examined in the study.

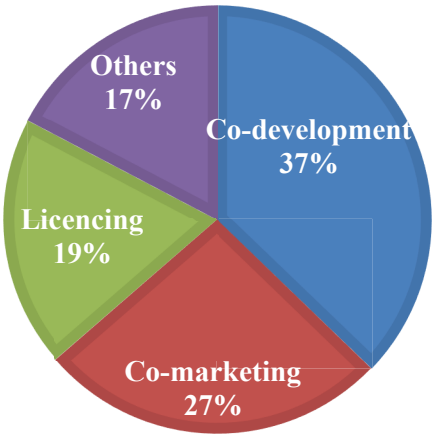


Figure 5.2: Coopetitive alliance by functional domain*

*Others include deals related to supply chain/logistics as well as where respondents did not share the deal type.

Further, alike the functional type of alliances, the designation of the respondents also indicates

diversity. Some of the key designations of the respondents were the Director or Heads of Business development and licensing (BD&L), apart from the Vice-President or Director/ Senior Directors of R&D/Marketing, and the Head of technology transfer (TT)/ Project Management. Senior stakeholders from finance included the chief financial officer (CFO); Business Planning and Analysis (BPA) or Finance managers involved in due diligence, tracking and managing the alliances. Figure 5.3 indicates the absolute number, and % of the designations of key respondents who participated in the survey.

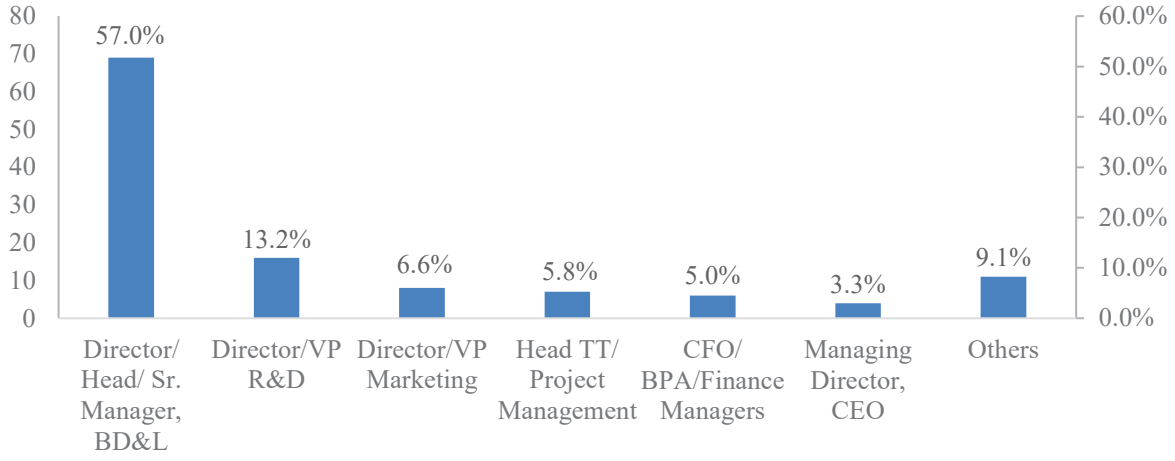


Figure 5.3: Designation of key respondents*

*Others include respondents with tile as alliance managers, consultant or senior consultant etc.

It indicates that most of the participants in the research were members of the upper echelon of management for their respective functions or firms and have a significant level of expertise in activities pertaining to alliances. Further, the respondents were asked about the number of alliances they have been part of and a majority of them (55.4%) had worked on over 5 alliances in their career indicating a strong understanding of the alliances in IPI. Table 5.1 indicates number of alliances managed by respondents.

Table 5.1: Respondent's experience of alliance management

Number of alliances	Number of respondents	% of the total respondent pool
Fewer than two	17	14.0%
2-4	37	30.6%
5-10	44	36.4%
More than 10	23	19.0%

5.2.2 Preliminary analysis

5.2.2.1 Identification of outliers, missing value analysis and data preparation

Hair et al. (1998) criteria were employed to identify outliers, given that the sample size exceeded 80. The findings indicated the absence of any statistically significant outliers.

The data collected from the participants was exported from the Alchemer survey tool into a Microsoft Excel file and subsequently examined for any inconsistencies and inaccuracies. Initially, the questionnaires that have been completed are scrutinised to ensure their comprehensiveness, while those that are significantly incomplete are eliminated from the dataset. According to Newman's (2003) methodology, questionnaires that had missing values exceeding 10% were eliminated from the analysis. For the remaining missing values, imputation was performed using the mean of the respective series. Subsequently, the collected data was organised and structured in Microsoft Excel, with the variable scales serving as the column headers and the responses comprising the rows. The dataset underwent a thorough cleaning process to eliminate incomplete data, followed by a thorough manual review to detect any anomalies within the dataset. This step is known to be time-consuming but is essential in the data analysis procedure.

In order to ensure consistency in scoring, the negatively phrased questions were reverse coded, as it is not appropriate to utilise the same scoring method for these types of questions. Consequently, the data was prepared for further analysis.

5.2.2.2 Common method bias

Given the research design, wherein responses were obtained through self-reporting via a single survey and data for all variable types (dependent, independent variables) were gathered from a single respondent, it is possible that the presence of common method variance (CMV) could introduce systematic measurement error (Sackett and Larson, 1990; Podsakoff et al. 2003). Consequently, both ex-ante and ex-post methodologies were deployed to lower the presence of CMV.

In order to mitigate the influence of the consistency incentive, a few survey items were incorporated with negative phrasing. Further, the questionnaire was pretested with a sample of six senior alliance leaders from various organisations in order to enhance the readability of the measurement items included in the survey. Additionally, the participants were provided with assurances of confidentiality and anonymity in the research, and they were explicitly informed that there were no correct or incorrect answers, emphasising the importance of responding

truthfully (Chang et al., 2010). Further, when possible, data was collected from two distinct sources within the organisation, including one from senior management and another from an individual actively involved in the operational management activities of the alliance.

The ex-post approach was employed, utilising statistical methodologies. The emergence of CMV is more probable in models characterised by excessive simplicity. Due to the intricate nature of the framework employed in this study, it is improbable that these links would be incorporated within the cognitive maps of the individual respondents. Further, two statistical tests were conducted to check for CMV – Harman one-factor test (Podsakoff & Organ, 1986) and calculating the variance inflation factor (VIF). The results of harman one-factor using principal axis factor with no rotation indicated that the extracted factor accounted for a mere 25.15% of the variance, which falls below the threshold of 50%. Given that no singular dominant factor has been identified, it may be inferred that the presence of CMV did not have an impact on the significance (Scott & Bruce, 1994) of the associations (the results are presented in Appendix II – table 2). Further, post running the principal component analysis (PCA), we calculated VIF of all variables during SEM phase and the VIF results are displayed in Table 5.2. As all the values are between 1.15 and 3.01, indicating that multicollinearity was not an issue to move ahead with the analysis.

Table 2.2 Variance inflation factor analysis

Construct	VIF value
TMC	1.385
ALE	1.514
ABS	2.330
AMC	2.924
KSR	2.173
RBG	3.014
RCA	1.668
RLT	1.159

5.2.3 Descriptive statistics and correlation matrix

Descriptive statistics were performed for all constructs, and the resulting analysis output, which includes means, standard deviations, and inter-correlations among the variables, is reported in Appendix II (Table-1). Descriptive statistics, namely means and standard deviations, are quantitative measures that capture the central tendency and variability of the data, ideally reflecting values that are proximate to the centre of the distribution. All of the

means in the given dataset fall within the range of values larger than 3.0 and less than 4.5, with the exception of TMC2, which has a mean value of 4.56. Hence, the measures exhibit no bias towards either extreme of the scales. Moreover, it is worth noting that all standard deviations exceed the value of 0.52, which suggests the presence of substantial variance that requires further explanation.

The correlation matrix as demonstrated in table 5.3 indicates that, in line with existing research, there is a significant correlation among the variables, with the exception of the variable relationship tension. This variable exhibits a negative correlation with other variables, indicating a negative association with value creation. It is noteworthy to observe that the level of trust and the attainment of competitive advantage are strongly associated with the dimensions of value creation. This implies that value creation occurs when partners possess confidence in one another and prioritise the acquisition of a competitive edge over their rivals. The research by Raza-Ullah and Eriksson (2017) indicates a stronger link between information sharing and relationship commitment, influenced by trust levels.

Table 5.3: Correlation matrix

#	Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Top Management Commitment (TMC)	1																	
2	Alliance experience	0.30	1.00																
3	Acquisition	0.40	0.44	1.00															
4	Assimilation	0.48	0.35	0.36	1.00														
5	Transformation	0.24	0.39	0.27	0.43	1.00													
6	Exploitation	0.17	0.36	0.27	0.35	0.49	1.00												
7	Inter-organisational coordination	0.22	0.27	0.12	0.47	0.53	0.44	1.00											
8	Inter-organisational learning	0.29	0.30	0.29	0.25	0.43	0.45	0.45	1.00										
9	Alliance proactiveness	0.44	0.33	0.29	0.28	0.37	0.48	0.26	0.37	1.00									
10	Alliance transformation	0.19	0.27	0.33	0.30	0.21	0.36	0.42	0.34	0.21	1.00								
11	Information Sharing Readiness	0.36	0.11	0.26	0.28	0.31	0.29	0.47	0.35	0.38	0.42	1.00							
12	Knowledge Sharing Readiness	0.39	0.42	0.36	0.35	0.43	0.37	0.47	0.47	0.55	0.28	0.61	1.00						
13	Degree of relational commitment	0.46	0.43	0.41	0.38	0.44	0.43	0.47	0.40	0.43	0.32	0.42	0.50	1.00					
14	Degree of trust	0.37	0.38	0.30	0.28	0.43	0.41	0.32	0.48	0.41	0.37	0.40	0.56	0.55	1.00				
15	Communication between partners	0.29	0.38	0.31	0.45	0.49	0.39	0.61	0.47	0.45	0.40	0.48	0.60	0.58	0.58	1.00			
16	Alliance Realized competitive advantage	0.28	0.35	0.22	0.36	0.40	0.37	0.31	0.39	0.48	0.36	0.40	0.45	0.45	0.52	0.55	1.00		
17	Relationship tension - Level of conflict	-0.11	0.01	-0.20	-0.14	-0.05	-0.06	-0.07	-0.12	-0.05	-0.05	-0.21	-0.22	-0.09	-0.38	-0.22	-0.13	1.00	
18	Value creation	0.36	0.45	0.47	0.41	0.37	0.42	0.35	0.52	0.40	0.51	0.30	0.43	0.48	0.61	0.52	0.67	-0.23	1.00

5.2.4 Inferential statistical analysis

Hypotheses testing was carried out using inferential statistics and confirmatory factor analysis (CFA). To examine the integrated framework created in section 3.2, partial least squares structural equation modelling (PLS-SEM) was used. PLS-SEM was selected because it can predict the complicated model (Akter et al., 2017) and is a non-parametric method that can produce reliable results even with small sample numbers (Chin, 1998) as well as non-normal data. This makes it particularly useful for analysing complex integrated models, which may involve multiple latent constructs and indicators that are measured with different scales or types of data. SEM*[2] is a versatile technique that allows researchers to test complex models involving multiple interrelated constructs (Garthwaite, 1994; Ryan et al. 1999) and have the flexibility of handling multiple mediating variables simultaneously (Iacobucci et al. 2007) in contrast to regression analysis. It can handle both reflective and formative measurement models, which allows for a more nuanced understanding of the relationships among constructs. The first stage of PLS-SEM involves assessing the outer model with the objective to assessing the extent to which the questions align with the theoretical construct. The analysis of the outer model involves examining the unidirectional predictive correlations that exist between each latent construct and its corresponding observed construct (Hair et al. 2021). According to Hair et al. (2010), there are two primary metrics for assessing indicators, namely the reflective and formative outer model. The evaluation of the reflective outer model entails the analysis of various aspects, including the reliability of individual items (indicator reliability), the reliability of each latent variable, internal consistency measures such as Cronbach alpha and composite reliability, construct validity through loading and table # analysis, convergent validity measured by average variance extracted (AVE), and discriminant validity assessed using the Fornell-Larcker criterion, cross loading analysis, and Heterotrait-monotrait (HTMT) criterion.

PLS Path Modeling was conducted using the R package PLSPM. The proposed integrated framework encompasses both first-order as well as second-order (higher-order) constructs. The two-stage approach (Becker et al., 2012; Ringle et al., 2012), which is more appropriate for a small sample size, was used to develop and estimate the path model (Sarstedt et al., 2019).

The results of convergent and discriminant validity measurements for the hierarchical model,

[2] SEM is an effective method for testing complex models. However, there are a few drawbacks and these were reduced by carefully taking care of adequate sample size, well-defined assumptions, addressing missing data and collinearity etc.

hypotheses testing, and path estimates are presented below.

5.2.4.1 Assessing the reliability, validity and dimensionality of the measurement model/framework

As mentioned earlier, the first stage included establishing the reliability and validity of the measurement scale. This included an assessment of the dimensionality of first-order constructs followed by an assessment of construct validity (Hair et al., 1998; Worthington & Whittaker, 2006). In addition, since the hypothesized integrated framework also included four hierarchical components (i.e., second-order constructs), their convergent validity and discriminant validity was also established.

The outer loadings of each item in the framework were measured in order to analyse dimensionality. A score above 0.5 is acceptable for outer loading when other items measure the same construct (Chin, 1998a). Except for AE1, every item had an absolute standardised loading greater than 0.5 on its respective first-order latent construct (See Table 5.4). Since the factor loading of ALE1 was less than 0.5, it was dropped (see factor loading of all constructs in Appendix II, Table 5).

Next, the unidimensionality of items used in the frameworks was examined. In order to determine whether the designated items on each dimension were loaded adequately (>0.5) on it or a cross-loading difference (>0.10) (Kathuria, 2000), each dimension of value creation was individually submitted to exploratory factor analysis (EFA). Instead of using an orthogonal method (varimax), which implies there is no intercorrelation between the dimensions, Principle Component Analysis (PCA) with oblique rotation (promax rotation) was used to factor analyse each construct (Lawley & Maxwell, 1971). Promax rotation was selected because it more accurately portrays the underlying factor structure, which was expected given the dimensions.All of the measurement items were kept since they all had percentages of variance explained by more than 50% and KMO estimates larger than 0.60. The EFA outcomes are shown in Appendix II (Table 3).

Table 5.4: Loadings of scale items for the measurement (outer) model

Items		First Order construct	Factor Loading
TMC1	←	Top Management Commitment (TMC)	0.82
TMC2	←		0.78
TMC3	←		0.76
TMC4	←		0.72
ALE1	←	Alliance experience	0.47
ALE2	←		0.84
ALE3	←		0.78
AE4	←		0.86
AC	←	Absorptive capacity	0.71
AS	←		0.78
TR	←		0.71
EX	←		0.68
IC	←	Alliance Management Capability	0.68
IL	←		0.76
AP	←		0.74
AT	←		0.63
KS	←	Knowledge sharing routine	0.92
IS	←		0.87
DR	←	Relation based governance	0.84
DT	←		0.84
CB	←		0.86
ARC1	←	Alliance realized competitive advantage	0.88
ARC2	←		0.61
ARC3	←		0.85
ARC4	←		0.64
RT.LC1	←	Relationship tension - Level of conflict	0.92
RT.LC2	←		0.85
VCR1	←	Value creation	0.64
VCR2	←		0.70
VCR3	←		0.75
VCR4	←		0.70
VCR5	←		0.82
VCR6	←		0.76

The reliability and validity of constructs was established using a two-step approach. First, we performed Principal Component Analysis (PCA) on lower order constructs. Then PCA scores

of lower-order constructs were subsequently used as indicators for the higher-order construct in a separate PLS path model. Since PCA is a unidimensional analysis conducted for each construct, calculating composite reliability (CR) via the PCA method is not possible. Thus, CR is only available for constructs formed during SEM (i.e., Phase 2). However, the study utilised Dillon-Goldstein's rho to compute CR, which considers other components to assess the extent to which a latent variable exhibits strong one-dimensionality. For each construct, a Cronbach's alpha of at least 0.5 is regarded as satisfactory reliability (Chau & Lai, 2003), and ideally, a coefficient alpha of at least 0.7 denotes an acceptable level of reliability (Hair et al., 2010). Cronbach's alpha value ranged from 0.594 to 0.850, indicating the reliability of constructs. Additionally, each construct's average variance extracted (AVE) and composite reliability (CR) are much higher than the criterion values of 0.70 for CR and 0.50 for AVE, demonstrating the reliability of each latent construct (see Table 5.5). The findings demonstrate the framework's strong internal consistency and convergent validity.

Table 5.5: Construct reliability and validity

Measure	Items	Cronbach's Alpha	CR	AVE
Phase 1 (using PCA)				
First order				
Acquisition	3	0.723	-	0.990
Assimilation	4	0.764	-	0.798
Transformation	4	0.732	-	0.795
Exploitation	3	0.768	-	0.989
Inter-organisational coordination	3	0.790	-	0.878
Inter-organisational learning	4	0.779	-	0.892
Alliance proactiveness	4	0.810	-	0.864
Alliance transformation	3	0.763	-	0.991
Information Sharing Readiness	4	0.794	-	0.815
Knowledge Sharing Readiness	5	0.803	-	0.816
Degree of relational commitment	5	0.770	-	0.811
Degree of trust	6	0.850	-	0.882
Communication between partners	4	0.744	-	0.848
Phase 2 (using path model)				
First order				
Top Management Commitment	4	0.594	0.855	0.773
Alliance experience	3	0.687	0.873	0.782
Alliance Realized competitive advantage	4	0.742	0.839	0.567

Relationship tension - Level of conflict	2	0.725	0.879	0.781
Value creation	6	0.821	0.871	0.530
Second order				
Absorptive capacity	4	0.694	0.814	0.517
Alliance Management Capability	4	0.674	0.804	0.498
Knowledge sharing routine	2	0.761	0.893	0.804
Relation based governance	3	0.799	0.882	0.714

Discriminant validity pertains to the degree to which a construct demonstrates empirical differentiation from other constructs. Additionally, it quantifies the extent of variances among the overlapping constructs. The assessment of discriminant validity can be conducted by several methods, including the cross-loading of indicators, the Fornell and Larcker criterion, and the Heterotrait-monotrait (HTMT) ratio of correlation (Ab Hamid et al., 2017). Discriminant validity was established by using Fornell and Larcker (1981) ("FL") criterion. The FL criterion involves the comparison between the square root of AVE with the correlation of constructs. It is preferable for a construct to provide a more comprehensive explanation for the variability observed in its own indicator, rather than focusing on the variability of other constructs. Hence, it is expected that the square root of the AVE for each construct will exhibit a higher value compared to the correlations seen with other latent constructs. To check whether it met the requirements, the square root of AVE was compared to all construct correlations and results are presented in Table 5.6. The results suggest that discriminant validity is ascertained using FL criteria.

Table 5.6: Fornell-Larcker criteria

	TMC	ALE	ABC	AMC	KSR	RBG	RCA	RLT	VCR
TMC	0.771								
ALE	0.300	0.829							
ABC	0.478	0.537	0.719						
AMC	0.429	0.416	0.660	0.706					
KSR	0.417	0.317	0.514	0.673	0.897				
RBG	0.437	0.470	0.632	0.714	0.662	0.845			
RCA	0.282	0.349	0.457	0.559	0.472	0.601	0.753		
RLT	-0.114	0.007	-0.168	-0.103	-0.239	-0.273	-0.133	0.884	
VCR	0.360	0.449	0.581	0.620	0.413	0.636	0.673	-0.231	0.728

*Diagonal elements are the square root of AVE for the variable while non-diagonal elements are correlation between the latent variables

Another measure used to assess discriminant validity is the HTMT ratio of correlation. Henseler et al. (2015) conducted a Monte Carlo simulation study to evaluate the efficacy of this approach. Their findings indicate that HTMT has superior performance in terms of specificity and sensitivity rates, with values ranging from 97% to 99%. In comparison, the cross-loadings criterion yielded a specificity rate of 0.00%, while the Fornell-Lacker criterion achieved a specificity rate of 20.82%. High values of the HTMT ratio, close to 1, suggest a deficiency in discriminant validity. The utilisation of HTMT as an evaluative criterion entails the process of comparing it against a pre-established threshold. If the HTMT value exceeds the specified threshold, it might be inferred that there is insufficient evidence of discriminant validity. Kline (2023) proposes a threshold of 0.85, however Gold et al. (2001) argue and offer a value of 0.90 in order to prove discriminant validity. The analysis of study, as indicated in table 5.7, concludes that all HTMT ratios are below the threshold of 0.90, so confirming the establishment of discriminant validity.

Table 5.7: HTMT ratios

	TMC	ALE	ABS	AMC	KSR	RBG	RCA	RLT	VCR
TMC									
ALE	0.398								
ABS	0.624	0.699							
AMC	0.539	0.542	0.895						
KSR	0.519	0.377	0.703	0.826					
RBG	0.559	0.569	0.863	0.869	0.836				
RCA	0.354	0.426	0.647	0.748	0.631	0.768			
RLT	0.295	0.125	0.215	0.151	0.322	0.348	0.194		
VCR	0.461	0.549	0.764	0.844	0.529	0.783	0.799	0.295	

5.2.4.2 Hypotheses testing using PLS-SEM

The hypotheses were evaluated by computing t-statistics and examining the significance level of structural path coefficients. The bootstrap method, which generates more logical standard error estimates, was employed. Based on the methodology described by Hair et al. (2012), the study conducted 1,000 resampling iterations with replacement from the original dataset consisting of 121 cases. This was done to calculate standard errors and derive t-statistics. Since the hypothesized integrated framework included four hierarchical constructs, the indicator reuse technique suggested by Wold (1980) was applied to assess the proposed integrated

framework. Table 5.8 shows that the path coefficients of ten out of eleven paths in the hypothesized integrated framework were significant. The result shows that H1(a), H1(b), and H1(c) are significant and indicate that TMC is positively associated with ABS ($p = 0.000$, $\beta = 0.478$), AMC ($p = 0.000$, $\beta = 0.429$), and KSR ($p = 0.000$, $\beta = 0.353$) respectively. Similarly, H5(a) and H5(b) were supported, indicating that ALE has a positive influence on KSR ($p = 0.015$, $\beta = 0.211$) and RBG ($p = 0.000$, $\beta = 0.470$).

Further, results suggest that AMC ($p = 0.028$, $\beta = 0.247$), and RBG ($p = 0.000$, $\beta = 0.396$) positively influence VCR, supporting hypothesis H2 and H6, respectively. Though it is shown that top management and prior alliance experience positively influence KSR, the hypothesis that KSR positively influences RCA (H3) was not supported ($p = 0.677$, $\beta = 0.043$). Experts remark that as the pharmaceutical industry is heavily dependent on R&D and technical knowhow, it indicates manager and associates' reluctance to share technical knowhow and sensitive information, which might be detrimental to openly share knowledge to create value, and hence, create private value. The framework also shows that absorptive capacity ($p = 0.000$, $\beta = 0.33$) and RCA ($p = 0.000$, $\beta = 0.51$) are positively related to VCR, supporting hypothesis H4 and H7. The moderating role of RT, i.e., H8 ($p = 0.084$, $\beta = –0.11$) in VCR is also supported. The PLS-SEM analysis's path estimates are displayed in Figure 5.4.

Table 5.8: Hypothesized integrated framework testing

Hypothesis	Path			p-value	B/β/Path Coefficient	Std. Error	t-value	Results
H1 (a)	TMC	→	ABS	0.000	0.478	0.0778	5.943	Supported*
H1 (b)	TMC	→	AMC	0.000	0.429	0.0732	5.182	Supported*
H1 (c)	TMC	→	KSR	0.000	0.353	0.1059	4.130	Supported*
H2	AMC	→	RCA	0.028	0.247	0.1003	2.220	Supported*
H3	KSR	→	RCA	0.677	0.043	0.108	0.417	Not supported
H4	ABS	→	VCR	0.000	0.330	0.0764	4.752	Supported*
H5 (a)	ALE	→	KSR	0.015	0.211	0.103	2.471	Supported*
H5 (b)	ALE	→	RBG	0.000	0.470	0.0661	5.813	Supported*
H6	RBG	→	RCA	0.000	0.396	0.0891	3.620	Supported*
H7	RCA	→	VCR	0.000	0.508	0.0628	7.350	Supported*
H8	RTM	→	VCR	0.084	-0.110	0.0684	-1.742	Supported*

Note: *p value <0.1

To examine the prediction ability of the integrated framework, Rsquare (R^2) of the constructs was used. R^2 explains the variance in the endogenous variable being explained by the

exogenous variable(s).The analysis is presented in Table 5.9.

Table 5.9: Prediction ability of hypothesized integrated framework

Path			R-square
ABS			0.229
TMC	→	ABS	
AMC			0.184
TMC	→	AMC	
KSR			0.214
TMC	→	KSR	
ALE	→	KSR	
RBG			0.221
ALE	→	RBG	
RCA			0.397
AMC	→	RCA	
KSR	→	RCA	
RBG	→	RCA	
VCR			0.56
ABS	→	VCR	
RCA	→	VCR	
RTM	→	VCR	

The analysis indicated that the R^2 value for VCR (0.56), RCA (0.397), RBG (0.221), KSR (0.214), AMC (0.184), and ABS (0.229) were all above the acceptable level of 0.1 (Falk and Miller, 1981). As a result, it is clear that the proposed hypothesized framework is suitable for evaluating value creation because it accounts for a sizable proportion of the variance in the constructs. The mediation effect of realized competitive advantage was evaluated by re-running the path model estimations analysis by testing the direct effects of AMC, KSR, and RBG. The results show a negative effect of AMC on VCR, establishing the role of RCA as a mediator in this path model.

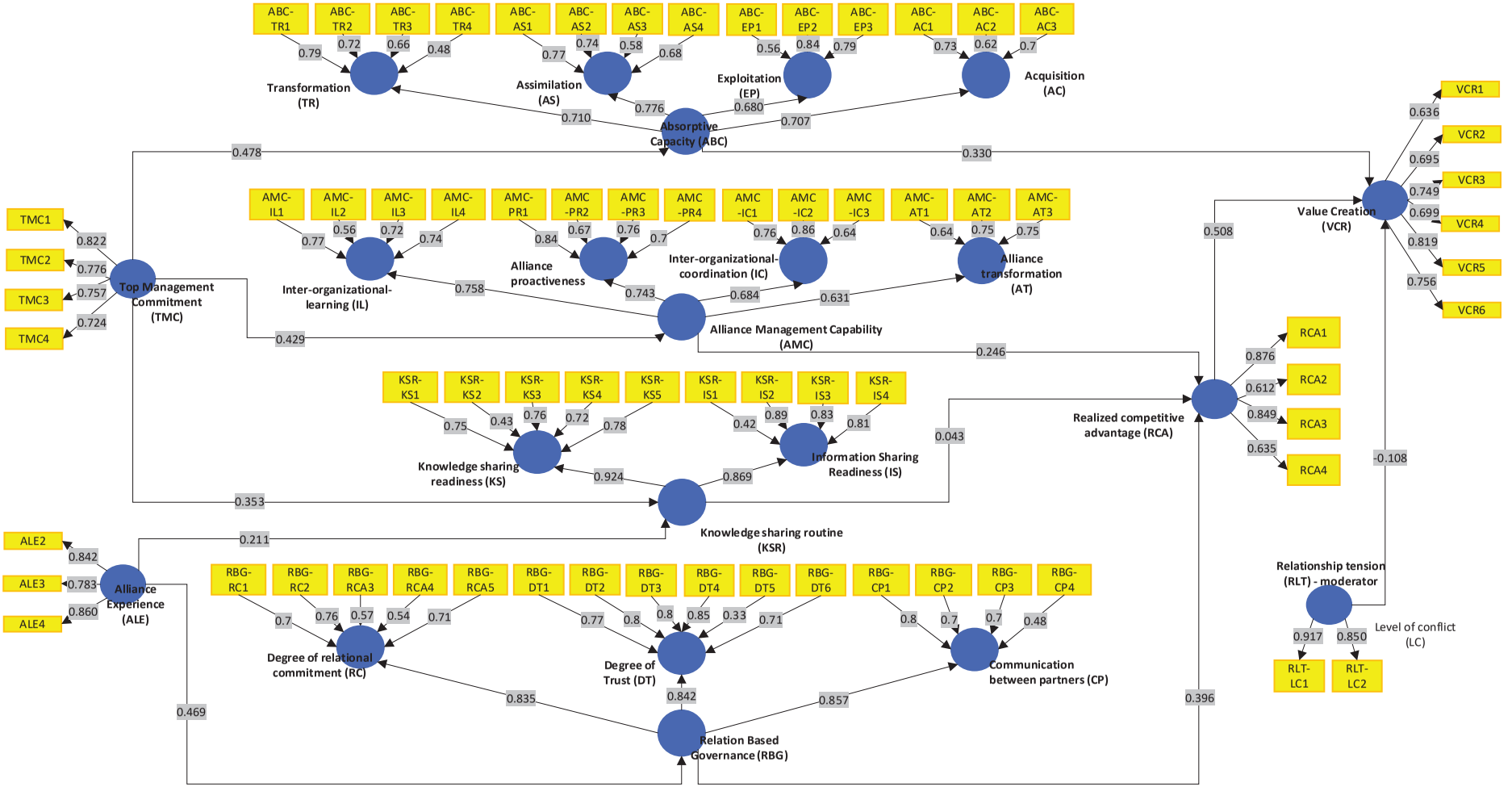


Figure 5.4: Path estimation model

5.3

5.4 Data analysis for value appropriation integrated theoretical framework in interfirm alliances

5.4.1 Sample Characteristics

Panico's (2017) recommendation to consider the varied power situations of partners in an alliance while designing the study pool was followed. Recent articles have highlighted an increasing number of coopetitive partnerships between businesses of all sizes (Chiambaretto et al., 2020b; Hora et al., 2018). Therefore, the study used varied kinds of firms that differ from other firms in terms of size, nature of alliance, etc. The respondents include business development and licencing (BD&L) heads or regional heads or directors leading the alliances, with significant experience (average of 17+ years) of working in or managing multiple coopetitive alliances.

An interview script to guide discussions with respondents was prepared. The discussions covered the need for the coopetitive alliance (strategic objective) and determinants of value appropriation in the alliance. Further, publicly available information on the firms being studied and their alliances was accessed in order to obtain a broader perspective to better understand the nature of the collaboration.

Table 5.10 lists the sample firms and their characteristics. The respondents are leaders who have managed different kinds of alliances (co-marketing, co-development, or co-development plus marketing deals) and different types of firms (innovator, generic, large-sized as well as medium-sized firms). A total of seven industry leaders (senior executives) who led multiple coopetitive alliances during their careers were interviewed. However, only five sample cases are considered for analysis, owing to theoretical saturation post five interviews.

Williamson SME – Opportunitism empirically validated.

Risk sharing

Table 5.10: Demographics of sample firms

Organisation		Market position of partner firms	Corporate Headquarter	Nature of the alliance	Geographical focus	Nature of operations
1	Firm A	Top 10 Global Pharma	US	Co-marketing	India	Innovator originator drugs
	Firm B	Top 10 Indian MNC	India		India	Generics
2	Firm C	Top 20 Indian MNC	India	Co-development	Africa	Generics

Organisation		Market position of partner firms	Corporate Headquarter	Nature of the alliance	Geographical focus	Nature of operations
	Firm D	Medium Size pharma	India		India	Generics FDF and API
3	Firm E	Medium-size Australian firm	Australia	Co-development	Asia Pacific (APAC)	Generics
	Firm F	Medium size Indian Pharma	India		India	Contract research
4	Firm G	Top 10 Indian Pharma	India	Co-development and marketing	India	Generics
	Firm H	Large Japanese Pharma	Japan		Europe	Innovative Pharma Technology firm
5	Firm I	Top 20 Indian pharma	India	Co-marketing	US	Generics with a focus on abbreviated new drug application (ANDA)
	Firm J	Medium size Indian Pharma	India		India	

5.4.2 Discussion guide/ Interview script preparation

The data was collected in two stages. The study involved in-depth interviews with two business leaders to understand their alliances and refine the interview script (see -Appendix III for discussion guide). The second stage involved five interviews, focusing on coopetitive alliances over five years. The interviews asked about strategic intent, value delivered, and how competitors' involvement influenced their position. Follow-up questions were posed to gain additional insights. The interviews lasted between two hours and 75-90 minutes, with transcripts and preliminary analyses shared with respondents to avoid bias. Table 5.11 presents a summary of the characteristics of the alliance, the strategic intent of the alliance, value appropriation objective of the focal firm, and partner firm.

Table 5.11: Summary of the characteristics of the focal firms included in the study

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5
Partner companies	Firm A: Leading US Pharmaceutical firm Firm B: Leading Indian Pharmaceutical firm	Firm C: Leading Indian pharmaceutical firm Firm D: Leading Indian Pharmaceutical firm with expertise as a bulk drug manufacturer (Active pharmaceutical ingredient i.e., API manufacturer)	Firm E: Medium size Australian Pharmaceutical firm Firm F: Medium size Indian contract manufacturer	Firm G: Leading Indian Pharmaceutical firm Firm H: Japanese Pharmaceutical firm	Firm I: Leading Indian Pharmaceutical firm Firm J: Medium size Indian Pharmaceutical firm focused on dosage form development
Duration of alliance	Over 10 years	Over 10 years	Over 15 years	~6 years	~10 years and ongoing
Type of alliance/deal	Co-marketing deal	Formulation development and procurement of API	Co-development and contract manufacturing	Co-development	Co-development and co-marketing deal
Background/ Strategic need of the alliance	Firm A launched an innovative DPP4 inhibitor alone in India. However, within 2 years of its launch in India, a European pharmaceutical major launched another DPP4 inhibitor with three co-marketing partners. Firm-A identified and entered into a coopetitive partnership with Firm-B (only out of pocket market) wherein Firm-B shall co-market its secondary trademark product (in-licensed from Firm-A) and acquire rights to the trademarks at the end of the deal in 2022.	Firm C had a strong presence in the US as a Generic (Gx) pharmaceutical firm. Firm C's major strength was in its formulation development capabilities as well as paragraph IV filings. Firm C was aiming to become a dominant player in the anti-retroviral business across the globe. Firm-C was looking for stable supply of antiretroviral active pharmaceutical ingredient (API) which are high-volume products and hence were looking to partner for finished dosage form and API partner. Firm D was the leader in the Antiretroviral bulk drug space	Firm-E had technological know-how and market rights for some APAC markets, but it lacked production facilities outside of Australia. Firm F had state of the art manufacturing facilities for Cardiovascular (CVS) products and were looking to scaleup and diversify, however; lacked exposure to	Firm G had highest growth for a few years in Indian market and were primarily focused on emerging markets but wanted to expand footprint in focused emerging markets. Firm H had access and expertise to manufacture bi and tri layer tablets wherein they make a hole through laser and fill in the drug for targeted delivery.	It was a co-development and co-marketing deal. Firm I wanted a fast-track development of new chemical entity (NCE) and formulation to submit NCE minus 1 filing and sell generic formulation with market exclusivity benefits. Both firms shared cost and focused on developing a molecule which can be submitted via

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5
		with state-of-the-art API manufacturing facilities and was focusing to strengthen their finished dosage form (formulation development) capabilities	developed and regulated markets like Australia	However, they did not target most of the emerging markets. Conflicts were comparatively less as Japanese company was not focused on emerging markets, but both the companies had a list of non-exclusive markets to compete	Para-4 filing for NCE minus 1 benefits. Firm I was responsible for the investment in terms of material purchase, small development of the product and supplying the material while firm J was to manufacture the pilot batch for testing and perform stability and other analysis for India filing (and comarket in India) requirement while Firm I will make the filing for US
Strategic Objective of alliance	To propagate the DPP4 inhibitor in Indian market and shape the patient and healthcare practitioner (HCP) behaviour to switch patients on DPP4 inhibitors. The objective was to make their DPP4 inhibitor as first line of therapy supported by its rigorous scientific data on safety and efficacy parameters.	Cost advantages while ensuring a stable supply of bulk drug/ API. Strengthen its reputation as a reliable Gx partner for high volume products.	Getting quality products developed at a cheaper cost while sharing risk and profits.	Optimal use of idle capacity and it would also help both firms in risk sharing and gaining new markets .	Benefit from market exclusivity (6 months) and associated benefits for a NCE-1 filing in the US.

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5
Value appropriation objective of alliance	To bring healthcare environment changes by influencing physician and patient behaviour Best use of combined resources/ abilities to have a solid footprint when it comes to Geospatially coverage (more penetration and more share of voice to the HCP)	To provide unhindered and cost-effective medicines to HIV patients across the globe. c (especially African markets with huge human immunodeficiency virus (HIV) burden) though the firm-C was already considered a strong name in leading Gx players in developed markets	Establish themselves as key players in some of the regulated markets	Risk and cost sharing while gaining exclusive market rights for some of the markets as per contractual rights.	Learn best practices from each other
Value Appropriation objective by partnering firm(s)	For firm A: To increase the market share for its DPP4 inhibitor, which benefits the firms bottom-line. Strengthen commercial capabilities by partnering with a domestic player who already has proven capabilities in the diabetes space for the Indian market. Launch the product at 1/6th of the US price and showcase to Indian policymakers and HCPs that the firm is serious to bring innovative yet affordable drugs to India. Understand and learn how a generic Indian pharmaceutical company works.	For firm C: Ensuring continued supply of API to churn out huge volume anti-retroviral formulations (profit sharing) Cost competitiveness to get edge over competitors. Take advantage of the API's cost advantage (apart from secure supply) to integrate it forward into generic finished dosage formulation.	For Firm E: Get the product manufactured at an optimal cost. Quick scaleup of product development Risk and cost sharing	For Firm G: Exposure to latest technology and addition of new products that can further strengthen their growth in domestic market. To increase the market footprint in shortest possible time Risk and cost sharing in development of innovative formulations. Gain exclusive market rights for some of the markets as per contractual rights.	For firm I: Meet the US filing timelines for small molecule development (easy to generate and validate data for a small company) Cost sharing and rights to the US market on profit sharing basis. Data of firm J's exclusive markets to support filing in the US.
	For firm B:	For firm D:	For Firm F:	For firm H:	For firm J:

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5
	Learn the regulated market way of marketing – Preparing the scientific data package and presenting the right data i.e., firm B realized and learned how to create high science inputs for innovator products and for regulated markets. Learn segmentation, targeting and promotion-related best practices. Getting a lot of exposure to US compliance processes which helps in redesigning their organisation and practices. Getting access to trademarks after the deal successfully gets over after the agreed period and start selling the generic molecule that gives them a lot of headway over other generic companies	As firm D was not so strong in formulation development, they wanted to strengthen formulation capabilities by aligning and getting the best practices from one of the top Indian players. Learn IP litigation ways and try for ANDA filings. Learning compliance processes of regulated markets by adopting best practices from the partner	Gain knowledge of technical knowhow and try to apply for ANDA. Gain experience in dealing with Pharmaceutical Benefits Advisory Committee (PBAC), Australia by providing regulatory submission and pilot batches.	Had very expensive instruments that they can optimise for use and gain economies of scale. Gaining experience of tender based markets Reduction in Capex (cost sharing in development of finished dosage form)	Receive royalty payments for markets exclusive to the firm-I and co-market in identified markets including India. Learn best practices and gain exposure to NCE minus 1 filing and compliance processes.

5.4.3 Interview transcript analysis

Being subjective and text-based, qualitative data analysis is frequently a complex and time-consuming procedure. In this study, the content analysis technique is used to infer findings. Qualitative data were analysed in the following three steps (Bardin, 2011; da Silva et al., 2023):

- Pre-analysis and organisation of data,
- Exploration of the material, coding and categorisation of the data and
- Analysis, treatment of results, inference and interpretation.

The data was organised in the pre-analysis stage. It included organising transcripts and capturing notes from desk research about the alliance apart from creating memos. In order to systematize the coding and categorisation of data, NVivo 12.0, the qualitative analysis software program from QSR International, was used. NVivo speeds up analysis times, offers more detailed interpretation, and helps researchers manage their data more effectively. It can arrange and analyse data from a variety of sources, including interviews or focus group transcripts, diary notes, audio recordings, etc. (Hilal & Alabri, 2013; Wong, 2008).

After the interviews were completed, focused coding was executed. Transcripts and diary notes from interviews were inputted using the NVivo12.0 software, which considers categories as nodes and subcategories as sub-nodes. Sub-nodes were created during the process of critical reading of the verbatim transcripts. The analysis required travelling back and forth iteratively through the data in order to compare respondents' inputs and identify descriptive codes. Then, using terms that represented the theoretical notions, the findings were defined as higher- and lower-order determinants based on respondents' statements. Ten nodes were produced in the initial round of open coding. Following this, a second round of coding was completed, and it was independently reviewed by a second reviewer. A total of 18 sub-nodes were found after the second round. Subsequently, nodes that exhibited similarities were organized and merged, resulting in a collective of eight distinct groups. (see figure 5.5). Some groups and topics were renamed as a result of this procedure, and others were collapsed (Browning et al., 1995). A title was assigned to represent identified core categories and the categories/constructs created were shared with the respondents to check if they aligned with their feedback. In addition, these were compared with concepts and theories from literature. The development of each

overarching concept was supported by verbatim quotes from the interviews.

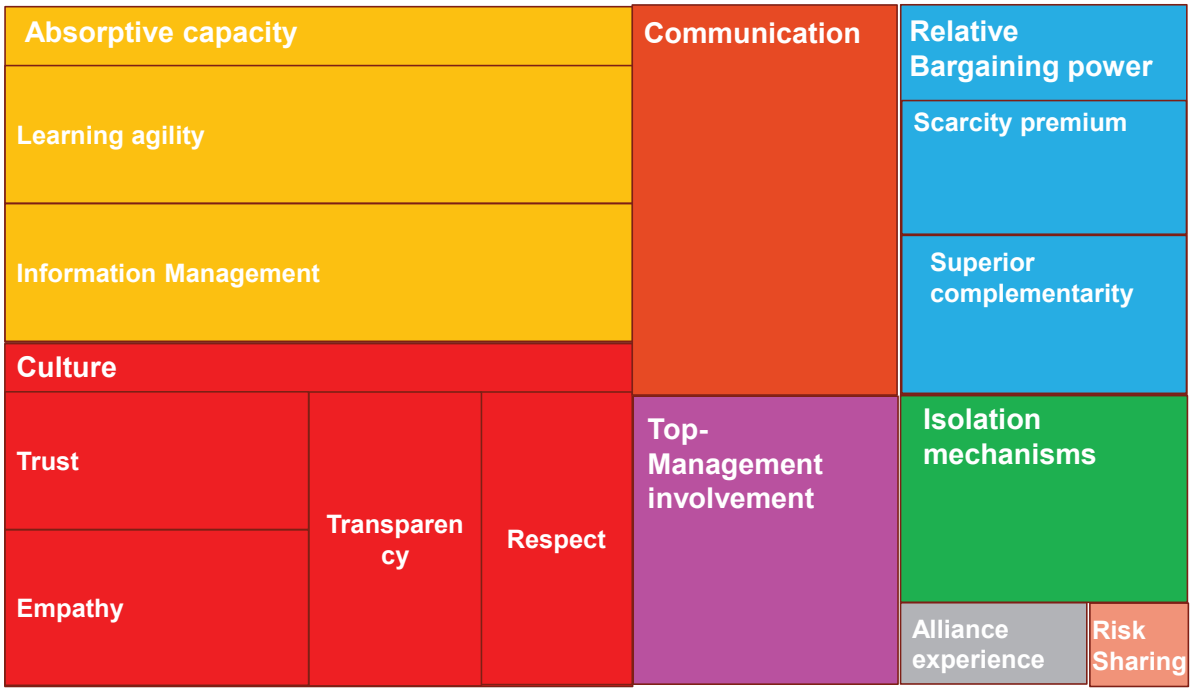


Figure 5.5: Structuring data into lower and higher-order constructs using NVivo hierarchy charts.

In order to code in NVivo, textual data must be divided into segments, compared for similarities and differences, and then conceptually related data must be grouped in the appropriate nodes (Wickham & Woods, 2005). The text search query and hierarchal chart identified various determinants of value appropriation and compared them in terms of frequency in the dataset provided. The codebook extract shows that a firm's absorptive capacity was considered to be most important parameter, as it appeared a total of 21 times and was discussed in all the five interviews. Other key attributes that were common among all five respondent interviews were relative bargaining power (14), cultural aspects (14), communication (12), top management involvement (10), and trust (7). Table 5.12 depicts the determinants identified and the frequency of their coding in the analysis.

Table 5.12: Node and sub-nodes along with their code frequency for identified determinants

Name	#Transcripts	# of code
Absorptive capacity	5	21
Learning agility	4	13
Information management	3	8
Relative bargaining power	5	14

Superior complementary	5	8
Scarcity premium	4	6
Cultural aspects	5	14
Empathy	1	2
Respect	2	2
Transparency	3	3
Trust	5	7
Communication	5	12
Top management involvement	5	10
Isolation mechanisms	3	7
Contractual governance	3	6
Pie-splitting	1	1
Alliance Experience	2	2
Risk and cost-sharing	1	1

Further, the codes were analysed using the in-built text analytics function of NVivo 12.0 to cluster items by coding similarity. The degree of resemblance or overlap between two or more codes is called the 'coding similarity of items' in NVivo. This is helpful for finding themes or trends in the data and evaluating the accuracy and consistency of the coding. The analysis depicting nodes based on coding similarity are visualized in Figure 5.6. It shows that a firm's absorptive capacity and learning agility, communication, and top management involvement overlap with each other, while governance mechanisms and alliance experience do not resemble or overlap with them. Further, 'risk and cost-sharing' as a determinant does not resemble the remaining codes, indicating that it is an entirely separate theme, which cannot be combined.

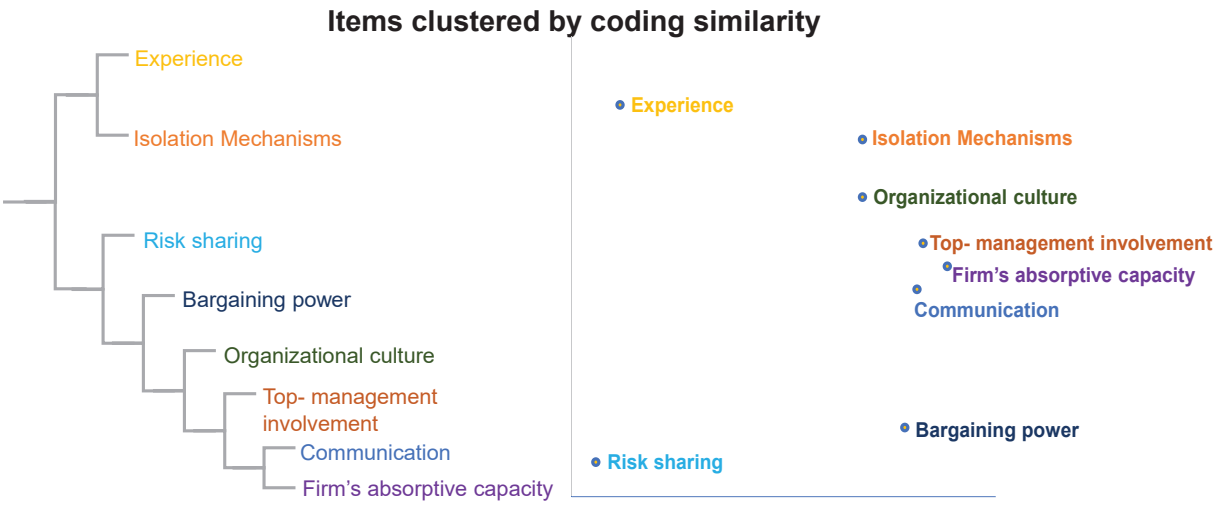


Figure 5.6: Coding similarity between various nodes

As per Marks (2015), the analysis should ideally not exceed seven core themes post combination of themes and if codes are reasonably distinct from one another, they should be eliminated. Risk and cost-sharing was coded in only one interview and hence it was decided to drop it from the analysis.

5.4.4 Results

While analysing the transcripts of the five interviews using NVivo 12.0, numerous additional themes emerged on value appropriation in coopetitive alliances in IPI. Some of these themes go beyond the identified traditional perspectives (see Section 2) and provide insights into the determinants that influence the successful appropriation of value in coopetitive alliances. The additional determinants identified include learning agility, information management, top management involvement, communication between partners, and alliance experience apart from cultural aspects such as transparency, empathy, respect, and trust. The following sub-sections briefly describe these determinants along with a set of representative quotes describing them from the focal firm's lens.

5.4.4.1 Learning agility

The respondents emphasised the necessity of learning agility repeatedly while discussing how to properly appropriate value in coopetitive dyadic alliances. Learning agility refers to a firm's ability to learn quickly and adapt to new situations (Lombardo & Eichinger, 2000). Learning agility was mentioned by four respondents and was coded a total of 13 times in the transcripts, indicating that the respondents considered it a key determinant of how firms capture value in coopetitive alliances. The respondents also emphasised the necessity for firms to swiftly adapt

and pick up on the capabilities, processes, and strategies of the partner firm. Firms with high learning agility can quickly adjust to shifting market conditions and new technology in coopetitive alliances. As a result, the firm may be better able to both create and appropriate value.

According to the BD&L Head of Firm A:

"The learning agility of partner Firm B enabled us to assimilate new knowledge, adjust our approaches, and capitalise on emerging opportunities outside the alliance in other therapy areas, ultimately enhancing our ability to appropriate value from the alliance. The evidence generation and science behind a product development [sic] is critical in health technology assessments; however, when it comes to generic products it's not proprietary, right? So that's why their segmentation, targeting, and positioning approach is very different. Firm B was very agile in learning how a big innovative pharma plays the game; how segmentation, targeting, and positioning are done, and leveraged that soft knowledge".

Similarly, the General Manager of Business Development and Alliance Management (GM, BD&AM) of Firm G indicated that they used people's learning agility to ensure that they capture targeted value from their alliance with the partner:

"I believe learning agility played a major role in value appropriation during the alliance. We deployed our smartest people who could assimilate knowledge and learn how to make a scientific dossier for regulated markets."

5.4.4.2 Information management

Our analysis indicates that robust information and knowledge management is vital for value appropriation in coopetitive alliances. The respondents emphasised the significance of effectively capturing, organizing, and disseminating information within the dyadic alliance. They highlighted that well-designed information management processes facilitate sharing of explicit as well as tacit knowledge which enables partner firms to learn from each other's expertise and appropriate value. Information and knowledge management processes were quoted by three out of five respondents, and they were coded a total of eight times in the transcripts, indicating its significance as a determinant of how firms capture value in coopetitive alliances.

According to the GM BD&AM of Firm G, one of the determinants that helped them in optimally appropriate value with the Japanese partner was having robust information

management processes in place that can aid in enhancing the absorptive capacity.

"To me absorptive capacity is not restricted to human associates alone, but knowledge integration and digital systems also play a role to ensure that best practices were documented and in due course of time leveraged to capture value within and outside the alliance".

De Cassia Arantes et al. (2021) used a case study to analyse the processes of creation and appropriation of value in a horizontal agribusiness network and indicated that value appropriation occurs due to the learning processes as the sharing of information and knowledge leads to replication of partner firms' resources. According to Dyer et al. (2018), in a dynamic context, when partner firms' knowledge and resources are replicated, the bargaining power between organisations is modified and when this happens, the organisation with better absorptive capacity is more likely to appropriate the created value. Our findings support a similar view for dyadic coopetitive alliances.

5.4.4.3 Culture

Culture refers to the shared values, beliefs, and norms that shape the behaviour of individuals within an organisation (Hofstede, 2001). In coopetitive alliances, culture plays a critical role in value appropriation. Firms that have a culture of collaboration, empathy, trust, respect, and transparency are more likely to create and appropriate value effectively. This, in turn, can lead to increased value creation and appropriation. Our analysis also uncovered the significance of cultural characteristics such as transparency, empathy, respect, and trust in value appropriation. The respondents emphasized that a collaborative culture, characterized by open and transparent communication, and trust creates an environment conducive to not only value creation but also appropriation. According to the respondents, these cultural aspects fostered collaboration, promoted communication and information exchange, and problem-solving, which ultimately led to improving the effectiveness and success of the coopetitive alliance.

For example, Firm C entered into an alliance with Firm D. Firm C was a reputed and leading Indian pharma company and Firm D was a medium-sized pharma company that had established itself as an active pharmaceutical ingredient (API) player but was a budding player in finished dosage form (FDF) business. Executives from Firm C realised during their initial meetings that scientists from Firm D in the FDF division were concerned about whether Firm C (being a senior partner in the alliance) would try to enforce their ways of working in the alliance. However, Firm C executives made sure that enough space was given to their counterparts at Firm D, which helped in reducing friction, developing trust and free flow of

information, and learning. According to the Director, International Alliance Management of Firm C:

"I could sense one part is respect that our company managed well. Giving space and basically hearing out each other to develop the trust is another [part] that eventually helped us out in reducing tension as well as capture value from the partnership".

In our interviews, ***trust*** was a recurring determinant, indicated by all the five respondents and was coded seven times in the analysis. According to the Head, Business Development & Portfolio Management of Firm E:

"Trust played a pivotal role in facilitating the exchange of sensitive information. Shared trust nurtured a sense of mutual collaboration and ensured that value is appropriately and fairly distributed, benefiting both partners".

Empathy was also identified as a cultural component that facilitated closer collaboration, and eventually, value appropriation according to the BD&L Head of Firm A. He elaborated:

"Empathy and trust are not written in the agreement…. Empathy helps us to understand concerns and viewpoints of our partner and find common ground and unlock potential, leading to successful value appropriation".

Similarly, transparency was another determinant that two respondents noted as influencing value appropriation in their alliance with a rival pharmaceutical firm. According to the Director, Head of Alliance Management for Firm I:

"As partners, we are very open and inform [the] other partner right away if we get stuck. We want to get most out of the alliance and that's why we share knowledge and our learnings as well as any challenges openly. If you give more, you will receive more".

The Head of Business Development and Portfolio Management at Firm E also spoke about the importance of transparency and visibility of long-term goals in an alliance, stating that they help in value appropriation in a coopetitive alliance:

"Transparency and trust. And then, yeah, especially these two and not completely leaving everything hands off to the other company are key things according to me. Having a visibility for both the companies about goals, about issues played a crucial role in generating as well as capturing value".

According to a respondent from Firm G, culture and its components, like transparency, trust,

respect, and empathy play a crucial role in value appropriation:

"I believe it is the culture that has acted as a glue to hold our alliance together for over a decade. Transparency in work transactions, trust in each other's capabilities and respect ensured both parties feel comfortable in exchanging knowledge and best practices which could be leveraged outside the current alliance without affecting the relationship between firms".

From a review of literature on strategic alliances, it was noted that many researchers emphasised the important role of trust as a factor supporting relations in a strategy of coopetition (Brolos, 2009; Devetag, 2009). According to the organisational learning theory, trust is envisioned as an element of absorptive capacity (Lane et al. 2001). As per this theory, trust impacts how much and how well knowledge is transferred among alliance partners. Further, the analysis outcome provides some support to the findings of Lascaux (2020) and Yami & Nemeh (2014) that trust-based social interactions resolve tensions between partners in dyadic coopetitive alliances and enable increased value creation and appropriation.

5.4.4.4 Top management involvement

Top management involvement refers to the extent to which senior executives are involved in alliance activities (Gulati & Singh, 1998). The experience and skill of the top management in understanding the characteristics of partners help in mitigating appropriation-related tensions (Ingram & Yue, 2008). All of the five respondents spoke about the role of top management and how it acts as a catalyst in an alliance and helps in reducing tensions, motivating people, and bringing best out of the alliance. The role of top management was coded a total of 10 times in the five transcripts, indicating the respondents' emphasis on their involvement in value appropriation.

According to the Head, Business Development & Portfolio Management at Firm E, their founder knew the VP of the partner Firm F personally, and their personal bonding helped in building the relationship between the two companies. It started with the co-development of one molecule, which has evolved to a multi-molecule engagement.

"Our founder knew the partner firm's VP of alliances, and this helped in reducing the tension. Senior leadership's active participation sent a clear message to the teams that the partnership is a strategic priority. Also, the rapport between LT (leadership teams) means, there was more regular sharing of information and insights leading to appropriation of value".

Kotzab & Teller (2003) argue that top management efforts in fostering organisational culture in alliance activities can result in increased value creation. Firms whose senior executives are

involved in the alliance are more likely to provide necessary resources, make strategic decisions, and resolve conflicts. Our findings indicate that top management involvement creates a culture of collaboration, helps in quick resolution of conflicts and facilitates open communication and sharing of information, leading to value appropriation.

5.4.4.5 Communication

Social exchange theory indicates that communication between partners helps in strengthening relations between firms in an alliance and helps mitigate tensions, which eventually strengthens alliance competencies (Blau, 1964; Emerson, 1972). Respondents in our study indicated that regular communication between partners helped in bringing transparency and strengthening trust between partners. Further, informal communication methods, like catching up over meals, team-building activities, and workshops between partner firms, enable more open knowledge sharing amongst associates, and based on their absorptive capacity are able to acquire, assimilate, transform, and exploit new knowledge and skills gained from alliance partners. Communication was identified as a key determinant of value appropriation by all five respondents, and it was coded 12 times in the transcripts.

The BD&L head of Firm A articulated that regular communication between partner firms act as an early warning system and regular connects help in obtaining the required information:

"We are not doing just these meetings for meet and greet. So, I think the fundamental objective is to have an early warning system, OK. So, if your house is on fire, then there is no point in calling a fire brigade. So, the collaboration and these meetings help you have early warnings and understand the risk. Further, there could be times wherein the teams would be reluctant to share the information, but we would get that information through more like intel rather than a formal communication. So, it's like regular connects between the teams, like outside of office, like just catching up for lunch, or just discussion over tea".

The respondent from Firm C (Director, International Alliance Management) indicated how regular communication helped them reduce tensions in the alliance and leverage learnings to capture value:

"One senior formulation guide, one process guide and one senior analytical scientist will go to the partner firm's facility once every week and have a look at all the documents. If there are any discrepancies, figure them out and discuss with them then and there. Discuss with them rather than suggesting them to do something, discuss with them. Such regular communication helped not only to reduce friction but also to understand their perspective and leverage

learnings".

Thus, our analysis indicates that formal and informal communication help develop rapport, disseminate information more openly, and appropriate more value in a pharmaceutical dyadic alliance.

5.4.4.6 Prior alliance experience

Previous experience of collaboration with opponents is considered vital for future collaboration, according to our analysis of respondents' statements. Prior alliance experience was indicated as a determinant of value appropriation by two respondents. According to them, alliance experience has a significant impact on raising the standard of knowledge exchange and learning that occurs between and within firms.

As per the alliance manager at Firm E:

"Previous experience of alliances not only helped in facilitating knowledge sharing and learning opportunities but also [in] efficient and effective utilization of resources by leveraging the strengths and capabilities of both companies and managing the tension and friction points in the alliance".

5.4.5 Validated integrated framework of value appropriation

Value appropriation as a phenomenon has received attention from scholars in the strategy domain (Bengtsson & Kock, 2000; Lavie, 2007; Ritala & Tidström, 2014) and existing studies highlight a few determinants of value appropriation. Based on the study analysis, these determinants are integrated to propose an integrated conceptual framework of value appropriation as depicted in Figure 5.7.

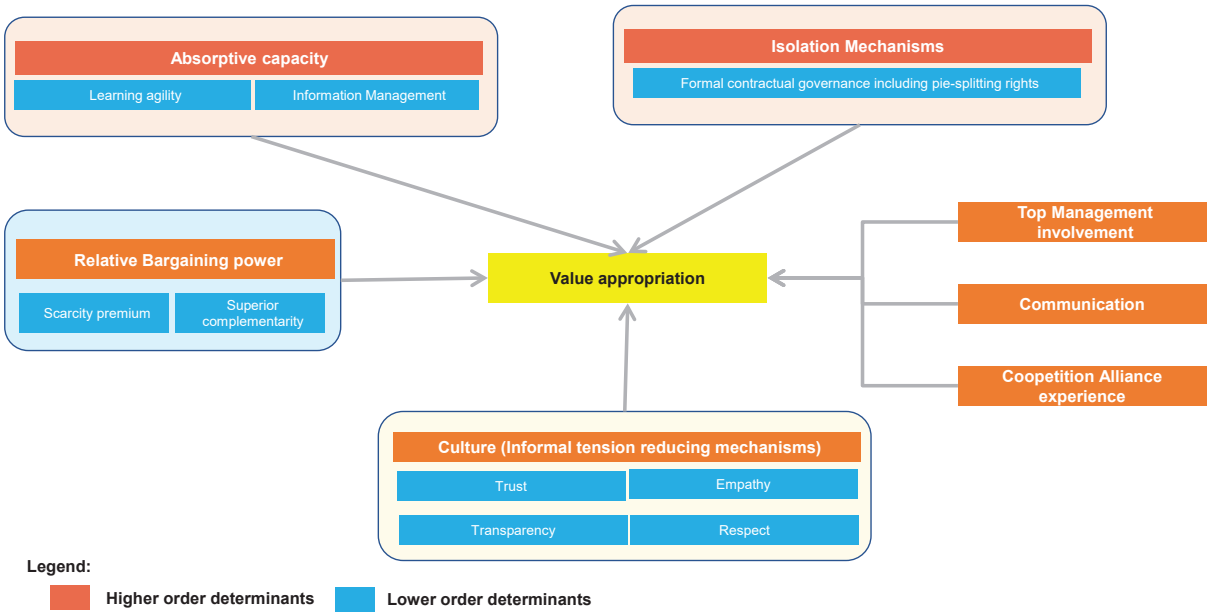


Figure 5.7: Integrated conceptual framework of determinants of value appropriation

Findings from the study support the well-defined determinants of value appropriation, such as absorptive capacity, relative bargaining power, and isolating mechanisms. Our thematic analysis indicates that learning agility and information management processes in a company contribute to absorptive capacity, which eventually influences value appropriation. Further, respondents indicated that learning agility and information management influence absorptive capacity and eventually value appropriation in a co-opetition alliance. According to one of the respondents:

"Rapid knowledge assimilation and its use are made possible by learning agility while information and knowledge management systems aid organisational learning and both of these eventually help to strengthen absorptive capacity that leads to capturing favourable value from the alliance".

As per the respondents, these determinants are lower-order determinants while absorptive capacity is a higher-order determinant that directly impacts value appropriation. Similarly, respondents indicated that trust, empathy, transparency, and respect in day-to-day practices are part of the firm's culture, which influence value appropriation in a coopetitive alliance. Hence, it is posited that trust, empathy, transparency, and respect are lower-order determinants that define and influence the culture of an organisation and organisational culture is a higher-order determinant of value appropriation. This conceptual framework contributes to a comprehensive understanding of value appropriation processes and guides future empirical

research in the field of strategic alliances.

5.4.6 Concluding remarks

Through a rigorous analysis of the collected data, this chapter successfully examines the integrated framework for value creation and value appropriation in coopetitive alliances and presents the results that validate the hypothesized frameworks.

This chapter has uncovered key insights, and the findings strongly support the hypothesized relationships within the integrated framework, providing empirical evidence of its applicability in real-world scenarios. The next chapter will discuss the outcomes and implications apart from the limitations of the study.

CHAPTER 6: FINDINGS AND DISCUSSION

6.1 Introduction

This chapter provides a comprehensive discussion of the findings derived from the analysis of the collected data. The statistical studies and results for both hypothesized frameworks of value creation and value appropriation in coopetitive alliances were outlined in the preceding chapter. The interpretation of the statistical results produced for both frameworks has been thoroughly examined in this chapter. In addition to the primary discoveries, this research delves into the theoretical and practical ramifications, as well as the limitations of the study. Additionally, recommendations for future research have been proposed.

6.2 Major findings

The following major insights were gained from the analysis:

- This study extends the alliance competence model proposed by Lambe et al. (2002) and Wittmann et al. (2009), to value creation in alliances and supports and extends their findings about top management commitment's criticality in developing AMC from relational and knowledge-based perspectives.
- The integrated framework establishes the hierarchical path framework of value creation by capturing lower-order constructs (top management commitment, alliance experience, realized competitive advantage) and higher-order constructs (absorptive capacity, AMC, knowledge-sharing routines).
- The integration of higher-order constructs (top management commitment and AMC) improves the explanatory power (50%) of value creation through realized competitive advantage; studies by Kale et al. (2002) and Wittmann et al. (2009) provide lower explanatory powers of alliance success with R^2 of 0.29 and 0.41, respectively.
- The integrated framework of value appropriation indicates new determinants like learning agility, information processing and management experience apart from cultural aspects that influences value appropriation in dyadic copetitive alliances.
- Value appropriation framework also identifies a few higher order constructs for example the absorptive capacity is a higher order construct that is made of two lower order constructs. Further study of these constructs shall add to strengthening of literature on value appropriation in coopetitive alliances.

6.3 Discussion of Results

In a tempestuous business climate, R&D, and technology–intensive firms rely heavily on collaborating with their competitors on upstream and downstream activities, always wondering about how to ensure value creation and appropriation in these coopetitive alliances. This study attempts to answer this question by empirically validating the integrated framework of value creation in coopetition-based dyadic interfirm alliances in the context of the IPI by administering surveys to senior-level managers responsible for alliance management. Existing studies in this domain have focused on value creation and value appropriation (Walley, 2007; Dagnino et al., 2010) and a few studies have focused on relational and knowledge-based perspectives in integrated value-creation framework.

The findings of our study highlight that top management commitment to the alliance is critical in developing AMC, absorptive capacity, and knowledge-sharing routines. The path model estimations using PLS-SEM show the association between top management commitment and AMC ($\beta = 0.429$), absorptive capacity ($\beta = 0.478$), and knowledge-sharing routines ($\beta = 0.353$). These results support the competence-based theory, which states that effective alliance management depends on top management support (Morgan and Hunt, 1994; Varadarajan and Cunningham, 1995). Similarly, development of absorptive capacity and readiness for information and knowledge sharing are also driven by top management strategic decisions (Lambe et al., 2002). The integrated framework comprises four higher-order constructs depicting hierarchical lower-order constructs for AMC, absorptive capacity, knowledge-sharing routine, and relation-based governance. This establishes the fact that determinants of value creation in interfirm dyadic alliances are a combination of non-hierarchical (top management commitment, alliance experience, realized competitive advantage) as well as lower-order (Acquisition, Assimilation, exploitation, transformation, information and knowledge sharing readiness, degree of trust etc.) and higher-order (absorptive capacity, AMC, knowledge-sharing routines) constructs.

The integrated framework also tested the effect of relationship tension as a moderator between realized competitive advantage and value creation, and the results indicate that relationship tension as an independent variable, which explains –0.045 variance of value creation, whereas the interaction between relationship tension and realized competitive advantage increases the explanatory power to –0.129, affirming the moderation effect of relationship tension between realized competitive advantage and value creation.

This study also builds upon the relation-based governance perspective as a crucial pillar of

value creation in coopetition alliances. The results reiterate a significant relationship between relation-based governance and realized competitive advantage (β = 0.396) leading to value creation. Existing research emphasises the employment of relational and contract-based governance systems in tandem for more effective results that increase interfirm cooperation (Poppo and Zenger, 2002). The study could not gather enough evidence to support the relationship between knowledge-sharing routine and realized competitive advantage (H3). The justification for non-significance comes from the arguments compiled from responses by senior alliance managers who highlight a reluctance to sharing sensitive knowledge and technical knowhow, due to lack of trust in their partners and the risk of opportunism, which reiterates that trust building is a crucial element for alliance success. The findings corroborate with Crick (2019) work on role of competitive business environment, organizational resources and capabilities, and trust between rivals as major moderators affecting the relationship between coopetition and company's performance.

Consistent with previous research, our exploratory study supports various firm-level and relational determinants of value appropriation, such as absorptive capacity, isolating mechanisms, and relative bargaining power. Our findings also support the work done by Muthusamy and White (2005) on strategic alliances (and expand and validate it for coopetitive alliances). Building on SET, Muthusamy and White (2005) evaluated the influence of social exchange processes between alliance partners on the overall learning and knowledge transfer in a strategic alliance. They posited that in strategic alliances, learning and knowledge transfer are positively correlated with social exchanges, such as reciprocal commitment, trust, and mutual influence between partners. By learning and integrating knowledge to create innovative offerings, the Knowledge Based View of the partnerships offers that the main goal of alliances is to boost each ally's productivity through integrating information (Capaldo, 2014; Grant & Baden-Fuller, 2000). The process might include tacit (personal, striving to communicate) or explicit (codified, transmittable) knowledge to produce this collaborative innovation in alliance firms (Okumus, 2013).

Further, the study brings an integrated perspective to the determinants of value appropriation in coopetitive alliances. The study proposes an integrated conceptual framework of value appropriation determinants, which may provide direction to senior managers in the pharmaceutical industry to make informed decisions and ensure optimal private value capture for their firms. Overall, the identified determinants highlight the complex and multifaceted nature of private value capture in coopetitive alliances.

6.4 Implications of the research

This section describes the theoretical implications for researchers and industry leader based on the above research findings.

6.4.1 Theoretical implications for researchers

This study contributes significantly to the literature on value creation, coopetitive alliance management, and strategic management theory by highlighting the interaction of relation-based view with resource advantage theory, and the study establishes the relationship between popular strategic management theories with alliance management capability, absorptive capacity, and competitive advantage:

- This study has theoretically delineated the notion of value creation in interfirm alliances specific to Indian pharmaceutical industry into different components.
- Scholars have consistently described coopetition field as fragmented and lacking coherence in the application of its theories (Bengtsson & Kock, 2014; Bengtsson et al., 2010; Walley, 2007). Our model fulfils long standing need (as indicated by Bengtsson et al., 2016) to integrate, unify and advance traditional macro-level theories of coopetition.
- This study extends alliance theory and practice by combining resource-based, competence-based, and relation-based factors, among others. It also demonstrates the significance of realized competitive advantage as a mediating factor between alliance and knowledge management, relation-based governance factors, and value creation in interfirm alliances and relationship tension as a moderator between realized competitive advantage and value creation.
- By conceptualising a thorough integrated framework incorporating TCE, RBV, KBV, absorptive capacity, SET, game theory, and Resource Advantage theory to understand value creation in interfirm alliances, this study responds to the call of alliance scholars to integrate various theoretical approaches to derive significant insights into the strategic management theories of firms (Foss and Roemer, 2010; Wassmer & Dussauge, 2011).
- This study posits interlinkages and interdependences between variables from different theoretical perspectives, and the resultant framework has an explanatory power of value creation in coopetitive interfirm dyadic alliances, which has not been provided in extant literature.
- This study adds to the literature on value appropriation in strategic alliances by identifying

a relationship between key determinants of value appropriation in dyadic coopetitive alliances. The study seeks to close the research gap in academic literature on value appropriation and advances knowledge base by identifying important elements determining value appropriation in a regulated industry like pharmaceuticals.

- The results of this study contribute to the knowledge base on how value appropriation is possible in various kinds of coopetitive alliances such as co-marketing and co-development coopetitive alliance functions in the pharmaceutical industry.
- Further the bibliometric analysis conducted in this study also attempts to fill the research gap in the academic literature on coopetition and contributes to the academic world by identifying key trends, and emerging critical themes on coopetition that have emerged in the last decade.

6.4.2 Managerial implications

The study has several important implications for top management. It provides evidence to support the competence-based alliance management theory. Alliance-creating firms mix implicit and explicit knowledge and hence, a competence-based alliance that provides a competitive advantage is likely to be long-lasting (Kandemir et al., 2006). Many multinational pharmaceutical companies have established specialised alliance units to develop and enhance alliance capabilities after realising the significance of leaders in forging and maintaining successful agreements. Consistent with earlier research (e.g., Morgan & Hunt, 1994; Wittman et al., 2009), findings from the study support relational factors associated with relation-based governance that can actively contribute to realized competitive advantage. As a result, firms' investments in developing relationships between alliance managers and other employees will probably result in more value creation. For example, the pharma division of Proctor & Gamble (P&G) includes relationship development as being so vital for the success of alliance that P&G includes relationship building initiatives in their alliance strategy. Meetings with prospective partners comprise both formal and informal meetings (Finn & McCamey, 2002) and this relationship building aspire to provide increased collaboration that could result in enhanced cooperation and competitive edge. The integrated framework proposed in this study may be helpful for alliance managers and leaders to understand the dynamics of value creation in a strategic coopetitive alliance. Further, managers can leverage the findings to boost alliance performance and generate greater value.

The findings from value creation integrated framework offer some direction to alliance

managers in the pharmaceutical industry. It suggests that in order to ensure a win-win situation and better value creation from the alliance, alliance managers might find it helpful to (a) focus on gaining buy-in from senior management for the alliance; (b) work towards developing relationship-based governance in addition to formal contractual governance mechanisms (c) develop better absorptive capacity, and (d) strive to foster AMC. Even though the above will take time to build, keeping them in mind before joining a strategic partnership and focusing to implement them over the duration of alliance could help the company add value and sustain a competitive advantage.

Similarly, the value appropriation framework indicates that firms that can leverage their complementary resources using bargaining power, leveraging the scarcity premium, deploying alliance managers with learning agility to develop stronger absorbing capacity, while also aligning with partner firms on goals and interests, building trust and reputation, and creating a culture and structure that supports collaboration, are more likely to capture private value in the alliance.

Further, results suggest that to appropriate better value, alliance managers should emphasise increased top management involvement in the alliance and strive to develop relationship-based governance, apart from formal contractual governance mechanisms. Further, they should focus on developing strong absorptive capacity and put money into staff training and development, participating in continuous learning activities, and fostering an environment that encourages creativity and experimentation, thus improving the team's learning agility to ensure a win–win situation and better value appropriation for their firm. This study also shows that organisational culture plays a vital role and organisations focusing on empathy, respect, and transparency can build trust-based relationships and help firms improve their knowledge sharing, enabling them to stay ahead of competition, create a larger pie of value, and appropriate better value from the alliance.

6.5 Novelty of the research

The novelty/uniqueness of this research is based on following aspects:

- This study brings to bear an integrated perspective on the determinants of value creation. The arguments incorporate resource dependence–based considerations as well as dynamic capability, transaction cost, and relational and competence perspectives, which create the theoretical foundation of the investigation. The study brings out all these independent constructs from different theoretical perspectives, and links them together in an integrated

framework, thus enhancing the explanatory power of the framework. Further, this study extends Lambe et al.'s (2002) and Wittmann et al.'s (2009) alliance competence framework on value creation in alliances and supports their findings about the criticality of top management commitment in developing alliance competence. Further, it contributes to alliance literature by conceptualizing and operationalizing value creation in dyadic interfirm alliances in a specific industry and market, i.e., the pharmaceutical industry in India.

- Another novelty of the research is that this study is one of its kind that has attempted to integrate various determinants of value appropriation in one integrated framework while indicating relationships among these determinants. Past studies have primarily focused on either value creation or only a select determinants like bargaining power as determinants for value appropriation.
- This research shows novelty in the sample of the study which constitutes the senior leaders from IPI who have led multiple alliances in their organisations. Further the study sample includes firms with various sizes and nature of alliances. Earlier research has focused primarily on asymmetric alliances between Biotech and Pharmaceutical companies while studying coopetition. Thus, this is one of the few studies that has covered pharmaceutical leaders in such a comparable number (N = 121).
- Also, the bibliometric analysis unearths various research clusters based on studies published on coopetition over last decade. The bibliometric analysis evaluates the past research highlighting the key influencers and contributors in coopetition research, noting how they have shaped the field, both in terms of what has been studied and what remains unexplored.

6.6 Major contributions of the research

The major contributions of this study are that it has given two conceptual frameworks explaining the determinants of value creation and value appropriation in dyadic coopetitive alliances.

- The integrated framework of value creation effectively captures the intricate dynamics between cooperative and competitive behaviours, emphasising the significance of maintaining a balance between cooperation and competition in order to harness synergies, facilitate knowledge exchange, and realise competitive advantage and driving innovation.

- The comprehensive framework of value appropriation provides a clear understanding of the various determinants that impact the allocation and acquisition of value within alliances between partner firms. This shall help in ensuring sustainable value appropriation in alliances.

6.7 Limitations and the future scope of the study

The study does however have limitations. The identified limitations and corresponding future scope of research have been suggested as follows:

- Although the comprehensive integrated framework for value creation uses key constructs from the resource-based and competence-based views and relational factors, this study was unable to integrate all constructs that could potentially affect coopetitive alliances. Future studies should therefore focus on other variables, including specialised competencies (such as supply chain integration, environmental scanning, and new product development competencies), resources (such as social capital, financial capital, and cultural resources), and relationship aspects (e.g., shared values, lack of opportunism, propensity to stay).
- This study has been carried out in the Indian context and while value creation and appropriation are the ultimate phenomenon in alliances, any generalisation of results must be done with extreme caution because the empirical investigations were conducted in the setting of the IPI. IPI is not only amongst highly regulated industries but also highly fragmented and therefore, one would not necessarily expect firms in other industries to act in the same way. It is therefore likely that other contexts may result in other manifestations of the different values to those presented by this study. There is also a possibility of interview bias in the study as the viewpoints of the respondents have not been validated by their counterparts in partner firms involved in the alliance. In addition, although much has been written about value in coopetition alliances, the dynamics of value creation and appropriation remain poorly articulated (Volschenk et al., 2016) and should be studied in conjugation with each other.
- The study only covers dyadic interfirm alliances, while many alliances are part of a network. This implies that the dynamics of value creation or value appropriation for other kinds of coopetitive alliances may be different. Future studies could concentrate on carefully analysing and contrasting problems connected to value creation and appropriation techniques on various levels (e.g., dyadic relationship between two partners in another industry or an alliance coopetitive network comprising multiple partner firms).

- According to Anand & Khanna (2000), the impact of learning on value creation is most pronounced in the context of research joint ventures, while it is comparatively less significant in the case of marketing joint ventures. Additional investigation can be conducted to distinguish the effects of factors influencing value appropriation in different subcategories of coopetitive alliances, such as development or commercial alliances within a specific industry.
- There is a possibility of interview bias in the study as the viewpoints of the respondents have not been validated by their counterparts in partner companies involved in the alliance. In addition, although much has been written about value in coopetition alliances, the dynamics of value creation and appropriation remain poorly articulated (Volschenk et al., 2016) and should be studied in conjugation with each other.
- Specifically for value appropriation, more generalizable techniques, such as survey studies, should be used in future study to overcome the aforementioned constraints. Moreover, it is suggested that future research could extend and include inputs from partner firms and each partner in the network to mitigate interview bias.
- This study also lays out the scope for some additional future research work, as identified by various authors in the bibliometric research clusters. There are immense opportunities for researchers working in the strategic interactions and strategic alliance domains to investigate the topics identified under various research streams. For example, some research topics could be: developing new scales using a coopetition-based approach for tension, capability, and value creation; investigating factors that influence the balance of cooperation and competition, at both the individual and industry level; developing and adapting the conflict management styles for these alliances; empirically investigating the nature and effects of tension; various aspects of balance between collaboration and competition and their impact on innovation and other aspects of performance.
- It is also observed from the study that multiple factors impact both value creation and value appropriation in coopetitive alliances and it suggests potential avenues for future research. These avenues could involve delving deeper into the interdependencies and interplay among the various factors influencing value creation and value appropriation.

6.8 Concluding remarks

This thesis adds to the continuing discussion on value creation and appropriation in coopetitive alliances in multiple ways. Further, it provides recommendations to alliance managers in a

regulated industry like pharmaceuticals to help them in creating and appropriating value in dyadic alliances. Finally, this study offers several interesting avenues for future research and encourages more theoretical development and empirical examination in this interesting field of study. For example, research that concentrates on different industry sectors could uncover diverse objectives of coopetitive alliance formation, and this could offer further insights on the internal dynamics of value creation and appropriation in interfirm coopetitive alliances.

References

Ab Hamid, M. R., Sami, W., & Sidek, M. M. (2017). Discriminant validity assessment: Use of Fornell & Larcker criterion versus HTMT criterion. In Journal of Physics: Conference Series, 890 (1), IOP Publishing.

Adegbesan, J. A. (2009). On the origins of competitive advantage: strategic factor markets and heterogeneous resource complementarity. Academy of Management Review, 34 (3), 463–475.

Adegbesan, J. A., & Higgins, M. J. (2010). The intra-alliance division of value created through collaboration. Strategic Management Journal, 32, 187-211.

Akter, S., Fosso Wamba, S., & Dewan, S. (2017). Why PLS-SEM is suitable for complex modelling? An empirical illustration in big data analytics quality. Production Planning and Control, 28, 1011–1021.

Amit, R. & Schoemaker, P.J.H. (1993). Strategic assets and organizational rent. Strategic Management Journal, 14(1), 33-46.

Anand, B. N., & Khanna, T. (2000). Do firms learn to create value? The case of alliances. Strategic management journal, 21(3), 295-315.

Andersen, N. (2019). Mapping the expatriate literature: A bibliometric review of the field from 1998 to 2017 and identification of current research fronts. The International Journal of Human Resource Management, 1–38.

Anderson, E. & Weitz, B. (1992). The use of pledges to build and sustain commitment in distribution channels. Journal of Marketing Research, 29, 18-34.

Anderson, J. C., & Gerbing, D. W. (1982). Some methods for respecifying measurement models to obtain unidimensional construct measurement. Journal of marketing research, 19(4), 453-460.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modelling in practice: a review and recommended two-step approach. Psychological Bulletin, 103(3), 411–423.

Anderson, J.C., & Narus, J.A. (1990). A model of distributor firm and manufacturer firm working partnerships. Journal of Marketing, 54(1), 42-58.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016). The disruptor's dilemma: TiVo and the U.S. television ecosystem. Strategic Management Journal, 37(9), 1829–1853.

Arya, B., & Lin, Z. (2007). Understanding Collaboration Outcomes from an Extended Resource-Based View Perspective: The Roles of Organizational Characteristics, Partner Attributes, and Network Structures†. Journal of Management, Vol. 33, pp. 697–723.

Aulakh, P.S., Kotabe, M., & Arvind, A. (1997). Trust and performance in cross-border marketing partnerships: A behavioural approach. In P. Beamish, & J.P. Killing (Eds.), Cooperative strategies: North American perspectives (pp. 163-96). San Francisco, California: The New Lexington Press.

Axelrod, R. (1984). The evolution of cooperation. New York: Basic Books.

Babovic, S., & Wasan, K. M. (2011). Impact of the trade-related aspects of intellectual property rights (TRIPS) agreement on India as a supplier of generic antiretrovirals. Journal of pharmaceutical sciences, 100(3), 816-821.

Bacharach, S. B., & Lawler, J. L. (1984). Bargaining: Power, Tactics, and Outcomes. San Francisco, CA: Jossey-Bass.

Bardin, L. (2011). Analise de conteudo. Lisboa, Ediç~oes70.

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.

Barney, J. B., & Clark, D. N. (2007). Resource-based theory: Creating and sustaining competitive advantage. Oxford: Oxford University Press.

Barney, J.B. (1986). Types of competition and the theory of strategy: Toward an integrative framework. Academy of Management Review, 11(4), 791-800.

Barney, J.B. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17, 99-120.

Barney, J.B. (2002). Gaining and sustaining competitive advantage. Upper Saddle River, NJ: Prentice Hall.

Barney, J.B., & Clark, D.N. (2007). Resource-based theory: Creating and sustaining competitive advantage. New York: Oxford University Press.

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. Journal of Management, 36(1), 256-280.

Baruch, Y., & Lin, C. (2012). All for one, one for all: Coopetition and virtual team performance. Technological Forecasting and Social Change, 79(6), 1155–1168.

Bastian, M., Heymann, S., & Jacomy, M. (2009). Gephi: An Open Source Software for Exploring and Manipulating Networks. Proceedings of the International AAAI Conference on Weblogs and Social Media. Association for the Advancement of Artificial Intelligence. Retrieved from https://gephi.org/publications/gephi-bastianfeb09.pdf. Accessed April 18, 2020.

Becker, J. M., Klein, K., & Wetzels, M. (2012). Hierarchical latent variable models in PLS-SEM: guidelines for using reflective-formative type models. Long range planning, 45(5-

6), 359-394.

Belderbos, R., Cassiman, B., Faems, D., Leten, B., & Van Looy, B. (2014). Co-ownership of intellectual property: exploring the value-appropriation and value-creation implications of co-patenting with different partners. Research Policy, 43 (5), 841–852

Bengtsson, M, Kock, S, Lundgren-Henriksson, E-L & Näsholm MH. (2016). Coopetition research in theory and practice: growing new theoretical, empirical, and methodological domains. Industrial Marketing Management, 57, 4–11.

Bengtsson, M., & Johansson, M. (2014). Managing coopetition to create opportunities for small firms. International Small Business Journal, 32(4), 401–427.

Bengtsson, M., & Kock, S. (2000). "Coopetition" in business Networks—to cooperate and compete simultaneously. Industrial marketing management, 29(5), 411-426.

Bengtsson, M., & Kock, S. (2014). Coopetition - Quo vadis? Past accomplishments and future challenges. Industrial Marketing Management, 43(2), 180-188.

Bengtsson, M., & Raza-Ullah, T. (2016). A systematic review of research on coopetition: toward a multilevel understanding. Industrial Marketing Management, 57, 23–39.

Bengtsson, M., Eriksson, J., & Wincent, J. (2010). Co-opetition dynamics – an outline for further inquiry. Competitiveness Review: An International Business Journal, 20(2), 194-214.

Bhatt, Y., Ghuman, K., & Dhir, A. (2020). Sustainable manufacturing. Bibliometrics and content analysis. Journal of Cleaner Production, 260.

Blau, P. (1964). Exchange and power in social life. New York: Wiley & Sons

Blondel, V. D., Guillaume, J.-L., Lambiotte, R., & Lefebvre, E. (2008). Fast unfolding of communities in large networks. Journal of Statistical Mechanics: Theory and Experiment, P10008.

Bloomberg Law. (2020). Pharma collaborations in the Covid-19 era come with legal risks. From https://news.bloomberglaw.com/pharma-and-life-sciences/pharma-collaborations-in-the-covid-19-era-come-with-legal-risks

Bouncken, R. B., Fredrich, V., & Kraus, S. (2020a). Configurations of firm-level value capture in coopetition. Long Range Planning, 53(1), 101869.

Bouncken, R. B., Fredrich, V., Ritala, P., & Kraus, S. (2020b). Value-creation-capture equilibrium in new product development alliances: A matter of coopetition, expert power, and alliance importance. Industrial Marketing Management, 90, 648–662.

Bouncken, R. B., Fredrich, V., Ritala, P., & Kraus, S. (2018). Coopetition in new product development alliances: Advantages and tensions for incremental and radical innovation.

British Journal of Management, 3, 391.

Bouncken, R.B., Gast, J., Kraus, S. & Bogers, M. (2015). Coopetition: a systematic review, synthesis, and future research directions. Review of Managerial Science, 9(3),577–601.

Bowman, E.H., & Hurry, D. (1993). Strategy through the option lens: An integrated view of resource investments and the incremental-choice process. Academy of Management Review, 18(4), 760-82.

Brandenburger, A. M., & Nalebuff, B. J. (1996). Coopetition. New York: Bantam Doubleday Dell Publishing Group.

Brolos, A. (2009). Innovative coopetition: the strength of strong ties. International Journal of Entrepreneurship and Small Business, 8(1), 110-134.

Browne, K. (2005). Snowball sampling: Using social networks to research non-heterosexual women. International Journal of Social Research Methodology: Theory and Practice, 8(1), 47–60

Browning, L. D., Beyer, J. M., & Shelter, J. C. (1995). Building Cooperation in a Competitive Industry: SEMATECH and the Semiconductor Industry. Academy of Management Journal, 38, 113-151.

Buchanan, L. (1992). Vertical trade relationship: The role of dependence and symmetry in attaining organizational goals. Journal of Marketing Research, 29, 65-75.

Burt, R.S. (1991). Measuring age as a structural concept. Social Networks 13, 1-34.

Butler, B., & Batt, P. J. (2014). Re-assessing value (co)-creation and cooperative advantage in international networks. Industrial Marketing Management, 43 (4), 538–542.

Campbell, D.D. (1955). The informant in quantitative research. American Journal of Sociology, 60, 339-42.

Capaldo, A., & Petruzzelli, A. M. (2014). Partner geographic and organizational proximity and the innovative performance of knowledge-creating alliances. European Management Review, 11(1), 63- 84.

Celuch, K., Bantham, J.H., & Kasouf, C.J. (2011). The role of trust in buyer-seller conflict management, Journal of Business Research, 64(10), 1082–1088.

Chakravarthy, B.S., & Doz, Y. (1992) Strategy process research: Focusing on corporate self-renewal. Strategic Management Journal, 13, 5-15.

Chang, Sea-Jin, van Witteloostuijn, Arjen, and Eden, Lorraine. (2010), “From the Editors: Common Method Variance in International Business Research”, Journal of International Business Studies, Vol. 41, pp.178-184.

Chau, P. Y., & Lai, V. S. (2003). An empirical investigation of the determinants of user

acceptance of internet banking. Journal of organizational computing and electronic commerce, 13(2), 123-145.

Chávez-Bustamante, F., & Troncoso-Valverde, C. (2023). Deceptive behaviour and coopetition: the role of heterogeneous absorptive capacities and product specialisation. Journal of Business & Industrial Marketing.Vol. ahead-of-print No. ahead-of-print

Chen, H., Yao, Y., Zan, A., & Carayannis, E. G. (2021). How does coopetition affect radical innovation? The roles of internal knowledge structure and external knowledge integration. Journal of Business & Industrial Marketing, 36(11), 1975-1987.

Chen, M., Tang, T., Wu, S., & Wang, F. (2021). The double-edged sword of coopetition: differential effects of cross-functional coopetition on product and service innovations. Journal of Business & Industrial Marketing, 36(2), 191-202.

Chen, M. J. (1996). Competitor analysis and interfirm rivalry: Toward a theoretical integration. Academy of management review, 21(1), 100-134.

Chen, M.J., Su, K.H., & Tsai, W., (2007). Competitive tension: The awareness-motivation-capability perspective. Academy of Management Journal, 50 (1), 101-18.

Chia-Ling 'Eunice'Liu. (2009). Do firms create value through international strategic alliances? In New Challenges to International Marketing. Emerald Group Publishing Limited, 195-225.

Chiambaretto P., Maurice J., & Willinger M. (2020a). Value Creation and Value Appropriation in Innovative Coopetition Projects. M@n@gement, 23(2), 20-41.

Chiambaretto, P., Bengtsson, M., Fernandez, A.-S., & Näsholm, M. H. (2020b). Small and large firms' trade-off between benefits and risks when choosing a coopetitor for innovation. Long Range Planning, 53(1), 101876.

Chiambaretto, P., Fernandez, A-S., & Näsholm, M. (2019). Impact of Learning from Experience on the Selection of a Competitor as a Partner for Innovation. Academy of Management Proceedings, 2019(1), 12143.

Chim-Miki, A. F., & Batista-Canino, R. M. (2017). The coopetition perspective applied to tourism destinations: A literature review. Anatolia, 28(3), 381-393

Chim-Miki, A. F., & Batista-Canino, R. M. (2018). Development of a tourism coopetition model: A preliminary Delphi study. Journal of Hospitality and Tourism Management, 37, 78-88.

Chin, K.-S., Chan, B.L., & Lam, P.-K. (2008). Identifying and prioritizing critical success factors for coopetition strategy. Industrial Management & Data Systems, 108(4), 437-54.

Chin, W. W. (1998a). Commentary: Issues and opinion on structural equation modeling. MIS

quarterly, vii-xvi.

Chin, W.W. (1998). The partial least squares approach to structural equation modeling. In Marcoulides, G.A. (Ed.), Modern Methods for Business Research, Lawrence Erlbaum Associates Publishers.

Coase's work Coase, R.H. (1937). The nature of the firm, Economica N.S. 4(4), 386-405.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. Administrative science quarterly, 128-152.

Cohen, W., & Levinthal, D. (1994). Fortune favours the prepared firm. Management Science,40(2), 227-251.

Contractor, F. J., & Lorange, P. (2002). The growth of alliances in the knowledge-based economy. International Business Review, 11(4), 485-502

Converse, J. M., and Presser, S. (1986). Survey questions : handcrafting the standardized questionnaire. Sage Publications.

Cook, K.S. & Emerson, R.M. (1978). Power, equity, and commitment in exchange networks.American Sociological Review, 43, 721-39.

Cooper, D. R., & Schindler, P. S. (2014). Business research methods (12th ed.). New York,NY: McGraw Hill.

Cravens, K., Piercy, N., & Cravens, D. (2000). Assessing the performance of strategic alliances: matching metrics to strategies. European Management Journal,18, 529–541.

Crick, J. M. (2021). Unpacking the relationship between a coopetition-oriented mindset and coopetition-oriented behaviours. Journal of Business & Industrial Marketing, 36(3), 400-419.

Crick, J. M. (2019). Moderators affecting the relationship between coopetition and company performance. Journal of Business & Industrial Marketing, 34(2), 518-531.

Crick, J. M. (2018). Studying coopetition in a wine industry context: Directions for future research. International Journal of Wine Business Research, 30(3), 366–371.

Crick, J. M., & Crick, D. (2020). Coopetition and COVID-19: Collaborative business-to business marketing strategies in a pandemic crisis. Industrial Marketing Management, 88, 206–213.

Crossan, M., Lane, H., & White, R. (1999). An organizational learning framework: From intuition to institution. Academy of Management Review, 24, 522-37.

Czakon, W. (2009). Power asymmetries, flexibility and the propensity to coopete: an empirical investigation of SMEs' relationships with franchisors. International Journal of Entrepreneurship and Small Business, 8 (1), 44-60.

Czakon, W., Mucha-Kuś, K., & Rogalski, M. (2014a). Coopetition research landscape—A systematic literature review 1997–2010. Journal of Economics and Management, 17, 122–150.

Czakon, W., Fernandez, A. S., & Minà, A. (2014b). Editorial–From paradox to practice: the rise of coopetition strategies. International Journal of Business Environment, 6(1), 1-10.

Czakon, W., Niemand, T., Gast, J., Kraus, S. & Frühstück, L. (2020). Designing coopetition for radical innovation: An experimental study of managers' preferences for developing self-driving electric cars. Technological Forecasting and Social Change, 155.

Czakon, W., Srivastava, M. K., Le Roy, F., & Gnyawali, D. (2020). Coopetition strategies: Critical issues and research directions. Long Range Planning, 53(1)

da Silva, L. M., da Silveira, A. B., Monticelli, J. M., & Kretschmer, C. (2023). Microfoundations of dynamic coopetition capabilities in firms from a microbrewery cluster. Revista de Gestão, 30(2), 190-206.

Dagnino, G. B. (2007). Preface: Coopetition Strategy—Toward a New Kind of Inter-Firm Dynamics? International Studies of Management & Organization, 37(2), 3-10.

Dagnino, G. B., & Padula, G. (2002). Coopetition Strategy: A New Kind of Interfirm Dynamic for Value Creation. Paper presentation at the European Academy of Management's Second Annual Conference on Innovative Research in Management, Stockholm, Sweden. Retrieved from http://ecsocman.hse.ru/data/977/644/1219/coopetition. pdf. Accessed on January 20, 2022

Dagnino, G.B. (2009). Coopetition strategy: A new kind of interfirm dynamics for value creation. In G.B. Dagnino & E. Rocco (Eds.) Coopetition Strategy: Theory, Experiments and Cases, London, Routledge.

Das, S. & Teng, B.-S. (2000a). A resource-based theory of strategic alliances. Journal of Management, 26, 31-61.

Das, T.K. & Teng, B.-S. (2000b). Instabilities of inter-firm alliances: An internal tensions perspective. Organization Science, 11(1), 77-101.

Das, T.K., & Teng, B.S. (2002a). Alliance constellations: a social exchange perspective. Academy of Management Review, 27(3), 445–456.

Das, T.K., & Teng, B.-S. (2002b). The dynamics of alliance conditions in the alliance development process. Journal of Management Studies, 39, 725-46.

Day, G.S. (1995). Advantageous alliances. Journal of the Academy of Marketing Science, 23(4), 297-300.

de Cassia Arantes, R., da Costa Mineiro, A. A., de Castro, C. C., & Deboçã, L. P. (2021).

Creating and appropriating value in cooperation networks. Revista Ibero-Americana de Estratégia, 20(1), 18242.

Dekker, H.C. (2004). Control of inter-organizational relationships: evidence on appropriation concerns and coordination requirements. Accounting Organizations and Society, 29, 27–49.

Della Corte, V. (2018). Innovation through coopetition: Future directions and new challenges. Journal of Open Innovation: Technology, Market, and Complexity, 4(4), 47–60.

Devece, C., Ribeiro-Soriano, D. E., & Palacios-Marqués, D. (2019). Coopetition as the new trend in inter-firm alliances: literature review and research patterns. Review of Managerial Science, 13, 207-226.

Devetag, M. G. (2009). Coordination and trust as prerequisites of coopetition: experimental evidence. In Coopetition Strategy (pp. 294-309). Routledge.

Di Minin, A., & Faems, D. (2013). Building appropriation advantage: An introduction to the special issue on intellectual property management. California Management Review, 55(4), 7-14.

Dierickx, I. & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. Management Science, 35(2), 1504-11.

DiMasi, J. A. (2014). Pharmaceutical R&D performance by firm size: Approval success rates and economic returns. American journal of therapeutics, 21(1), 26-34.

Dittrich, K. & Duysters, G. (2007). Networking as a means to strategy change: The case of open innovation in mobile telephony. Journal of Product Innovation Management, 24(6), 510-21.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021a). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285–296.

Donthu, N., Kumar, S., Pattnaik, D., & Lim, W. M. (2021b). A bibliometric retrospection of marketing from the lens of psychology: Insights from Psychology & Marketing. Psychology & Marketing, 38(5), 834–865.

Dorn, S., Schweiger, B., & Albers, S. (2016). Levels, phases and themes of coopetition: A systematic literature review and research agenda. European Management Journal, 34(5), 484-500.

Dowling, M. J., Roering, W. D., Carlin, B. A., & Wisnieski, J. (1996). Multifaceted relationships under coopetition. Journal of Management Inquiry, 5(2), 155–167.

Draulans, J., deMan, A.-P., & Volberda, H.M. (2003). Building alliance capability:

Management techniques for superior alliance performance. Long Range Planning, 36, 151-66.

Dunlock, H. L., (1993). Research Design: Descriptive Research. Journal of Pediatric Oncology Nursing, 10(4), 154–157.

Duysters, G., Kok, G., & Vaandrager, M. (1999). Crafting successful strategic technology partnerships. R&D Management, 29(4), 343-351.

Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. Academy of Management Review, 23 (4), 660-679.

Dyer, J. H., Singh, H., & Hesterly, W. S. (2018). The relational view revisited: A dynamic perspective on value creation and value capture. Strategic management journal, 39(12), 3140-3162.

Dyer, J. H., Singh, H., & Kale, P. (2008). Splitting the pie: Rent distribution in alliances and networks. Managerial and Decision Economics, 29(2/3), 137-148.

Dyer, J.H. (2000). Collaborative advantage, winning through extended enterprise supplier networks. Oxford University Press, New York.

Dyer, J.H., Kale, P. & Singh, H. (2001). How to make inter-firm alliances work, MIT Sloan Management Review, 42(4), 37-43.

Eisenhardt, K.M. (1985). Control: organizational and economic approaches. Management Science,31, 134–149.

Eisenhardt, K.M. & Schoonhoven, C.B. (1996). Resource based view of strategic alliance formation: Strategic and Social Effects in Entrepreneurial Firms. Organization Science, 7(2), 136-150

Eisenhardt, K.M. & Martin, J.A. (2000). Dynamic capabilities: What are they? Strategic Management Journal, 21, 1105-21.

Elmuti, D., & Kathawala, Y. (2001). An overview of strategic alliances. Management Decision, 39, 205–218.

Emerson, R. (1972). Exchange theory part 1: Psychological basis for social exchange. In Sociological Theories in Progress. J. Berger., J. Zelditch Jr., B. Anderson, 2. (38-57). Boston, MA: Houghton Mifflin.

Estrada, I., Faems, D., & de Faria, P. (2016). Coopetition and product innovation performance: The role of internal knowledge sharing mechanisms and formal knowledge protection mechanisms. Industrial Marketing Management, 53, 56-65.

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review

and bibliometric analysis. International Journal of Production Economics, 162, 101–114.

Falk, R. F. and Miller, N. B. (1992), A primer for soft modeling. Akron: University of Akron Press.

Ferguson, R.J., Paulin, M., & Bergeron, J. (2005). Contractual governance, relational governance, and the performance of interfirm service exchanges: the influence of boundary-spanner closeness. Journal of the Academy of Marketing Science, 33, 217–234.

Fernandez, A. S. and Chiambaretto, P. (2016). Managing tensions related to information in coopetition, Industrial Marketing Management, 53, 66–76.

Fernandez, A.-S., Chiambaretto, P., Le Roy, F., & Czakon, W. (2018), Coopetition: from neologism to a new paradigm. Abingdon: Routledge.

Ferrin, D. L., Bligh, M. C., & Kohles, J. C. (2007). Can I trust you to trust me? A theory of trust, monitoring, and cooperation in interpersonal and intergroup relationships. Group & Organization Management, 32(4), 465-499.

Finn, T., & McCamey, D. (2002). P&G's guide to successful partnerships. Pharmaceutical Executive, 22(1), 54-60.

Fjeldstad, Ø., Becerra, M., & Narayanan, S. (2004). Strategic action in network industries: An empirical analysis of the European mobile phone industry. Scandinavian Journal of Management, 20, 173-97.

Flatten, T.C., Engelen, A., Zahra, S.A., & Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. European Management Journal, 29, 98-116.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of marketing research, 18(1), 39-50.

Foss, N. J., & Roemer, E. (2010). Real options, resources and transaction costs: advancing the strategic theory of the firm. International Journal of Strategic Change Management, 2(1), 73-92.

Frank, R.H. (1988). Passions within reason: The strategic role of emotions. New York: Norton.

Frost, T.S. and Zhou, C. (2005). R&D co-practice and 'reverse' knowledge integration in multinational firms. Journal of International Business Studies, 36, 676–687

Garrette, B., Castañer, X. & Dussauge, P. (2009). Horizontal alliances as an alternative to autonomous production: Product expansion mode choice in the worldwide aircraft industry, 1945-2000. Strategic Management Journal, 30(8), 885-94.

Garthwaite, P.H. (1994). An interpretation of partial least squares. Journal of the American Statistical Association, 89 (425): 122-27.

Gast, J., Filser, M., Gundolf, K., & Kraus, S. (2015). Coopetition research: towards a better

understanding of past trends and future directions. International Journal of Entrepreneurship and Small Business, 24(4), 492-521.

George, G., Zahra, S. A., Wheatley, K. K., & Khan, R. (2001). The effects of alliance portfolio characteristics and absorptive capacity on performance: A study of biotechnology firms. The Journal of High Technology Management Research, 12(2), 205-226.

Gernsheimer, O., Kanbach, D. K., & Gast, J. (2021). Coopetition research-A systematic literature review on recent accomplishments and trajectories. Industrial Marketing Management, 96,113-134.

Ghoshal, S. & Moran, P. (1996). Bad for practice: A critique of the transaction cost theory. Academy of Management Review, 21(1), 13-47.

Glynn, M.A., Lant, T.K. & Milliken, F. (1994). Mapping learning processes in organizations: A multi-level framework linking learning and organizing. In C. Stubbart, J. Meindl, & J. Porac (Eds.). Advances in Managerial Cognition and Organizational Information Processing , 5, 48-83.

Gnyawali, D. R., & Park, B. J. (2011). Co-opetition between giants: Collaboration with competitors for technological innovation. Research Policy, 40(5), 650-663.

Gnyawali, D. R., He, J., & Madhavan, R. (2006). Impact of co-opetition on firm competitive behaviour: an empirical examination. Journal of Management, 32 (4), 507-530.

Gnyawali, D.R., & Charleton, T.R. (2018). Nuances in the interplay of competition and cooperation: towards a theory of coopetition. Journal of Management, 44(7), 2511–2534.

Gnyawali, D.R., & Madhavan, R., (2001). Cooperative networks and competitive dynamics: A structural embeddedness perspective. Academy of Management Review, 26 (3), 431-445.

Gnyawali, D.R., & Park, B.J. (2009). Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model. Journal of Small Business Management, 47(3), 308-30.

Gnyawali, D.R., He, J., & Madhavan, R. (2008). Co-opetition: Promises and challenges. In C. Wankel (Ed.), 21st century management: A reference handbook (pp. 386-398). Thousand Oaks, California:Sage Publications.

Gnyawali, D.R., Madhavan, R., He, J., & Bengtsson, M., (2016). The competition-cooperation paradox in inter-firm relationships: A conceptual framework. Industrial Marketing Management, 53, 7- 18.

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. Journal of management information systems, 18(1), 185-214.

Gouldner, A.W. (1960). The norm of reciprocity: A preliminary statement. American

Sociological Review, 25(2), 161-78.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. American Journal of Sociology, 91(3), 481-510.

Grant, R. M., & Baden-Fuller, C. (2000). Knowledge and economic organization: an application to the analysis of interfirm collaboration. In Knowledge creation: A source of value, 113-150. London: Palgrave Macmillan UK.

Grant, R.M. (1996). Prospering in dynamically competitive environments: Organizational capability as knowledge integration. Organization Science, 7, 375-87.

Gulati, R. & Singh, H. (1998). The architecture of cooperation: Managing coordination costs and appropriation concerns for strategic alliances. Administrative Science Quarterly, 43(4), 781-814.

Gulati, R. (1995). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. Academy of Management Journal, 38, 85-112.

Hagedoorn, J. & Schakenraad, J. (1994). The effect of strategic technology alliances on company performance. Strategic Management Journal. 15, 291-309.

Hair Jr, J., Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A primer on partial least squares structural equation modeling (PLS-SEM). Sage publications.

Hair, J. F., Black, W., Babin, B., & Anderson, R. (2010). Multivariate data analysis: A global perspective: Pearson Prentice Hall. New Jersey, USA.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing theory and Practice, 19(2), 139-152.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. Journal of the academy of marketing science, 40, 414-433.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), Multivariate data analysis: A global perspective. Pearson Prentice Hall, New Jersey.

Hair, J.R., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). Multivariate data analysis. Prentice-Hall, New York

Hair, J.R., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). Multivariate data analysis. Prentice-Hall, New York.

Haksever, C., Chaganti, R., & Cook, R. G. (2004). A model of value creation: Strategic view. Journal of Business Ethics, 49, 295-307.

Hambrick, D.C. & Mason, P.A. (1984). Upper echelons: The organization as a reflection of its top managers. Academy of Management Review, 9, 193-206.

Hamel, G. (1991). Competition for competence and inter-partner learning within international inter-firm alliances, Strategic Management Journal. 12(4), 83-103.

Hamel, G. and Prahalad, C.K. (1994), Competing for the future. Boston: Harvard Business School Press.

Hamel, G., Doz, Y.L., & Prahalad, C.K. (1989). Collaborate with your customers-and win. Harvard Business Review, 67(1), 133-40.

Hansen, J.Ø. & Schütter, H. (2009). The resource-based view and transaction cost economics in managerial decision-making: A sequential approach. Retrieved from http://www.rbvandtce.com

Hanvanich, S., Richards, M., Miller, S. R., & Cavusgil, S. T. (2005). Technology and the effects of cultural differences and task relatedness: a study of shareholder value creation in domestic and international joint ventures. International Business Review, 14 (4), 394-414.

Harbison, J.R. & Pekar, P. Jr. (1998). Smart alliances. San Francisco, CA: Jossey-Bass.

Harrigan, K. R., & Newman, W. H. (1990). Bases of interorganization co-operation: propensity, power, persistence. Journal of Management Studies, 27(4), 417-434.

Harrigan, K.R. (1988). Joint ventures and competitive strategy. Strategic Management Journal, 9, 141-58.

Harrison, J.S., Hitt, M.A., Hoskisson, M.A., & Ireland, R.D. (2001). Resource complementarity in business combinations: Extending the logic to organizational alliances. Journal of Management, 27(6), 679-90.

Helfat, C. E. (1997). Know-how and asset complementarity and dynamic capability accumulation: the case of R&D. Strategic management journal, 18(5), 339-360.

Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M.A., Singh, H. and Teece, D.J.(2007). Dynamic capabilities: Understanding strategic change in organizations. Blackwell, Malden, MA.

Henderson, R. & Cockburn, I. (1998). Absorptive capacity, coauthoring behaviour, and the organization of research in drug discovery. Journal of Industrial Economics, 46(2), 157-82.

Hennart, J.F., Roehl, T., & Zietlow, D.S. (1999). “Trojan horse” or “workhorse”? The evolution of U.S.-Japan joint ventures in the United States. Strategic Management Journal, 20, 15-29.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the academy of

marketing science, 43, 115-135.

Hess, A. M., & Rothaermel, F. T. (2011). When are assets complementary? Star scientists, strategic alliances, and innovation in the pharmaceutical industry. Strategic Management Journal, 32(8), 895-909.

Hilal, A. H., & Alabri, S. S. (2013). Using NVivo for data analysis in qualitative research. International Interdisciplinary Journal of Education, 2(2), 181-186

Hill, C.W.L. (1990). Cooperation, opportunism, and the invisible hand: Implications for transaction cost theory. Academy of Management Review, 15(3), 500-13.

Hitt, M.A., Dacin, T.M., Levitas, E., Arregle, J.L., & Borza, A.(2000). Partner selection in emerging and developed market contexts: Resource-based and organizational learning perspectives. Academy of Management Journal, 43, 449–467.

Hodgson, G.M. (1998). Competence and contract in the theory of the firm. Journal of Economic Behaviour and Organization, 35, 179-201.

Hofstede, G. (2001). Culture's consequences: Comparing values, behaviours, institutions, and organizations across nations. Thousand Oaks, CA: Sage Publications.

Hora, W., Gast, J., Kailer, N., Rey-Marti, A. & Mas-Tur, A. (2018). David and Goliath: Causes and effects of coopetition between start-ups and corporates. Review of Managerial Science, 12(2), 411–439.

Hsieh, Y. H., Lin, Y. T., & Yuan, S. T. (2013). Expectation-based coopetition approach to service experience design. Simulation Modelling Practice and Theory, 34, 64-85.

Huber, G. (1991). Organizational learning: The contributing processes and the literatures. Organization Science, 2(1), 88-115.

Hughes-Morgan, M.B., & Yao, B.E. (2015). Rent appropriation in strategic alliances: a study of technical alliances in pharmaceutical industry. Long Range Planning, 49(2), 186-195.

Hung, S-W. & Chang, C-C. (2012). A co-opetition perspective of technology alliance governance modes. Technology Analysis and Strategic Management, 24(7), 679-96.

Hunt, S.D. (2000), A general theory of competition: Resources, competences, productivity, economic growth, Thousand Oaks, CA: Sage Publications.

Hunt, S.D., & Morgan, R.M. (1995). The comparative advantage theory of competition. Journal of Marketing, 59(2), 1-15.

Iacobucci, D., Saldanha, N., & Deng, X. (2007), "A meditation on mediation: Evidence that structural equations models perform better than regression", Journal of Consumer Psychology, Vol. 17 No. 2, pp. 139-153.

Ilvonen, I., & Vuori, V. (2013). Risks and benefits of knowledge sharing in co-opetitive

knowledge networks. International Journal of Networking and Virtual Organisations, 13 (3).

Ingram, P., & Qingyuan Yue, L. (2008). Structure, affect and identity as bases of organizational competition and cooperation. Academy of Management Annals, 2 (1), 275-303.

Inkpen, A.C. & Beamish, P.W. (1997). Knowledge, bargaining power and international joint venture stability. Academy of Management Review, 22, 177-202.

Inkpen, A.C. (1998). Learning and knowledge acquisition through international strategic alliances. The Academy of Management Executive ,12(4), 69–80.

J´ambor, Z. (2018). Cooperation and competition at the same time: A literature review of coopetition. Retrieved from http://www.irisro.org/economics2018january/ 46JamborZsofia.pdf. Accessed July 10, 2020.

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing potential and realized absorptive capacity: how do organizational antecedents matter? Academy of Management Journal, 48(6), 999-1015.

Janssen, G., De Man, A., & Quak, H. (2013). Fairness and value appropriation in logistics alliances: a case-study approach. Proceedings of the 24th POMS Annual Meeting, Denver, Colorado, USA.

Jap, S.D. (1999). Pie-expansion efforts: Collaboration processes in buyer–seller relationships. Journal of Marketing Research, 36(3), 461-75.

Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. Journal of Consumer Research, 30, 99-218.

Johnson, J. L. (1999). Strategic integration in industrial distribution channels: Managing the interfirm relationship as a strategic asset. Journal of the Academy of Marketing Science, 27, 4-18

Kale, P. & Singh, H. (1999). Alliance capability and success: A knowledge based approach. Paper presented at the Academy of Management Conference. Retrieved from: knowledge.wharton.upenn.edu/papers/842.pdf.

Kale, P., Dyer, J. H., & Singh, H. (2002). Alliance capability, stock market response, and long-term alliance success: the role of the alliance function. Strategic management journal, 23(8), 747-767.

Kale, P., Singh, H., & Perlmutter, H. (2000). Learning and protection of proprietary assets in inter-firm alliances: Building relational capital. Strategic Management Journal, 21, 217-37.

Kandemir, D., Yaprak, A., & Cavusgil, S. T. (2006). Alliance orientation: conceptualization, measurement, and impact on market performance. Journal of the academy of marketing science, 34(3), 324-340.

Kathuria, R. (2000). Competitive priorities and managerial performance: A taxonomy of small manufacturers. Journal of Operations Management, 18, 627-41.

Khalid, S., & Ali, T. (2017). An integrated perspective of social exchange theory and transaction cost approach on the antecedents of trust in international joint ventures. International Business Review, 26(3), 491–501.

Khanna, T. (1998). The scope of alliances. Organization Science, 9(3), 340–355.

Khanna, T., Gulati, R., & Nohria, N. (1998). The dynamics of learning alliances: competition, cooperation, and relative scope. Strategic Management Journal, 19 (3), 193–210.

Khanra, S., Dhir, A., Kaur, P., & M¨antym¨aki, M. (2021). Bibliometric analysis and literature review of ecotourism: Toward sustainable development. Tourism Management Perspectives, 37, Article 100777."

Khanra, S., Dhir, A., Parida, V., & Kohtam¨aki, M. (2021). Servitization research: A review and bibliometric analysis of past achievements and future promises. Journal of Business Research, 131, 151–166.

Kline, R. B. (2023). Principles and practice of structural equation modeling. Guilford publications.

Kock, S., Nisuls, J., & S¨oderqvist, A. (2010). Co-opetition: A source of international opportunities in Finnish SMEs. Competitiveness Review: An International Business Journal, 20(2), 111–125."

Kogut, B. & Singh, H. (1988). The effect of national culture on the choice of entre mode. Journal of International Business Studies, 19 (3), 411-32.

Kogut, B. & Zander, U. (1993). Knowledge of the firm and evolutionary theory of the multinational corporation. Journal of International Business Studies, 24, 625-45.

Kogut, B. (1988). Joint ventures: Theoretical and empirical perspectives. Strategic Management Journal, 9(4), 319-32.

Kotzab, H., & Teller, C. (2003). Value-adding partnerships and co-opetition models in the grocery industry. International journal of physical distribution & logistics management, 33(3), 268-281.

Kotzab, H. & Teller, C. (2003). The consumer direct myopia. In J. Kent (Ed.), Proceedings of the thirty-second annual logistics educators conference, Chicago, CD-Rom.

Lado, A.A., Boyd, N.G., & Hanlon, S.C. (1997). Competition, cooperation, and the search for

economic rents: A syncretic model. Academy of Management Review, 22(1), 110-41

Lado, A.A., Boyd, N.G., & Wright, P. (1992). A competency-based model of sustainable competitive advantage: Toward a conceptual integration. Journal of Management, 18, 77-91.

Lambe, C. J., Spekman, R. E., & Hunt, S. D. (2002). Alliance competence, resources, and alliance success: conceptualization, measurement, and initial test. Journal of the academy of Marketing Science, 30(2), 141-158.

Lan, S., Liu, K., Dong, Y. (2019). Dancing with wolves: how value creation and value capture dynamics affect complementor participation in industry platforms. Industry and Innovation, 1-21.

Lane, P. J., Salk, J. E., & Lyles, M. A. (2001). Absorptive capacity, learning, and performance in international joint ventures. Strategic management journal, 22(12), 1139-1161.

Lane, P.J. & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning.Strategic Management Journal, 19, 461-77.

Larson, A. (1992). Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. Administrative Science Quarterly, 37(1), 76-104.

Lascaux, A. (2020). Coopetition and trust: What we know, where to go next. Industrial Marketing Management, 84, 2-18.

Lavie, D. (2006). The competitive advantage of interconnected firms: An extension of the resource-based view of the firm. Academy of Management Review, 31, 638-58.

Lavie, D. (2007). Alliance portfolios and firm performance: a study of value creation and appropriation in the U.S. software industry. Strategic Management Journal, 28, 1187-1212.

Lawson, B., Samson, D., & Roden, S. (2012). Appropriating the value from innovation: inimitability and the effectiveness of isolating mechanisms. R&D Management, 42(5), 420–434.

Le Roy, F., & Czakon, W. (2016). Managing coopetition: the missing link between strategy and performance. Industrial Marketing Management, 53(1), 3-6.

Le Roy, F., Fernandez, A. S., & Chiambaretto, P. (2018). From strategizing coopetition to managing coopetition. The Routledge companion to coopetition strategies, 58-68.

Le Roy, F., & Guilletreau, P. (2010). Successful strategy for challengers: competition or coopetition with dominant firms? In: S. Yami, S. Castaldo, G.B. Dagnino, F. Le Roy (Eds.), Coopetition: Winning Strategies for the 21st Century (pp. 238–255), Sheltenham

Lee, J., Hoetker, G. and Qualls, W. (2015), “Alliance Experience and Governance Flexibility”

Organization Science, Vol.26 No.5, pp.1536-1551.

Leite, E., Pahlberg, C., & Åberg, S. (2018). The cooperation-competition interplay in the ICT industry. Journal of Business & Industrial Marketing, 33(4), 495-505.

Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. Strategic Management Journal, 13, 111-25.

Lepak, D. P., Smith, K. G., & Taylor, M. S. (2007). Value creation and value capture: a multilevel perspective. Academy of Management Review, 32 (1), 180-194

Lerner, J., & Merges, R. P. (1998). The control of technology alliances: An empirical analysis of the biotechnology industry. The Journal of Industrial Economics, 46(2), 125-156

Levinson, N.S. & Asahi, M. (1996). Cross-national alliances and interorganizational learning.Organizational Dynamics, 24, 51-63.

Levitt, B., & March, J. (1988). Organizational learning. Annual Reviews, 14, 319-340

Lippman, S. A., & Rumelt, R. P. (1982). Uncertain imitability: an analysis of interfirm differences in efficiency under competition. Bell Journal of Economics, 13 (2), 418-438.

Liu, R. (2013). Cooperation, competition and coopetition in innovation communities. Prometheus: Critical Studies Innovation, 31(2), 91–105.

Liu, Y., Jiao, J., Xia, J. (2019). Subsidiary Networks and Foreign Subsidiary Performance: A Coopetition Perspective. Management and Organization Review, 15(1), 111-143.

Lombardo, M. M., & Eichinger, R. W. (2000). High potentials as high learners. Human Resource Management, 39(4), 321-329.

Lorange, P. (1996). Strategy at the leading edge - interactive strategy - alliances and partnership. Long Range Planning, 29(4), 581-84.

Luo, Y. (2004). A coopetition perspective of MNC-host government relations. Journal of International Management, 10, 431-45.

Luo, Y. (2005). Toward coopetition within a multinational enterprise: A perspective from foreign subsidiaries. Journal of World Business, 40(1), 71–90.

Luo, Y. (2007). A coopetition perspective of global competition. Journal of World Business, 42(2), 129-44.

Lyles, Marjorie A., & Jane E. Salk (1996), Knowledge acquisition from foreign parents in international joint ventures: An empirical examination in the Hungarian context. Journal of International Business Studies, 27(5), 877–903.

MacDuffie, J.P., & Helper, S. (1997). Creating lean suppliers: Diffusing lean production through the supply chain. California Management Review, 39(4), 118-51.

Macneil, I.R. (1980), The new social contract: An inquiry into modern contractual relations.

Yale University Press, New Haven, CT.

Madhok, A. & Tallman, S.B. (1998). Resources, transactions and rents: Managing value through interfirm collaborative relationships. Organization Science, 9, 326-39.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. Strategic Management Journal. 22(5), 387-401.

Makdok R. and Barney J. B. (2001). Strategic factor market intelliegence: An application of information economics to strategy formulation and competitor intelligence. Management science, 47 (12), 1621-1638

Markides, C. & Williamson, P.J. (1994). Related diversification, core competences and corporate performance. Strategic Management Journal, 15, 149-57.

Marks, L. D. (2015). A pragmatic, step-by-step guide for qualitative methods: Capturing the disaster and long-term recovery stories of Katrina and Rita. Current Psychology, 34, 494-505.

Martinez, J.I., & Jarillo, J.C. (1989). The evolution of research on coordination mechanisms in multinational corporations. Journal of International Business Studies, 20(3), 489–514.

Matusik, S. F., & Heeley, M. B. (2005). Absorptive capacity in the software industry: Identifying dimensions that affect knowledge and knowledge creation activities. Journal of Management, 31, 549-572

Meena, A., Dhir, S., & Sushil, S. (2023). A review of coopetition and future research agenda. Journal of Business & Industrial Marketing, 38(1), 118-136.

Menon, G., Bickart, B., Sudman, S., & Blair, J. (1995). How well do you know your partner? Strategies for formulating proxy-reports and their effects on convergence to self-reports. Journal of Marketing Research, 32(1), 77-84.

Mention, A-L. (2011). Co-operation and co-opetition as open innovation practices in the service sector: which influence on innovation novelty?.Technovation,31 (1), 44–53.

Merchant, H. & Schendel, D. (2000). How do international joint ventures create shareholder value? Strategic Management Journal, 21(7). 723-37.

Mesquita, L.F., Anand, J., & Brush, T. (2008). Comparing the resource-based and relational views:

Milgrom, P., & Roberts, J. (1995). Complementarities and fit strategy, structure, and organizational change in manufacturing. Journal of Accounting and Economics, 19(2-3), 179-208.

Min`a, A., & Dagnino, G. B. (2016). In search of coopetition consensus: Shaping the collective identity of a relevant strategic management community. International Journal of

Technology Management, 71(1–2)."

Mindruta, D. (2013). Value creation in university-firm research collaborations: A matching approach. Strategic Management Journal, 34(6), 644–665.

Minerbo, C., & Brito, L. A. L. (2022). An integrated perspective of value creation and capture: a systematic literature review. Journal of Business & Industrial Marketing,37(4), 768-789.

Mione, A. (2009). When entrepreneurship requires coopetition: The need for standards in the creation of the market. International Journal of Entrepreneurship and Small Business. 8, 92-109.

Mohr, J. & Spekman, R. (1994). Characteristics of partnership success: Partnership attributes, communication behaviour and conflict resolution. Strategic Management Journal, 15, 135-52.

Moore, K.R. & Cunningham, W.A. (1999). Social exchange behaviour in logistics relationships: A shipper perspective. International Journal of Physical Distribution & Logistics Management, 29(2), 103-21.

Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. Journal of marketing, 58(3), 20-38.

Mowery, D.C., Oxley, J.E., & Silverman, B.S. (1996). Inter-firm alliances and interfirm knowledge transfer. Strategic Management Journal, 17, 77-91.

Mullin, R. (2014). Cost to Develop New Pharmaceutical Drug Now Exceeds $2.5B. Chemical and Engineering News, November 24. https://www.scientificamerican.com/article/cost-to-develop-new-pharmaceutical-drug-now-exceeds-2-5b/.

Murphy, J. T., & Schindler, S. (2011). Globalizing development in Bolivia? Alternative networks and value-capture challenges in the wood products industry. Journal of Economic Geography, 1–25

Muthusamy, S. K., & White, M. A. (2005). Learning and knowledge transfer in strategic alliances: A social exchange view. Organization Studies, 26(3), 415-441.

Nalebuff, B., & Brandenburger, A. (1997). Coopetition: Competitive and cooperative business strategies for the digital economy. Strategy & Leadership, 25(6), 28–33.

Nault, B.R. & Tyagi, R.K. (2001). Implementable mechanisms to coordinate horizontal alliances. Management Science, 47(6), 787-99.

Navío-Marco, J., Ibar-Alonso, R., & Bujidos-Casado, M. (2021). Interlinkages between coopetition and organisational innovation in Europe. Journal of Business & Industrial Marketing, 36(9), 1665-1677.

Nelson, R., and Winter, S. (1982), An evolutionary theory of economic change. Cambridge, MA: Harvard University Press.

Nevis, E.C., DiBella, A.J. & Gould, J.M. (1995). Understanding organisations as learning systems.Sloan Management Review, 73-85.

Newman, D.A. (2003). Longitudinal modeling with randomly and systematically missing data: A simulation of ad hoc, maximum likelihood, and multiple imputation techniques. Organizational Reserach Methods, 6(3). 328-62.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. Organization Science, 5, 14-37.

O'Reilly, C.A. and Tushman, M.L.(2007). Ambidexterity as a dynamic capability: resolving the innovator's dilemma. Working Paper No. 07-088. Cambridge, MA: Harvard Business School.

Okumus, F. (2013). Facilitating knowledge management through information technology in hospitality organizations. Journal of Hospitality and Tourism Technology, 4(1), 64-80.

Olivares, J.V. (2023). Alliances as a Coopetitive Strategy of the Airlines: The Case of Iberia (1980–2020). Fernández Pérez, P. and San Román, E. (Ed.) Collective Entrepreneurship in the Contemporary European Services Industries: A Long Term Approach (Frontiers of Management History), Emerald Publishing Limited, Bingley, 77-93

Oxley, J. E., & Silverman, B. S. (2008). Inter-firm alliances: a new institutional economics approach. In E. Brousseau & J. M. Glachant (Eds). New Institutional Economics: A Guidebook. New York, Cambridge University Press.

Padula, G. & Dagnino, G.B. (2007). Untangling the rise of coopetition: the intrusion of competition in a cooperative game structure. International Studies of Management & Organization, 37(2), 32-52.

Panico, C. (2017). Strategic interaction in alliances. Strategic Management Journal, 38(8), 1646–1667.

Park, B. J. R., Srivastava, M. K., Gnyawali, D. R. (2014). Walking the tight rope of coopetition: Impact of competition and cooperation intensities and balance on firm innovation performance. Industrial Marketing Management, 43(2), 210-221

Park, B. J., Srivastava, M. K., Gnyawali, D. R. (2014). Impact of coopetition in the alliance portfolio and coopetition experience on firm innovation. Technology Analysis & Strategic Management, 26(8), 893-907.

Parkhe, A. (1993). Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. Academy of Management Journal, 36(4) 794-829.

Pavlou, P. A., & El Sawy, O. A. (2006). From IT leveraging competence to competitive advantage in turbulent environments: The case of new product development. Information Systems Research, 17, 198-227.

Peltokorpi, V. (2017). Absorptive capacity in foreign subsidiaries: The effects of language-sensitive recruitment, language training, and interunit knowledge transfer. International Business Review, 26(1), 119-129.

Peng T.-J.A., Pike S., Yang J.C.-H., Roos G. (2012). Is Cooperation with Competitors a Good Idea? An Example in Practice. British Journal of Management. 23(4), 532-60

Peng T.-J.A., Yang J.C.-H., Pike S., Roos G. (2011).Intelletual capitals, business models and performance measurements in forming strategic network. International Journal of Learning and Intellectual Capital. 8(3), 328-347.

Perrow, C. (1986). Complex organizations: A critical essay (3rd ed). New York: McGraw-Hill.

Pfeffer, J. (1987). A resource dependence perspective on intercorporate relations. Intercorporate relations: The structural analysis of business, 1(1), 25-55.

Pfeffer, J. & Salancik, G.R. (1978). The external control of organizations: A resource dependence perspective. New York: Harper & Row.

Pfeffer, J., & Nowak, P. (1976). Joint ventures and interorganizational interdependence. Administrative Science Quarterly, 21, 398–418.

Philips, L.W. (1981). Assessing measurement error in key informant reports: A methodological note on organizational analysis in marketing. Journal of Marketing Research, 18, 395-415.

Pitelis C.N., Desyllas P., Panagopoulos A. (2018). Profiting from Innovation through Cross-Border Market co-Creation and co-Opetition: The Case of Global Pharmaceuticals.European Management Review, 15(4), 491-504

Podsakoff, P.M. & Organ, D.W. (1986). Self-reports in organizational research: Problems and prospects. Journal of Management, 12(4), 531-44.

Podsakoff, P.M., MacKenzie, S.B., Lee, J-Y., & Podsakoff, N.P. (2003). Common method biases in behavioural research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879-903.

Poppo, L. & Zenger, T. (2002). Do formal contracts and relational governance function as substitutes or complements? Strategic Management Journal, 23(8), 707-25.

Prahalad, C.K. & Hamel, G. (1990). The core competence of the corporation. Harvard Business Review, 68(3), 79-91.

Pret, T., & Cogan, A. (2019). Artisan entrepreneurship: A systematic literature review and

research agenda. International Journal of Entrepreneurial Behaviour & Research, 25 (4), 592–614.

Quintana-García, C. & Benavides-Velasco, C. (2004). Cooperation, competition, an innovative capability: A panel data of European dedicated biotechnology firms. Technovation, 24, 927-38.

Quintana-García, C. & Benavides-Velasco., C.A. (2005). Agglomeration economies and vertical alliances: the route to product innovation in biotechnology firms. International Journal of Production Research, 43 (22), 4853–4873.

Rai, R. K. (2016). A Co-opetition-Based Approach to Value Creation in Interfirm Alliances: Construction of a Measure and Examination of Its Psychometric Properties. Journal of Management, 42(6),1663–1699.

Rai, R., Gnyawali, D. R., & Bhatt, H. (2022). Walking the tightrope: Coopetition capability construct and its role in value creation. Journal of Management.

Rajala, A., & Tidström, A. (2021). Unmasking conflict in vertical coopetition. Journal of Business & Industrial Marketing, 36(13), 78-90.

Raza-Ullah, T. (2020). Experiencing the paradox of coopetition: A moderated mediation framework explaining the paradoxical tension–performance relationship. Long Range Planning, 53(1).

Raza-Ullah, T., & Eriksson, J. (2017). Knowledge sharing and knowledge leakage in dyadic coopetitive alliances involving SMEs. In Global opportunities for entrepreneurial growth: Coopetition and knowledge dynamics within and across firms (pp. 229-252). Emerald Publishing Limited.

Richardson, G.B. (1972). The organisation of industry. Economic Journal, 82, 883-96.

Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012). Editor's comments: a critical look at the use of PLS-SEM in" MIS Quarterly". MIS quarterly, iii-xiv.

Ritala, P, Golnam, A & Wegmann, A. (2014). Coopetition-based business models: the case of Amazon.com. Industrial Marketing Management, 43(2), 236–249.

Ritala, P. & Hurmelinna-Laukkanen, P. (2013). Incremental and radical innovation in coopetition: the role of absorptive capacity and appropriability. Journal of Product Innovation Management,30(1), 154-169.

Ritala, P. & Hurmelinna-Laukkanen, P. (2009). What's in it for me? Creating and appropriating value in innovation-related coopetition. Technovation, 29, 819-28.

Ritala, P. (2012). Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance. British Journal of Management, 23(3), 307-324.

Ritala, P., & Sainio, L.M. (2014). Coopetition for radical innovation: technology, market and business-model perspectives. Technology Analysis & Strategic Management, 26(2), 155–169.

Ritala, P., & Tidström, A. (2014). Untangling the value-creation and value-appropriation elements of coopetition strategy: a longitudinal analysis on the firm and relational levels. Scandinavian Journal of Management, 30 (4), 498-515.

Ritala, P., (2011). Coopetition Strategy—When is it Successful? Empirical Evidence on Innovation and Market Performance. British Journal of Management 23(3):307–24

Robert, M., Chiambaretto, P., Mira, B. & Le Roy, F. (2018). Better, faster, stronger: The impact of market-oriented coopetition on product commercial performance. M@n@gement, 21(1), 574-610.

Root, F. R. (1988). Some taxonomies of international cooperative arrangements. In F. J. Contractor & P. Lorange (Eds.). Cooperative strategies in international business. Lexington, MA: Lexington Books.

Rowley, J., & Slack, F. (2004). Conducting a literature review. Management Research News, 27, 31–39.

Rusko, R. (2011). Exploring the concept of coopetition: A typology for the strategic moves of the Finnish forest industry. Industrial Marketing Management, 40, 311-20.

Ryan, M.J., Rayner, R., & Morrison, A. (1999). Diagnosing customer loyalty drivers: Partial least squares vs. regression. Marketing Research, 19-26.

Sacket, P.R. & Larson, J.R. (1990). Research strategies and tactics in industrial and organizational psychology. In M.D. Dunnette & L.M. Hough (Eds.), Handbook of industrial and organizational psychology (pp. 419-89). Palo Alto, CA: Consulting Psychologists Press.

Sanchez, R. & Heene, A. (1997). Reinventing strategic management: New theory and practice for competence-based competition. European Management Journal, 15(3), 303-17.

Sanchez, R. Heene, A., & Thomas, H. (1996). Dynamics of competence-based competition. New York: Elsevier.

Sanou, F.H., Le Roy, F. & Gnyawali, D.R. (2016). How does centrality in coopetition networks matter? An empirical investigation in the mobile telephone industry. British Journal of Management, 27 (1), 143–160.

Santos, J. N. (2021). Linking joint value creation to the interplay of competition and cooperation: A fuzzy set approach. Industrial Marketing Management, 92, 45-54.

Sarkar, M. B., Echambadi, R. & Harrison, J. S. (2001). Alliance entrepreneurship and firm

market performance. Strategic Management Journal, 22, 701-711.

Sarkar, M.B., Echambadi, R., Cavusgil, S.T., & Aulakh, P. (2001). The influence of complementarity, compatibility, and relationship capital on alliance performance. Journal of Academy of Marketing Science, 29(4), 358-73.

Sarstedt, M., Hair Jr, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. Australasian marketing journal, 27(3), 197-211.

Saxton, T. (1997). The effects of partner and relationship characteristics on alliance outcomes.Academy of Management Journal, 40(2), 443-61.

Schilke, O. & Goerzen, A. (2010). Alliance management capability: An investigation of the construct and its measurement. Journal of Management, 36(5), 1192-1219.

Schulze, W.S. (1992). The two resource-based models of the firm: Definitions and implications for research. In J.L., Wall & L.R., Jauch (Eds.), Academy of Management Best Papers Proceedings, 37-41.

Scott, S.G. & Bruce, R. (1994). Determinants of innovative behaviour: A path model of individual innovation in the workplace. Academy of Management Journal, 37(3), 580-607.

Seely, B.J, & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. Organization Science, 2(1), 40-56.

Shukla, G. (2012). Six pharma majors join hands to beat cost pressures. Business today Magazine. 22 (1), 44-49.

Shvindina, H. (2019). Coopetition as an emerging trend in research: Perspectives for safety & security. Safety, 5(3), 61.

Simonin, B.L. (1997). The importance of collaborative know-how: an empirical test of the learning organization. Academy of Management Journal, 40(5), 1150-74.

Skyrms, B. (2004). The stag hunt and evolution of social structure. Cambridge: Cambridge University Press.

Spanos, Y.E. & Lioukas, S. (2001). An examination into the causal logic of rent generation: Contrasting Porter's competitive strategy framework and the resource-based perspective. Strategic Management Journal, 22(10), 907-34.

Spekman, R. E., Isabella, L. A. and MacAvoy, T. C. (1999), Alliance Competence: Maximizing the Value of Your Partnerships. New York: John Wiley.

Spekman, R.E., Kamauff, J.W., & Myhr, N. (1998). An empirical investigation into supply chain management: A perspective on partnership. International Journal of Physical

Distribution and Logistics Management, 28(8), 630-50.

Stein, H. D. (2010). Literature overview on the field of coopetition. Business: Theory & Practice, 11(3), 256–265.

Tallman, S. (2005). Forming and managing shared organization ventures: Resources and transaction costs. In D. Faulkner & M. De Rond (Eds.), Cooperative strategy: Economic, business, and organizational issues. New York: Oxford University Press.

Tandon, A., Kaur, P., M¨antym¨aki, M., & Dhir, A. (2021). Blockchain applications in management: A bibliometric analysis and literature review. Technological Forecasting and Social Change"

Teece, D.J. (1982). Towards an economic theory of the multiproduct firm. Journal of Economic Behaviour and Organization, 3, 39-63.

Teece, D.J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509-33.

Thomason, S., Simendinger, E., & Kiernan, D. (2013). Several determinants of successful coopetition in small business. Journal of Small Business and Entrepreneurship, 26(1),15–28.

Tidström, A. (2009). Causes of conflict in intercompetitor cooperation. Journal of Business & Industrial Marketing, 24 (7), 506–518.

Tidström, A. (2014). Managing tensions in coopetition. Industrial Marketing Management, 43(2), 261–271.

Tidstrom, A., Ritala, P., & Lainema, K. (2018). Interactional and procedural practices in managing coopetitive tensions. Journal of Business & Industrial Marketing, 33(7), 945-957.

Townsend, J.D. (2003). Understanding alliances: A review of international aspects in strategic marketing. Marketing Intelligence Planning, 21, 143–155.

Toylan, N.V., Semerciöz, F, & Hassan, M.U. (2020). Knowledge Sharing in Strategic Alliance Relationships: An Empirical Research on Hotels in Turkey. European Journal of Tourism Research, 24,24-03.

Tu, Q., Vonderembse, M. A., Ragu-Nathan, T. S., & Sharkey, T. W. (2006). Absorptive capacity: Enhancing the assimilation of time-based manufacturing practices. Journal of Operations Management, 24(5), 692-710.

Tzokas, N., Kim, Y. A., Akbar, H., & Al-Dajani, H. (2015). Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. Industrial marketing management, 47, 134-142.

Umachandram, K.; Juricic, I.; Della Corte, V.; Ferdinand-James, D.S. Industry 4.0: The new industrial Revolution. In Big Data Analytics for Smart and Connected Cities; IGI-GLOBAL: Hershey, PA, USA, 2018

Umachandran, K., Jurcic, I., Ferdinand-James, D., Said, M. M. T., & Abd Rashid, A. (2018). Gearing up education towards Industry 4.0. International Journal, 17(02).

Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. Administrative Science Quarterly, 42(1), 35-67.

Vahlne, J. E., & Johanson, J. (2021). Coping with complexity by making trust an important dimension in governance and coordination. International Business Review, 30(2), 101798.

Vanpoucke, E. & Vereecke, A. (2010). The Predictive Value of Behavioural Characteristics on the Success of Strategic Alliances. International Journal of Production Research, 48(2)2, 6715–6738.

Vanyushyn, V., Bengtsson, M., Näsholm, & M. H., Boter, H. (2018). International coopetition for innovation: Are the benefits worth the challenges? Review of Managerial Science, 12(2), 535-557

Varadarajan, P. R., & Cunningham, M. H. (1995). Strategic alliances: a synthesis of conceptual foundations. Journal of the academy of marketing science, 23, 282-296.

Varadarajan, R.P. & Cunningham, M.H. (1995). Inter-firm alliances: A synthesis of conceptual foundations. Journal of the Academy of Marketing Science, 23(4), 282-96.

Vasudeva, G. & Anand, J. (2011). Unpacking absorptive capacity: A study of knowledge utilization from alliance portfolios. Academy of Management Journal, 54(3), 611-23.

Virtanen, H., & Kock, S. (2022). Striking the right balance in tension management. The case of coopetition in small-and medium-sized firms. Journal of Business & Industrial Marketing, 37(13), 33-47.

Virtanen, H., & Kock, S. (2016). Tension in coopetition between small and medium-sized firms. McGill International Entrepreneurship Conference, Vaasa, Finland.

Volschenk, J., Ungerer, M., & Smit, E. (2016). Creation and appropriation of socioenvironmental value in coopetition. Industrial Marketing Management, 57, 109–118.

Vonortas, N. 2000. “Multimarket Contract and Inter-Firm Cooperation in R&D.” Journal of Evolutionary Economics 10(1–2):243–71.

Walley, K. (2007). Coopetition - An introduction to the subject and an agenda for research. International Studies of Management & Organization, 37, 11-31.

Wassmer, U., & Dussauge, P. (2011). Value creation in alliance portfolios: The benefits and costs of network resource interdependencies. European Management Review, 8(1), 47-64.

Wassmer, U., & Dussauge, P. (2011). Network resource stocks and flows: how do alliance portfolios affect the value of new alliance formations? Strategic Management Journal, 7(33), 871–883.

Wassmer, U. (2010). Alliance portfolio: A review and research agenda. Journal of Management, 36, 141-171

Wernerfelt, B. (1984). A resource-based view of the firm. Strategic Management Journal, 5(2), 171-80.

West, J & Bogers, M. (2014). Leveraging external sources of innovation: a review of research on open innovation. Journal of Product Innovation Management, 31(4),814–831

White, S & Lui, S.S-Y. (2005). Distinguishing costs of cooperation and control in alliances. Strategic Management Journal, 26, 913-32.

Wickham, M., & Woods, M. (2005). Reflecting on the strategic use of CAQDAS to manage and report on the qualitative research process. The Qualitative Report. University Of Tasmania Journal contribution. 10(4): 687-702

Williamson, O. E. (1985). Reflections on the new institutional economics. Journal of Institutional and Theoretical Economics, 141(1),187-195.

Winter, S.G. (2003). Understanding dynamic capabilities. Strategic Management Journal, 24, 991-95.

Wittmann, C. M., Hunt, S. D., & Arnett, D. B. (2009). Explaining alliance success: Competences, resources, relational factors, and resource-advantage theory. Industrial Marketing Management, 38(7), 743-756.

Wold, H. (1980). Model construction and evaluation when theoretical knowledge is scarce: Theory and application of partial least squares. In Evaluation of econometric models (pp. 47-74). Academic Press.

Wong, L. P. (2008). Data analysis in qualitative research: A brief guide to using NVivo. Malaysian Family Physician, 3(1), 14-20.

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. The counseling psychologist, 34(6), 806-838.

Wu, G., Zhao, X., & Zuo, J. (2017). Relationship between project's added value and the trust–conflict interaction among project teams. Journal of Management in Engineering, 33(4), 04017011.

Yadav, N., Kumar, R., & Malik, A. (2022). Global developments in coopetition research: A bibliometric analysis of research articles published between 2010 and 2020. Journal of Business Research,145, 495-508.

Yami, S., & Nemeh, A. (2014). Organizing coopetition for innovation: The case of wireless telecommunication sector in Europe. Industrial Marketing Management, 43(2), 250–260.

Yami, S., Castaldo, S., Dagnino, G.B., & Le Roy, F. (2010). Editors‘ Introduction. In S. Yami, S. Castaldo, G.B., Dagnino, & F. Le Roy, (Eds.), Coopetition: Winning strategies for the 21st century (pp. 1-16). Northampton, MA: Edward Elgar.

Yan, A., & Gray, B. (1994). Bargaining power, management control, and performance in United States–China joint ventures: a comparative case study. Academy of Management journal, 37(6), 1478-1517.

Yong-Hak, J. (2013). Web of science. Thomson Reuters. Retrived from http://wokinfo.com/media/pdf/WoSFS_08_7050.pdf. Accessed June 18, 2020.

Yoshino, M.Y., & Rangan, U.S. (1995). Strategic alliances: an entrepreneurial approach to globalization. Harvard Business Press.

Young-Ybarra, C., & Wiersema, M. (1999). Strategic flexibility in information technology alliances: The influence of transaction cost economics and social exchange theory. Organization Science, 10: 439-459

Zacharia, Z., Plasch, M., Mohan, U., & Gerschberger, M. (2019). The emerging role of coopetition within inter-firm relationships. The International Journal of Logistics Management, 30(2), 414-437.

Zaheer, A, McEvily, B, & Perrone, V. (1998). Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. Organizational Science, 9(2), 1-20.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. Academy of management review, 27(2), 185-203.

Zahra, S.A., Sapienza, H.J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. Journal of Management Studies, 43, 917-55.

Zajac, E.J. & Olsen, C.P. (1993). From transaction cost to transactional value analysis: Implications for the study of interorganizational strategies. Journal of Management Studies 30, 131-45.

Zhang, H., Shu, C., Jiang, X., & Malter, A. J. (2010). Managing knowledge for innovation:

The role of cooperation, competition, and alliance nationality. Journal of International Marketing, 18(4), 74-94.

Zobel, A. K., Lokshin, B., & Hagedoorn, J. (2017). Formal and informal appropriation mechanisms: The role of openness and innovativeness. Technovation, 59, 44-54.

Appendices

Appendix I: Value creation: Constructs and scale items

"All measurement items, except for alliance experience, were formulated as Likert-type statements anchored by a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Constructs	Code	Items	Scale	Reference
Top Management Commitment (TMC)	TMC1	Top managers in both firms believe that this alliance is important for the future success of each firm.	5-point Likert scale [1=Strongly Disagree; 5=Strongly Agree]	Adapted from Lambe et al. (2002)
	TMC2	Top managers in both firms want this alliance to be a success.		
	TMC3	Top managers in both firms strongly support the alliance		
	TMC4	Top managers in both firms believe that this alliance is important for achieving strategic goals of each firm		
Absorptive capacity - Acquisition	AC-ACQ1	The search for relevant information concerning our industry is every-day business in our company.	5-point Likert scale	Adopted from Flatten, et al. (2012)
	AC-ACQ2	Our management motivates the employees to use information sources within our industry.		
	AC-ACQ3	Our management expects that the employees deal with information beyond our industry.		
Absorptive capacity - Assimilation	AC-ASC1	In our firm, ideas and concepts are communicated across departments.	5-point Likert scale	Adopted from Flatten et al.(2012)
	AC-ASC2	Our management emphasizes cross-departmental support to solve problems.		
	AC-ASC3	In our firm, there is a quick flow of newly acquired information across departments and business units.		
	AC-ASC4	Our management ensures periodical inter-departmental meetings to exchange new developments, problems, and achievements		
Absorptive capacity - Transformation	AC-TRN1	Our employees have the ability to structure, and use acquired knowledge.	5-point Likert scale	Adopted from Flatten et al.(2012)"
	AC-TRN2	Our employees are skilled at absorbing and making use of new knowledge.		
	AC-TRN3	Our employees successfully link existing knowledge with new insights.		
	AC-TRN4	Our employees are able to make use of new knowledge to improve their practical work.		

Constructs	Code	Items	Scale	Reference
Absorptive capacity - Exploitation	AC-EXP1	Our management supports the development of prototypes based on new knowledge.	5-point Likert scale	Adopted from Flatten et al.(2012)
	AC-EXP2	Our firm regularly reconsiders technologies and adapts them according to newly available knowledge.		
	AC-EXP3	Our company has the ability to make its work more effective by adapting new technologies		
Alliance Management Capability- Inter-organizational coordination	AMC-IC1	Our activities with R&D alliance partners are well coordinated.	5-point Likert scale	Adopted from : Jarvis, et al. (2003) and Pavlou and El Sawy (2006)
	AMC-IC2	We ensure that our work is synchronized with the work of our R&D alliance partners.		
	AMC-IC3	There is a great deal of interaction with our R&D alliance partners on most decisions		
Alliance Management Capability- Inter-organizational learning	AMC-IL1	We have the capability to learn from our R&D alliance partners.	5-point Likert scale	Adopted from Matusik and Heeley (2005); and Pavlou and El Sawy (2006)
	AMC-IL2	We have the managerial competence to absorb new knowledge from our R&D alliance partners.		
	AMC-IL3	We have adequate routines to analyse the information obtained from our R&D alliance partners.		
	AMC-IL4	We can successfully integrate our existing knowledge with new information acquired from our R&D alliance partners		
Alliance Management Capability- Alliance proactiveness	AMC-PR1	We strive to preempt our competition by entering into R&D alliance opportunities.	5-point Likert scale	Adopted from Sarkar et al (2001)
	AMC-PR2	We often take the initiative in approaching firms with R&D alliance proposals.		
	AMC-PR3	Compared to our competitors, we are far more proactive and responsive in finding and “going after” partnerships.		
	AMC-PR4	We actively monitor our environment to identify R&D partnership opportunities		
Alliance Management Capability- Alliance transformation	AMC-AT1	We are willing to put aside contractual terms to improve the outcome of our R&D alliances.	5-point Likert scale	Adapted from Johnson (1999); Young & Wiersema (1999)
	AMC-AT2	When an unexpected situation arises, we would rather modify an R&D alliance agreement than insist on the original terms.		
	AMC-AT3	Flexibility, in response to a request for change, is characteristic of our R&D alliance management process		
Alliance	AE1	Please indicate the number of interfirm alliances your company has had within the	#of alliances in last 5	Adopted from :

Constructs	Code	Items	Scale	Reference
experience		last 5 years.	years	Jarvis, et al.(1999)
	AE2	We have a deep base of partnership experience.	5-point Likert scale	Adopted from Lambe et al. (2002)
	AE3	We have participated in many alliances with this partner.		
	AE4	We have been partners in a substantial number of alliances		
Knowledge Sharing Routine - Knowledge Sharing Readiness	KSR1	Managers and research staff in both firms are willing to share knowledge with each other within the alliance boundary	5-point Likert scale	Developed from Glynn et al. (1994); Huber (1991); Nonaka (1994); Seely et al. (1991); Senge (1997); Nevis et al. (1995); Crossan et al. (1999)
	KSR2	Managers and research staff in both firms do not view each other as competitors and engage in turf wars while sharing knowledge within the alliance boundary		
	KSR3	Managers and research staff in both firms do not sense any insecurity while sharing knowledge with each other which falls within the alliance boundary		
	KSR4	Managers and research staff in both firms are willing to collaborate with each other to create new knowledge within the alliance boundary		
	KSR5	Managers and research staff in both firms willingly cooperate and share knowledge to develop competitive products and services		
Knowledge Sharing Routine - Information Sharing Readiness	IRS1	We share proprietary information with our alliance partner which is within the alliance boundary.	5-point Likert scale	Adopted from Mohr & Spekman (1994)
	IRS2	We inform the alliance partner in advance of changing needs.		
	IRS3	We are willing to keep each other informed about events or changes that may affect the other party.		
	IRS4	We share commercial and technical information and updates related to the alliance without the need to protect ourselves.		
	IRS5	We share commercial and technical information and updates related to the alliance without the need to protect ourselves		
Relation Based Governance - Degree of relational	RBG-DRC1	Both my alliance partner and I view our relationship as something we are very committed to	5-point Likert scale	Adopted from Morgan & Hunt (1994)
	RBG-DRC2	Both my alliance partner and I view our relationship as very important to our firms		

Constructs	Code	Items	Scale	Reference
commitment	RBG-DRC3	Both my alliance partner and I view our relationship as something our firms intend to maintain indefinitely		
	RBG-DRC4	Both my alliance partner and I view our relationship as something our firms really care about		
	RBG-DRC5	Both my alliance partner and I view our relationship as deserving our firms' maximum efforts to maintain		
Relation Based Governance - Degree of trust	RBG-DT1	In our relationship, both my alliance partner and I are honest and truthful	5-point Likert scale	Adopted from Morgan & Hunt (1994)
	RBG-DT2	In our relationship, both my alliance partner and I can be counted on to do what is right		
	RBG-DT3	In our relationship, both my alliance partner and I have confidence in each other		
	RBG-DT4	In our relationship, both my alliance partner and I have high integrity		
	RBG-DT5	In our relationship, both my alliance partner and I are not reliable		
	RBG-DT6	In our relationship, both my alliance partner and I are trustworthy		
Relation Based Governance - Communication between the partners	RBG-CBP1	In our relationship, the interaction between me and my partner apprise each other of new developments in timely and accurate manner	5-point Likert scale	Adopted from Morgan & Hunt (1994); Mohr & Spekman (1994)
	RBG-CBP2	In our relationship, the interaction between me and my partner are open, helpful and without reservation		
	RBG-CBP3	In our relationship, the interaction between me and my partner takes place regularly to effectively compare current performance against expectations		
	RBG-CBP4	In our relationship, the interaction between me and my partner is adequate to credibly discuss issues relating to utilization of common resources		
Alliance Realized competitive advantage	ARC1	Because of the alliance, both my partner and I have gained strategic advantages over our competitors.	5-point Likert scale	Developed from Bigliardi et al. (2011)
	ARC2	The relationship has led to a depletion of strategic resources.		
	ARC3	Because of the alliance, both my partner and I are able to respond more effectively and dynamically to market changes.		
	ARC4	The relationship has not resulted in strategically important outcomes		

Constructs	Code	Items	Scale	Reference
Relationship tension – Level of conflict	RT-LC1	During the past years, there have been few significant disagreements between us and this alliance partner.	5-point Likert scale – Reverse question	Rai (2016)
	RT-LC2	There is almost never a conflict between us and this alliance partner.	5-point Likert scale	
Value creation	Within the alliance boundary, this alliance has led to: …		5-point Likert scale	
	VCR-1	the development of new resources and new capabilities leading to competitive advantage	5-point Likert scale	
	VCR-2	more effective exploitation of existing resources leading to improved cost effectiveness	5-point Likert scale	
	VCR-3	the development of new knowledge leading to increased innovation	5-point Likert scale	
	VCR-4	more effective exploitation of existing knowledge leading to greater efficiency	5-point Likert scale	
	VCR-5	more efficient deployment and utilization of resources leading to continuous improvement of quality of products and services	5-point Likert scale	
	VCR-6	A more effective penetration of market leading to improvement of market positions of both alliance partners	5-point Likert scale	

Appendix II: Value creation framework: Descriptive analysis

Table 1: Means, standard deviations of scale items used in the integrated model for value creation

Items	Mean	S.D.	Items	Mean	S.D.	Items	Mean	S.D.	Items	Mean	S.D.	Items	Mean	S.D.
TMC1	4.4	0.64	AMC.IC1	4.06	0.65	KSR.KS 2	3.6	0.96	RBG.DT6	4.2	0.57	TMC_fit	0	1
TMC2	4.56	0.62	AMC.IC2	4.06	0.58	KSR.KS 3	3.74	0.8	RBG.CP1	4.04	0.68	ALE_fit	0	1
TMC3	4.29	0.61	AMC.IC3	3.97	0.71	KSR.KS 4	3.94	0.66	RBG.CP2	3.95	0.59	AC_fit	0	1
TMC4	4.4	0.63	AMC.IL1	4.12	0.62	KSR.KS 5	3.86	0.79	RBG.CP3	4.06	0.65	AS_fit	0	1
ABC.AC1	4.02	0.71	AMC.IL2	4.31	0.62	KSR.IS1	3.79	0.92	RBG.CP4	4.02	0.68	TR_fit	0	1
ABC.AC2	4.1	0.77	AMC.IL3	3.98	0.66	KSR.IS2	3.18	1.06	RCA1	4.21	0.59	EP_fit	0	1
ABC.AC3	3.84	0.83	AMC.IL4	4.04	0.69	KSR.IS3	3.97	0.69	RCA 2	3.64	0.85	IC_fit	0	1
ABC.AS1	4.17	0.64	AMC.PR1	3.93	0.83	KSR.IS4	3.35	1	RCA 3	4.1	0.73	IL_fit	0	1
ABC.AS2	4.29	0.61	AMC.PR2	3.94	0.84	RBG.RC1	4.11	0.66	RCA 4	3.93	0.68	PR_fit	0	1
ABC.AS3	3.9	0.78	AMC.PR3	3.9	0.8	RBG.RC2	4.18	0.52	RLT.LC1	3.17	0.93	AT_fit	0	1
ABC.AS4	4.16	0.82	AMC.PR4	4.23	0.67	RBG.RC3	3.91	0.71	RLT.LC2	3.12	0.91	KS_fit	0	1
ABC.TR1	4.17	0.62	AMC.AT1	3.64	0.99	RBG.RC4	4.06	0.54	VCR1	4.02	0.72	IS_fit	0	1
ABC.TR2	4.06	0.78	AMC.AT2	3.91	0.8	RBG.RC5	4.03	0.59	VCR2	4.02	0.6	RC_fit	0	1
ABC.TR3	4.25	0.6	AMC.AT3	3.93	0.71	RBG.DT1	4.09	0.67	VCR3	4.04	0.65	DT_fit	0	1
ABC.TR4	4.03	0.83	ALE2	4.07	0.75	RBG.DT2	4.1	0.58	VCR4	3.97	0.8	CP_fit	0	1
ABC.EP1	3.98	0.68	ALE3	3.74	0.79	RBG.DT3	4.18	0.52	VCR5	4.12	0.57	RCA_fit	0	1
ABC.EP2	4.12	0.71	ALE4	3.67	0.93	RBG.DT4	4.22	0.56	VCR6	4.21	0.62	RLT_fit	0	1
ABC.EP3	4.16	0.75	KSR.KS1	3.94	0.69	RBG.DT5	4.01	1.07	VCR_fit	0	1			

Table 2: Harman one-factor test output

	PA1	Communalities (h2)	Specificity (u2)		Standardized loadings (PA1)	Communalities (h2)	Specificity (u2)		Standardized loadings (PA1)	Communalities (h2)	Specificity (u2)
TMC1	0.39	0.151	0.85	AMC.IL4	0.58	0.338	0.66	RBG.RC5	0.56	0.313	0.69
TMC2	0.44	0.198	0.8	AMC.PR1	0.56	0.309	0.69	RBG.DT1	0.62	0.385	0.61
TMC3	0.38	0.141	0.86	AMC.PR2	0.44	0.19	0.81	RBG.DT2	0.66	0.431	0.57
TMC4	0.43	0.182	0.82	AMC.PR3	0.51	0.257	0.74	RBG.DT3	0.62	0.382	0.62
ABC.AC1	0.42	0.173	0.83	AMC.PR4	0.51	0.263	0.74	RBG.DT4	0.62	0.38	0.62
ABC.AC2	0.42	0.179	0.82	AMC.AT1	0.25	0.063	0.94	RBG.DT5	0.18	0.033	0.97
ABC.AC3	0.39	0.154	0.85	AMC.AT2	0.48	0.234	0.77	RBG.DT6	0.67	0.452	0.55
ABC.AS1	0.46	0.211	0.79	AMC.AT3	0.56	0.31	0.69	RBG.CP1	0.61	0.37	0.63
ABC.AS2	0.41	0.165	0.84	AE2	0.49	0.24	0.76	RBG.CP2	0.63	0.398	0.6
ABC.AS3	0.42	0.173	0.83	AE3	0.33	0.109	0.89	RBG.CP3	0.56	0.309	0.69
ABC.AS4	0.44	0.197	0.8	AE4	0.5	0.252	0.75	RBG.CP4	0.51	0.261	0.74
ABC.TR1	0.52	0.266	0.73	KSR-KS1	0.6	0.363	0.64	RCA1	0.59	0.343	0.66
ABC.TR2	0.52	0.269	0.73	KSR.KS2	0.32	0.105	0.9	RCA2	0.43	0.181	0.82
ABC.TR3	0.47	0.223	0.78	KSR.KS3	0.55	0.298	0.7	RCA3	0.62	0.385	0.61
ABC.TR4	0.34	0.113	0.89	KSR.KS4	0.67	0.445	0.55	RCA4	0.38	0.148	0.85

ABC.EP1	0.6	0.359	0.64	KSR.KS5	0.6	0.36	0.64	RLT.LC1	-0.24	0.06	0.94
ABC.EP2	0.47	0.224	0.78	KSR.IS1	0.41	0.169	0.83	RLT.LC2	-0.18	0.034	0.97
ABC.EP3	0.44	0.193	0.81	KSR.IS2	0.5	0.254	0.75	VCR1	0.55	0.305	0.7
AMC.IC1	0.51	0.26	0.74	KSR.IS3	0.61	0.366	0.63	VCR2	0.48	0.233	0.77
AMC.IC2	0.52	0.269	0.73	KSR.IS4	0.39	0.153	0.85	VCR3	0.62	0.379	0.62
AMC.IC3	0.51	0.263	0.74	RBG.RC1	0.48	0.232	0.77	VCR4	0.51	0.26	0.74
AMC.IL1	0.46	0.214	0.79	RBG.RC2	0.57	0.32	0.68	VCR5	0.57	0.322	0.68
AMC.IL2	0.39	0.152	0.85	RBG.RC3	0.55	0.308	0.69	VCR6	0.55	0.301	0.7
AMC.IL3	0.55	0.304	0.7	RBG.RC4	0.47	0.224	0.78				

Table 3: Exploratory factor analysis and reliability of first order constructs in the integrated model for value creation

Construct	items	KMO (Overall MSA)	Bartlett's Test (p-value)	Components		%of Variance	Cronbach's alpha
				1	2		
Top Management Commitment (TMC)	TMC1	0.71	5.09E-26	0.74		0.81	0.77
	TMC2			0.7			
	TMC3			0.83			
	TMC4			0.57			
Alliance experience	AE2	0.7	1.54E-21	0.69		0.99	0.78
	AE3			0.79			
	AE4			0.73			
Acquisition	ABC-ACQ1	0.68	1.72E-15	0.73		0.99	0.72
	ABC-ACQ2			0.62			
	ABC-ACQ3			0.7			
Assimilation	ABC-ASC1	0.69	7.19E-02	0.77		0.8	0.76
	ABC-ASC2			0.74			
	ABC-ASC3			0.58			
	ABC-ASC4			0.68			
Transformation	ABC-TRN1	0.68	3.24E-23	0.79		0.8	0.73
	ABC-TRN2			0.72			
	ABC-TRN3			0.66			
	ABC-TRN4			0.48	0.5		
Exploitation	ABC-EXP1	0.66	6.42E-22	0.56		0.99	0.77
	ABC-EXP2			0.84			
	ABC-EXP3			0.79			
Inter-organisational coordination	AMC-IC1	0.68	2.80E-24	0.76		0.98	0.79
	AMC-IC2			0.86			
	AMC-IC3			0.64			

Construct	items	KMO (Overall MSA)	Bartlett's Test (p-value)	Components		%of Variance	Cronbach's alpha
Inter-organisational learning	AMC-IL1	0.76	9.58E-26	0.77		0.9	0.78
	AMC-IL2			0.56			
	AMC-IL3			0.72			
	AMC-IL4			0.74			
Alliance proactiveness	AMC-PR1	0.77	7.18E-31	0.84		0.86	0.81
	AMC-PR2			0.67			
	AMC-PR3			0.76			
	AMC-PR4			0.7			
Alliance transformation	AMC-AT1	0.69	1.39E-18	0.64		0.99	0.76
	AMC-AT2			0.75			
	AMC-AT3			0.75			
Information Sharing Readiness	IRS1	0.66	1.99E-42	0.42		0.81	0.79
	IRS3			0.89			
	IRS4			0.83			
	IRS5			0.81			
Knowledge Sharing Readiness	KSR1	0.79	8.32E-35	0.75		0.81	0.80
	KSR2			0.43			
	KSR3			0.76			
	KSR4			0.72			
	KSR5			0.78			
Degree of relational commitment	RBG-DRC1	0.74	3.69E-29	0.7			0.77
	RBG-DRC2			0.76		0.81	
	RBG-DRC3			0.57			
	RBG-DRC4			0.54			
	RBG-DRC5			0.71			
Degree of trust	RBG-DT1	0.86	1.37E-63	0.77		0.88	0.85
	RBG-DT2			0.8			

Construct	items	KMO (Overall MSA)	Bartlett's Test (p-value)	Components		%of Variance	Cronbach's alpha
	RBG-DT3			0.8			
	RBG-DT4			0.85			
	RBG-DT5			0.33	0.43		
	RBG-DT6			0.71			
Communication between partners	RBG-CBP1	0.7	1.90E-23	0.8		0.85	0.74
	RBG-CBP2			0.7			
	RBG-CBP3			0.7			
	RBG-CBP4			0.48			
Alliance Realized competitive advantage	ARC1	0.72	4.51E-23	0.85		0.95	0.74
	ARC2			0.5			
	ARC3			0.76			
	ARC4			0.53			
Relationship tension - Level of conflict	RT-LC1	0.5	1.05E-11	0.75		1	0.73
	RT-LC2			0.75			
Value creation	VCR1	0.72	3.62E-52	0.7		0.77	0.82
	VCR2			0.6			
	VCR3			0.71			
	VCR4			0.59			
	VCR5			0.8			
	VCR6			0.69			

Table 4: Cross-loading of factors

		1	2	3	4	5	6	7	8	9
	Item	TMC	ALE	ABS	AMC	KSR	RBG	RCA	RTM	VCR
1	TMC1	0.8222	0.2535	0.39	0.2878	0.2828	0.287	0.241	0.0693	0.325
1	TMC2	0.7758	0.0763	0.275	0.4569	0.499	0.349	0.247	-0.033	0.226
1	TMC3	0.7571	0.3646	0.421	0.2323	0.2686	0.318	0.1502	-0.0427	0.172
1	TMC4	0.7241	0.2771	0.416	0.31	0.1816	0.393	0.2204	-0.3711	0.403
2	ALE2	0.2344	0.8415	0.518	0.3898	0.2982	0.421	0.2905	-0.0242	0.306
2	ALE3	0.2204	0.7833	0.341	0.2552	0.0805	0.276	0.2644	0.1582	0.312
2	ALE4	0.2833	0.8599	0.439	0.3562	0.3283	0.426	0.3087	-0.0428	0.475
3	ABS- AC	0.4043	0.4388	0.707	0.3771	0.352	0.403	0.2194	-0.1962	0.471
3	ABS-AS	0.4809	0.3475	0.776	0.4401	0.3538	0.436	0.3637	-0.1386	0.405
3	ABS-TR	0.2402	0.3948	0.71	0.5364	0.4202	0.535	0.3978	-0.0538	0.371
3	ABS-EP	0.1734	0.3643	0.68	0.6141	0.3747	0.483	0.3733	-0.0573	0.415
4	AMC-IC	0.218	0.2659	0.518	0.6836	0.5203	0.553	0.3054	-0.0664	0.349
4	AMC-IL	0.2878	0.2971	0.473	0.758	0.4624	0.534	0.3926	-0.1232	0.521
4	AMC-AP	0.4394	0.3279	0.474	0.7432	0.5277	0.512	0.481	-0.0534	0.395
4	AMC-AT	0.1917	0.2726	0.416	0.6312	0.3833	0.43	0.3566	-0.0501	0.506
5	KSR-KS	0.3865	0.4229	0.52	0.643	0.9242	0.658	0.4468	-0.2199	0.43
5	KSR-IS	0.3604	0.1074	0.388	0.5584	0.8687	0.514	0.3959	-0.2083	0.297
6	RBG-RC	0.4565	0.4328	0.568	0.5725	0.5197	0.835	0.4528	-0.0912	0.484
6	RBG-DT	0.373	0.3799	0.476	0.5645	0.5434	0.842	0.5159	-0.3829	0.609
6	RBG-CP	0.2853	0.3801	0.558	0.6698	0.6109	0.857	0.5524	-0.2156	0.518
7	RCA1	0.2358	0.369	0.391	0.464	0.3682	0.484	0.8762	-0.1153	0.68
7	RCA2	0.1537	0.169	0.29	0.331	0.4611	0.357	0.6124	-0.032	0.271
7	RCA3	0.2862	0.2995	0.407	0.5231	0.4258	0.563	0.8491	-0.1391	0.61
7	RCA4	0.1357	0.1536	0.266	0.3277	0.1761	0.376	0.6346	-0.0855	0.343
8	RLT-LC1	-0.1917	0.0526	-0.16	-0.0934	-0.215	-0.286	-0.1457	0.9167	-0.229
8	RLT-LC2	0.0177	-0.0549	-0.134	-0.088	-0.2079	-0.185	-0.0806	0.8498	-0.174

		1	2	3	4	5	6	7	8	9
	Item	TMC	ALE	ABS	AMC	KSR	RBG	RCA	RTM	VCR
9	VCR1	0.2415	0.3076	0.377	0.5373	0.4433	0.445	0.401	-0.1704	0.636
9	VCR2	0.3583	0.3606	0.401	0.3589	0.2659	0.388	0.4549	-0.1756	0.695
9	VCR3	0.1656	0.3533	0.49	0.5435	0.4476	0.483	0.4013	-0.1834	0.749
9	VCR4	0.2963	0.3483	0.415	0.3984	0.2695	0.436	0.4558	-0.0926	0.699
9	VCR5	0.2792	0.3139	0.441	0.4438	0.2333	0.508	0.523	-0.2333	0.819
9	VCR6	0.2415	0.2934	0.418	0.4442	0.2012	0.505	0.6571	-0.1528	0.756

Table 4: Factor loading Analysis

The below table of factor loading shows the variance explained by the variable on the particular latent construct.ALE1 was dropped as value (being less than 0.5) was not indicating significant variance being extracted by it.

Items	Construct	Factor Loading
TMC1	Top Management Commitment (TMC)	0.82
TMC2		0.78
TMC3		0.76
TMC4		0.72
ALE1	Alliance experience	0.47
ALE2		0.84
ALE3		0.78
ALE4		0.86
ABS- AQ	Absorptive Capacity	0.71
ABS – AS		0.78
ABS – TR		0.71
ABS –EP		0.68
AMC-IC	Alliance Management Capability	0.68
AMC-IL		0.76
AMC-AP		0.74
AMC-AT		0.63
KSR- IS	Knowledge sharing routine	0.92
KSR-KS		0.87
RBG-RC	Relation based governance	0.84
RBG-DT		0.84
RBG-CP		0.86
RCA1	Alliance Realized competitive advantage	0.88
RCA2		0.61
RCA3		0.85
RCA4		0.64
RLT.LC1	Realtionship tension - Level of conflict	0.92
RLT.LC2		0.85

VCR1	Value creation	0.64
VCR2		0.70
VCR3		0.75
VCR4		0.70
VCR5		0.82
VCR6		0.76

Appendix III: Value appropriation framework: Discussion guide

Intended use of this discussion guide

The purpose of this document is to support facilitation of a discussion with Industry leaders/ experts (such as BD&L Head, CFO) who have managed/led coopetitive alliances. All the information collected as part of these interviews shall be used for academic research and publication in peer reviewed journals. Based on approval from the expert, due credit without citing name of the companies engaged in the dyadic alliance, will be given.

Meeting objectives and agenda

Overall, the objective is to provide unique insights to how pharmaceutical firms in a coopetitive dyadic alliance perceive value appropriation, how different factors influence the value appropriation and provide guidance to managers on what factors or mechanisms can help in appropriating value in a coopetitive alliance. Further, we aim to identify a structured and comprehensive set of research opportunities for future studies to stimulate the advancement of research on value appropriation in coopetitive alliances.

Agenda:

S.N.	Topic	Duration	Description
1	Goal/Objective of the meeting	5 mins	Set the context and objectives for the study
2	Value creation and appropriation : Overview	10 mins	Inform the expert about key terminologies and ensure the key terms are well understood
3	Discussion	45-60 mins	Understand strategic intent/need of the dyadic alliance. Evolution of the engagement Value appropriation objective/ focus Identify factors influencing Value appropriation (moderators as well as key determinants)
5	Closure	10 mins	Validate insights, align on next steps, ask for referral to another industry leader, Thank and close

Key discussion points

1. When did the coopetitive relationship took place and what was the nature of cooperation/coopetition?

    I. Seek info and use an alliance that was for longer period (for a few years). Suggested to use such strategic alliance in mind while answering all remaining questions.
2. Kindly share timeline and how the partnership evolved over time?
    I. Probe on how the partnership evolved for example the intent initially was to be stronger on the market as a group in comparison with competitors or to preserve market position,
    II. To strengthen the position in the market through the focused product niches of individual firms and with the help of interaction between them and later to merge ? or
    III. explore new technologies, leverage synergies of other forms expertise in a given area)
3. What was the strategic objective when the firms entered into the partnership ? Probe on
    I. To learn from each other (positive-sum) or to utilize the resources and capabilities of each other. (positive-sum)
4. What was the Value appropriation objective/ focus during the collaboration?
    I. To be able to gain financially by offering the other companies access to its sales network or
    II. To be able to gain additional products by leveraging partner firm's regulatory capabilities.
    III. To leverage and gain by using dosage formulation (Finish dosage formulation capabilities of another firm) and bring cost effectiveness to make products attractive.
5. What were the various determinants of value appropriation according to you in the engagement? (Probe and validate factors that impact value appropriation such as)

6. How was the contractual based governance: How were the pie splitting control rights defined, what determines pie-splitting rights?
    I. What were some of the Contractual governance (Pie split rights, IP rights, mfg. rights, any other exclusive rights, etc.) mechanisms?
    II. Role of informal governance mechanisms (willingness to share information)/ information sharing readiness.
7. How do you prescribe the relational, firm level and knowledge sharing strategies for the coopetitive alliance?
    I. How do you describe tension resolving mechanisms for knowledge sharing/ exchange process in the alliance? kindly share details of mechanisms used
8. What changed after some time in the engagement -(technical knowhow/knowledge, Joint discussions on technological developments/advancements to keep you competitive)?
9. How do you describe private value _co-operation and private value competition appropriation done by your organization?
    I. How was the privately appropriated value used (better market access based on learnings, developing FDC or using the learnings to other Therapy areas)?
    II. Assuming it was not a zero-sum game, who could appropriate better value and why?

List of publications and conferences

Paper published in international journal.

- Yadav, N., Kumar, R., & Malik, A. (2022). Global developments in coopetition research: A bibliometric analysis of research articles published between 2010 and 2020. Journal of Business Research, 145, 495-508. https://doi.org/10.1016/j.jbusres.2022.03.005 (SCOPUS Indexed, ABDC – A category)

Paper presented in international conferences.

- Kumar, Roopesh & Bhat, Anil & Yadav, Neetu. (2023). Value Appropriation in Inter-firm Coopetitive Alliances: Case of the Indian pharmaceutical industry. 10.4324/9781003415725-73. Presented paper in international conference on Evidence based management, 2023, in BITS Pilani, held on 24-25 February 2023. Paper was also published in conference proceedings.

Paper in pipeline

- What determines value appropriation in coopetitive interfirm alliances? Qualitative insights from the Indian pharmaceutical industry
- Value creation in coopetition-based interfirm alliances between R&D-intensive firms: An empirical study of the Indian pharmaceutical industry

Brief Biography of the candidate

Roopesh Kumar is a Ph.D. scholar at Department of Management, Birla Institute of Technology and Science, Pilani, Rajasthan, India. He is pursuing his research in value creation and value appropriation in coopetition based strategic alliances in Indian Pharmaceutical industry. Some part of his research work has already published in reputed journals like Journal of Business Research. He is currently working at Novartis Business Services, where he heads a group supporting market access for global launches in Neurosciences and Solid tumour therapy areas. He holds masters in MBA (Pharmaceutical Marketing) from National Institute of Pharmaceutical Education and Research, S.A.S. Nagar, India.

Brief Biography of the supervisor

Neetu Yadav is an Associate Professor of Strategic management area at Birla Institute of of Technology and Science, Pilani. Prior to joining BITS, she has worked with University of Delhi as Assistant Professor at Shaheed Sukhdev College of Business Studies. She holds a Ph.D. from Department of Management Studies, Indian Institute of Technology Delhi. She has been awarded with the most prestigious Paul R. Lawrence Fellowship to participate in NACRA 2018 annual meeting and is a recipient of Emerald Literati Awards 2019. She has also been awarded as Senior Research Fellow from University Grants Commission (UGC) and international travel grants from ICSSR.

Brief Biography of the co-supervisor

Anil K. Bhat is a Professor in the Department of Management, BITS Pilani, Pilani, Rajasthan, India. He is a graduate in Mechanical Engineering from REC, (now NIT) Srinagar and earned his doctorate (fellowship) from IIM-Bangalore. He is a member of Academy of Management (AOM), American Marketing Association (AMA), Academy of International Business (AIB), British Academy of Management (BAM) and a Fellow of Institution of Engineers (India). Besides guiding many Ph.D.'s, he has co-authored a book on management published by Oxford University Press and has more than a hundred refereed publications. His research mainly focuses on risk management, consumer behaviour, brand management, business excellence, and marketing research.