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What informs a firm's Attractiveness as an Alliance Partner? The development of a survey instrument.

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What informs a firm's Attractiveness as an Alliance Partner? The development of a survey instrument.

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Abstract

Strategic alliances are defined as inter-organisational collaborative arrangements whose purpose is to achieve the strategic targets of partners (Das and Teng, 1998). Within the pharmaceutical industry, they represent a key form of disintegration that enables organisations to create a network based on partnerships, whereby the overarching goal is to pursue a set of agreed-upon goals, in which they share the benefits (Chen and Chen, 2002). Despite the high prevalence of strategic alliances within this industry, only 50% are considered stable or achieve performance perceived by the partners as satisfactory (McCutchen et al., 2008) and up to 70% terminate early (Kogut, 1989; Park and Russo, 1996; Park and Ungson, 1997). Nevertheless, 85% of the senior executives still believe alliances are and will continue to be essential or important to their business (Powerlinx, 2014), and as such have invested significantly in becoming attractive alliance partners, or partner of choice. Further, both conceptual and empirical evidence has signaled that a partner's attractiveness can have significant contribution to the success of the alliance itself (Coombs and Deeds, 2000; Lee, 2007).

Despite this evidence, there is no validated approach for a firm to test how attractive they are perceived to be by prospective partners. Without this, a firm is not able to tangibly understand what their perceived strengths and weaknesses are, and how these evolve over time. The purpose of this research is to address this gap. Further, the research aims to understand the impact of firm's Alliance Strategy on their attractiveness scores.

As such, this research makes three overarching and significant contributions; (1) the identification of two key antecedents of a firm's Attractiveness as an Alliance Partner (2) the development of a self-assessment questionnaire for a firm to use in order to quantify their attractiveness, and (3) the development of research propositions for how an Alliance Strategy moderates the relationship between Attractiveness and its antecedents.

This research applies Network Theory, which, in its most simple terms, refers to a firm's relationships with others that have important and desired resources (Ireland et al., 2002). Networks promote alliance formation and firm success through 'social capital', described as the benefits a firm derives from their relationships (Coleman, 1988). Social capital increases in alliances with greater diversity within their networks (Baker, 2000) and with the quality of the alliances themselves (Glaister and Buckley, 1999). As such, this theory plays a key part in explaining the identified antecedents of Attractiveness - Previous Alliance Performance and Alliance Portfolio Diversity. In turn, this research extends Network Theory in two ways. Firstly, by introducing the novel concept of Attractiveness as an Alliance Partner as an indicator of a firm's success or performance. Secondly, by introducing the novel concept of an Alliance Strategy as an important condition that will moderate a firm's attractiveness.

A mixed method approach has been used, comprising of four Empirical Studies in order to develop and finalise the research propositions and questionnaire. This research has been conducted within and for the pharmaceutical industry specifically but can be applied to other industries.

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Acknowledgements

Author's declaration

This thesis is the result of my own work and includes nothing that is the outcome of collaboration with others. It has not been submitted in whole or in part for a degree at any other university. All sources of quoted information are acknowledged by means of references. The length of this thesis, including appendices, references, footnotes and tables is approximately 69,637 words and it contains 50 tables and 4 figures within the main body of the thesis.

Millie Pari
London, January 2023

Chapter 1: Introduction

The purpose of this Chapter is to introduce the area of interest and the gap that this research seeks to address. This Chapter will follow the structure below:

As outlined above, there are 4 sections to this introduction. An introduction will first be presented, which will give a high level overview of the research and aims. Next, the phenomenon of interest will be described in detail, followed by a review of alliance articles which concluded in identification and selection of the key research gap that will be addressed. Finally, this Chapter will conclude with the thesis structure to help navigate the reader through what to expect.

The research will now be introduced in this first section of this Chapter.

1.1   Introduction to research

Strategic alliance has received several conceptualizations over the last two decades. Gulati (1998), founded much of the research in this space and defined strategic alliances as voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services. However, since then, other definitions have been proposed and utilized, recognizing the evolving motivations and structures that have been adopted since 1998. This research defines strategic alliances as inter-organisational collaborative arrangements whose purpose is to achieve the strategic targets of partners (Das and Teng, 1998).

The research will be conducted within the pharmaceutical sector, which represents 1.4% of the EU's combined GDP (EFPIA, 2019; Grand View Research,2021). Indeed, the global pharmaceutical manufacturing market size was valued at over $405 billion in 2020 and is expected to grow at a compound annual growth rate (CAGR) of 11.34% from 2021 to 2028. Importantly, innovation in pharmaceuticals has contributed some of the most important successes in modern medicine—e.g., for the treatment of high cholesterol and heart disease, highly active antiretroviral therapy for the treatment of HIV, tyrosine kinase inhibitors (TKIs) for the treatment of chronic myeloid leukemia, and many other breakthroughs (Lakdawalla, 2018). Thus, a well-functioning pharmaceutical industry can contribute directly and significantly to

human wellbeing and the reduction of ill health and suffering (Taylor, 2015) and as such, research that can optimise a firm's performance in this important space can make a meaningful difference. Moreover, this research can also have theoretical and practical application in other fields, and these are outlined in Chapter 5.

Several empirical studies relating to strategic alliances have been conducted with the pharmaceutical industry, (Scillitoe et al., 2015; Xu and Cavusgil, 2019; Nirjar et al., 2018; Cui et al., 2018), in part due to the significant rise of alliances in this area. This rise has been attributed in part to a phenomenon of disintegration across the healthcare industry broadly, but within the pharmaceutical industry more specifically (Smith, 2012; Anscombe et al., 2009). This phenomenon is further discussed in Chapter 1, Section 1.2. Despite the high prevalence of strategic alliances, only 50% of alliances are considered stable or achieve performance perceived by the partners as satisfactory (McCutchen et al., 2008) and up to 70% terminate early (Kogut, 1989; Park and Russo, 1996; Park and Ungson, 1997). Nevertheless, 85% of the senior executives still believe alliances are and will continue to be essential or important to their business (Powerlinx, 2014) leading to a significant interest from strategic, marketing and management scholars alike to investigate factors that might influence their success.

Conceptual and empirical research has signaled both partner attractiveness and selection (Coombs and Deeds, 2000; Lee, 2007) and a firm's alliance portfolio experience and diversity (Lane and Lubatkin, 1998; Ahuja, 2000a; Lahiri and Narayanan, 2013) to have a significant contribution to the likely success of an alliance. The aim of this research is to build on both areas through the context of the research gaps identified from the literature review conducted, further described in Chapter 2. The first overarching research question is to understand the key antecedents of a firm's attractiveness as an alliance partner. The second overarching research question is to explore the moderating role of firm's alliance strategy on a firm's attractiveness and its antecedents. In answering both of these research questions, this research will make its key, overarching contribution – the development of a self- assessment questionnaire for firms to test how attractive they are to potential partners.

This research has not found any validated approach that would enable firms to understand in quantitative terms, how attractive they might be to prospective partners. Without this, a firm is not able to tangibly understand what their perceived strengths and weaknesses are, and how these evolve over time through targeted interventions that are intended to make the company more attractive to partner with. Ultimately, this research aims to address that gap.

The variables and research questions were proposed and refined through literature reviews and a qualitative research approach with key subject matter experts within the industry of interest. The methodology created for this research is described in Chapter 3.

In addressing the two overarching questions, this current research seeks to provide both theoretical contributions to the literature and also executive teams with tangible actions to incorporate into their alliance plans. Specifically, understanding the antecedents of alliance attractiveness will enable firms to build and communicate the appropriate factors that will attract partners in order that they can meet their firms objectives. Moreover, understanding the role of

an alliance strategy will enable firms to consider this when developing their long term corporate and alliance strategic plans. Finally, the questionnaire itself will enable firms to understand, in specific quantitative terms, how attractive they are to potential partners, and if and how this evolves over time. The specific implications and recommendations of this research have been elaborated on in Chapter 5.

The phenomenon of interest will now be discussed, to include the evidence of disintegration, and the types of alliances applied in practice. Next, the research relevance will be justified, specifically considering the variance in alliance success and failure and the contributing factors. The review of alliance articles will then be thoroughly discussed, concluding in the research gaps identified. The gap selected will then be explained, and the final section of the introduction will describe the research aims and objectives.

1.2   Phenomenon of interest

Each choice, or business decision, a pharmaceutical company makes will influence its ability to compete and succeed in an increasingly complex market (Li, 1995; Herrmann, 2008). Choices empirically discussed and investigated include product development and portfolio mix (Girotra et al., 2007; Rogers et al., 2002) or how and where to geographically operate (Tannoury and Attieh, 2017; Bhangale, 2008). The set of choices an organisation makes will inform the way in which it organizes itself and the strategies it deploys to achieve its goals.

Smith (2012) in "The future of Pharma" identifies six fundamental shifts or trends that either favour or disfavour particular strategies or models, whilst also leading to the evolution of new ones. The purpose of this research is to explore and investigate the impact of one of the shifts described in Smith's research, which concerns changes in how much economic activity firms perform inside their boundaries, and how much they chose to source from externally (Smith, 2012). Simply put, the phenomenon can be described as the choice to either integrate or to disintegrate and connect (Anscombe et al., 2009). The phenomena itself is not new and is well documented; common research areas within the field discusses the shift within the context of the consequential business models (Fisken and Rutherford, 2002) or disintegration tactics, such as outsourcing (Higgins and Rodriguez, 2006; Jones, 2000), merging (Ornaghi, 2009) or, as is the case of this research area, the choice to enter into strategic alliances (Danzon et al., 2005) where organizations believe that the optimum combination of cost, risk, flexibility and control is achieved through relinquishing specific activities or even entire processes (Herrmann, 2014).

1.2.1   The evidence for disintegration

Historically, the life science industry has been relatively integrated – that is, pharmaceutical organisations have largely owned the entire process of drug discovery, development, and through to commercialisation, conducted these activities entirely in-house. A survey by Ettlie (1997) built on empirical evidence of the time to suggest that simultaneously engineering products and processes improves firm performance, in part by improving market need understanding. However, since the 2000s, studies have argued and demonstrated the opposite – that is, pharmaceutical organisation are now conducting parts of the drug life cycle process

outside of the confines or boundaries of their core business. It is this choice to stop conducting all activities in-house that defines disintegration (Smith, 2016).

As an example, Gautam and Pan (2016) analysed data on the top 12 big pharma companies to understand the change in strategic focus over the past 20 years. In doing so, they showed that between 1995-2005, nearly all the 12 big pharma companies had undergone an intense merger driven by a strategy to integrate the dispersed research units and therapy areas across the merged companies, supporting Ettlie (1997) earlier findings. However, post the late 2000s they observed a shift towards leaner and more focused models (Gautam and Pan, 2016). Companies that were fully integrated, choosing to fully own the process of drug discovery to commercialisation, have instead moved to a disintegrated model, where selected parts of the process are moved outside of their firm boundaries. This observation is validated through analyst reports (Herrmann, 2014) who highlight examples such as AstraZeneca's divestment of their infectious disease arm and the creation of a semi-autonomous, virtual unit for neuroscience. Examples like these suggest the unique requirements of selected therapeutic areas in part motivate organisations to disintegrate their internal structures in order to be able to leverage the required capabilities.

Analysing the source of investments towards therapeutic advancements also provides evidence of disintegration across the life science industry more broadly, beyond company's choosing to disintegrate through business models. Munos (2009) showed that the share of drugs approved by large US firms steadily decreased from ~80% in 1980 to approximately 50% in 2008. This was supported by Kneller (2010) who found at least half of the new drugs discovered in the USA between 1998 and 2007 originated from public laboratories or small firms. In this way, therapeutic advancements are no longer just coming from Big Pharma. According to IQVIA's 2018 institute report on global Oncology Trends, there are now over 700 organizations active in late stage oncology research alone, ranging from academic institutions to large pharmaceutical companies (Aitken et al., 2018). Moreover, their analysis shows US spending growth for therapeutic medicines has slowed since 2015 but has simultaneously increased across the emerging markets (Aitken et al., 2018). Both trends support PricewaterhouseCoopers's observation of disintegration across the industry being multinational and multi-disciplinary in nature (PricewaterhouseCoopers, 2009).

The growing field of digital medicine is an example of a recent healthcare advancement that has been led through a disintegrated model. Steinhubl and Topol (2018) describe how regulatory approvals that are helping to legitimize the field of digital medicine have required collaborative and thoughtful interaction between individuals including networks of computer scientists, healthcare providers, engineers, behavioural scientists, ethicists, clinical researchers, and epidemiologists.

1.2.2   Forms of disintegration

Disintegration speaks to the strategic decision a firm makes to stop conducting all their activities in-house (Smith, 2016). The most common resulting business models in Pharma are (Horvath et al., 2019):

1. Open Innovation based R&D - Appears when companies decide to focus more on their core competencies and outsource their R&D activities
2. Networked - The open form of the traditional fully integrated companies, where varying forms and intensity of partnership are applied in order to leverage assets of other firms and drive efficiencies
3. Fully diversified - Expansion of core business to provide related products through in-licensing, collaborations or merger and acquisitions

In this way, several approaches can be leveraged to create the specific model desired. The mix of arrangements appears to create different consequences of disintegration; as Smith notes, "between the extremes of integration and disintegration lie every possible shade of grey" (Smith, 2016, p56).

Some of the more common approaches to disintegration have been further described below.

I.   Divesting and out-licensing:

Four reasons have been attributed to pharmaceutical divestments: strategy change, capacity reduction, cost reduction and risk reduction (Festel, 2014). GlaxoSmithKline's decision to focus on consumer health led to the divestment of their Oncology portfolio to Novartis, who in turn divested their consumer business to GlaxoSmithKline. As an alternative to outright divestments, out-licensing of individual or portfolio product rights can enable a firm to gain economic benefits from the commercialization of technological knowledge (Hu et al., 2015) whilst being able to focus on their core competencies.

II.   Outsourcing:

Outsourcing is used across the value chain for either individual tasks or entire processes with research predicting a shift towards the latter, in particular with regards to capabilities or activities that are not deemed to be central to a firm's strategy; for instance, IT or manufacturing (Gilbert et al., 2003). Conversely, PricewaterhouseCoopers's paper observes that the most effective and efficient networks have been created where the goal has been to outsource to a partner with a wider range of opportunities, specialist skills and market access than the company has on their own (PricewaterhouseCoopers, 2009). In this way, PricewaterhouseCoopers believes outsourcing benefits expansion of goals rather than narrowing in. This is supported by Festel et al.'s research (2010) that expanding in-house capabilities by external expertise is seen as the most important advantage of outsourcing, contending the view of Gilbert et al. (2003).

III.   Mergers & Acquisitions (M&As):

M&As can initially be dismissed as an integration method only, however research suggests that motivations for M&As may be changing and are in fact a consequence of a firm's plans to disintegrate. Whilst M&As are still deployed to buy innovation at speed (Bansal et al., 2018), recent acquisitions have been driven by a rationale to build complimentary capabilities rather than a desire to be massive (Gautam and Pan, 2016).

IV.   Strategic alliances:

Strategic alliances are a form of disintegration that enables organisations to create a network based on partnerships, whereby the overarching goal is to pursue a set of agreed-upon goals, in which they share the benefits (Chen and Chen, 2002; Das and Teng, 2001; Lambe et al., 2002) for instance building a broader base for innovation (Lavie and Rosenkopf, 2006; Bouncken et al., 2016).

Before discussing the various forms, a strategic alliance might take, Table 1 below compares different types of partnerships described within the literature often interchangeably with strategic alliances. One of the key differences between the concepts is in the part of the partnership that the definition emphasizes. For instance, strategic alliances emphasize the relationship between the partnership and the firm's strategies – in this way, it emphasizes the strategic nature or motivation behind the partnership. Conversely, joint ventures emphasize the legal and contractual nature of the partnership. As this research is concerned with partnerships as a consequence of a firm's strategic choice to disintegrate more broadly, the term "strategic alliance" will be applied.

Table 1: Partnership concept comparisons

Concept	Definition
Strategic alliances	Voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services (Gulati, 1998). Strategic alliances provide a platform for exchanging important resources as well as strategic advantages such as skills, competence or market access (and are therefore a means to achieve company goals and increase their competitive power (Talebi et al., 2017).
Corporate partnering	An on-going relationship between two firms that involves a commitment over an extended time period, and a mutual sharing of information and the risks and rewards of the relationship (Hendrick, 1995)
Intra-and inter stakeholder alliances	Alliances among the various stakeholder groups within (intra) or between (inter) specific corporations (Fassin et al., 2017)
Alliance form; e.g. R&D alliances	A type of alliance. Innovation-based relationships in which R&D activities constitute a significant part of the collaborative effort and represent a particular subset of cooperative agreements (Hagedoorn, 2002; Oxley, 1997).
Joint ventures	A contractual arrangement that creates a separate legal entity in which the parent firms hold ownership interests under conditions and provisions that are specified by a legal document (Murray and Siehl, 1989). A kind of hybrid governance structure, or voluntary arrangement that is sustained by ensuring the exchanges among partners are mutually

	beneficial in helping firms match their resources and capabilities requirements (Hwang and Gaur, 2009)		

The literature also adopts different definitions of strategic alliances that were introduced since Gualti's definition (1998). In order to agree and adopt a definition that was aligned with the proposed research scope, a comparison of common cited definitions has been compared and summarized in Table 2 below. The citation volume refers to how many articles used the definition – High (H), Medium (M) or L (Low).

Table 2: Strategic alliances definitions

Definition	Comments	Relevance to research scope	Citation volume
By Construct:			
Any form of inter-firm cooperation. Includes any transnational corporate linkage, hybrid arrangements (Borys and Jemison, 1898), and/or international collaborative relationships which result in expanding firm boundaries (Hergert and Morris, 1988). This incudes mergers and acquisitions.	Used when the phenomenon of alliances is not the primary interest and often in combination with a secondary definition or narrow unit of analysis	Too broad and does not take into account the equity contributed or obligated by the partners	H
Defined on a markets-hierarchies continuum. Categorized by unilateral contractual agreements, bilateral contractual agreements, and equity-based alliances (Oxley, 1997)	Often combined with transaction cost theory but not social or behavioural theories	Does not distinguish between alliances that are strategic in nature and those that are operational	M/L
By Purpose			
Extended cooperative agreements that achieve mutually relevant benefits by exchanging, sharing or co-developing products, technologies, or services (Anand and Khanna, 2000; Gulati, 1995)	Used when the success of alliances is explored and often combined with Learning and knowledge management theories	Can be interchangeable with joint ventures.	H
Gaining access to partner resources in order to minimise costs that appear from cooperative risks by absorbing sufficient knowledge and maintaining and developing abilities by	Used within the context of governance practices or trust	Strategic purpose but narrowed to one motivation	M/L

combining skills with their partners (Li et al., 2008)			
A type of dynamic capability that supports firms with external resources, which otherwise would have been missed (Ma et al., 2012) and thus improves partner capabilities (Nielsen and Nielsen, 2009)	Used in combination with a secondary definition and when the emphasis is on alliance capabilities	Motivations not commonly and explicitly explored within the context of alliance capabilities as the subject of capabilities is so far ranging	H
Inter-organisational collaborative arrangements whose purpose is to achieve the strategic targets of partners (Das and Teng, 1998)	Used when exploring the modification of business practices	Definition is broad enough to explore but specific in its requirement to be strategic and not operational. *Definition adopted within research.*	H
The primary purpose of an alliance is grouped into **co-option, co-specialization, and learning and internalization** (Doz and Hamel, 1998)	'Value' is often concurrently described and explored, either in relation to the alliance or the product	Goes further than Das and Teng (1998) to categorize motivations and includes an element of transaction cost theory through cooption, but not commonly adopted	M/L

Similar to other disintegration approaches, examples exist of strategic alliances across the value chain, and these are described further in the following sections.

1.2.3   Forms of and motivations for strategic alliances

I.   R&D alliances:

Despite the well documented challenges of low productivity and increasing R&D costs, the ABPI notes that the industry still has the highest R&D intensity measures of any sector globally, with companies investing on average 20% of their company sales to R&D expenditure (ABPI). The allocation of such investments has already shifted away from integrated programmes and towards collaborations, for instance, the most innovative drugs between 1998-2007 all originated in academia and small biotech companies, rather than large pharmaceutical companies (Arvidsson et al., 2016).

According to an alliance study conducted by Deloitte, alliances are viewed as the best alternative to M&As for organisations that wish to de-risk their in-house R&D, which is a market dynamic most attributed to R&D alliances by the majority of alliance experts (Herrmann, 2014). Gautam and Pan's (2016) research however gives additional emphasises to the role of globalization in driving R&D alliances. They note that localizing in global hotspots has allowed

pharma to broaden the access of external innovation through targeted alliances and collaborations with the academic institutions and biotechs in these innovation ecosystems (Gautam and Pan, 2016). The role of globalization is discussed to a lesser degree in Gottinger and Umali's (2008) research- perhaps in part since the research was conducted in 2008 when the full effects of globalization on industry partnerships were not yet seen. Their research focusses instead on the speed of evolving technological capabilities and the need to share information at pace (Gottinger and Umali, 2008). Interestingly, McCutchen and Swamidass (2004), who studied the motivations for strategic alliances in the industry, observed that only 25% of large organisations stated reducing the cost of R&D as a motivation to enter into alliance, suggesting the transaction cost dynamic is less influential, relative to the desire to leverage their ally's capabilities.

II.   Manufacturing alliances:

Alliances in manufacturing is less debated in the literature than R&D and commercial alliances. A noted example however is GlaxoSmithKline's 30-year partnership with Bespak to develop the Diskus inhalers, which supports the view to ally in manufacturing in order to leverage increasingly sophisticated technology capabilities (Gottinger and Umali, 2008).

There are also arguments for a manufacturing to be fully outsourced (Festel et al, 2014) instead of conducted through partnerships. As the overall costs of manufacturing and supply has grown, outsourcing now accounts for 22% of pharmaceutical manufacturing (Aylor et al. CG, 2018) due to a desire to leverage newer technologies, enter new markets and help mitigate risk. Outsourcing has however been suggested to bring both risks and potential negative consequences, such as decrease in labour productivity (Broedner et al., 2009), operational capability loss (Handley, 2012), and appropriation of valuable technological knowledge (Li et al., 2008).

III.   Commercial alliances:

Disintegration in the later part of the value chain is a newer trend that culminated in all of the highest revenue global drugs of 2005 being involved in a form of commercial collaboration (Carter, 2005). McCutchen and Swamidass's research (2004) showed that two thirds of large pharmaceutical companies entered into a strategic alliance with the motivation of gaining market access and expanding into newer markets. This is supported by alliance consultants, who observe commercial alliances occurring in organisations with a limited selection of products to offer customers, or a limited customer base in specific markets (Wavestone, 2017). In these instances, alliances serve as a way for companies in similar or related fields to share a customer base in order to market their individual products to a broader audience. Both of these observations offer a rationale as to why commercial alliances have increased in recent years and suggest motivations are more about growth rather than reducing or controlling costs. Alliance studies have also acknowledged that equity analysts pay close attention to the quality of pharmaceutical firms' alliances (Gottinger and Umali, 2008) supporting Smith's (2016) observation that the flow of capital within and across the industry increases investor pressure (Smith, 2016).

1.2.4   The challenge of strategic alliances

A 2014 study conducted by the Chief Marketing Officers Council concluded that 85% of the senior executives believe partnerships and alliances are essential or important to their business (Powerlinx, 2014). Within the biotechnology industry specifically, the growth of strategic alliances has been found to outweigh that in other sectors, with an annual average growth rate of 25% (Scillitoe et al., 2015).

Despite their widespread use however, studies have shown that only 50% of alliances are considered stable or achieve satisfactory performance based on objective as well as subjective measures (McCutchen et al., 2008). Reported rates of alliance termination range from 30% to 70% (Kogut, 1989; Park and Russo, 1996; Park and Ungson, 1997) although alliance termination is, in itself, not always undesirable (Gulati 1998).

Nevertheless, during the period 1977–2010 as many as 71% of all product alliances were terminated before the drug reached the market, with only 33% of alliances terminated because of a lack of efficacy or safety (Herrmann, 2014). In addition, of all product alliances that had been terminated, 55% were still pursued by the licensor post termination (Herrmann, 2014). This suggest that, on top of the expected technical hurdles, a significant portion of alliances are terminated for strategic or economic reasons. Despite this, McCutchen et al.'s (2008) research demonstrated that international alliances perform better than domestic alliances, in that they were less likely to be terminated and more likely to have a desirable performance. As such, there appears to be factors that might predict and influence the chances of success or failure.

Having discussed the different types and forms of strategic alliances and their challenges, the next section will detail the review of alliance articles conducted at the start of this research in order to narrow the specific research area and questions.

1.3   Review of alliance articles

In order to understand how the literature has discussed the topic of alliances and to what degree there is an interest in and need to further examine the specific factors influencing their success, the literature overview aims to explore two areas;

1. The theories that have been developed or adopted in alliance research, and
2. The topics that have been investigated under the main theories

As a consequence of this literature review, four research gaps were identified and one selected and developed further into research aims and objectives. These are outlined at the end of this Chapter.

1.3.1   Review criteria

I.   Time period:

Two searches were conducted using Google Scholar and the University of Westminster Library and in a second step using Web of Science and Scimago (Scopus) The first search looked at all

alliance literature with no defined time period, sorted by relevance to the field. This allowed for the broadest analysis of the literature possible. The second search narrowed the literature to those published since 2016. No articles published since 2016 appeared in the first search criteria so there was no overlap or 'double counting'. In this way, comparisons were able to be made across both searches.

The two searches are referred to as "All" and "Since 2016".

II. Journal selection:

Journal selection was not narrowed. There are multiple motivations for cross-disciplinary theory analysis and integration (Shaw et al., 2018), but in the case of this research it is important to understand the newer ways in which the long-standing phenomena of alliances are viewed. Moreover, the field of alliances is applicable to a breadth of sectors and disciplines and therefore a breadth of journals. As such, in order to fully explore the breadth of theories applied, it was important to not narrow the journals which could then have inadvertently skewed the types of theories, for instance limiting the theories to only those of Strategic Management. The journal ranking was, however, narrowed to ensure credibility of results. Only journals ranked 3 ABS and above were applied.

III. Number of Journals:

Forty journals for each of the searches, "all" and "since 2016" were extracted into an Excel for analysis. The total number of journals analyzed over both searches were 80, which was more than the recommended number of 50 for literature reviews (Creswell and Creswell, 2017).

IV. Developing and applying a coding structure:

Information was collected on the following categories and documented in the excel; journal rating, research question, methodology (including whether a statistical model and / or conceptual model was used), industry, dominant theoretical perspective and research topic.

For the research categories, the Qualitative Data Analysis approach was used (Khandkar, 2009). As the journals were being categorized, key topics were analysed. Specifically, the journals were being compared for relations, similarities and dissimilarities in order to create a list of constructed codes. These codes represented topics that were significant to either the research question posed within the journal, or a significant portion of the discussion and implications. The codes were then further analysed to find similarities and grouped into categories with similar properties. As an example, when analyzing the journals, the codes "management" and "control" were commonly applied and subsequently grouped under the broader category of "governance".

Table 3: Topic categories

	Topic category	Codes
1	Governance mechanisms	Management, control
2	Social / behavioral	Trust, belief, confidence, culture

3	Competition and cooperation	Risk, power, tension, conflict
4	Innovation	New product development, value
5	Alliance experience	Alliance capability
6	Resource	Resource allocation, people allocation, resource efficiencies
7	Firm performance	Firm growth, financial performance, firm outcomes
8	Alliance performance	Alliance success, outcomes, termination
9	Knowledge	Knowledge exchange, knowledge acquisition, learning, information exchange, technology exchange
10	Motivation	Alliance or firm goals, strategy, objectives
11	Geography	International, cross border

Each article was visually scanned and analysed to extract the paper's research questions and conclusion. Where possible, the "Find" search bar was used in parallel to the visual scan. For the theories, the terms "theory", "theoretical", "view", and "perspective" was searched. Because the articles often referenced several theories, only theories that were mentioned more than once, or in significant detail, were included in the excel database.

For the methodologies, 5 labels were applied:

1. Literature reviews: journals that reviewed previous literature only
2. Mixed method reviews: reviews extracting multiple data sources for its analysis, for instance alliance data bases, patent data bases or investor reports, as well as previous literature
3. Quantitative study: a study that looked to measure, or quantify ("how many" or "how much"), typically through structured surveys
4. Qualitative study: typically, an exploratory study that looked to understand underlying reasons ("what", "how" or "why") often through semi or un-structured interviews
5. Mixed methods study: studies that applied both Quantitative and Qualitative methods

V. Defining a Theory:

To ensure only true theories were extracted into the literature review, the terminology was better understood.

Colloquially, 'theory' is often suggestive of untested views or a guess without supporting evidence. Despite there being no consensus on a definition (Zima, 2007; Gorelick, 2011) for academics and scientists the word 'theory' conveys the opposite meaning. Bacharach (1989) defines a theory as a statement of relationships between units observed or approximated in the empirical world. Within this definition, approximated units mean constructs, which by their very nature cannot be observed directly such as satisfaction or culture. Observed units are variables which can be operationalized empirically by measurement (Bacharach, 1989). Put simply, the primary goal of a theory is to answer the questions of How, When, and Why.

As such, a 'theoretical perspective' can be viewed as set of assumptions about a given reality that inform the questions we ask and therefore the kinds of answers we arrive at. In this sense, a theoretical perspective can be understood as a selected lens through which the author is looking (Wood et al., 2018). This can serve to both focus the reader's attention to what the author believes to be important, whilst also risking exclusion of that which is believed to be out of frame. As an example, in "What is Theory", Zima (2007) defines and describes "theory" through a linguistic construct, whereby objects are viewed and connected within a particular kind of discourse (Zima, 2007). However, Gorelick (2011), a Professor in Mathematics and Statistics, explicitly defines theory as the formation of testable hypotheses, in direct contrast to empirical work which he defines as hypothesis testing (Gorelick, 2011). In this way, theoretical perspectives can and have been applied to define the term 'theory'.

In order to extract and analyse the true theories applied within alliance literature, Bacharach's (1989) description of what a theory is and is not has been applied. Bacharach (1989) explicitly distinguishes between theories about phenomena and descriptions of the phenomena. Using this distinction, perspectives that were either articulated or posed as theories, but were actually descriptions of alliances, were removed from the literature review.

Table 4: Differences between a theory and a description

	Primary Goal	Examples relating to alliance literature
A theory, as defined by Bacharach (1989) "a statement of relationships between units observed or approximated in the empirical world"	To answer the questions of How, When and Why through:	Theories included in the analysis:
	1) Theory development	Resource complementarity was developed from complimentary theory to explain how and why firms in an alliance combine resources (Harrison et al., 1991)
	2) Theory adoption or theory building	Evolutionary theory can be applied to alliance literature to describe how alliance conditions change over the different stages of its lifecycle (Das and Teng, 2002)
A description, as defined by Werkmeister (1959) "features or qualities of individual things, acts, or events"	To answer the questions of What through:	Descriptions not included in the analysis:
	1) categorization of raw data (What is the phenomena?)	Coopetition (collaboration between competing firms) is used as a way of describing the types of alliances in certain business environments (Ritala, 2012)

	2) typologies (What is the most important aspect of the phenomenon?)	The capability aggregation model of alliances assumes that allies value each other for the assistance they can provide one another (Morrow, 1991)
	3) metaphors (How is the phenomenon similar to another, often unrelated, phenomenon?)	The holobiont shift has been used to describe disintegration in Pharma, stemming from evolutionary biology which describes how species work together symbiotically (Smith, 2012)

VI. Examining previous reviews:

Before undertaking the analysis, previous reviews of alliance theoretical perspectives were also examined to investigate whether the findings from such reviews could be used to identify areas of interest and gaps in the field of interest.

As alliances have evolved in structure and purpose, the alliance literature has evolved to encapsulate theories spanning social and business fields alike. The phenomena itself has been credited with the development of streams of research, for instance its application to resource-based view as a new theory of the firm (Conner, 1991; Das and Teng, 2000; Gulati, 1998; Grant and Baden-Fuller, 2004).

The theoretical reviews conducted within the alliance research can be categorized in two ways; first, theoretical reviews looking at a single alliance topic, and second, theoretical reviews looking at a single theory or field of theories. In the first, common topics have included theoretical reviews explaining alliance management (Niesten and Jolink, 2015), motivations (McCutchen and variadass, 2004) and knowledge transfer within alliances (Ding et al., 2009). Related to the second category, theoretical reviews exploring alliance topics applied to a single theory, or field of theories, is equally rich and most commonly include exploration of alliance topics relating to the knowledge based view (Eisenhardt and Santos, 2002) resource based view (Das and Teng, 2000) and transaction cost theory (Macher and Richman, 2008). However, no recent reviews have been conducted on the full spectrum of alliance literature and as such, an independent literature review was required in order to select and justify future research questions.

1.3.2 Review results

1.3.2.1 Use of theories within alliance articles

In total, 38 theories were applied across all 80 articles. 26 articles had no dominant or significantly discussed theory. A significant proportion (18) of the theories were applied only once in either of the searches, i.e. they were applied in one article on either the "All" search OR

the "Since 2016" search. These were categorized as "Other". In order to best reflect these into the data, the origin of the "Other" theories was explored and, where possible and appropriate, re-categorized to a main theory. If this was not possible, it remained categorized as "Other". For instance, Evolutionary Institutional Economics is a sub theory of Institutional Economics and was therefore re-categorized from "Other" to "Institutional Economic theory". Conversely, the Incomplete Contracts Theory remained categorized as "other". Although it is closely related to Transaction Cost theory, re-categorizing it as such would forgo other important theoretical contributions, for instance theories of integration (Hart, 1988). As such, it remained categorized as "Other".

Once re-categorization of theories occurred and all "Other" theories were aggregated, 20 theories remained.

Interestingly, of the 26 articles that used no theory, only 10 of them (38%) used a conceptual model, compared with 52% of those that did use a theory (28 of the 54 journals that used a theory). Conversely, statistical models were used in 73% of the articles that used no theory, and 65% of journals that did. Put another way, in most articles that used no theory, a statistical model was applied but a conceptual model was not.

1.3.2.2 Theories adopted or applied most widely

Eight theories were commonly adopted or significantly discussed across both searches; that is, three articles or more used the theory in either search. Table 5 gives a high-level description of the main theories, their authors and their discipline.

Of these main theories, the oldest is Institutional Economics which emphasizes the role of non-market factors, for instance social institutions, on influencing economic behavior. Whilst the theory has been "written off" since 1930s for failing to provide a systematic and viable approach to economic theory (Hodgson, 2004), its use within the alliance literature has largely been to provide a dominant and grounding perspective for newer and narrower applications. Zollo et al. (2002) considered the role of routinization of processes at the partnering-firm level on influencing alliance performance, and as such applied an evolutionary economic perspective of Institutional Economics. Olson and Zeckhauser (1966) applied Institutional Economics to create a cost/benefit model of alliances between nations. Institutional Economics has also provided, in part, a grounding for spin-off theories in organizational studies, which moves beyond the notion of a firm as a production function to one of a governance function (Davis and Cobb, 2010). Two theories from this discipline are noted in Table 5 as main theories in the alliance literature: Transaction Cost Economics and Resource Dependence theory.

These two theories have several similarities; both emerged at the same time and from the same body of work- Thompson's "organizations in Action", and both discuss the different strategies organizations deploy in relation to their environment or context (Davis and Cobb, 2010). They are however distinguished by their views on the core driver of such decision-making. Transaction cost emphasizes efficiency through resource allocation whilst Resource Dependence theory emphasizes power. This is observed in its applications within the alliance literature. Reuer et al. (2002) applies Transaction Cost theory to consider the division of labor

within alliances in influencing governance structures. Conversely, Grant and Baden-Fuller (2004) applies Resource Dependence Theory to consider the importance of knowledge-acquisition motivations in alliances to improve organizational competition, or power.

Whilst Resource Dependence Theory is orientated towards resources obtained externally, Resource Based View focuses on competitive advantage gained through utilizing resources owned *by* the organization (Wernerfelt, 1984). As such, Das and Teng (2000) systematically applied Resource Based View to alliance rationale, formation, structural preferences and performance. For example, they discuss how the internal resource profiles of a partner firm would determine their structural and contractual alliance preferences (Das and Teng, 2000).

Early Resource Based View theorists emphasized that resources, by themselves, cannot be valuable unless they create distinct strategic options for a firm or enable firms to conceive and implement value-creating strategies (Peteraf, 1993; Barney, 1991). As such, the view is often supported by Contingency Theory, for instance by Lioukas et al. (2016) whose study identified the conditions under which IT capabilities are particularly valuable for a firm involved in an alliance. In bringing these two theories together, they were able to demonstrate how research in strategy can be advanced through the lens of management-based research. In a recent publication, Bouncken et al. (2019) built on this partnership by bringing in Knowledge Based Views. They consider how a partner's power, derived largely from their knowledge resources, are moderated by the level of competition, concluding that when the market overlap between the alliance partners is high, the expert power of partners, as well as common benefits, become more beneficial to innovation-related value creation (Bouncken et al. 2019).

Another main theory in alliance research is Entrepreneurial Orientation at a firm level, which derives from Miller's work. Miller (1983) created a scale to empirically measure a firm's innovation, risk-taking and proactivity – the three dimensions of entrepreneurship. Despite the subsequent body of work in this space, questions exist as to whether enough solid empirical evidence exists to validate the link between entrepreneurship and long-term performance (Covin and Slevin, 1991; Sexton and Bowman-Upton, 1991; Zahra, 1991) or whether it is a quick fix, were performance is only temporarily affected (Wiklund,1999). Such considerations appear to have extended into its application within more recent alliance studies. Hagedoorn et al. (2018) considers how participation in alliance networks benefits the innovation performance of spin-off firms. Their longitudinal study uses a 5-year window to examine the potential influence of longer lags on firm's innovation as measured by their patent output.

Finally, the literature review showed how Game Theory is being more recently applied to the field of alliances, stemming from the view that partners believe it advantageous to maximize their own gains at the expense of the venture (Hennart, 1991). Despite this, the theory has helped to demonstrate *how* alliances can add value to firms, for instance in exploring how the configuration of control and dependence drive partner strategic choices and ultimately transform a coopetitive alliance to a cooperative alliance (Panico, 2017).

Table 5: Main theories and their applications

Main theory	Description	Discipline	Theory authors	Main "alliance" topics to which theory is applied
Transaction cost theory	The costs of running an economic system is the primary determinant of a make-or-buy decision	Organizational studies	Williamson (1975)	Governance (7) Motivation (6) Alliance Performance (4) Cooperation and competition (4)
Institutional economics	Both evolutionary process and institutions shape economic behavior	Economics	Veblen (1899)	Motivation (3) Alliance Performance (3)
Resource Based View	Competitive advantage comes from firm's applying and adapting their defined resources (physical and human) and capabilities	Strategic Management	Penrose (1959), Wernerfelt (1984), Conner (1991), Barney (1991)	Cooperation and competition (6) Innovation (7) Knowledge (8)
Resource Dependence theory	Organizations will adapt and respond to external actors or organizations upon whose resources they are dependent and will try to minimize that dependence when possible	Organizational studies	Aldrich and Pfeffer (1976), Pfeffer and Salancik (1978)	Innovation (3) Motivation (2) Firm Performance (2)
Contingency theory	The optimal course of action for a firm is contingent, or dependent, upon the internal and external situation and the most effective organizations are those that "fit" with their environment and their subsystems	Organizational sociology	Burns and Stalker (1961), Lawrence and Lorsch (1967), Woodward (1965)	Motivation (3) Governance (2) Social / behavioural (2) Coopetition and Competition (2)
Knowledge-based theory	Knowledge is the most important resource of a firm and performance differences accrue	Strategic Management	Grant (1996), Kogut and Zander (1992),	Innovation (5) Knowledge (6)

	due to differing stocks of knowledge and a firms' differing capabilities concerning its use and development		Nonaka and Takeuchi (1995) Spender and Grant (1996).	
Entrepreneurial orientation	Three dimensions can be applied to characterize and test entrepreneurship: "innovativeness", proactiveness" and "risk-taking"	Strategic Management	Miller (1983)	Innovation (3) Knowledge (2)
Game theory	Decision-makers pursue well-defined exogenous objectives (they are rational) and take into account their knowledge or expectations of other decision-makers' behavior (they reason strategically)	Mathematical economics	Von Neumann et al. (1944)	Social / behavioural (2) Cooperation and Competition (2) Firm Performance (2) Knowledge (2)

1.3.2.3   Topics adopted or applied most widely

The main two topics associated with each theory is captured in Table 5, above. Where a topic had equal coverage across more than two topics, this was also noted.

Of the eight main theories, only three were considered to have a strong relationship with a topic; that is, the topic was correlated with that theory across four or more articles. These were:

I. Transaction Cost Theory with:
   a. Governance – 7 articles
   b. Motivation – 6 articles
   c. Alliance Performance – 4 articles
   d. Cooperation and competition – 4 articles
II. Resource Based View with:
   a. Cooperation and competition – 6 articles
   b. Innovation – 7 articles
   c. Knowledge – 8 articles
III. Knowledge Based View with:
   a. Innovation – 5 articles
   b. Knowledge – 6 articles

For the remaining theories, the relationships were not considered "strong" as they only appeared in three of fewer articles.

Through the lens of the categories, a similar number of strong relationships could be found. This was determined by the number of times the topic was a 'main topic'. If the topic was a 'main topic' for two of fewer theories, a strong relationship was determined. These were:

I. Governance with:
    a. Transaction Cost Theory
    b. Contingency Theory
II. Alliance Performance with:
    a. Transaction Cost Theory
    b. Institutional Economics
III. Firm Performance with:
    a. Resource Dependence Theory
    b. Game Theory
IV. Social Behavioral with:
    a. Contingency Theory
    b. Game Theory

For the remaining topics, the relationships were not considered "strong" as they were associated with more than two theories; for instance, 'innovation' was associated with Resource Based View, Resource Dependence Theory, Knowledge Base View and Entrepreneurial Orientation.

Interestingly, 3 topics were never 'main topics' – that is they were not attributed to any of the theories, although this was due to the fact they had less mentions overall; Geography (11 articles), Alliance Experience (10 articles) and Resource (11 articles).

The vast majority of the 8 main theories outlined in Table 5 changed in their adoption over the two searches, as depicted in Figure 1 below. Knowledge based theory, Entrepreneurial Orientation and Game theory all increased in their use in the alliance literature post 2016. When considering their related topics, each of these theories have a strong relationship to the 'knowledge' and the 'innovation' category. Conversely, Institutional Economics, Resource Dependence Theory and Contingency theory reduced in use since 2016. These three topics are strongly correlated with the 'motivation' category.

Although use of Transaction Cost Theory and Resource Based View remained largely similar across both searches, its application to the alliance phenomena did differ, noted through the related categories. In the 'All' search category, Transaction Cost Theory was associated largely with 'motivation' and 'governance', however in 'since 2016' search, it was associated more with 'competition and coopetition', although its use across 'governance' topics sustained. Similarly, application of the Resource Based View shifted from 'alliance performance' towards 'competition and coopetition'.

Figure 1: Key alliance theories across the two searches
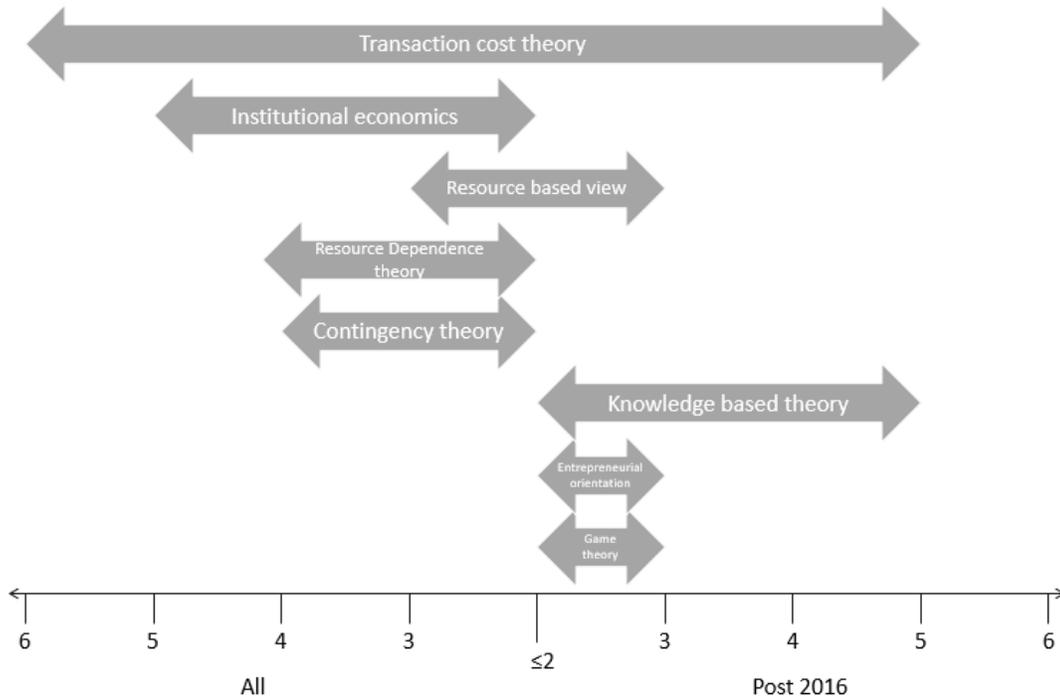
1.3.2.4   Methodologies applied

Table 6 outlines the number of papers that used different approaches. The vast majority were either conceptual in nature or extracted secondary data sources only.

Table 6: Article count by research approach

Research approach	Article count (of 80)
Theoretical/Conceptual paper	27
Secondary research only	31
Empirical paper:	
Qualitative methodology	3
Quantitative methodology	11
Mixed methodology	8

1.3.3   Review conclusions

The purpose of this literature review was to understand the degree to which there has been interest in and evidence of the specific factors influencing alliances. Of the four main topics identified across the literature review, two were alliance performance and firm performance, validating a significant interest in understanding the factors influencing both these areas. Other observations relating to the interest and evidence around factors influencing strategic alliances are:

1. The breadth of theories spanning Social and Strategic Management theories alike highlight the interest across different fields
2. The topic of alliance performance became less common in the Post 2016 literature, and instead alliance factors influencing firm performance became more common
3. Articles in 4* journals narrowed the type of strategic alliances they investigated, commonly as R&D alliances or brand alliances
4. Network Theory has not been widely explored within the research, and has not been commonly associated with the performance categories
5. The Motivation category was common across both search criteria, and often discussed a firm's strategy or goals in relation to their specific alliance objectives
6. Partner Selection Criteria was a common research aim but spanned across categories of governance and motivation
7. The majority of the research focused on the dyadic perspective of an alliance, and not the portfolio perspective
8. Few papers were empirical in nature, and only 10% of the total papers reviewed used mixed methods approach

1.3.4   Research gaps

Having investigated the alliance articles and validated the interest and evidence behind strategic alliances, four areas were noted as being potential future research areas, summarized in the table below.

Table 7: Potential research areas

	Potential research area	Research gaps

1	Business models and strategic alliances	• Alliances have been studied within the context of Business models and business model innovation through two ways:
		  i. Alliances as a form of business model, and
		  ii. Alliances as a driver of business model innovation
		• A key gap within this research area is how different business models within the pharmaceutical industry might influence the success of a strategic alliance

2	Service Dominant Logic and Strategic Alliances	• Few Marketing theories have been widely applied to the field of strategic alliances • Newer marketing theories, like SD Logic, can be applied to alliances to give a newer explanation of why strategic alliances fail or succeed

3	Network strategy and alliances	• The most significant and common reason for early termination of alliances is a lack of strategic importance or a change in a firms' strategic direction (Reuer and Zollo, 2005; Lunnan and Haugland, 2008) • Network theory has been applied to alliance literature in order to understand the impact of network positions on alliance performance • The theory has primarily been focused around the role of network strategy as an independent variable. It's role as a moderator is largely unexplored
4	Firm attractiveness as alliance partner	• Partner selection has also been noted as one of the key determinants of alliance success (Shah and Swaminathan, 2008) and as such specific characteristics that may be critical in the selection of a partner has been significantly investigated • The specific characteristics a firm would need to demonstrate in order to be perceived as an attractive alliance partner has however been largely absent from the literature • There is no validated method by which companies can understand, in quantitative terms, how attractive they are to partner with

Having identified the potential research gaps from the literature review, a pragmatist philosophy was adopted in order to select a research gap and begin to develop the research aims and research questions.

Pragmatism promotes the view that there are most likely multiple realities and one perspective can never give the full picture of what is actually happening. Pragmatists believe in both a world that is independent of an individual's mind but also takes into consideration what is going on in the mind of the individual (Creswell and Creswell, 2017). Their views of the world are reflected in their research approach. As such, the authors views, based on their experience in working in the pharmaceutical industry and the research area, was taken into account when selecting the research gap to address.

Based on the authors experience, "partner attractiveness", or research gap 4 from the table above, was felt to be of personal interest and empirical importance. In recent years, a number of pharmaceutical companies have begun developing specific plans to increase their attractiveness to potential partners, recognizing the shift to disintegrate as being a key phenomena in the industry – as described in Chapter 1. This is demonstrated in the growth of strategic alliances within the industry, averaging 25% per year (Scillitoe et al., 2015). Further, a 2014 study conducted by the Chief Marketing Officers Council concluded that 85% of the senior executives believe partnerships and alliances are essential or important to their business (Powerlinx, 2014). As such, firms are considering ways to increase their attractiveness as an alliance partner. However, there is no current validated method by which companies can understand, in quantitative terms, how attractive they are to partner with. As a result, there is no way on measuring the impact of their interventions to increase their attractiveness.

The next section will outline how the thesis will be presented in order to describe the process to address this selected research area.

1.4   Thesis structure outline

Chapter 1 as introduced the phenomenon of interest and the proposed research area based on the review or alliance articles.

Chapter 2 will now introduce the literature review on the main theory and the research variables. As a consequence of this literature review, the research aims and objectives were developed together with the specific research propositions.

Chapter 3 will describe the research methodology. First, it will describe the different research philosophies and approaches considered. Next, this Chapter will outline how the research was designed to develop the conceptual model and the final questionnaire. This Chapter will also outline how data was handled and bias avoided, together with other ethical considerations.

Chapter 4 will then discuss the research results. These will be presented by each study, and the final conceptual model and questionnaire will be shared.

Finally, Chapter 8 expands this research by first summarizing its main contributions. The theoretical and practical implications are outlined, including recommendations to both alliance suiters and to Pharmaceutical firms. The Chapter describes how the research contributions can be applied to other sectors and also where the key research limitations are. Future research areas are also considered.

The literature review will now be presented in Chapter 2.

Chapter 2: Literature Review

Having introduced the phenomena of interest and the research gap, this Chapter will present the literature review that underpins the research. Specifically, the Chapter will discuss the main theory, the research variables, and the relationship between variables. Finally, the research propositions will be presented. This Chapter will follow the structure below:

The first section of this Chapter will now discuss the literature review conducted on alliance theories.

2.1 Review of main theory

Having identified the area of "firm attractiveness" as a key research area, and development of the questionnaire as the key research contribution, the next step was to identify a main theory that might explain the role of a firm's attractiveness in their alliance successes. As such, a literature review was conducted in the first instance on theories that explain the variation in success of alliances. In doing this, the author intended to identify a theory that might explain the role of a firm's attractiveness specifically and also select the key research variables for the conceptual model and for the self-assessment questionnaire.

2.1.1 Theories explaining the variation in success of alliances

Although there is an extensive amount of literature dealing with alliances, a comprehensive theory has not yet emerged to explain variations in outcomes (Hoffmann and Schlosser, 2001).

However, two theories that have been commonly adopted to explain factors influencing the outcome of alliances.

The resource-based view (Penrose, 1959), which focuses on the uniqueness of a firm's resource set, has been used to explain performance diversity because some resourced are not easily bought or sold (Das and Teng, 2000; Dierickx & Cool, 1989). Studies leveraging this view argue that alliance success is influenced significantly by the resources that each partner contributes to an alliance and the extent to which the alliance creates new resources (Das & Teng, 2000; Jap, 1999; Park et al., 2004). As such, partner complementarity and selection has been examined deeply to further investigate variability in alliance outcomes (Beckman et al., 2004; Dollinger et al., 1997; Geringer, 1991; Hitt et al., 2000). A review of 40 related studies concluded four factors consistently identified as being important to partner attractiveness and selection; (1) trust; (2) commitment; (3) complementarity; and (4) value, or financial payoff (Shah and Swaminathan, 2008). Within the pharmaceutical industry specifically, resource complementarity relating to a firm's technological capabilities, signaled by a firm's scientific knowledge, location, and top management team's international experience (Coombs and Deeds, 2000), has been shown to influence the success of alliances and firms (Lee, 2007; Sivakumar et al., 2011).

When applied to a portfolio view of alliances, resource based perspective has been extended to consider alliance success as a result of diversity within and across the firm's alliance portfolio (Goerzen and Beamish, 2005; Jiang et al 2010; Wuyts et al 2004), diversity of alliance functions held within the portfolio, such as manufacturing, marketing, and research and development (Jiang et al., 2010), and low diversity in geographical dispersion, due to increased difficulties in resource coordination and communication (Ganesan et al, 2005), social and cultural difficulties (Jiang et al., 2010) and differences in national political-economic systems, government policies and industry structures (Cui and O'Connor, 2012).

Although the resource-based perspective has provided an important lens through which to view alliance success, scholars also argue that organizations vary considerably in their network resources and that this also influences their competitive advantage (Gulati, 1999). As such, resource-based view has been debated to only partially account for the competitive advantage gained from some alliances (Lavie, 2006). Social network theory in particular has been used most prominently, and often complimentary to resource-based view to explain not only the reasons networks benefit from collaborations (Gulati, 1995), but also the variability in collaborative outcomes (Shan et al., 1994; Stuart, 1998; Stuart et al., 1999). Specifically, network designs or positions have been found to uniquely influence the flow of resources and capabilities that become available to the firms through their alliances (Ahuja, 2000b; Stuart, 1998) and thus influence performance. However, there are differing perspectives as to whether a firm that adopts a central network position or a position with multiple structural holes or gaps amongst partners, are more successful (Ibarra, 1993; Burt, 1992).

2.1.2   Main theory of research gap

2.1.2.1   Networks and network theory

A network consists of a set of actors along with a set of ties of a specified type (such as a strategic alliance) that link them. The ties interconnect through shared end points to form paths that indirectly link actors that are not directly tied. As such, networks do not have natural boundaries, distinguishing them from groups (Borgatti and Halgin, 2011).

There are two most commonly applied network theories (Borgatti and Halgin, 2011). The first is Granovetter's (1973) Strength of Weak Ties theory, which states that the stronger the tie between two actors, or firms, the more likely their worlds will overlap and that they will have ties with the same third party actors. The theory also states that bridging ties that link one actor or firm, to someone who is not connected to those within their immediate network, are a potential source of more diverse and novel ideas relative to direct ties, although they are unlikely to be strong ties Granovetter's (1973). In this way, the weak ties are the best potential sources of novel information (Borgatti and Halgin, 2011).

The second commonly applied network theory is Burt's (1992) Structural Hole theory of social capital, concerning 'ego networks'—the cloud of actors surrounding a given actor, along with all the ties among them. Burt's more strategic and instrumental view (Borgatti and Halgin, 2011) claims that the benefits of social capital result from the diversity of information and the brokerage opportunities created by the lack of connection between separate clusters in a social network. Conversely, an actor or firm that is strongly tied to others' has little autonomy to negotiate (Gargiulo and Benassi, 2000). Burt's (1992) concept states that structural holes are the gaps in information flows between firms linked to the same network but not linked to each other. A structural hole indicates that firms on either side of the hole participate in different flows of information. Networks rich in structural holes imply access to many, mutually unconnected partners, and consequently, access to many distinct information flows.

Gulati (1999) was the first to use social network theory within the context of alliances, suggesting that the firm's strategic actions are affected by the social context in which they and the firm are embedded. This social context includes both direct and indirect ties with network actors (Ahuja, 2000b) together with interorganizational and intraorganizational resource relationships (Madhok and Tallman, 1998). Several studies have provided implicit support for strength of weakness theory in particular; the level of relational embeddedness, or strong ties, among collaborators have been found to positively affect reciprocal assistance (Hansen, 1999), increases cohesiveness (Gulati and Singh, 1998), lowers opportunistic withholding of knowledge (Yli-Renko et al., 2001), enhances communication effectiveness (Dyer and Singh, 1998), and enhances cooperation (Uzzi, 1996).

2.1.2.2 Application of Network theory to alliance literature

As it is the role of researcher to define the network that they are analyzing - by choosing a set of nodes and a type of tie, there is no consistent definition or application of networks across literary field (Borgatti and Halgin, 2011). However, in alliance literature, network perspective has enabled alliance research to move beyond the early focus on dyadic or firm level perspective and consider more the overall network in which a firm in embedded in order to understand how alliances, or alliance portfolios, contribute to a firm's competitive advantage (Duysters et al.,

1999). The table below summarizes the different characteristics in perspectives and its applications across the literature.

Table 8: Dyadic and Network perspective applications

Dyadic or firm-level perspective*	Research example	Network perspective*	Research example
Firm strategy based on: - Autonomy - Individual partner interest - Firm's function in the market	Firms' boundary choices of non-partnering, allying, or acquiring are greatly affected by interfirm differences, which reflect the tensions between resource opportunities and risk controls (Schilling and Steensma, 2002).	Firm strategy based on: - Dependence - Firm interest in the network - Firm's position in the network	Research findings at the dyadic level suggest that interfirm differences are important antecedents of firms' boundary choices. However, at the network level, firms' particular structural positions may be critical for either non-partnering, allying, or acquiring decisions (Wang and Zajac, 2007)
Alliances based on: - Partner selection based on individual fit - Bilateral knowledge exchange - Alliances managed as separate contracts	Resource similarity, combined relational capabilities and partner knowledge will affect the likelihood firms selecting alliance partners and forming an alliance (Wang and Zajac, 2007)	Alliances based on: - Partner selection based on network fit - Knowledge leveraged across network - Alliances managed as combination of competencies	Whether exploratory alliance or exploitative alliance are chosen depends on the type of uncertainty that firms are facing- firm-specific or market-level uncertainty (Beckman et al., 2004)
Top management role includes: - Initiator and evaluator of the alliance - Lower management responsible for operational affairs	Because alliance formation and dissolution decisions tend to be made in a decentralized way by the directly involved units of the firm, there is a significant risk of sub-optimization and conflict within the resulting portfolio of alliances (Wassmer et al., 2010).	Top management role includes: - Moderating potential conflicts between alliances in network - Ensuring alliances in network are prioritised in line with firm strategy	Alliances form when firms are led by large, experienced, and well-connected top management teams. The underlying logic of alliance formation is, thus, strategic needs and social opportunities (Eisenhardt and Schoonhoven, 1996)

Adapted from Duysters et al., 1999

2.1.2.3 Network position and alliance performance

Much of the theoretical literature of network analysis consists of characterizing network structures (e.g, alliance portfolios) and actor's positions (e.g. centrality or structural holes) and relating these to group, or firm outcomes (Borgatti and Halgin, 2011). Specifically, the structural design of alliance networks has been found to have significant strategic consequences on performance and its ability to compete (Koka and Prescott, 2008) and has therefore been extensively studied. Moreover, the nature, or contingencies, of the network surrounding the firm determines its ability to control information flows, knowledge flows and financial flows (Duysters et al., 1999). As such, categorizing these approaches and establishing the conditions under which alliance networks affect performance has been a key area of both debate and research.

In the first approach, firms select to have a *prominent* (Koka and Prescott, 2008) or *central* (Powell et al., 1996, Yang et al., 2010) position in their network. Such an approach has been found to drive performance by enabling forms to pursue and establish their own strategic agenda. Another description of this approach has been as an *integrator*, whereby firms combine various products into a complete offering (Duysters et al., 1999). However empirical research has differed in the consequences of this position – in the biotech industry, this approach has been associated with enhanced innovation (Powell et al., 1996) however poorer performance has been demonstrated within the steel industry (Madhavan et al., 1998).

In the second approach, firms select an *entrepreneurial* network strategy position (Koka and Prescott, 2008; Donckels and Lambrecht, 1997) building on Burt's structural hole theory (Tan et al., 2015). Such an approach has been associated with higher innovativeness (Zaheer and Bell, 2005) but also fewer patents (Ahuja, 2000a). Inconsistencies in empirical research has spanned a related body of work focusing on the conditions under which each network position is associated with enhancing firm performance. Contingencies researched have included:

- Environmental change and firm strategy (Koka and Prescott, 2008)
- Relational embeddedness, or characteristics of relationships and structural embeddedness, or characteristics of the relational structure (Rowley et al., 2000)
- Increased or reduced governance and structure (Heimeriks et al., 2015)
- Firm-level social capital and network level social capital (Tan et al., 2015).

2.1.2.4 Synergistic effect of networks

Another important stream within the alliance network literature is the impact of the network itself on individual alliances. In its simplest sense, a synergy effect means that the utility of alliance ties between three or more actors or firms will be more than the utility gained by the sum of the ties (Cranmer et al., 2012). Cranmer et al. (2012) tested this theory in alliance formation between states during periods of radical transition such as World War 2, decolonization, and the collapse of the Soviet Union. Their study found that network effects are the only consistent predictors of the tendencies of state to form alliances with one another, other than geographic contiguity. That is to say that, across all time periods, networks have evolved towards a state of several densely connected clusters of states and that this is more important to alliance formation that political similarity or nation capabilities. Within the air transportation sector,

Wassmer and Dussauge (2012) found that markets reward firms forming alliances that contribute resources that can be synergistically combined with firms' own resources as well as with network resources accessed through their alliance portfolios. Markets were also found to penalize firms entering into alliances that create resource combinations that are substitutes to resource combinations deployed by existing alliance partners. As such, their findings suggest that network resources that can be combined at both the individual alliance level and the alliance portfolio level are particularly valuable.

Another way in which networks can promote alliance formation and success is through social capital, which refers to a firm's relationships with other companies that have important resources (Ireland et al., 2002). In strategic alliances, social capital develops as firm's interact with each other and is therefore often referred to as relational capital, characteristic of each partnership rather than of individual firms (Kale et al., 2000). Thus, firms may seek partners with significant social capital to gain access to their partner's network resources (Chung et al., 2000). Studies have shown social capital is increased in alliances with greater diversity of networks (Baker, 2000) and quality of relationships between partners (Glaister and Buckley, 1999). Interestingly, Ahuja (2000b) also found that social capital in alliances increased the probability of producing radical technological breakthroughs.

2.2 Review of research variables

Having conducted the literature review of the underpinning theory, research variables were drafted and then amended based on Empirical Study 1, which is described in the Methodology section. The final research variables are:

1. Alliance Strategy
2. Previous Alliance Performance
3. Attractiveness as an Alliance Partner
4. Alliance Portfolio Diversity

The following section summarizes and critically appraises the literature across these final research variables. In doing so, the final research variables and their dimensions are proposed within the research conceptual model. It is these research variables and dimensions that will form the basis of the self-assessment questionnaire for firms to assess their level of attractiveness.

2.2.1 Alliance Strategy

The alliance strategy of a firm constitutes an important component of a firm's overall corporate strategy. Put another way, a firm's long-term corporate goals and objectives should influence the choice of alliance type, partner criteria, timing of the alliances and the relationship process affecting the alliances (Koko and Prescott, 2008). Some studies have examined the interacting effect of a firm's corporate strategy on its alliance strategy. For instance, Koko and Prescott (2008) found that firms that pursue and analyzer corporate strategy and are also more prominent within their alliance network exhibit higher firm performance. Such research as relied largely on organizational theory and the Miles and Snow's (1978, 2003) business strategy

typology to address their research questions. Other studies have examined the role of alliances in delivering a specific part of a firm's corporate strategy, for instance in helping to achieve a digital strategy (Siachou et al., 2021).

However, the alliance strategy literature has predominantly focused on one part of the alliance strategy – for instance the structure or design of a firm's alliance networks. Alliance management has also been well researched (Ireland et al., 2002; Al-Tabbaa et al., 2019; Sakhdari et al., 2020) as has alliance capability (Inigo et al., 2020; O'Dwyer and Gilmore, 2018; Kohtamäki et al, 2018). However empirical research focused on the totality of an alliance strategy that encompasses the design and management more broadly is scarce, if not non-existent, despite theoretical works (Bamford et al., 2003; Steinhilber, 2008).

As such. this research makes a novel contribution in addressing empirically the question of what constitutes an alliance strategy, and what influence that strategy has on empirically validated alliance variables such as Alliance Portfolio Diversity, Alliance Performance and Attractiveness as Alliance Partner. Put another way, the key aim of the research is to understand the impact of a new variable, Alliance Strategy, on known variables Alliance Portfolio Diversity, Alliance Performance and Attractiveness as Alliance Partner.

Bamford et al. (2003) outlines four key elements of an alliance strategy that were used as the basis of the discussions during Empirical Study 1 in order to define the dimensions and items. The first element firms should consider is the Design of the Alliance – specifically it's goals, rationale and scope. The second element considers effective Alliance Management, recognizing that organizational issues in alliance management are as important as strategic issues in alliance design (Bamford et al., 2003). The third element outlined is consideration of how the firm's multiple alliances, or Alliance Constellation, is designed and managed. The firm's Alliance Capability represents the final element of the alliance strategy, recognizing that the success of external alliances often depends on having a supportive internal infrastructure. Together, these four dimensions represent much more than the deal itself—together they articulate the intent, dynamic process, and the logic that guides the alliance decision (Bamford et al., 2003).

As a result of this review, the following dimensions, or components, for Alliance Strategy are proposed, for use within the research conceptual model and questionnaire to test the research questions:

   I.   Design of an Alliance
  II.   Management of an Alliance
 III.   Alliance Constellation
 IV.   Alliance Capability

2.2.2 Previous Alliance Performance

A review conducted by Gomes et al. (2016) of alliance studies concluded that a significant amount of research has been devoted to analyzing the antecedents and implications of alliance performance (over 11% of their sample), and that the interest on this topic appears to be growing over time. This was seen through the review of alliance articles (please see Chapter 1,

Section 1.3). This trend can be traced back to a call from early seminal papers for more examination of alliance performance as an exciting and unexplored area (Gulati 1998; Saxton, 1997).

To this end, the alliance performance research stream has largely focused on antecedents of alliance performance, most notably the impact of alliance experience (Xiong and Bharadwaj, 2011, Váquez et al., 2006, Child and Yan, 2003), alliance capability (Shi and Prescott, 2012, Mu and Di Benedetto, 2011) and organizational fits in terms of complementarity and compatibility (Hess and Rothaermel, 2011, Lin et al., 2009). In nearly all such studies, alliance performance is examined as the dependent variable.

As such, this research makes the novel contribution of examining alliance performance through the lens of an independent variable, where firm attractiveness is the dependent variable, or the desired outcome. In order to make clear the difference of alliance performance being used as an antecedent to attractiveness in this research, the novel title "previous alliance performance" has been used.

There is little coherent agreement as to how to understand and measure alliance performance, and thus what the dimensions are (Lunnan and Haugland, 2008). Christoffersen et al. (2014) analysed 167 empirical studies exploring strategic alliance performance and concluded that there are considerable differences among performance measures most often employed. Importantly, their study found that such differences did indeed matter empirically - different measures were associated with different likelihoods of research getting support for their hypotheses.

However, Christoffersen et al. (2014) research, and those conducted subsequently, have not empirically tested and concluded which alliance performance measures are more appropriate for which variables and hypotheses. They did however recommend use of measurements that delineates three criteria that this research has responded to;

1. Mode of assessment (type of measure): How is performance assessed? (accounting/CAR/stability/subjective)
2. Construct assessed: Which performance is assessed?
3. What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?
   a. Level of analysis: The performance of which organizational unit is being assessed? (alliance/partner)
   b. Domain: Which domains of performance in that unit are being assessed? (operational/financial/overall)

For the first criteria, this research will use subjective measures to assess previous alliance performance, which is still the most commonly used measure within the alliance literature (Prabhudesai and Prasad, 2017). In order to ensure reliability of results, only managers who have been directly involved in alliances will be asked to complete the survey.

In terms of the level of analysis, the ultimate goal of the research is to understand the impact of a firm's alliance strategy on a firm's attractiveness. As such, the level of analysis is at the level of the firm, not the level of the alliance. The items have been phrased accordingly.

Finally, the domain seeks to understand the overall previous performance of the firm, specifically in relation to its perceived attractiveness as an alliance partner.

Ariño (2003) questionnaire which measures the organizational effectiveness and operational measures of alliance performance has been adopted so as to more specifically address these three criteria. Table 10 notes which elements of previous alliance performance were adapted and which were added based on the interview results (marked with an Asterix).

As a result of this review, the following dimensions for Previous Alliance Performance are proposed, for use within the research conceptual model and questionnaire to test the research questions:

I.   Alliance outcomes
II. Operational measures

2.2.3 Attractiveness as an Alliance Partner

Several Pharma companies have described in detail their plans to become a "Partner of Choice" within their long term corporate strategic plans. Such plans recognize that in order to attract the best partners, products or services, they need to understand the required attractiveness attributes, develop those, and then ensure the industry and their desired partners are aware of them. Consulting company reports are used by Pharma to understand their current rating- the most popular and well renowned of these is Boston Consulting Group's licensing report, published every 3-5 years. However little or no research has been done to empirically test and validate the metrics used by such consultants in these reports, or, crucially, to understand how an alliance strategy might influence a company's ranking. This constitutes a key contribution of this research.

The attractiveness literature has used a number of dimensions or categories, most notably by general motivations (Brouthers et al., 1995; Doz and Hamel, 1998; Child and Faulkner, 1998). More recently, the items have been categorized as task-related or partner-related (Das and He, 2006). Through the interviews conducted within this research, it was found that a firm's attractiveness could be high if a firm had sufficient degree of a few key dimensions. As an example, if the company had a key capability or product that the firm was seeking, the other dimensions of attractiveness would be less important. Put another way, there are some 'hard' dimensions that would be more important or in some cases overlook the 'soft elements'.

This has been found within the research, for instance, Shah and Swaminathan (2008) found that a partner might be selected on the basis of its ability to consistency deliver financial payoff to the alliance, even in the absence of trust, a soft factor. Thus, this research makes the novel contribution of categorizing attractiveness dimensions as 'hard' and 'soft', where 'hard' is defined as what the firm gets and 'soft' is defined as how the firm gets them (Grönroos, 1984).

In order to create a provisional list of items of a firm's attractiveness as an alliance partner, the 'partner selection and attractiveness' literature was leveraged. This stream of research has largely focused on the characteristics that one firm looks for when partnering with another, recognizing the critical importance of partner selection to a successful alliance (Cummings and Holmberg, 2012; Gomes et al., 2016). Of these, Hitt et al. (2004), criteria for partner selection was used as a foundation for building attractiveness items as it was published in a 4* ranking journal and, since its publication in 2004, has been cited over 740 times. Finally, these items will be weighted and ranked in a future study in order to understand their causal effects on the latent variable of attractiveness as an alliance partner.

As a result of this review, the following dimensions for Attractiveness as an Alliance Partner are proposed, for use within the research conceptual model and questionnaire to test the research questions:

   I.   Hard measures
   II.   Soft measures

2.2.4   Alliance Portfolio Diversity

Broadly, the literature on Alliance Portfolio Diversity has focused on its impact on firm performance. Research over the past two decades has attributed the positive impact on performance on innovation to a recombination across diverse technological fields (Fleming, 2001; Goerzen and Beamish, 2005;), new knowledge assimilation (Cohen and Levinthal, 1990) and value associated with choice (Gavetti and Levinthal, 2000). However not all studies have demonstrated a positive impact on performance; high portfolio diversity has also been linked with information overload and diseconomies of scale (Ahuja and Lampert, 2001), difficulties in recombination of knowledge (Fleming and Sorenson, 2001) difficulties in building strong cohesive ties, transfer of tacit knowledge, and mobilization and coordination of resources (Koka and Prescott, 2008) as well as challenges associated with more complicated management structures (Goerzen and Beamish, 2005). As such, many of the studies demonstrated an inverted U-shaped relationship between alliance portfolio diversity and performance (de Leeuw et al, 2014; Duysters et al. 2012; Jiang et al., 2010; Oerlemans et al., 2013). At lower levels of alliance portfolio diversity, positive effects are limited as partners provide resources that are similar to the one the focal firm already possesses. Too high levels of diversity, on the other hand, increase communication, monitoring and coordination costs and reduce the benefits of the access to diverse knowledge (Oerlemans et al., 2013).

To build on this work, this research will explore the impact of alliance portfolio diversity on its attractiveness. Specifically, the research will answer if a U-shape relationship also exists when examining attractiveness as the measure of a firm's performance – not for example innovation. Further, the research will look to examine the impact of an alliance strategy on this relationship. Put another way, does a diverse portfolio increase a firm's attractiveness if combined with a clear alliance strategy?

When measuring diversity, the majority of studies have considered each dimension of diversity, such as functional diversity, industry diversity and governance diversity separately and have

explored their independent effects (Jiang et al., 2010; Rogbeer et al., 2014). However, more recently, researchers have argued that since alliance portfolio diversity dimensions are not independent, it is important to combine them to understand the nature of the latent construct of alliance portfolio diversity (van Beers and Zand, 2014; Castro et al., 2015).

As such this research aims to address this gap by adopting the three-dimension definition of Alliance Portfolio Diversity as initially proposed by Jian et al. (2010) and subsequently adopted by other research scholars (Kumar and Zaheer, 2019; Degener et al, 2018). Specifically, the dimensions of alliance portfolio diversity considers:

    i.   Organisational type; the degree of variance in partners' resources, capabilities, knowledge, and technological bases
    ii.   Functional purpose; what value chain activities the firm performs in its alliances
    iii.   Governance structure; how the firm organizes and manages its alliances using different organizing structures

As a result of this review, the following dimensions for Alliance Portfolio Diversity are proposed, for use within the research conceptual model and questionnaire to test the research questions:

    I.   Organizational type
    II.   Functional purpose
    III.   Governance structure

2.2.5   Review of relationships

Having identified the key dimensions, or components, of each of the research variables, the next step was to conduct a literature review on the relationships between the variables. This was critical in order to develop the research propositions which are presented at the end of this Chapter.

The following table summarises the key literature on the relationships between the research variables.

Table 9: Literature review of relationships between the research variables

Key Question from Literature	Key Conclusion from Literature	Key Paper from Literature
Alliance portfolio diversity and attractiveness as an alliance partner		
What is the impact of depth and scope of an entrepreneurial firm's downstream alliance portfolio on their technology innovation and commercialization success?	APD positively impacts firm performance in relation to innovation and commercialization success	Hora, M. and Dutta, D.K., 2013. Entrepreneurial firms and downstream alliance partnerships: Impact of portfolio depth and scope on technology innovation and commercialization success. Production and Operations Management, 22(6), pp.1389-1400.
What is the impact of variation in startups'	High APD improves financial performance	Baum, J. A. C., Calabrese, T. and Silverman, B. S. (2000). 'Don't go it

alliance network composition on their early performance?		alone: Alliance network composition and startups' performance in Canadian biotechnology'. Strategic Management Journal, 21, 267–94.
What relationship does partner type variety and partner type relevance, as different dimensions of partner diversity have with firm innovation?	High APD improves innovative performance	Hagedoorn, J., Lokshin, B. and Zobel, A. K. (2017). 'Partner type diversity in alliance portfolios: Multiple dimensions, boundary conditions and firm innovation performance'. Journal of Management Studies, 55, 809–36.
What is the impact of diversification in types of technological alliances?	High APD improves organization growth	De Leeuw, T., Lokshin, B. and Duysters, G. (2014). 'Returns to alliance portfolio diversity: The relative effects of partner diversity on firm's innovative performance and productivity'. Journal of Business Research, 67, 1839–49.
What are the links among firms' cooperation strategies, the complexity of their alliance portfolios, and their innovativeness?	At very high levels of APD the enhanced coordination costs can offset the positive effects of APD	Golonka, M., 2015. Proactive cooperation with strangers: Enhancing complexity of the ICT firms' alliance portfolio and their innovativeness. European Management Journal, 33(3), pp.168-178.
Previous Alliance Performance and attractiveness as an alliance partner		
What are the effects of partner nationality, organizational dissimilarity, and economic motivation on the dissolution of joint ventures?	Previous alliance experience can contribute to the success of current alliances as knowledge gained should help the firm more effectively manage future alliances	Park, S.H. and Ungson, G.R., 1997. The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. Academy of Management journal, 40(2), pp.279-307.
How do firms identify prospective alliance partners that have the needed resources and capabilities?	Chinese firms value previous alliance experience and performance from potential alliance partners	Hitt, M.A., Ahlstrom, D., Dacin, M.T., Levitas, E. and Svobodina, L., 2004. The institutional effects on strategic alliance partner selection in transition economies: China vs. Russia. Organization science, 15(2), pp.173-185.
Do Firms Learn to Manage Alliance Portfolio Diversity?	Prior experience in forming and managing multiple alliances enhances the likelihood of alliance formation by the firm in future due to their developed alliance	Duysters, G., Heimeriks, K. H., Lokshin, B., Meijer, E. and Sabidussi, A. (2012). 'Do firms learn to manage alliance portfolio diversity? The diversity-performance relationship and the moderating effects of experience and capability'. European Management Review, 9, 139–52.

	portfolio management capabilities	
What role does tacitness and trust play in the pursuit of learning and innovation?	Prior alliances enables firms to devise better conflict resolution mechanisms due to their developed collaborative know-how	Nielsen, B.B. and Nielsen, S., 2009. Learning and innovation in international strategic alliances: An empirical test of the role of trust and tacitness. Journal of management Studies, 46(6), pp.1031-1056.
Alliance portfolio diversity and previous alliance performance		
What are the effects of correlations between the outcomes in different alliance options?	Increasing APD allows firms to benefit from synergies resulting from alliances because they can exploit interdependencies among different partners	Vassolo, R. S., Anand, J. and Folta, T. B. (2004). 'Non-additivity in portfolios of exploration activities: A real options-based analysis of equity alliances in biotechnology'. Strategic Management Journal, 25, 1045–61.
What is the relationship between intercorporate technology alliances and firm performance?	APD indicates a focal firm's capabilities and status	Stuart, T. E. (2000). 'Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry'. Strategic Management Journal, 21, 791–811.
Can firms learn to manage alliance portfolio diversity?	At a certain point APD leads to managerial challenges – such as conflicts and competing objectives – that limit and hinder optimal decision-making and exploitation of synergies between alliance partners, resulting in a U-shaped relationship	Duysters, G. and Lokshin, B. (2011). 'Determinants of alliance portfolio complexity and its effect on innovative performance of companies'. Journal of Product Innovation Management, 28, 570–85.
What is the influence of multiple dimensions of alliance portfolio partner type diversity?	Alliance portfolios characterized by both high partner type variety and high relevance, or importance of different partner types, cause inferior innovation performance	Hagedoorn, J., Lokshin, B. and Zobel, A. K. (2017). 'Partner type diversity in alliance portfolios: Multiple dimensions, boundary conditions and firm innovation performance'. Journal of Management Studies, 55, 809–36.

Having conducted the literature review of the underpinning theory and research variables, the next section summarises the research aims and objectives.

2.3   Research overview

The research variables and dimensions as a consequence of the literature review are presented in the table below. These were developed during Empirical Study 1, which is described in the Methodology section. It is these final research variables and dimensions that will form the basis of the self-assessment questionnaire for firms to assess their level of attractiveness.

Table 10: Research variables and dimensions

	Variable	Role		Draft Dimension
1	Alliance Strategy	Moderator	I.	Design of an Alliance
			II.	Management of an Alliance
			III.	Alliance Constellation
			IV.	Alliance Capability
2	Attractiveness as an Alliance Partner	Dependent variable	I.	Hard
			II.	Soft
3	Alliance Portfolio Diversity	Antecedent	I.	Organizational type
			II.	Functional purpose
			III.	Governance structure
4	Previous Alliance Performance	Antecedent	I.	Alliance outcomes
			II.	Operational measures

2.3.1   Research aims and conceptual model

The overall aim of this research is to understand how a firm's alliance strategy can moderate the relationship between a firm's Attractiveness as an Alliance Partner and its antecedents. More broadly, the research will identify the dimensions and elements of Alliance Strategy and the explore its relationship between the variables Previous Alliance Performance, Alliance Portfolio Diversity and Attractiveness as an Alliance Partner. The research contributions of this research are summarized in Table 12 however the overarching contribution is the development of a self-assessment questionnaire which firms can use to quantitatively assess their attractiveness levels to potential partners. This questionnaire is the basis to answer the research aims outlined above.

The research aims and questions can be summarized in the conceptual model presented below.

Figure 3: Research Conceptual Model
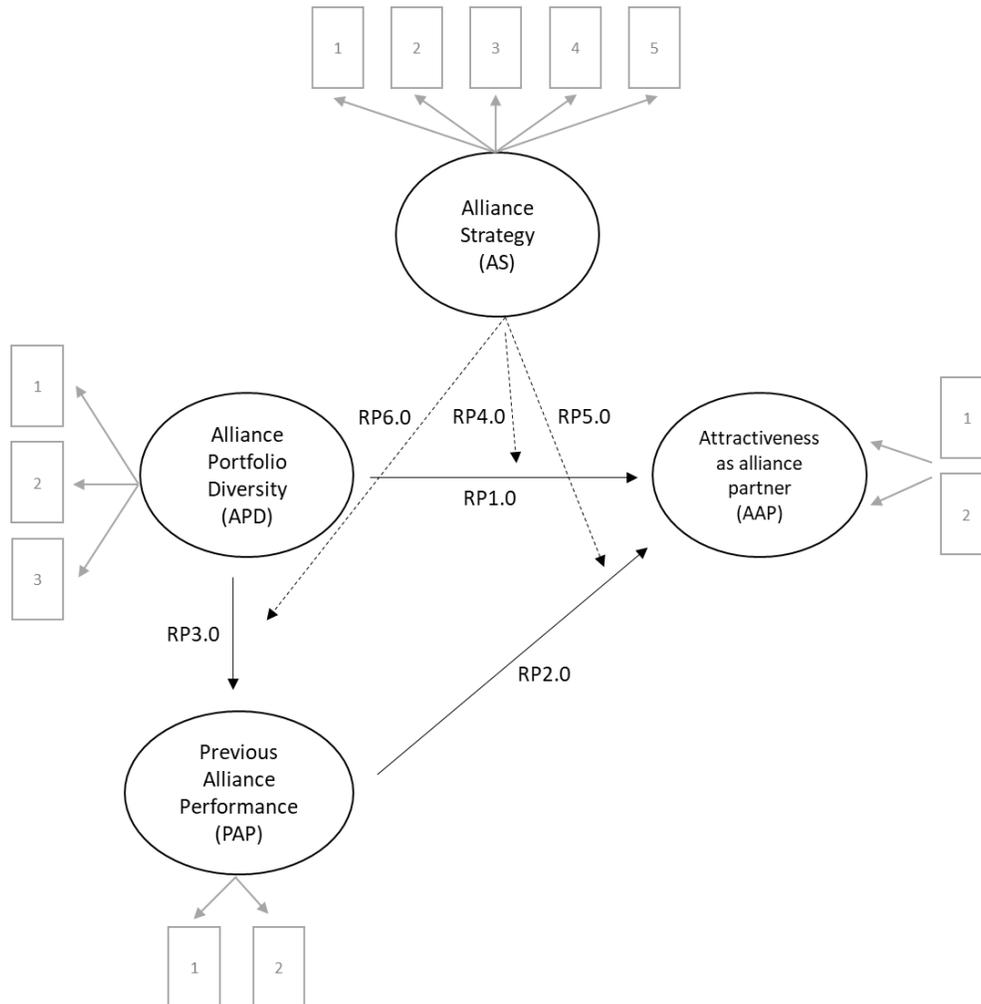
Source: own elaboration

2.3.2 Overall research questions

The two overarching research questions are:

i.   How does Alliance Portfolio Diversity and Previous Alliance Performance increase a firm's Attractiveness as an Alliance Partner?
ii. What is the moderating role of an Alliance Strategy on Attractiveness as an Alliance Partner and its antecedents?

The specific research questions within each of these overarching questions are summarized in the table below.

Table 11: Summary of research questions

Overarching Research Questions		Specific Research Questions
1	How does Alliance Portfolio Diversity and Previous Alliance Performance help firm's Attractiveness as an Alliance Partner?	RQ1.0: What is the impact of Alliance Portfolio Diversity on a firm's Attractiveness as an Alliance Partner? RQ1.1: What are the key dimensions or Alliance Portfolio Diversity? RQ1.2 Do some dimensions of Alliance Portfolio Diversity impact Attractiveness as an Alliance Partner more than others?
		RQ2.0: What is the impact of Previous Alliance Performance on a firm's Attractiveness as an Alliance Partner? RQ2.1: What are the key dimensions of Previous Alliance Performance? RQ2.2: Do some dimensions of Previous Alliance Performance impact Attractiveness as an Alliance Partner more than others?
		RQ3.0: What is the impact of Alliance Portfolio Diversity and Previous Alliance Performance? RQ3.1: Do some dimensions of Alliance Portfolio Diversity impact Previous Alliance Performance more than others?
2	What is the moderating role of an alliance strategy on Attractiveness as an Alliance Partner and its antecedents?	RQ4.0: What is the moderating role of an Alliance Strategy on Alliance Portfolio Diversity and Attractiveness as an Alliance Partner? RQ4.1: Does a high alliance strategy change the relationship between Alliance Portfolio Diversity and Attractiveness as an Alliance Partner?
		RQ5.0: What is the moderating role of an Alliance Strategy on Previous Alliance Performance and Attractiveness as an Alliance Partner? RQ5.1: Does a high Alliance Strategy change the relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner?
		RQ6.0: What is the moderating role of alliance strategy on Alliance Portfolio Diversity and Previous Alliance Performance? RQ6.1: Does a high Alliance Strategy change the relationship between Alliance Portfolio Diversity and Previous Alliance Performance?

2.3.3 Research objectives

This research has four key objectives:

i.   To contribute to the theoretical literature base by exploring new perspectives of the concept of an Alliance Strategy that goes beyond its individual dimensions but considers its impact on a firm more broadly

ii. To identify the core dimensions of an Alliance Strategy and explore the impact of each of its dimensions on previously tested alliance variables

iii.   To build on the empirical literature base through field work, in order to specify which dimensions of Alliance Portfolio Diversity and Previous Alliance Performance contribute to Attractiveness as an Alliance Partner

iv.   To offer alliance executives a tangible way to understand their perceived attractiveness by potential partners, through the development of a self-assessment questionnaire

2.3.4   Research contributions

A summary of the overall and the specific research contributions of this research has been outlined in the Table below. These research contributions have been described by their overall contribution as well as the specific contributions made. Further, the Table includes the Chapter and Sections within the thesis that these contributions have been made in order to orientate the reader through the work. The overarching contribution is the development of a self-assessment questionnaire which firms can use to quantitatively assess their attractiveness levels to potential partners.

Table 12: Summary of research contributions

Overall Research Contribution	Specific Research Contribution	Thesis section

1. Identification of two key antecedents of Attractiveness	A. Identification of key topics and theories of interest within the alliance space
	  i. Identification of how topics and theories have evolved post 2016
	  ii. Assessment of theories that have been applied to topics of interest
	  iii. Identification of four potential research areas and gaps
	  iv. Presentation of theories by key question
	B. New variable 'Alliance Strategy' developed and examined as a Moderator
	  i. Role of 'Alliance Strategy' examined as a Moderator
	  ii. Research propositions developed
	C. Previous Alliance Performance examined as an Antecedent
	D. New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable
	E. Alliance Portfolio Diversity examined as an Antecedent
		Chapter 2

2. Development of research propositions for how an Alliance Strategy moderates the relationship	A. Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner B. Research propositions developed for the role of Alliance Strategy as a Moderator between:	Chapter 2

	between Attractiveness and its antecedents	i. Alliance Portfolio Diversity and Attractiveness as Alliance Partner ii. Previous Alliance Performance and Attractiveness as Alliance Partner iii. Alliance Portfolio Diversity and Previous Alliance Performance	
3.	Development of a Questionnaire for firms to test their Attractiveness	A. Final questionnaire developed to empirically test the conceptual model B. Final survey developed for use online	Chapter 4

2.4   Developing the research propositions

Having introduced the research aims and objectives, the next section outlines the development of the research propositions. The questionnaire was developed to test these research propositions, and a key future research area would be to empirically test the questionnaire in order to validate the propositions. However, this research makes the key and novel contribution of developing the questionnaire itself.

In order to develop the research propositions, the literature review described in the previous sections was used as the foundation so that the research can be explicitly related to the existing knowledge base. This is the building block of all academic research activities (Snyder, 2019).

The research propositions were developed using two key inputs. The first was the review on the relationship between the research variables discussed in the previous sections. The table below leverages the key conclusions from the literature review, as outlined in Table 9, and relates it to the key research questions and developed propositions. The second input is a review of the moderating role of Alliance Strategy, which is discussed in the next section. This review was critical in order to develop the remaining research propositions.

Table 13: Research propositions for relationships between the variables

Key Question from Literature	Key Conclusion from Literature	Key Paper from Literature	Research question and proposition of this research
Alliance portfolio diversity and attractiveness as an alliance partner			
What is the impact of depth and scope of an entrepreneurial firm's downstream alliance portfolio on their technology innovation and commercialization success?	APD positively impacts firm performance in relation to innovation and commercialization success	Hora, M. and Dutta, D.K., 2013. Entrepreneurial firms and downstream alliance partnerships: Impact of portfolio depth and scope on technology innovation and commercialization success. Production and Operations Management, 22(6), pp.1389-1400.	RQ1.0: What is the impact of Alliance Portfolio Diversity on a firm's Attractiveness as an Alliance Partner? RP1.0: There is a U-shaped relationship

What is the impact of variation in startups' alliance network composition on their early performance?	High APD improves financial performance	Baum, J. A. C., Calabrese, T. and Silverman, B. S. (2000). 'Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology'. Strategic Management Journal, 21, 267–94.	between APD and a firm's attractiveness as an alliance partner
What relationship does partner type variety and partner type relevance, as different dimensions of partner diversity have with firm innovation?	High APD improves innovative performance	Hagedoorn, J., Lokshin, B. and Zobel, A. K. (2017). 'Partner type diversity in alliance portfolios: Multiple dimensions, boundary conditions and firm innovation performance'. Journal of Management Studies, 55, 809–36.	
What is the impact of diversification in types of technological alliances?	High APD improves organization growth	De Leeuw, T., Lokshin, B. and Duysters, G. (2014). 'Returns to alliance portfolio diversity: The relative effects of partner diversity on firm's innovative performance and productivity'. Journal of Business Research, 67, 1839–49.	
What are the links among firms' cooperation strategies, the complexity of their alliance portfolios, and their innovativeness?	At very high levels of APD the enhanced coordination costs can offset the positive effects of APD	Golonka, M., 2015. Proactive cooperation with strangers: Enhancing complexity of the ICT firms' alliance portfolio and their innovativeness. European Management Journal, 33(3), pp.168-178.	
Previous Alliance Performance and attractiveness as an alliance partner			
What are the effects of partner nationality, organizational dissimilarity, and economic motivation on the dissolution of joint ventures?	Previous alliance experience can contribute to the success of current alliances as knowledge gained should help the firm more effectively manage future alliances	Park, S.H. and Ungson, G.R., 1997. The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. Academy of Management	RQ2.0: What is the impact of Previous Alliance Performance on a firm's Attractiveness as an Alliance Partner?

		journal, 40(2), pp.279-307.	RP2.0: High previous alliance performance increases a firm's attractiveness as an alliance partner
How do firms identify prospective alliance partners that have the needed resources and capabilities?	Chinese firms value previous alliance experience and performance from potential alliance partners	Hitt, M.A., Ahlstrom, D., Dacin, M.T., Levitas, E. and Svobodina, L., 2004. The institutional effects on strategic alliance partner selection in transition economies: China vs. Russia. Organization science, 15(2), pp.173-185.	
Do Firms Learn to Manage Alliance Portfolio Diversity?	Prior experience in forming and managing multiple alliances enhances the likelihood of alliance formation by the firm in future due to their developed alliance portfolio management capabilities	Duysters, G., Heimeriks, K. H., Lokshin, B., Meijer, E. and Sabidussi, A. (2012). 'Do firms learn to manage alliance portfolio diversity? The diversity-performance relationship and the moderating effects of experience and capability'. European Management Review, 9, 139–52.	
What role does tacitness and trust play in the pursuit of learning and innovation?	Prior alliances enables firms to devise better conflict resolution mechanisms due to their developed collaborative know-how	Nielsen, B.B. and Nielsen, S., 2009. Learning and innovation in international strategic alliances: An empirical test of the role of trust and tacitness. Journal of management Studies, 46(6), pp.1031-1056.	
Alliance portfolio diversity and previous alliance performance			
What are the effects of correlations between the outcomes in different alliance options?	Increasing APD allows firms to benefit from synergies resulting from alliances because they can exploit interdependencies among different partners	Vassolo, R. S., Anand, J. and Folta, T. B. (2004). 'Non-additivity in portfolios of exploration activities: A real options-based analysis of equity alliances in biotechnology'. Strategic Management Journal, 25, 1045–61.	RQ3.0: What is the impact of alliance portfolio diversity on previous alliance performance? RP3.0: There is a U-shaped relationship

What is the relationship between intercorporate technology alliances and firm performance?	APD indicates a focal firm's capabilities and status	Stuart, T. E. (2000). 'Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry'. Strategic Management Journal, 21, 791–811.	between APD and previous alliance performance
Can firms learn to manage alliance portfolio diversity?	At a certain point APD leads to managerial challenges – such as conflicts and competing objectives – that limit and hinder optimal decision-making and exploitation of synergies between alliance partners, resulting in a U-shaped relationship	Duysters, G. and Lokshin, B. (2011). 'Determinants of alliance portfolio complexity and its effect on innovative performance of companies'. Journal of Product Innovation Management, 28, 570–85.	
What is the influence of multiple dimensions of alliance portfolio partner type diversity?	Alliance portfolios characterized by both high partner type variety and high relevance, or importance of different partner types, cause inferior innovation performance	Hagedoorn, J., Lokshin, B. and Zobel, A. K. (2017). 'Partner type diversity in alliance portfolios: Multiple dimensions, boundary conditions and firm innovation performance'. Journal of Management Studies, 55, 809–36.	

2.4.1   Role of Alliance Strategy as a moderator

As outlined in Section 2.2.1, individual dimensions, or components, of Alliance Strategy have been examined within the alliance research. This research aims to make a key contribution of examining the impact of all three dimensions of alliance strategy collectively.

Further, the research sims to consider the role of Alliance Strategy as a moderator. A summary of the literature review conducted on this specific area is summarized below. This review was used to consider the research propositions for each of the remaining research questions that related to the moderating role of Alliance Strategy.

2.4.1.1 Moderating the relationship between Alliance Portfolio Diversity and Attractiveness as an Alliance Partner

RQ4.0: What is the moderating role of an alliance strategy on Alliance Portfolio Diversity and attractiveness?
RQ4.1: Does a high alliance strategy change the relationship between Alliance Portfolio Diversity and attractiveness?

As has been described previously, studies have shown a U-shaped relationship between Alliance Portfolio Diversity and the individual items of attractiveness. Research has started to consider the contexts and contingencies that might explain or change this relationship. For instance, Cui and O'Connor (2012) found that alliance management function positively moderates the relationship between portfolio resource diversity and firm innovation – a key dimension of attractiveness.

Thus, a high alliance strategy would theoretically make the positive relationship between Alliance Portfolio Diversity and attractiveness even more positive. If the alliance is designed and managed effectively as part of that alliance strategy, the benefits arising from diversity should be further enhanced. A firm might be seen as being even more attractive if their diverse portfolio is strategic and not consequential. Conversely, a high alliance strategy might theoretically minimise or even over-turn the negative relationship seen when Alliance Portfolio Diversity becomes very high. Without a clear strategy, such high diversity might be coupled with the negative effects as has been noted however these might be reduced in the presence of a high strategy. As such, the firm might still be seen as attractive even when diversity is very high.

On the other hand, a low alliance strategy coupled with very high levels of diversity could result in low attractiveness - if the diversity is not considered or strategic, partners could consider that the firm will be unable to manage the additional complexities.

As such, based on the literature review, the research proposition is:

RP4.0: Alliance strategy positively moderates the relations between Alliance Portfolio Diversity and attractiveness.
RP4.1: When Alliance Portfolio Diversity is medium/high, high alliance strategy would further enhance the positive impact on attractiveness. When Alliance Portfolio Diversity is very high, high alliance strategy would reduce the negative effect on attractiveness.

2.4.1.2 Moderating the relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner

RQ5.0: What is the moderating role of an Alliance Strategy on Previous Alliance Performance and Attractiveness as an Alliance Partner?
RQ5.1: Does a high Alliance Strategy change the relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner?

Shah and Swaminathan (2008) found that the alliance project type, or the design of an alliance, moderates the relationship between partner characteristics and attractiveness. This research proposes that a firm that has a clear alliance strategy would be able to leverage the insights and the learnings from their previous alliances into their future alliances.

Based on the literature review, the research proposition is:

RP5.0: High Alliance Strategy positively moderates the relations between Previous Alliance Performance and Attractiveness as an Alliance Partner.
RP5.1: When Alliance Strategy is high, the positive relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner is further enhanced

2.4.1.3 Moderating the relationship between Alliance Portfolio Diversity and Previous Alliance Performance

RQ6.0: What is the moderating role of alliance strategy on Alliance Portfolio Diversity and Previous Alliance Performance?
RQ6.1: Does a high Alliance Strategy change the relationship between Alliance Portfolio Diversity and Previous Alliance Performance?

As described in Table 9, studies on the Alliance Portfolio Diversity and performance have been inconclusive and have not consistently found that more diversity leads to more performance. Recent research has begun to explore potential contingencies in order to explain inconclusive findings, and alliance strategies, in particular capabilities, have largely paved the way as decisive factors (Wuyts and Dutta, 2014).

Duysters et al., 2012 found that portfolio management capabilities moderate the relationship between Alliance Portfolio Diversity and performance such that when alliance capabilities are higher alliance performance is maximized at a higher level of Alliance Portfolio Diversity. Degener et al., (2018) furthered this research by concluding that alliance capability, and specifically the portfolio coordination capability, supports the flow of relevant resources, capabilities, and knowledge between different partners, and as a result even a highly diverse alliance portfolio can be more than the sum of its parts and foster innovation. Both these studies suggest that firms realize performance benefits from a diverse set of external alliance partners only when they focus on and apply internal coordination to manage these alliances – a key dimension of alliance strategy. Further, a recent study on the moderating role of an alliance function found that diversity of its members emerged as especially relevant to achieve effective alliance know-how collection and deployment for superior alliance performance (Russo and Vurro, 2019).

As such, based on the literature review, the research proposition is:

RP6.0: High alliance strategy positively moderates the relationship between Alliance Portfolio Diversity Previous Alliance Performance.
RP6.1: When Alliance Strategy is high, the positive relationship between Alliance Portfolio Diversity and Previous Alliance Performance is further enhanced

2.4.2 Final research propositions

The research questions and proposition are summarized in the table below.

Table 14: Final research propositions

	Overarching Research Question	Specific Research Question	Proposition
1	How does Alliance Portfolio Diversity and Previous Alliance Performance help firm's Attractiveness as an Alliance Partner?	RQ1.0: What is the impact of Alliance Portfolio Diversity on a firm's Attractiveness as an Alliance Partner? RQ1.1: What are the key dimensions or Alliance Portfolio Diversity? RQ1.2 Do some dimensions of Alliance Portfolio Diversity impact Attractiveness as an Alliance Partner more than others?	RP1.0: There is a U-shaped relationship between Alliance Portfolio Diversity and a firm's Attractiveness as an Alliance Partner
		RQ2.0: What is the impact of Previous Alliance Performance on a firm's Attractiveness as an Alliance Partner? RQ2.1: What are the key dimensions of Previous Alliance Performance? RQ2.2: Do some dimensions of Previous Alliance Performance impact Attractiveness as an Alliance Partner more than others?	RP2.0: High Previous Alliance performance increases a firm's Attractiveness as an Alliance Partner
		RQ3.0: What is the impact of Alliance Portfolio Diversity and Previous Alliance Performance? RQ3.1: Do some dimensions of Alliance Portfolio Diversity impact Previous Alliance Performance more than others?	RP3.0: There is a U-shaped relationship between Alliance Portfolio Diversity and Previous Alliance Performance
2	What is the moderating role of an alliance strategy on Attractiveness as an Alliance Partner and its antecedents?	RQ4.0: What is the moderating role of an Alliance Strategy on Alliance Portfolio Diversity and Attractiveness as an Alliance Partner? RQ4.1: Does a high alliance strategy change the relationship between Alliance Portfolio Diversity and	RP4.0: Alliance Strategy positively moderates the relations between Alliance Portfolio Diversity and attractiveness. RP4.1: When Alliance Portfolio Diversity is medium/high, high alliance strategy would further enhance the positive

		Attractiveness as an Alliance Partner?	impact on attractiveness. When Alliance Portfolio Diversity is very high, high alliance strategy would reduce the negative effect on attractiveness.
		RQ5.0: What is the moderating role of an Alliance Strategy on Previous Alliance Performance and Attractiveness as an Alliance Partner? RQ5.1: Does a high Alliance Strategy change the relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner?	RP5.0: High alliance strategy positively moderates the relations between Previous Alliance Performance and Attractiveness as an Alliance Partner. RP5.1: When Alliance Strategy is high, the positive relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner is further enhanced
		RQ6.0: What is the moderating role of alliance strategy on Alliance Portfolio Diversity and Previous Alliance Performance? RQ6.1: Does a high Alliance Strategy change the relationship between Alliance Portfolio Diversity and Previous Alliance Performance?	RP6.0: High Alliance Strategy positively moderates the relationship between Alliance Portfolio Diversity and Previous Alliance Performance. RP6.1: When Alliance Strategy is high, the positive relationship between Alliance Portfolio Diversity and Previous Alliance Performance is further enhanced

The development the of final research propositions mark the first overarching research contribution, a reminder of which is below.

[Repeated table] Table 12: Summary of research contributions

Overall Research Contribution		Specific Research Contribution	Thesis section
1.	Identification of two key antecedents of Attractiveness	F. Identification of key topics and theories of interest within the alliance space i. Identification of how topics and theories have evolved post 2016	Chapter 2

		ii. Assessment of theories that have been applied to topics of interest
		iii. Identification of four potential research areas and gaps
		iv. Presentation of theories by key question
		G. New variable 'Alliance Strategy' developed and examined as a Moderator
		   i. Role of 'Alliance Strategy' examined as a Moderator
		   ii. Research propositions developed
		H. Previous Alliance Performance examined as an Antecedent
		I. New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable
		J. Alliance Portfolio Diversity examined as an Antecedent	

2.	Development of research propositions for how an Alliance Strategy moderates the relationship between Attractiveness and its antecedents	C. Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner
		D. Research propositions developed for the role of Alliance Strategy as a Moderator between:
		   iv. Alliance Portfolio Diversity and Attractiveness as Alliance Partner
		   v. Previous Alliance Performance and Attractiveness as Alliance Partner
		   vi. Alliance Portfolio Diversity and Previous Alliance Performance
			Chapter 2

3.	Development of a Questionnaire for firms to test their Attractiveness	C. Final questionnaire developed to empirically test the conceptual model D. Final survey developed for use online	Chapter 4

The methodology to develop the questionnaire and survey will now be described.

Chapter 3: Research Methodology

Having presented the research propositions, the following Chapter describes the research methodology taken to develop the questionnaire. This Chapter will follow the structure below:

To start with, this Chapter will introduce and compare different research philosophies and describe why and how the pragmatists approach was applied to this research specifically. Next, it will introduce different research approaches, in particular the selected abductive approach. Finally, the research design will be laid out at the end of this Chapter, for both development of the conceptual model and of the final questionnaire and survey.

The different research philosophies will now be introduced.

3.1   Research philosophy

In order to apply the right research approach, different research philosophies to designing research were explored. This research philosophy was then coupled with a research approach, discussed in the next section, in order to design a research methodology that is outlined at the end of this Chapter.

Saunders et al. (2019) defines research philosophy as the development of knowledge by taking into consideration how the researcher views the world with their existing assumptions and beliefs. These assumptions fall into three main categories: epistemological assumptions, ontological assumptions and axiological assumptions (Collis and Hussey, 2013). Epistemological assumptions consider how individuals understand the world and how they

communicate this to others. Ontological assumptions are beliefs that reflect how individuals interpret what creates or constitutes a fact. Finally, Axiological assumptions value objectivity and suggest that subjectivity is misleading (Collis and Hussey, 2013). When undertaking research these three types of assumptions can affect the researcher's assumptions. Put another way, a researcher's existing values, ethics, perceptions, reality and beliefs can impact, or bias, the whole research study (Saunders et al., 2019).

As such, understanding the different research philosophies and consciously applying this within the design considerations of a research approach is critical. Table 15 below, adapted from Žukauskas et al (2017), summarizes the four main research philosophies, or paradigms, explored and the commonly applied methods. The final column outlines the relevance of each of the main paradigms to this research.

Table 15: Comparative research philosophies

Research paradigms/ philosophy	Basic methods	Data collection measure examples	Research relevance
Positivist	Quantitative	Experiments Half experiments Tests	Relevant in the future research proposed to use the questionnaire (please see Chapter 5, Section 5.8)
Interpretivist	Qualitative methods dominate although quantitative can also be used	Interviews Observation Document study	Dominant approach in alliance studies
Transforming	Qualitative, quantitative and mixed methods	A wide spectrum of measures in order to prevent discrimination or bias, e.g. sexism or racism	Not applicable or necessary for this field of research
Pragmatist	Qualitative and / or quantitative methods	Measures can be used from positivist as well as interpretivist, e.g. interviews, observations and testing	Most relevant: research is based on problems identified in practice as well as gaps identified in literature, and recommendations made are based on application in the real world (please see Chapter 5, Section 5.5)

A pragmatist approach has been applied to the research aim and questions. Specifically, the research will build on the recent interest in understanding the impact of alliance influencing

factors on performance, as well as responding to a call from marketing to move from a focus on individual alliances to multiple alliances, or alliance portfolios (Palmatier et al., 2007; Ross and Robertson, 2007). In addition, the research questions that have been proposed have been constructed to work towards the development of the main research contribution – the questionnaire. More broadly, addressing the research questions will provide evidence-based conclusions that pharmaceutical executives can leverage to build into their corporate plans to optimise their alliances and ultimately become a Partner of Choice by building their attractiveness as an Alliance Partner. These recommendations will be outlined in Chapter 5.

3.1.1 The pragmatists approach and its implication on the research design

Pragmatism promotes the view that there are most likely multiple realities and one perspective can never give the full picture of what is actually happening. Pragmatists believe in both a world that is independent of an individual's mind but also takes into consideration what is going on in the mind of the individual (Creswell and Creswell, 2017). Their views of the world, as categorized by the three assumption categories described above, are reflected in their research approach. This is summarised in the Table below, leveraging the work of Collis and Hussey (2013) and Saunders et al. (2019). Further, consideration of the selected research gap has been described below in relation to the author's assumption categories.

Table 16: Pragmatic philosophy - implications on assumptions

Assumption category	Key importance	Pragmatists implication on research	Consideration for selected research gap
Epistemological assumptions	Values how individuals understand the world and how they communicate this to others	Subjective data and observable data should be considered separately or together to provide suitable knowledge that can answer each research question individually	Relevant subject matter experts that are able to provide both subjective data and observable data will be more readily available for selected research gap in order help answer each research question individually
Ontological assumptions	Values what individuals believe and how this reflects in the way they interpret what creates or constitutes a fact	Multiple and external views should be considered and chosen based on their ability to answer the research question(s)	Subject matter experts within selected research area are from multiple different fields – including Corporate Strategy, Business Development, Marketing. As such, multiple views can be considered
Axiological assumptions	Values objectivity and suggests that	The values of the researcher play a large part in the research	Research aims to develop a survey so that a potentially subjective

	subjectivity is misleading	process due to the importance of both the subjective and objective perspectives	measure of "partner attractiveness" can be objectively measured

Because the pragmatic paradigm considers there to be multiple different ways of looking at the world, they promote a research methodology that applies multiple, or mixed, methods. Tashakkori and Teddlie (2010) argue that through the lens of pragmatism, in applying several approaches, more information around the identified phenomenon, or research question can be gained. As such, pragmatism promotes a lack of restriction in terms of choice for researchers to choose their own techniques, methods and research procedures that best fit the research questions and requirements of the study. It allows for different assumptions and considers different worldviews that can be obtained from multiple data collection techniques and analysis to give a broader perspective (Creswell and Creswell, 2017). Simply, the key importance of research for pragmatists is the practical elements and applied research (Saunders et al., 2019), which is appropriate for this study as different perspectives, crucially those of subject matter experts in the field and industry of interest, will assist in the development of the final research contribution – the testable questionnaire and survey.

3.2   Research approach

Having selected a fitting research philosophy, the different research approaches were then explored. Specifically, time was taken to consider how the empirical data from the research and the literature on alliances will be combined in order to meet the specific research questions and ultimately develop the questionnaire. The different approaches to combining these aspects are discussed in this section.

3.2.1   Case studies and empirical data

In isolation, the use of cause studies alone was initially not always recognized as a proper scientific method (Dubois and Gadde, 2002). The main arguments being that they provide little basis for scientific generalization (Yin, 1994) due to the impact of the specific context or situation on the findings. However, application of case studies started to increase when attitudes shifted from the seeing the impact of the context as a problem, to an opportunity to deepens understanding and interpretations (Weick, 1979; Cronbach, 1975). As such, use of case studies and empirical data has now become a common method in many scientific disciplines across subject areas such as psychology, sociology, political science, history, public policy, management and education (Yin, 1994).

3.2.2   Theories

Application of theory is the foundation of research however the debate in research philosophies is, in part, related to the degree to which the theory should be invested in and combined with other sources, such as case studies. According to Weick (1979), theories should be invested in

and prioritised in order to keep some intellectual control over what could otherwise be escalating set of case descriptions. As a consequence, theory has originally been resultant from practice, developed, and then applied back to practice to improve this further (Sekaran and Bougie, 2013).

3.2.3 The benefits of combining

Dubois and Gadde (2002) found that combining the use of empirical data, or case studies, with theories and constantly going back and forth between the two, enables researchers to expand their understanding of both the empirical phenomena and the theory itself. If the main objective of any research is to confront theory with the empirical, real world, then Dubois and Gadde (2002) argues that it is only when the two sources are combined that this confrontation can take place through the research process. In doing so, the research conclusions will be more robust. Moreover, case studies and empirical data are able to provide a unique way of developing theories further by utilizing current and in-depth insights of phenomena of interests and their contexts. In this way, theory cannot be properly and fully understood without empirical observation and the case studies themselves cannot be fully explained without investing in the theory.

There are three key approaches to combining - deductive, inductive, or abductive. The difference between these theories is grounded in how empirical studies or case studies are used and combined with theories. These approaches as described by Dudovskiy (2016), are summarised in the Table below.

Table 17: Comparative research approaches

	Deduction	Induction	Abduction
Logic	When the premises are true, the conclusion must also be true	Known premises are used to generate untested conclusions	Known premises are used to generate testable conclusions
How empirical data or case studies is used	Data collection is used to evaluate propositions or hypotheses related to an existing theory	Data collection is used to explore a phenomenon, identify themes and patterns and create a conceptual framework	Data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test this through subsequent data collection
How theory is used	Theory falsification or verification	Theory generation and building	Theory generation or modification; incorporating

			existing theory where appropriate, to build new theory or modify existing theory
Researchers critical analysis of approach	Assumed one main theory accounts for the full research findings	Does not appropriately leverage the depth of alliance literature and theories to help explain the findings	Stronger reliance on theory than induction but allows for more back and forth
Application to research	Not applied: research aim is not to validate an existing theory	Not applied: research aims cannot be addressed by applying or building on one theory alone	Applied to research: allows data from subject matter experts to be incorporated throughout the research

3.2.4   Applying an abductive approach to the research

Abduction (Peirce, 1931; Kirkeby, 1994) is about investigating the relationship between 'everyday language and concepts'. Dubois and Gadde (2002), build on this concept by introducing the practical application of 'systematic combining', described as a nonlinear, path-dependent process of combining efforts with the ultimate objective of matching theory and reality. Systematic combining is a two-part process that enables the researcher's theoretical framework, empirical fieldwork, and case analysis to evolve simultaneously. The first part is matching theory and reality, while the second deals with direction and redirection.

These processes affect, and are affected, by four key factors; (i) what is going on in reality (ii) available theories (iii) the case that gradually evolves and (iv) the conceptual model or analytical framework

Although abduction and the process of systematic combining is particularly useful for development of new theories, this research has applied this approach in order to ensure the final research contribution, the questionnaire and survey, is fully informed and reflective of both the alliance theories and the empirical data collated throughout the research.

The Table below outlines how and where the four key factors of systematic combining have been applied to the research

Table 18: Systematic combining – application in research

Systematic combining factor	**Application in research**	**Chapter**
What is going on in reality	Phenomenon of interest Research relevance	Chapter 1, Section 1.2 Chapter 1, Section 1.3

Available theories	Literature review of alliance articles	Chapter 1, Section 1.3
	Literature review of variables	Chapter 2, Section 2.2
	Literature review of relationships	Chapter 2, Section 2.2
The case that gradually evolves	Empirical Study 1 Empirical Study 2 Empirical Study 3 Empirical Study 4	Chapter 4
The analytical framework	Preliminary conceptual model	Chapter 4, Section 4.1
	Conceptual model	Chapter 4, Section 4.1.8

3.3   Research design

When designing the research steps, the concept of "validity" was first explored and considered in detail, in order to design an approach that would reach a justifiable and defensible stage of "validity" for all of the research contributions: (1) Identification of key Strategic Alliance variables (2) the Conceptual Model and (3) a testable questionnaire and survey instrument. The different types of validity were interrogated, and the researcher considered which type, or types, best suited the research. This is summarised in the table below.

Table 19: Validity concepts and relevance to research

Validity type	Description	Research relevance
Face Validity	A test has face validity if its content looks relevant to the person taking the test. It evaluates the appearance of the questionnaire in terms of feasibility, readability, consistency of style and formatting, and clarity of language used (Taherdoost, 2016)	Applicable. The questionnaire will be tested with subject matter experts during Empirical Study 3 and 4
Content Validity	Measures the degree to which the survey items reflect the content universe to which the instrument will be generalized (Straub et al., 2004)	Applicable. Establishing content validity involves literature reviews and then follow-ups with the evaluation by experts. This aligns with the selected abductive research approach
Criterion or Concrete Validity	Measures how well one measure predicts an outcome for another measure (Taherdoost, 2016)	Not applicable. Would be more applicable if this research survey to measure attractiveness would be used to predict alliance outcome or performance
Construct Validity	Refers to how well a concept, idea or behavior is	Not applicable at this stage of the research. Applicable after the

	operationalized into a functioning and operating reality (Taherdoost, 2016)	survey is used and tested as factor analysis is required to satisfy the criteria of construct validity

Once the types of validity most applicable to the research were selected, the research was designed in order to meet the criteria. Face and content validity were selected as the most appropriate for this research. Importantly, content validity is most closely associated with the abductive approach selected whereby the research would go back and forth between literature and real-world experts. The criteria for this type of validity was further explored, and can be summarised with the following:

1. An exhaustive literature reviews to extract the related items
2. A content validity survey is generated whereby each item is assessed using three-point scale (however this is not necessary or essential)
3. The survey should be sent to experts in the same field of the research
4. The content validity ratio (CVR) is then calculated for each item by employing Lawshe's method (Lawshe, 1975)
5. Items that are not significant at the critical level are eliminated

As a result of the decisions around the research philosophies, approaches and validity concept, the key steps taken to create the final research output – the testable questionnaire and survey, have been summarized below.

Table 20: Summary of research steps

	Step	Objective	Outcome	Method	Thesis
Development of conceptual model					
1.	Review of alliance articles	Identify the research gaps in the alliance literature and develop the main research elements	Research gaps	Literature Review of previous alliance literature using Google Scholar & Web of Science	Chapter 1, Section 1.3
2.	Literature Review	Explore the literature of the research variables and define the research variables and dimensions	Draft conceptual model and research propositions	Literature Review of research variables using Google Scholar & Web of Science	Chapter 2, Section 2.2
3.	Empirical Study 1	Selection, adoption and adaption of research variables	Final research variables, dimensions and items	Qualitative written and verbal interviews with four subject matter experts using open ended questions	Chapter 4, Section 4.1
4.	Empirical Study 2	Explore the relationships between the research variables		Qualitative written and verbal interviews with five subject matter experts using	

		and incorporate within a conceptual model		semi-structured interview questions	
Development of questionnaire and survey					
5.	Empirical Study 3	Develop the questionnaire by exploring the formatting and formulation of the questions and testing the questionnaire	Final questionnaire and survey instrument	Written mixed method approach with 20 participants using structured interview questions and the developed questionnaire	Chapter 4, Section 4.2
6.	Empirical Study 4	Finalise the questionnaire by exploring and addressing unresolved issues		Qualitative verbal focus group on Teams with four subject matter experts using a closed question	

As outlined in the table above, as well as incorporating literature and empirical data, this research will apply both qualitative and quantitative data collection methods. This mixed method approach is commonly applied with both a pragmatic paradigm and abductive approach, helping the researcher to gain the best outcomes for the research questions and problems (Creswell and Creswell, 2017). This approach will allow conclusions to be drawn from both the current knowledge within the literature, quantitative findings which allows for sufficient volumes to validate results, and qualitative findings which gives depth to understanding the results.

3.3.1 Development of conceptual model

As outlined in the steps above, the first part of the research was considered through the pragmatist approach for this study. This approach looks at observable facts, logical explanation and scientific processes instead of the subjective opinions and interpretation of the researcher (Saunders et al., 2019). To this end, the research started with a literature review to develop the preliminary research elements. In keeping with the pragmatist approach, these preliminary facts were influenced by the researcher, who applied their own experiences to select an area of interest. This is supported by the literature which states that, in general, experiments cannot be conducted value free (Geuens and De Pelsmacker, 2017).

After developing the preliminary research element through a literature review, the next step of the research was to validate the research variables, which was the first key contribution of this research. This was done during Empirical Study 1 which involved qualitative written and verbal interviews with four subject matter experts using open ended questions. This was then followed by a second empirical study, Empirical Study 2, which involved qualitative written and verbal interviews with five subject matter experts using semi-structured interview questions. As a consequence of these studies, the final research variables, dimensions and items were developed.

In this way, the true essence of pragmatism is applied throughout the research. Specifically, pragmatism promotes a lack of restriction in terms of choice for researchers to choose their own techniques, methods and research procedures that best fit the research questions and requirements of the study. Pragmatism allows different assumptions and considers different worldviews that include different data collection techniques and analysis to give a broader perspective.

3.3.2 Development of questionnaire

Having finalised the conceptual model, the research then focussed on developing the questionnaire and survey, the final and most critical research contribution. A questionnaire is a method in which each respondent is asked to answer an identical set of questions in a predetermined order at a certain point in time (De Vaus, 2002). It is the most widely used method for collection of primary data (Diamantopoulos and Schlegelmilch, 1996).

In order to develop the questionnaire, a number of common methodologies and considerations were investigated to include the Churchill paradigm, C‑OAR‑SE method, and formatting and formulation considerations. This is discussed in the following sections.

3.3.2.1 The Churchill paradigm

The Churchill (Churchill, 1979) approach to developing questionnaire proposes precise rules and simple measures for constructing measurement scales. The four steps recommended are:

1. specification of the construction domain and construction of the items
2. constitution of the database
3. purification process by exploratory factor analysis and
4. verification process by confirmatory factor analysis. Details of this process are described in the following paragraphs.

3.3.2.2 The C-OAR-SE Method for scale development

Devised as an acronym to describe the method's stages, C-OAR-SE stands for 'Construct definition, Object classification, Attribute classification, Rater identification, Scale formation and Enumeration.' As described by Rossiter (2002), the method draws upon the work of McGuire (1989) on the conceptualization of constructs as well as the work of multiple others like Blalock (1964), Fornell and Bookstein (1982), Cohen et al., (1990), Bollen and Lennox (1991), Law and Wong (1999) and Edwards and Bagozzi (2000) on the classification of attributes. Each construct of interest may be defined in terms of a focal object (henceforth referred to as 'object,' regardless of whether that object is of a physical or perceptual nature), a dimension of judgment (referred to here as 'attribute') (McGuire, 1989) and the judges or raters (referred to here as 'rater entities'), who confer meaning to the construct (Rossiter, 2002).

The C-OAR-SE procedure is made up of six steps according to Rossiter (2011a, p. 2):

1. construct definition;

2. object classification;

3. attribute classification;

4. rater-entity identification;

5. selection of item-type and answer scale; and

6. enumeration and scoring rule

The C‑OAR‑SE method, as outlined by Rossiter (2002), is grounded in rationalism rather than empiricism. As such, it is thought to be in congruence with this thesis' philosophical foundation of pragmatism. Furthermore, the procedure has no limitation as it can be applied to all types of construct, reflective and formative specially when measuring a subdimension of the construct using single items, such as beliefs and perceptions (Rossiter, 2011).

3.3.2.3   Drafting the questionnaire

In order to begin constructing the research questionnaire from the literature review, the question format was first considered and decided on so that the question topic and the individual questions could be positioned accordingly.

The first step was to select an appropriate question format. The options were considered were:

1. List
2. Category
3. Ranking
4. Rating
5. Frequency

The second step was consideration of the question formulation, specifically in relation to:

1. Question length
2. Grammar
3. Specificity and simplicity
4. Social desirability
5. Double-barrelled questions
6. Negatively worked questions
7. Question order

A draft questionnaire was then developed.

3.3.2.4   Finalizing the questionnaire

To validate and finalize the questionnaire, the research moved into empirical analysis. To begin with, Empirical Study 3 applied a written mixed method approach with 20 participants using structured interview questions and the draft questionnaire. The questionnaire was validated with

a qualitative focus group with four subject matter experts during the last study, Empirical Study 4.

The questionnaire was turned into a practical data collection instrument (a survey), which was developed from the questionnaire. The survey included the key variables from the conceptual model, and the items that were developed throughout the research. The main reason for turning the questionnaire into a survey is to be able to collect primary data from a range of participants cheaply and swiftly, saving time and enhancing effectiveness (Saunders, Lewis, and Thornhill, 2014). The main objective of the survey data collection instrument was to collect useful data to test the research hypotheses, which is outlined as the key future direction of this research.

3.4 Participant selection and profiles

In order to ensure a balance of participants across the empirical studies, the following data was collected from each participant for each of the four empirical studies.

What is your age range?
- ☐ 35-40
- ☐ 40-45
- ☐ 45-50
- ☐ 50-55
- ☐ 55-60
- ☐ 60-65
- ☐ 65-70

What is your gender?
- ☐ M
- ☐ F
- ☐ Prefer not to say

What is your current role?

- ☐ Business Development
- ☐ Alliance Management
- ☐ New Product Planning
- ☐ Corporate Strategy
- ☐ Alliance Consultant
- ☐ Marketing
- ☐ Other (please specify)

What sector are you in?
- ☐ Pharma (Big)
- ☐ Pharma (Med. sized)

- Bio tech
- University / Hospital
- Private / consultant

How many years of experience have you had in alliances?
- 5-10
- 10-15
- 15-20
- 20+

What types of alliances have you had experience in, primarily? (please select 1)
- Commercial (post PoC)
- Research and Development (pre PoC)
- Manufacturing
- Multi
- Other

3.4.1 Empirical Study 1

For Empirical Study 1, all four participants were recruited through a personal invitation from the researchers, based on the researcher's own networks and understanding of their roles and experiences. Based on the researcher's network, a list of 15 potential participants for this first study was created. Potential participants were listed solely on if they had the relevant knowledge of the research area of strategic alliances.

Of this initial list, four participants were ultimately selected. The four final participants were selected based on the following criteria:

- Depth of experiences - because the final sample was relatively small (four participants), it was important that the participants had a well-rounded experience spanning many years. As such, three participants of the original list of 15 were discounted
- Availably and interest – five participants of the original list of 15 were discarded based on the researchers understanding of their availability and travel plans over the coming weeks
- Openness – because the research was qualitative, it was important that the participants were completely open and forthcoming with their insights. Only one participant was discounted for this reason, based on the researchers experience with their level of openness in the past
- Representation – the final sample needed to represent the real world of executives within pharmaceutical alliances, which are mostly older men. As such, the researcher did not try and balance the final sample across age and gender due to the inherent imbalance in the real world
- Balance of perspectives and experiences – the final sample needed to represent a balance of sectors and roles. Although two (50%) of the final sample were Alliance

Managers, one was at the regional level (US) and one global. As such, their differing experiences were critical to help shape the research at the early stages

All four participants were contacted by the researcher and all four immediately responded within a day to agree to participate in the research within the given timeframe of two weeks.

The following table summarises the participants profile for Empirical Study 1

Table 21: Empirical Study 1 participant profiles

	Participant 1	Participant 2	Participant 3	Participant 4
Age	50-55	55-60	50-55	45-50
Gender	M	F	F	M
Role	Alliance Management	Business Development	Alliance Management	New Product Planning
Sector	Pharma (Big)	Bio tech	Pharma (Med. sized)	Private / consultant
Years of experience	15-20	10-15	15-20	10-15
Alliance type	Commercial	Commercial	Research and Development	Multi

3.4.2   Empirical Study 2

For Empirical Study 2, all five participants were recruited through a personal invitation from the researcher, however for this study, they were identified based on recommendations from the researcher's network. Specifically, the researcher asked their own network who the key experts within the pharma alliance space were. During Empirical Study 1, the participants also proactively suggested subject matter experts for the researcher to speak with. As a consequence of these discussions, 10 potential participants were identified.

Of these 10, 5 were selected and contacted for this empirical study based on the following criteria:

- Depth of experiences - because the final sample for this study was relatively small (5 participants), it was important that the participants had a well-rounded experience spanning many years. Further, the objective of Empirical Study 2 was to understand the relationship between the variables and as such it was important to incorporate insights from different sectors, and multiple types of experiences. One participant of the original list of 10 was discounted as the researcher felt they didn't have enough experience.
- Representation – the final sample needed to represent the real world of executives within pharmaceutical alliances, which are mostly older men. As such, the researcher did not try and balance the final sample across age and gender due to the inherent imbalance in the real world
- Balance of perspectives and experiences – the final sample needed to represent a balance of sectors and roles. Although two (40%) of the final sample were Alliance

Managers, one was at the regional level (US) and one global. In addition, two (40%) of the final sample primarily had experience in Research and Development, however these were in different modalities. As such, their differing experiences were critical to help shape the research at the early stages

Based on this criteria, five participants were randomly selected from the remaining list of nine (one was discounted due to a lack of depth of experience) and were contacted by the researcher. Of these five participants, one responded to say they were unavailable within the given timeframe of two weeks. As such, the researcher randomly selected one more from the remaining list of four and they agreed to participate within given timeframe of two weeks. The researcher made a note to contact the remaining three for a future study.

The following table summarises the participants profile for Empirical Study 2.

Table 22: Empirical Study 2 participant profiles

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
Age	50-55	55-60	55-60	50-55	45-50
Gender	M	M	M	M	F
Role	Alliance Management	Corporate Strategy	Marketing	Alliance Management	Alliance Consultant
Sector	Pharma (Big)	Pharma (Med. sized)	Private / consultant	Biotech	Private / consultant
Years of experience	15-20	15-20	10-15	20+	10-15
Alliance type	Research and Development	Commercial	Multi	Multi	Research and Development

3.4.3 Empirical Study 3

For Empirical Study 3, 20 participants were required in order to develop the questionnaire. These participants were recruited through The Association of Strategic Alliance Professionals (ASAP) one of the leading alliance networks within the pharma and biotech sector, in the world. In order to obtain 20 participants, the researcher agreed with a key executive at the ASAP to contact 25 experts from the network and see how many respondents came back. These 25 experts were selected by the executive, who was given the following criteria:

- Depth of experiences - it was important that the participants had a well-rounded experience spanning many years
- Representation – the proposed participants needed to represent the real world of executives within pharmaceutical alliances

- Balance of perspectives and experiences – those identified needed to represent a balance of sectors and roles.
- Openness and availability – it was important that those proposed were felt to be open and available to participate in the research

Of the first 25 contacted, 10 responded to the questionnaire within the given timeframe of two weeks. After this deadline passed, the executive at the ASAP contacted a further 20 experts, based on the same criteria. Of these 20 experts, seven responded within the given timeframe of two weeks. The additional three participants that were identified during Empirical Study 2 but not selected were then contacted for this study, and all three agreed to participate and did so within the given timeframe of two weeks. Together, this resulted in a final list of 20 participants and responses.

Of the final 20 participants, there was an equal split across roles. 20% of participants worked within Business Development, Alliance Management, Alliance Consultant and also Marketing, and 10% across both New Product Planning and Corporate Strategy. Across the alliance sectors, participants were primarily from private / consultancy (35%), and Big Pharma (25%) or medium-sized Pharma (20%). All participants had more than 10 years of experience, and 45% had more than 15 years of experience.

The following table summarises the participants profile for Empirical Study 3.

Table 23: Empirical Study 3 participant profiles

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8	Participant 9	Participant 10	Participant 11	Participant 12	Participant 13	Participant 14	Participant 15	Participant 16	Participant 17	Participant 18	Participant 19	Participant 20
Age	55-60	40-45	50-55	45-50	55-60	45-50	50-55	45-50	55-60	40-45	45-50	50-55	40-45	40-45	55-60	45-50	40-45	50-55	40-45	55-60
Gender	M	M	M	F	M	M	M	F	M	M	M	F	M	M	F	M	M	M	M	M
Sector	Private/ consultant	Pharma (Med. sized)	Private/ consultant	Pharma (Big)	Private/ consultant	Biotech	Pharma (Big)	University/ Hospital	Pharma (Med. sized)	Private/ consultant	Pharma (Big)	Biotech	Private/ consultant	Pharma (Med. sized)	Pharma (Med. sized)	Private/ consultant	Biotech	Pharma (Big)	Private/ consultant	Other
Role	Alliance Management	Alliance Consultant	Business Development	New Product Planning	Business Development	Marketing	Corporate Strategy	New Product Planning	Marketing	Alliance Consultant	New Product Planning	Marketing	Alliance Management	Business Development	Business Development	Marketing	Alliance Management	Corporate Strategy	Alliance Consultant	Alliance Consultant
Years of experience in	15-20	10-15	15-20	15-20	15-20	10-15	10-15	10-15	20+	10-15	10-15	20+	10-15	15-20	15-20	10-15	10-15	10-15	10-15	20+

Alliance type (primary)	Commercial	Multi	Multi	Multi	Commercial	Commercial	Multi	Multi	Multi	Commercial	Multi	Research and Development	Multi	Commercial	Commercial	Multi	Research and Development	Research and Development	Research and Development	Multi

3.4.4   Empirical Study 4

The purpose of Empirical Study 4 was to finalise the questionnaire, by discussing two critical outstanding issues from Empirical Study 3 with a small focus group of four subject matter experts. For Empirical Study 4, the focus group, all four participants were recruited through a personal invitation from the researcher. Specifically, participants were selected based in their involvement during Empirical Study 1, 2 and 3. Specifically, participants that showed a keen interest in the study were selected for this focus group. Of these participants, one was a participant on Empirical Study 1, and one from Empirical Study 2, and two were from Empirical Study 3. These participants proactively followed up with the researcher to understand how the research was progressing and showed a keen interest in the specific research questions. Importantly, the four participants of the focus group were likely users of the final questionnaire and survey instrument. As such, they were recruited for the focus group to help finalise the questionnaire. All four participants were contacted by the researcher and all four immediately responded within a day to agree to participate in the focus group within the given timeframe of three weeks.

The following table summarises the participants profile for Empirical Study 4.

Table 24: Empirical Study 4 participant profiles

	Participant 1	**Participant 2**	**Participant 3**	**Participant 4**
Age	50-55	45-50	50-55	55-60
Gender	M	M	M	M
Role	Alliance Management	Marketing	Corporate Strategy	New Product Planning
Sector	Private / consultant	Pharma (Med. sized)	Pharma (Med. sized)	Biotech
Years of experience	10-15	15-20	10-15	10-15
Alliance type	Research and Development	Multi	Multi	Multi

3.5   Handling the data

A number of considerations were made in order to ensure the data collected from the research was handled ethically and compliantly.

At the start of each of the interviews, the researcher asked the participants if they felt comfortable with notes being taken during the meeting. During the studies, the researcher took extensive notes in a notebook, and then wrote up the discussion on word within 1-2 days of the

interviews. These notes were then emailed it to the participants who were asked to review the notes and ensure it reflected their views and the discussion. This allowed participants the opportunity to add any further reflections. After the interviews were conducted, the researcher used a coding method to identify the themes. Words or phrases that appeared across two or more interviews were highlighted. These words or phrases were listed as "codes". The researcher then revisited the notes again and made sure to highlight across all the interviews when the "codes" appeared. Once this was done, the sections of the notes that had the particular code was grouped together in a new word document. In this way, the key discussion points that related to a code – or theme – could be understood. The researcher then deeply considered the data within the groupings in order to summarise the results and consider the conclusions and implications to the research. During this process, the researcher extracted, where appropriate and possible, a key quote from the groupings that effectively summarized the insight in order to share to help the reader understand the data.

3.6   Avoiding bias

There were two areas of potential bias that the researcher needed to avoid. The first was in selecting the final participants and the second was in the data collection. In order to ensure there was no bias in the final sample, especially as the participants were all from the researchers own network, it was important to ensure there was no bias in their perspectives and therefore opinions. As such, the final sample was discussed with the supervisors to ensure they were a representative and balanced group. During the data collection process, it was important to ensure there was no bias in the identification of themes. This was especially important as the researcher had previously worked within the research area before and so it was important no bias was applied when extracting themes or conclusions from the study. In order to avoid this, two mitigation steps were applied. Firstly, after the interview, the researcher wrote up the notes from the discussion and emailed it to the participant. They were asked to review the notes and ensure it reflected their views and the discussion. As well as preventing any bias in the note collecting, this step also allowed participants the opportunity to add any further reflections. The second mitigation step taken to avoid bias during the data collection process was the review of the conclusions by a third party. Once the codes were identified and the data was grouped within these codes, or themes, a third party was asked to review the grouped data to ensure the insights and conclusions extracted reflected the raw data.

3.7   Ethical considerations

At the start of the study, the researcher discussed the key ethical risks with the supervisor and agreed mitigation steps for each risk. These have been summarised below. The Participation Information Sheet and Consent Form can be found in the Appendix for reference.

I.   Keeping the anonymity of the participant

In order to ensure the anonymity of the participant was kept, the participants name was not noted on either the notes taken within the researcher's note book, or when these were written up in the word document. Instead, the date and time of the interview was used as a way of keeping track. Further, during the interviews, the researcher made sure not to divulge any of the

other participants that had either been contacted or been interviewed during any of the studies. This was especially important whenever the participants recommended subject matter experts to the researcher during the interview. This happened during all the interviews and each time the researcher thanked the participant for the recommendation but did not confirm if and when the suggested experts were contacted to participate in the study. In this way, all the participants across the studies were kept anonymous.

II.   Keeping the anonymity of the alliance(s)

Equally as important was the anonymity of the alliances the participants were referring to during the interviews. This regarded both the partner of the alliance and the alliance product, or products. At the start of all the interviews, the participants were asked by the researcher to keep both confidential.

III.   Ensuring the participants views were their own

In order for the research to be meaningful, it was crucial that participants were completely open and truthful and described their experiences as they experienced them. As such, it was important for the researcher to state at the start of every interview that they acknowledged that the participants views were their own and not a reflection of the company they worked for or the alliance partner they worked with. As such, the researcher asked each participant across each study if they needed to receive verbal or written approval from their company or alliance partner (either previous or current) before partaking in the research. All participants across all studies said this was not required but confirmed the perspectives expressed were their own only.

In addition to considering carefully, and mitigating the ethical risks of the research, the research ethics form was submitted in 2020 in the Virtual Research Environment of the UoW and was approved in due time.

An additional important consideration during the time of this research was the context of the unfolding Covid-19 virus and the quarantine restrictions which impacted the researcher and the subject matter experts being interviews. The research project has been carried out in full compliance with University of Westminster indications and Government regulations. All the studies took place whilst the restrictions were in place and were all therefore conducted virtually using Teams.

The research described in this paper is confirmed as Class 1: research with no or minimal ethical implications (The University of Westminster, 2017), as described by the criteria below:

1. Does not has clear potential ethical implications and which may cause, or has the potential to cause, harm in any form to participants, investigators, animals, the environment or others;
2. Does not involve potentially vulnerable participants or those in Regulated Activity (adults) as defined by the Safeguarding Vulnerable Groups Act 2006 (and as amended by the Protection of Freedoms Act 2012);
3. Does not involve any of the below that would make it qualify as a Class 2 research

I. the collection and use of human tissue where National Research Ethics Service (NRES) approval is not required;
II. the administering of drugs, substance(s), or clinical intervention;
III. subjecting participants to environmental conditions outside of the norm, where these conditions create a potential for risk of harm;
IV. deception of participants;
V. the procurement of data not already in the public domain that bears on issues of criminality;
VI. the internet for the procurement of sensitive data;
VII. invasion of privacy, harm to reputation, or adverse representation of individuals or classes of people and social groups; o personal or sensitive data (including but not limited to medical history);
VIII. personal or sensitive data which may be directly or indirectly attributable to the participant or other identifiable individuals;
IX. personal or sensitive information which is recorded in audio/video or other forms of media;
X. re-identification of personal or sensitive date following pseudo anonymisation; which "is described by the NHS as "the technical process of replacing person identifiers in a dataset with other values (pseudonyms) available to the data user, from which the identities of individuals cannot be intrinsically inferred" 2 Such data should be treated sensitively and in the same manner as non-anonymised sensitive or personal data

The results will now be presented and discussed.

Chapter 4: Results and Discussion

Having outlined the research methodology the following Chapter presented the research results and discusses their impact on the final deliverable, the questionnaire. This Chapter will follow the structure below:

Chapter 4 will begin by introducing the first two empirical studies that were conducted in order to finalize the research variables. Next, the final two empirical studies will be presented that were conducted to develop the questionnaire. The Chapter will conclude by presenting the final questionnaire and survey.

4.1   Development of the research variables, dimensions and items

As described in the Methodology, the steps presented in the table below were followed in order to develop the conceptual model and the questionnaire.

[Repeated table] Table 20: Summary of research steps

Step		Objective	Outcome	Method	Thesis
Development of conceptual model					
1.	Review of alliance articles	Identify the research gaps in the alliance literature and develop the main research elements	Research gaps	Literature Review of previous alliance literature using Google Scholar & Web of Science	Chapter 1, Section 1.3
2.	Literature Review	Explore the literature of the research variables and define the research variables and dimensions	Draft conceptual model and research propositions	Literature Review of research variables using Google Scholar & Web of Science	Chapter 2, Section 2.2
3.	Empirical Study 1	Selection, adoption and adaption of research variables	Final research variables, dimensions and items	Qualitative written and verbal interviews with four subject matter experts using open ended questions	Chapter 4, Section 4.1
4.	Empirical Study 2	Explore the relationships between the research variables and incorporate within a conceptual model		Qualitative written and verbal interviews with five subject matter experts using semi-structured interview questions	
Development of questionnaire and survey					
5.	Empirical Study 3	Develop the questionnaire by exploring the formatting and formulation of the questions and testing the questionnaire	Final questionnaire and survey instrument	Written mixed method approach with 20 participants using structured interview questions and the developed questionnaire	Chapter 4, Section 4.2

The next section introduces the first empirical study.

4.1.1 Empirical study 1: introduction

Two empirical studies were conducted at the start of the research to confirm the research variables, dimensions and items. In order to do this, a draft conceptual model and draft research questions were developed at the start of the research and used as the basis for the interviews conducted in Empirical Study 1. The draft research elements are presented in the table below, and this section describes the process taken to amend these variables and finalise them into the final research variables, dimensions and items.

Table 25: Empirical Study 1 – presented research elements

	Draft Element	Draft Role		Draft Dimension
1	Firm Network Position	Moderator		N/A
2	Attractiveness as an Alliance Partner	Antecedent	2A	Scientific knowledge
			2B	Firm location
			2C	Top management teams' international experience
3	Alliance Portfolio Mix	Mediator		N/A
4	Performance	Dependent variable	4A	Financial performance
			4B	Market performance

Leveraging the literature review from the previous section, a preliminary conceptual model was developed and used to support discussions within Empirical Study 1.

Figure 3: Empirical Study 1 – presented conceptual model
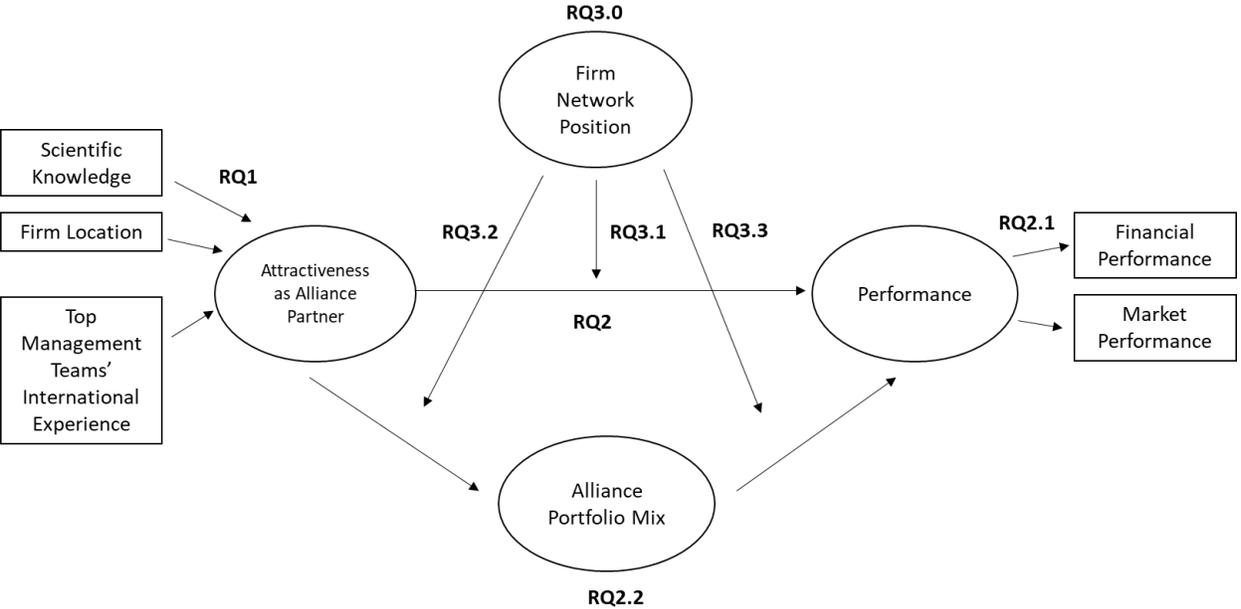
Source: Own elaboration

Table 26: Empirical Study 1 – presented research questions

	Overarching Research Question	Specific Research Question
1	What are the main antecedents and what is their influence on a firm's ability to attract alliance partners?	N/A
2	How does a firm's attractiveness as an alliance partner influence its performance?	RQ2.1: What dimensions of firm performance (financial performance and market performance) are impacted more by firm's attractiveness as alliance partner?
		RQ2.2: How does the firm's alliance portfolio mix mediate the relationship

		between its attractiveness as an alliance partner and its firm performance?
3	What is the moderating role of a firm's alliance network position?	RQ3.1: How does the network position moderate the relationship between a firm's attractiveness as an alliance partner impact its performance?
		RQ3.2: How does the network position moderate the relationship between a firm's attractiveness as an alliance partner and its alliance portfolio mix?
		RQ3.3: How does the network position moderate the relationship between a firm's alliance portfolio mix and its performance?

4.1.2   Empirical Study 1 questions

Four overarching research questions were posed within the written survey and were further discussed during the follow-up in-depth interviews in order to finalise the research variables.

1. How aware is your firm of their own attractiveness as an alliance partner? How important is this to your firm?
2. How aware is your firm of their position within its alliance network? How important is this to your firm?
3. How aware are firms of their own alliance portfolio diversity? How important is this to your firm?
4. How important is alliance success to your firm's overall performance?

The Empirical Study 1 Protocol can be found in the Appendix.

4.1.3   Empirical Study 1 results

The aim of Empirical Study 1 was to finalise the research variables. The overarching questions posed within this study have been summarized in the table below, together with a summary of the insights which were drawn from both the survey responses and the in-depth interviews that followed.

Table 27: Empirical Study 1 results

Empirical Study 1 Key Overarching Question		Summary of insights	Example quote
1.0	How aware is your firm of their own attractiveness as an alliance partner? How important is this to your firm?	- Consulting companies release reports on 'most attractive pharma companies to partner with' - Goal to become a 'Partner of Choice' included within most Pharma plans	*"if we want to be successful as a firm, we need to be seen as being a Partner of Choice but I don't think there is a clear understanding of what will get us there"*

2.0	How aware is your firm of their position within its alliance network? How important is this to your firm?	- Firms are unaware of their position - Alliances are formed on the basis of the partner's ability to fulfil the required capabilities or products, and not the partner's position within the firm's network	*"a network position is one part of the puzzle – companies don't even have a strategy for how they want to approach their alliances. It's done on a case by case basis which is why it's such a mess"*
3.0	How aware are firms of their own alliance portfolio diversity? How important is this to your firm?	- Lack of overarching strategy leads to lack of consciously creating a diverse portfolio - Portfolio diversity is usually unpanned and dictated by opportunity - Diversity is believed to be positive to a firm in order to reduce risk across the portfolio	*"we need to be thoughtful and aware of creating diversity in our portfolio but the truth is every company has their comfort levels with regards to who they partner with"*
4.0	How important is alliance success to your firm's overall performance?	- Success of an alliance can result in a capability uplift or product development, but not directly to a firm's total and overall performance	*"there are loads of factors that inform a firm's performance – alliance performance might be a part of it but it would be impossible to know for sure"*

Based on the responses shared during Empirical Study 1, the following three changes were made to the presented research variables, confirming why the final research variables were used.

I. 'Network Position' changed to 'Alliance Strategy'

Network position was viewed as being one part of a much broader strategy that firms would need to consider. It is the strength of the overall strategy that the respondents felt would contribute to the overall success of the alliance, not the network position specifically. Moreover, respondents felt that they would not be able to state what their firm's network position is or was and so they would not be able to confidently complete the survey. Other studies have commonly mapped a firm's alliances using publicly available data in order to describe its network position, however this research wanted to make the unique contribution in using both quantitative and qualitative survey instruments.

"If there is no broader alliance strategy then firms just fall into their alliances opportunistically- their network position will be a result of that. It's not conscious or even known. But the alliance strategy – or lack of - will be known". Empirical Study 1 interviewee

Although there is extensive evidence on difference parts of an alliance strategy – for instance the network position or alliance management, respondents felt there was no true understanding of what constitutes an alliance strategy more broadly, and what parts of the totality of the strategy would be most influential. As a result, pharmaceutical management teams have

invested heavily in creating alliance strategies and often do so with little foundational or empirically validated knowledge of what would be the most important to include.

"We assume an alliance strategy is important, but we don't know and we also don't know what parts of that strategy would be the most important and where". Empirical Study 1 interviewee

II.   'Firm Performance' changed to 'Previous Alliance Performance'

Given all the variables within the proposed model were related to firm alliances, respondents felt it would be difficult to confidently link them to a firm's overall market and financial performance. In addition, it was felt that a firm's performance was only loosely related to an alliance's performance or in fact any of the firm's achievements more broadly but was actually more closely related to the market's performance.

"It would be like using river water to measure the purity of your tap water – there will have been lots of contamination between the two." Empirical Study 1 interviewee

Instead, the elements of alliance performance were felt to be of more practical interest, in particular the relative importance and influence of more subjective measures such as the customer, or alliances partner's, experience.

III.   'Attractiveness as an Alliance Partner' changed from a mediator to the dependant, latent variable

Of each of the variables discussed, respondents were the most passionate and excited about 'Attractiveness as an Alliance Partner' (AAP) given both the recent interest in the topic within the industry and the lack of empirical evidence in the literature. Moreover, a number of firm's have "Become a Partner of Choice" as one of their key long-term strategic goals. In this way, firms are already working towards this as an outcome or result. Becoming a partner of choice is, in itself, a performance measure of the firm.

"If we want to be successful in terms of our shareholder value, we need to attract the right innovation – and we can only do that by being seen as someone to partner with. That's why so many of us are putting time, money and effort behind this. We need to be seen as being a Partner of Choice in order to be successful". Empirical Study 1 interviewee

Alliance experience and performance were hypothesised to be a key attribute to helping firms to achieve this goal.

"We need people to know that we have good alliances – that our partners enjoy working with us. If they do, we will be seen as being attractive and will therefore be able to partner with even more people – and we won't need to rely on just paying a premium every time". Empirical Study 1 interviewee

Moreover, respondents were also enthused by the relationship between alliance strategy, portfolio diversity and attractiveness. Specifically, whether high alliance strategy would make a difference in factors influencing their attractiveness as an alliance partner, and ability to be seen as a Partner of Choice.

4.1.4   Final research variables

As a result of these changes, the final research variables for the research were proposed, leveraging the literature review discussed in Chapter 2.

[Repeated table] Table 10: Research variables and dimensions

	Variable	Role	Draft Dimension	
1	Alliance Strategy	Moderator	I.	Design of an Alliance
			II.	Management of an Alliance
			III.	Alliance Constellation
			IV.	Alliance Capability
2	Attractiveness as an Alliance Partner	Dependent variable	I.	Hard
			II.	Soft
3	Alliance Portfolio Diversity	Antecedent	I.	Organizational type
			II.	Functional purpose
			III.	Governance structure
4	Previous Alliance Performance	Antecedent	I.	Alliance outcomes
			II.	Operational measures

4.1.5   Empirical study 2: introduction

Based on the final research variables, a second empirical study was subsequently conducted with a further five subject matter experts. The aim of this study was to finalize the conceptual model. Put another way, this study aimed to confirm which relationships to investigate during this research.

Empirical Study 2 entailed qualitative written and verbal interviews with five subject matter experts using semi-structured interview questions to explore and identify the relationships between the research variables and incorporate within a conceptual model. These final four research variables are Alliance Strategy, Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner. These relationships led to the ultimate development of the final research conceptual model.

4.1.6   Empirical Study 2 questions

Three overarching research questions were posed during Empirical Study 2, in order to fulfil the aim of finalizing the conceptual model.

1. What do you believe is the relationship between each of the variables?
2. How might each of the variables influence each other?
3. What factors do you think might influence these relationships?

The Empirical Study 2 Protocol can be found in the Appendix.

4.1.7 Empirical Study 2 results

The overarching questions posed within this study have been summarized in the table below, together with a summary of the insights. In order to build on the finding from Empirical Study 1, these subject matter experts were told of the roles of the variables. Specifically, that the research was primarily concerned with the influence and impact of Alliance Strategy on the other variables, and that Attractiveness as an Alliance Partner was the dependent variable within the model. The feedback reflected those key roles.

Table 28: Empirical Study 2 results

Empirical Study 2 Key Overarching Question		Summary of insights	Example quote
1.0	What do you believe is the relationship between each of the variables?	- All three variables could be antecedents of Attractiveness as an Alliance Partner - None of the variables would be considered strategic choices – e.g. portfolio diversity is often a coincidence, not always a strategy	*"what would be of particular interest if what aspects of each of these antecedents most impact attractiveness, and why"*
2.0	How might each of the variables influence each other?	- Alliance portfolio diversity antecedent of alliance performance - Portfolio diversity often arises as a result of an alliance capability, which in turn is developed through positive alliance experiences	*"more diversity could improve alliance performance – but performance could also increase companies' confidence to build a diverse portfolio"*
3.0	What factors do you think might influence these relationships?	- Top Management's buy in and execution of the Alliance Strategy considered the most important factor in influencing the relationships	*"If Management are telling potential partners 'we have great alliances, they are diverse and they are successful', then that carries more weight and shows we know what we are doing"*

Following on from this study, one outstanding question remained with regards to the relationships between the variables. This concerned the relationship between Alliance Portfolio Diversity and Previous Alliance Performance – specifically, whether Alliance Portfolio Diversity is an antecedent is Previous Alliance Performance, or whether Previous Alliance Performance is an antecedent of Alliance Portfolio Diversity.

Based on the survey feedback, it appeared that respondents felt both would be possible in practice. However, during the follow up discussions, it became apparent that Alliance Experience, not Performance, was in fact more of a perceived antecedent for Alliance Portfolio Diversity. Respondents felt that if a company had experiences with a number of previous

alliances, this would drive confidence in building a diverse alliance portfolio. However, the variable within this study is not Alliance Experience but Previous Alliance Performance. When this distinction was clarified with the respondents, the majority believed that Alliance Portfolio Diversity would therefore be the antecedent to Previous Alliance Performance. That is to say, the more diverse a companies' alliance portfolio, the more likely they are to have successful alliance performances. This is confirmed through the literature review that was discussed in Chapter 2.

4.1.8 Final conceptual model

Based on the results from Empirical Study 2, the final research model was proposed below.

[repeated figure] Figure 2: Research Conceptual Model
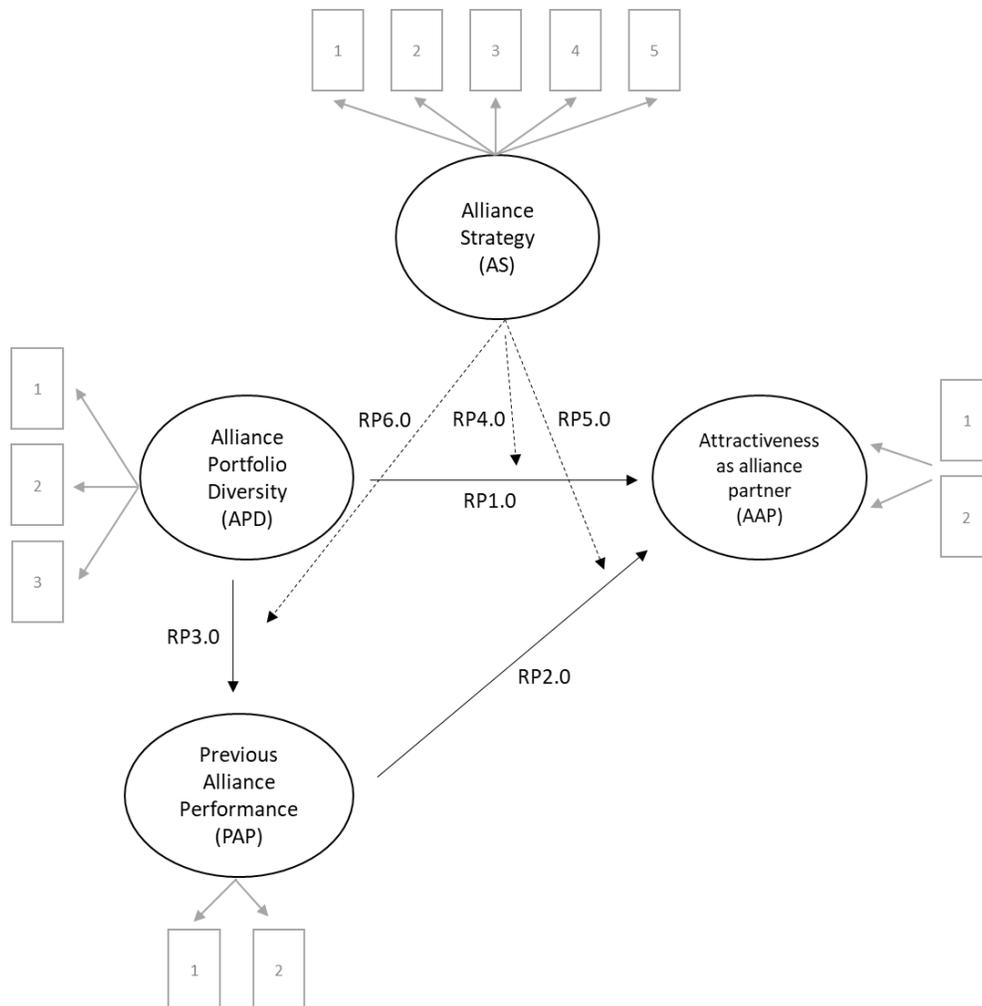
Source: own elaboration

The development the of final variables and conceptual model mark the second overarching research contribution, a reminder of which is below.

[Repeated table] Table 12: Summary of research contributions

Overall Research Contribution		Specific Research Contribution	Thesis section

1.	Identification of two key antecedents of Attractiveness	K. Identification of key topics and theories of interest within the alliance space
		   i. Identification of how topics and theories have evolved post 2016
		   ii. Assessment of theories that have been applied to topics of interest
		   iii. Identification of four potential research areas and gaps
		   iv. Presentation of theories by key question
		L. New variable 'Alliance Strategy' developed and examined as a Moderator
		   i. Role of 'Alliance Strategy' examined as a Moderator
		   ii. Research propositions developed
		M. Previous Alliance Performance examined as an Antecedent
		N. New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable
		O. Alliance Portfolio Diversity examined as an Antecedent
			Chapter 2

2.	Development of research propositions for how an Alliance Strategy moderates the relationship between Attractiveness and its antecedents	E. Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner
		F. Research propositions developed for the role of Alliance Strategy as a Moderator between:
		   vii. Alliance Portfolio Diversity and Attractiveness as Alliance Partner
		   viii. Previous Alliance Performance and Attractiveness as Alliance Partner
		   ix. Alliance Portfolio Diversity and Previous Alliance Performance
			Chapter 2

3.	Development of a Questionnaire for firms to test their Attractiveness	E. Final questionnaire developed to empirically test the conceptual model F. Final survey developed for use online	Chapter 4

4.2 Development of questionnaire and survey

Having finalised the development of the conceptual model, the following section describes the process followed to draft, develop and then present all the final items of the survey

questionnaire that can then be used in the future to empirically test the conceptual model and to provide specific answers to some of the research questions. This development of this questionnaire is the main and final theoretical and practical contributions of this research.

A questionnaire is an instrument in which each respondent is asked to answer an identical set of questions in a predetermined order at a certain point in time (De Vaus, 2002). It is the most widely used method for collection of primary data (Diamantopoulos and Schlegelmilch, 1996). In order to begin constructing the draft research questionnaire, the question format was first considered and decided on so that the question topic and the individual questions could be positioned accordingly. The types of close-ended question formats and response options are listed below, together with a critical review of their applicability to this research.

4.2.1   Question format

i.   List:

The list format allows respondents to select items from a list. Multiple items may be selected, for instance to indicate which items respondents have considered with respect to their firm's alliance strategy. This allows them to consider all the items.

This format would work for the first question relating to a firm's alliance strategy. Given the number of items, it would also help respondents to complete the questionnaire more quickly. However, the other topics within the questionnaire, such as alliance performance, require the respondent to give a perspective on the degree to which each item has been met. For instance, did the firm meet the objectives of their previous alliance? It would not be possible to address these questions with a list format. As such, for simplicity, it would be important to have the same format across each of the variables, and so this format would not be applicable.

ii.   Category:

This format allows respondents to select one response, or item, from a given set of mutually exclusive categories, so that behavioral or attribute data can be collected. If this research was looking to understand which of the items within each topic, or category, was the most important, then this format would be eligible. However, in order to address the research question relating to the impact of an alliance strategy on a firm's attractiveness, all the items would need to be considered. As such, this format would not be applicable.

iii.   Ranking:

The ranking format asks respondents to place the items in order of importance, thus exploring the relative importance of items or even categories. This would be applicable in the instance that the research was looking to understand the mist important topic to attractiveness, or even the most important items within each of the topics. However, for the purpose of this study, it would not address the research question.

iv.   Rating:

The rating format asks respondents to record their responses to questions on a given rating scale. This would be the most appropriate for this research as it allows opinion data to be collected and therefore the research goals to be met. However, a practical and important consideration is the length of time that would be required to complete this questionnaire with this format. This will need to be taken into account when briefing respondents.

A number of studies have found that a 5- to 7-point scale response option is the most commonly used (Lietz, P., 2008; Fink, 2003; Brace, 2004) with the 7-point Likert scale being shown to be the most reliable (Cronbach, 1951), due to the fact that it allows for greater differentiation of responses than the 5-point scale (Finn, 1972; Masters, 1974; Alwin, 1992).

v.   Frequency:

Adverbs that indicate frequency can be used in questionnaires, such as 'never, sometimes, often, always. In order to ensure their consistency in understanding, they can be coupled with a percentage of time this word meant something occurred. For instance, 'never (0-25% of time)', 'sometimes (25-50% of time)', 'often (50-75% of time)', 'always (75-100% of time)'.

In order for this questionnaire to be the most practical, it will need to be easily understood by different cultures and those with different first languages, especially given the nature of the teams within the strategic alliance sector, for which this research will be the most important. With this in mind, this format carries the most risk in terms of misunderstandings or misinterpretations. Furthermore, studies have shown that adverbs like 'frequently', 'usually' and 'regularly' have different meanings for different respondents. As such, this would not be a practical format option for this questionnaire.

As a result of the decision to include frequency as the basis to format, or score, the questions, the research variables were drafted into a questionnaire.

4.2.2   Question formulation

Having considered the question formatting, the question formulation was considered in order to draft the questionnaire.

Cognitive research into survey methodology highlighted that, irrespective of the model used, even minor details in the formulation of questions and answers could have a significant effect on the responses obtained and therefore ultimately the conclusions drawn from the research (Lietz, 2010).

Lietz (2010) research summarized the best practice in relation to question length, question wording and finally question order. This best practice reflects increased data quality, accurate reporting and an increased respondent comprehension. As this research will likely be applied across-borders where the respondents will be speaking different languages, these recommendations were significant and have been summarized below.

Question length (QL):

- Keep question as short as possible (Foddy, 1993; Dillmann, 2000; Fink, 2003) with a maximum of 16 words Brislin (1986)
- Groups of questions concerning the same topic should be preceded by a medium-length introduction (Blair et al., 1977; Andrews, 1984)

Grammar (G):
- Keep grammatical complexities to the minimum ((Brislin, 1986; Dillman, 2000; Dörnyei, 2003) by using an active rather than a passive voice, repeating nouns instead of using pronouns and avoid possessive forms

Specificity and simplicity (S&S):
- Use specific rather than general terms (Brislin, 1986; Dillmann, 2000; Martin, 2002; White et al., 2005)
- Break down more complex questions into more simple ones

Social Desirability (SD):
- Use indirect questioning (Brace, 2004)
- Use of the introductory phrase (Brace, 2004; Bradburn et al., 2004)
- Word questions are neutrally as possible
- Propose values on a certain topic not only in different directions
- Suggest the normalcy of socially deviant behavior

Double-barrelled questions (DBQ):
- Avoid questions that contain two different verbs or concepts (Brislin, 1986; Fowler, 1992; van der Zouwen, 2000; Fink, 2003; Brace, 2004)
- Ensure the reference group is clear in the question

Negatively worded questions (NWQ):
- Avoid use of negatively-worded questions were possible (Weems et al., 2002)
- Avoid use of 'no/not' together with words that have a negative meaning (Foddy, 1993)
- Rephrase question to be positively worded where possible

Question order (QO):
- General questions should be placed before specific questions
- Demographic questions about respondents, such as age and experience should come at the end of the questionnaire in order to avoid negative feelings about the provision of personal information impacting on the answering of questions (Converse and Presser, 1986; Oppenheim, 1992)

These recommendations were applied to the draft questionnaire.

4.2.3   Draft questionnaire

The draft questionnaire was developed using the literature review discussed in Chapter 2, the results from Empirical Study 1 and 2 discussed in Chapter 4, and the formatting and formulation

considerations discussed in the section above. After each step, the questionnaire was adapted and each version can be found in the Appendix.

As a result, the following draft questionnaire was developed. The questions were then further developed through Empirical study 3 and 4, each of which is outlined in the sections that follow.

Table 29: Draft questionnaire

Topic		Question
1. With regards to your firm's Alliance Strategy, to what degree have the following questions been considered? *(Please rate on a scale of 1-7)*	1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?
	1Aii	What is the scope of the alliance, that is, what is included and excluded? Which markets or products, technologies, and business systems does it include?
	1Aiii	What are the criteria for selecting a partner?
	1Aiv	What are the options for structuring the alliance, and what effects will these structures have on governance and the partnership?
	1Av	How should the alliance be negotiated and by who?
	1Bi	What are the partner objectives and how can the alliance be designed and then managed to ensure it is mutually beneficial?
	1Bii	What should be done in the first 30 to 180 days?
	1Biii	What culture do we want to promote within the alliance? Does this desired culture differ to that of the partners?
	1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?
	1Bv	What is the process for making decisions in the alliance when issues arise that have not been resolved in advance?
	1Bvi	How will operational decisions be made within the alliance, on both routine business and new strategic directions?
	1Bvii	How will the performance of the alliance and the relationship between the parents be measured? How will these measures be linked to individual incentives?
	1Bviii	What is the criteria and process for adjusting or terminating the alliance?
	1Ci	Where in the business should the alliances be formed, how many alliances should there be, and of what type?
	1Cii	What is the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?
	1Ciii	How will interactions among alliances of different divisions be managed?
	1Civ	How should our firm's multiple linkages be structured; for example, should there be a loose network, a stand-alone consortium, or an equity joint venture?

		1Cv	How will the alliance compete and who will receive value from it?
		1Di	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?
		1Dii	What skills, human resources, processes, tools, and systems are needed in each area?
		1Diii	How centralized or decentralized should the alliance capability be?
		1Div	How will our firm capture and disseminate learning from our own experience with alliances?
		1Dv	What will encourage incorporation of alliance thinking into the business?
		1Ei	How is the alliance strategy communicated and reviewed?
2	With regards to your firm's Previous Alliance Performance, please consider the following. *(Please rate on a scale of 1-7)*	2Ai	How satisfied was the firm with the overall performance of the alliance?
		2Aii	To what degree were each of the firm's alliance goals fulfilled?
		2Aiii	To what degree were each of the partner's alliance goals fulfilled?
		2Aiv	How positive or negative were the net side effects of the alliance to the firm?
		2Av	How effectively were issues resolved between the firm and the alliance partner?
		2Avi	How effective was the decision making across the alliance?
		2Bi	To what degree was the alliance maintained for as long as originally intended?
		2Bii	Were adjustment made to the alliance as and when necessary?
3	With regards to your firm's Attractiveness as Alliance Partner, please consider the following. *(Please rate on a scale of 1-7)*	3Ai	How strong are the firm's financial assets?
		3Aii	How strong are the firm's overall foundational capabilities?
		3Aiii	To what degree has the firm got desired unique capabilities?
		3Aiv	How strong is the firm's market access?
		3Av	How strong are the firm's technical capabilities?
		3Avi	How strong are the firm's management capabilities and reputation?
		3Avii	How significant an investment is the firm willing and likely to give to the alliance?
		3Bi	How strong firm's market knowledge?
		3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?
		3Biii	To what degree is the firm perceived to be trustworthy?
		3Biv	How many successful alliances has the firm had?
		3Bv	To what degree is the firm willing to share its experience?
		3Bvi	To what degree can the firm acquire new skills?
		3Bvii	To what degree does the firm have the skills to learn from alliance partners?

		3Bviii	To what degree is the firm willing to enter into a mutually beneficial partnership?
4	With regards to your firm's Alliance Portfolio Diversity, please consider the following. *(Please rate on a scale of 1-7)*	4Ai	To what degree has the firm entered in alliances with different underlying strategic motivations?
		4Aii	To what degree has the firm entered in alliances with partners with different characteristics?
		4Aiii	To what degree has the firm entered in alliances with partners from different industries?
		4Aiv	To what degree has the firm entered in alliances with partners based in a different nation states?
		4Av	To what degree has the firm entered in alliances with partners from different organisations?
		4Bi	To what degree has the firm entered in alliances providing differing commercial activities?
		4Bii	To what degree has the firm entered into alliances at different stages of their life cycle?
		4Ci	To what degree has the firm entered in alliances with different governance structures?

4.2.4   Empirical study 3: introduction

Having drafted the questionnaire, Empirical Study 3 was conducted to develop the questionnaire further.

4.2.5   Empirical Study 3 questions

Together with the draft questionnaire, three overarching questions were posed to 20 subject matter experts with the aim of developing the research questionnaire further.

1. Do you feel any questions are missing that would help address the overarching topic? Would these questions give a complete response to the overarching topic?
2. Are any of the questions duplicative? Can it be simplified in any way without losing the specificity of the questions?
3. Is the terminology and phrasing reflective of what is used within the industry and the area?

The Empirical Study 3 Protocol can be found in the Appendix.

4.2.6   Empirical Study 3 results

The aim of Empirical Study 3 was to develop the research questionnaire further through a survey with 20 subject matter experts. Specifically, the aim of the study was to ensure the questions fully represent the overarching topics, or Variables, and the language is simple and reflective of the terminology used within the industry and the area.

The results for Empirical Study 3 have been grouped into three types. The first result type describes the themes of study results. The second result type is feedback given in relation to the overarching questionnaire format and presentation. The third result type is feedback given

on the specific, individual questions. All three of these results types have been incorporated into the final questionnaire, which is presented at the end of this Chapter.

The three result types are discussed in the following sections.

4.2.6.1 Survey themes

The questions posed within the survey have been summarized in the table below, together with a summary of the feedback for each of the Topics. Eight experts included feedback that was outside of the three survey questions posed. This was shared either within the word document survey itself or as comments or suggestions included in the return email. These have been summarized as a fourth additional question in the table below.

The table below summarizes the survey themes that represents feedback that was received from three or more respondents.

Table 30: Empirical Study 3 survey themes

Empirical Study 3 Survey Question		Alliance Strategy	Previous Alliance Performance	Attractiveness as Alliance Partner	Alliance Portfolio Diversity
1.0	Do you feel any questions are missing that would help address the overarching topic?	- What does the firm want to be known for as an alliance partner?	- Was the parenting firm satisfied with the overall performance of the alliance?	No overarching themes	- None
2.0	Are any of the questions duplicative? Can it be simplified in any way without losing the specificity of the questions?	- 1Dv can be removed as not clear and/or significant enough	- 2Aiv can be combined with 2Ai - 2Bii can be removed – respondents will likely not know	- 3Aii, 3Aiii, 3Av and 3Avi are not clearly distinguishable	- 4Ai and 4Bi can be combined
3.0	Is the terminology and phrasing reflective of what is used within the area?	- 1Bvii "relationship between the parents" – rephrase parents to partners	- The definition of 'net side effects' is not clear or universally understood across the industry	- The definition of 'market access' is not clear or universally understood across the industry	- The definition of 'firm characteristics' is not clear

4.0	Other points across the questionnaire?	- Given the number of questions across each topic, suggest the questions are categorized in some way

Most survey themes were integrated into the final questionnaire, which is presented in Section 4.2.10, Table 36. Only two themes were not incorporated into the final questionnaire.

I. 2Bii can be removed

The reason for this theme was that the subject matter experts in Empirical Study 3 felt that not all respondents would not know if this was done. However, the phrasing of the question is deliberately flexible – "adjustments" has been left open and so can be interpreted as any changes, not just contractual which only a select group of alliance members would know. Given the importance of this question in being able to decipher if the previous alliance was flexible, the decision was made to keep the question in and allow respondents the option to rate "don't know".

II. 4Ai and 4Bi can be combined

4Ai ascertains the firm's experience in entering into alliance with different motivations. 4Bi ascertains the firm's experience in entering into alliance of different commercial types. A motivation can be beyond that of commercial type. Given the decision to include examples within 4Bi, the questions were not combined as this would help sufficiently distinguish between the questions. In addition, the term 'strategic motivation' was changed to 'goal' to further clarify the difference.

4.2.6.2 Overarching changes

The second result type is feedback given in relation to the overarching questionnaire format and presentation. Based on the responses shared during Empirical Study 3, two overarching changes were made to the draft questionnaire.

I. Included categories for the research questions

During the literature review discussed in Chapter 2 and the Empirical Study 1 and 2 discussions, each variable had dimensions proposed. As a result of the suggestion during Empirical Study 3 to include categories within the questionnnaire, dimensions for each variable were re-considered. The following table outlines the original dimensions applied to the variables, and the two changes made for inclusion within the final questionnaire

Table 31: Questionnaire categories

Variable		Dimension		Original source of dimension	Category for questionnaire
1	Alliance Strategy	1A	Design of an alliance	Literature Review; Bamford et al. (2003)	No change

		1B	Management of an Alliance	Literature Review; Bamford et al. (2003)	No change
		1C	Design and Management of an Alliance Constellation	Literature Review; Bamford et al. (2003)	No change
		1D	Development of an Internal Alliance Capability	Literature Review; Bamford et al. (2003)	No change
		1E	Strategy is explicitly stated*	Empirical Study 2	Alliance Strategy Communication
2	Previous Alliance Performance	2A	Organizational effectiveness	Literature Review; Ariño (2003)	Alliance outcomes
		2B	Operational measures	Literature Review; Ariño (2003)	No change
3	Attractiveness as Alliance Partner	3A	Hard elements*	Empirical Study 2	No change
		3B	Soft elements*	Empirical Study 2	No change
4	Alliance Portfolio Diversity	4A	Organisational type	Literature Review; Jian et al. (2010)	No change
		4B	Functional purpose	Literature Review; Jian et al. (2010)	No change
		4C	Governance structure	Literature Review; Jian et al. (2010)	No change

As stated, two changes to the original dimensions were made for inclusion as categories within the questionnaire. These were:

1. 'Strategy is explicitly stated' changed to 'Alliance strategy communication'

The change to this dimension was made on the basis of ease of understanding.

2. 'Organizational effectiveness' changed to 'Alliance outcomes'

The change to this dimension was made based on the responses the Empirical Study 3 which stated that "*the questions can be simplified as they primarily relate to the outcome of the alliance*". As such, this definition was used within the category for the developed questionnaire.

II.   Included definitions, descriptions or examples to support key terminologies

The second overarching change made to the questionnaire was inclusion of short definitions, descriptions or examples to key terminologies. Empirical Study 3 highlighted that some of the terminologies within the questionnaire were not clear or would not be consistently understood. As such, definitions, descriptions or examples were included as appropriate and relevant within the questionnaire. These have been summarised in the table below. In addition to including definitions, some terminologies have been changed.

Table 32: Summary of key definitions within questionnaire

Draft Questionnaire Question		Terminology	Definition, description or example
1Cii	What is the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?	Constellation	Include description; 'network'
4Aii	To what degree has the firm entered in alliances with partners with different characteristics?	Characteristics	Include description; 'capabilities'
4Av	To what degree has the firm entered in alliances with partners from different organisations?	Different organisations	Include examples; 'Big/Small Pharma, Biotech, Universities, Hospitals'
4Bi	To what degree has the firm entered in alliances providing differing commercial activities?	Functional activities	Include examples; 'marketing, manufacturing, and distribution'
4Bii	To what degree has the firm entered into alliances at different stages of their life cycle?	Life cycle	Include example; 'Pre Proof of Concept or Post Proof of Concept'
4Ci	To what degree has the firm entered in alliances with different governance structures?	Governance structures	Include examples; 'non equity, equity, joint ventures'

4.2.6.3 Question feedback

The third result type for Empirical Study 3 is feedback given on the specific, individual questions. Survey respondents were also given the opportunity to provide feedback on specific and individual questions. Changes as a result of this feedback have been captured and presented in the Appendix, together with the questionnaire that was adapted as a result of all the changes from Empirical Study 3.

4.2.7   Empirical study 4: introduction

Having further developed the questionnaire, Empirical Study 4 was conducted to finalise the questionnaire by addressing the outstanding questions.

4.2.7.1 Outstanding issues

The two outstanding issues relate to the following topics.

I.   The definition of alliance performance is not clear

During Empirical Study 3, a number of survey respondents highlighted that the questions relating to Previous Alliance Performance do not adequately define performance. The questions imply that if the pre-defined firm's goals were met, the alliance performed well. However,

respondents highlighted that, in the pharmaceutical industry in particular, there are a number of factors that would inform the goals being met or not that would be outside of the firms' control. As such, goals being met would not be indicative of alliance performance alone.

II.   A firm's Alliance Strategy and their Attractiveness as an Alliance Partner would depend on who the potential partner was.

The questions relating to Topic 1, Alliance Strategy, and Topic 3, Attractiveness as an Alliance Partner have been phrased in a way that allows respondents to consider any of their alliances. However, a number of respondents highlighted that their responses to those questions would differ depending on the alliance or partner. For instance, question 1Bv 'How will operational decisions be made within the alliance, on both routine business and new strategic directions?' would depend on, for instance, the size of the partner or the alliance. In addition, the questions relating to Topic 3, Attractiveness as an Alliance Partner, would also differ depending on the alliance in question.

As such, the purpose of Empirical Study 4 was to discuss in detail the two remaining issues in order to finalise the questionnaire. Specifically, a proposal for both outstanding issues was taken to the four subject matter experts during the focus group for discussion so that the remaining issues could be completed.

4.2.7.2   Proposal to address the outstanding issues

The proposal to address the two outstanding issues are outlined below.

I.   The definition of alliance performance has been made clearer through the changes made to the questions

Empirical Study 3 highlighted that there were two potential interpretations of alliance performance. The first is performance of the alliance outcome, or the degree to which the alliance goals were met. The second is one of the overall satisfaction of the alliance, in a more holistic sense. Through the addition of question 2Aii, whereby the partnering firm's overall satisfaction would be considered, this distinction should be sufficiently made and both interpretations of performance addressed.

The changes made to the relevant questions have been outlined in the table below.

Table 33: Focus Group Proposal 1: changes to alliance performance related questions

Topic		Draft Question		Developed Question
2	With regards to your firm's Previous Alliance Performance, please consider the following.	2Ai	How satisfied was the firm with the overall performance of the alliance?	How satisfied was the firm with the overall performance of the alliance?
		2Aii	To what degree were each of the firm's alliance goals fulfilled?	Was the partnering firm satisfied with the overall performance of the alliance?

| (Please rate on a scale of 1-7) | 2Aiii | To what degree were each of the partner's alliance goals fulfilled? | To what degree were the firm's alliance goals fulfilled? |
| | 2Aiv | How positive or negative were the net side effects of the alliance to the firm? | To what degree were the partner's alliance goals fulfilled? |

II.   Ask respondents to consider the same alliance across all topics within the questionnaire

The second proposal addressed the second unresolved issue, that a firm's Alliance Strategy and their Attractiveness as an Alliance Partner would depend on who the potential partner was. In order to address this issue, a statement in the introduction of the survey to request respondents to consider the same specific alliance for all questions will be made. In this way, the responses will at least be framed through the context of the same survey.

4.2.8   Empirical Study 4 questions

The purpose of Empirical Study 4 was to finalise the questionnaire by discussing and resolving the two remaining issues. As such, one question was posed to the four subject matter experts before the focus group, with the aim of finalizing the research questionnaire.

1. Do you agree with the proposals made to address the outstanding issues?

The Empirical Study 4 Protocol can be found in the Appendix.

4.2.9   Empirical Study 4 results

The results of this final step are summarized in the table below.

Table 34: Empirical Study 4 summary results

Unresolved Issue	Proposal to address	Summary of insights
1. The definition of alliance performance is not clear	The definition of alliance performance has been made clearer through the changes made to the questions	Include "would the alliance partner work with you again" as another indicator of alliance satisfaction
2. A firm's Alliance Strategy and their Attractiveness as an Alliance Partner would depend on who the potential partner was	Ask respondents to consider the same alliance across all topics within the questionnaire	Consider how different alliance types might impact the conceptual model in a future topic

During the Empirical Study 4 focus group, both unresolved issues were discussed in detail with the subject matter experts. The unresolved issue was first shared and then the proposal to address the issue presented to the subject matter experts for their further comments. Further detail on those discussions is outlined for each issue.

I.   The definition of alliance performance is not clear

During Empirical Study 3, a number of survey respondents highlighted that the questions relating to Previous Alliance Performance do not adequately define performance. The subject matter experts further elaborated on this issue by discussing what the risks of this issue were. Firstly, there could be different interpretations of the questions themselves, based on different interpretations of "performance". In turn, this could impact the conclusions drawn from the questionnaire. The second risk is that the questions themselves might not be able to truly establish a firm's Previous Alliance Performance if only a narrow definition of 'performance' is included.

After discussing the risks of the unresolved issue, the proposal was shared with the focus group. Specifically, the changes made from the draft questionnaire to the developed questionnaire was shared. The subject matter experts were asked if the changes clarified that performance was explored both in terms of alliance success, and in terms of satisfaction. The subject matter experts agreed the changes did clarify the difference, but highlighted how important it was to understand a firm's previous alliances from the perspective of their partners. In doing this, they were able to gauge if the firm was trustworthy and would be an attractive alliance partner. As such, the subject matter experts suggested to include the following question, on the basis this would give a well rounded perspective of performance; 'would the alliance partner work with you again?'. This suggestion was incorporated into the final questionnaire, which will be presented at the end of this Chapter.

I.   A firm's Alliance Strategy and their Attractiveness as an Alliance Partner would depend on who the potential partner was.

The second unresolved issue that was shared during the focus group related to the impact of alliance type on the responses to the questions relating to Alliance Strategy and Attractiveness as an Alliance Partner. Survey respondents of Empirical Study 3 highlighted that their responses to those questions would differ depending on the alliance or partner. For instance, question 1Bv 'How will operational decisions be made within the alliance, on both routine business and new strategic directions?' would depend on, for instance, the size of the partner or the alliance. In addition, the questions relating to Topic 3, Attractiveness as an Alliance Partner, would also differ depending on the alliance in question.

During the focus group, the subject matter experts were reminded of the research questions and objectives. Specifically, that the intention of this research is to assess a firm's overall Attractiveness as an Alliance Partner. The questionnaire enables firms to consider attractiveness to a partner in question. In other words, when a firm is wanting to enter into an alliance with another firm or organisation, they can use the questionnaire to consider how likely they are to be attractive to the particular partner. In this way, the unresolved issue is not a factor for this research.

The subject matter experts agreed with this proposal, however suggested that this was made clear within an introductory statement of the questionnaire. Specifically, that questionnaire respondents be asked to consider the same alliance across all topics within the questionnaire.

This suggestion was incorporated into the final questionnaire, presented at the end of this Chapter.

During this part of the focus group discussion, it became clear there could be a potential future topic relating to the impact of alliance type on this conceptual model. Specifically, a future research topic could explore which categories and questions would be most important to attractiveness for different alliance types, for instance capability alliances versus product alliances. This potential future topic has been noted in Chapter 8.

The final two changes were incorporated into the final questionnaire, presented at the end of this Chapter.

4.2.10 Final Questionnaire

The final questionnaire was developed based on feedback collated from the four empirical studies. The table below outlines which study impacted which of the 50 final questions, a summary of which is:

- Empirical Study 1: 15 questions
- Empirical Study 2: 0 question (the aim of this study was to finalise the conceptual model specifically)
- Formatting: 20 questions
- Formulation: 26 questions
- Empirical Study 3: 26 questions
- Empirical Study 4: 1 question

Table 35: Studies informing each question of the questionnaire

Topic		Category	Question		ES 1	Formatting	Formulation	ES 3	ES 4
1.	With regards to your firm's Alliance Strategy, to what degree have the following questions been considered? *(Please rate on a scale of 1-7)*	Design of an alliance	1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?			✓		
			1Aii	What is the goal of the alliance? As such, what is included and excluded? Which markets or products, technologies, and business systems does it include?				✓	
			1Aiii	What are the criteria for selecting a partner?			✓		
			1Aiv	What are the options for structuring the alliance, and what would inform selection of each option?			✓	✓	
			1Av	How should the alliance be negotiated and by who?			✓		

		Managem ent of an Alliance	1Bi	What might the partner's stated and implied objectives be? How can the alliance be designed and managed to ensure it is mutually beneficial?	✓		✓	✓	
			1Bii	What should be done in the first 30 to 180 days?			✓		
			1Biii	What culture do we want to promote within the alliance?	✓		✓	✓	
			1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	✓		✓		
			1Bv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?			✓	✓	
			1Bvi	How will escalations be resolved, and by who?			✓	✓	
			1Bvii	How will the performance of the alliance and the relationship between the partners be measured? How will these measures be linked to individual incentives?			✓	✓	
			1Bviii	What is the criteria and process for adjusting or terminating the alliance?			✓		
		Design and Managem ent of an Alliance Constellat ion	1Ci	Which alliances are required to achieve our goals?			✓		
			1Cii	What is the relationship among the various alliances and partners in the	✓		✓	✓	

				constellation, or network? What position should be taken within the constellation?					
			1Ciii	How will interactions among alliances of different divisions be managed?			✓		
			1Civ	How will our constellation of alliances compete, and with who?			✓	✓	
			1Cv	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?					
		Development of an Internal Alliance Capability	1Di	What skills, human resources, processes, tools, and systems are needed in each area?					
			1Dii	How will our firm capture and disseminate learning from our own experience with alliances?					
			1Diii	What will encourage incorporation of alliance thinking into the business?			✓	✓	
		Alliance Strategy Communication	1Ei	Who needs to know about our alliance strategy?	✓			✓	
			1Eii	What does the firm want to be known for as an alliance partner?					
2	With regards to your firm's Previous Alliance	Alliance Outcomes	2Ai	How satisfied was the firm with the overall performance of the alliance?			✓	✓	

Performance, please consider the following. *(Please rate on a scale of 1-7)*			2Aii	Was the partnering firm satisfied with the overall performance of the alliance?					
			2Aiii	To what degree were the firm's alliance goals fulfilled?				✓	
			2Aiv	To what degree were the partner's alliance goals fulfilled?	✓			✓	
			2Av	Would the alliance partner work with the firm again?					✓
		Operational Measures	2Bi	How effectively were issues resolved between the firm and the alliance partner?	✓				
			2Bii	How effective was the decision making across the alliance?	✓				
			2Biii	Were adjustments made to the alliance as and when necessary?		✓	✓	✓	
3	With regards to your firm's Attractiveness as Alliance Partner, please consider the following. *(Please rate on a scale of 1-7)*	Hard elements	3Ai	How strong are the firm's financial assets?		✓			
			3Aii	How strong are the firm's overall foundational capabilities?	✓	✓		✓	
			3Aiii	To what degree has the firm got desired unique capabilities?		✓		✓	
			3Aiv	How strong is the firm's geographical footprint?		✓	✓	✓	
			3Av	How strong is the firm's management's reputation?	✓	✓	✓	✓	
			3Avi	How significant an investment is the firm willing and likely to give to the alliance?	✓	✓	✓		

		Soft elements	3Bi	How strong firm's market knowledge?		✓			
			3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?	✓	✓		✓	
			3Biii	To what degree is the firm perceived to be trustworthy?	✓	✓			
			3Biv	How many successful alliances has the firm had?	✓	✓		✓	
			3Bv	To what degree is the firm willing to share its knowledge and experience?		✓		✓	
			3Bvi	To what degree is the firm willing to learn from a partner?		✓		✓	
4	With regards to your firm's Alliance Portfolio Diversity, please consider the following. *(Please rate on a scale of 1-7)*	Organisational type	4Ai	To what degree has the firm entered in alliances with different overarching goals?		✓	✓	✓	
			4Aii	To what degree has the firm entered in alliances with partners from different industries?		✓		✓	
			4Aiii	To what degree has the firm entered in alliances with partners based in a different nation states?		✓			
			4Aiv	To what degree has the firm entered in alliances with partners from different organisations, e.g. Big/Small Pharma, Biotech, Universities, Hospitals?		✓		✓	
		Functional purpose	4Bi	To what degree has the firm entered in alliances providing differing commercial		✓	✓	✓	

			ID	Question					
				activities, e.g. marketing, manufacturing, and distribution?					
			4Bii	To what degree has the firm entered into alliances at different stages of their life cycle, e.g. Pre Proof of Concept or Post Proof of Concept?	✓	✓		✓	
		Governance structure	4Ci	To what degree has the firm entered in alliances with different governance structures, e.g. non equity, equity, joint ventures?		✓		✓	
				Total:	**15**	**20**	**26**	**26**	**1**

The final questionnaire will now be presented.

Table 36: Final Questionnaire

The following questionnaire is intended to be used by pharmaceutical firms that seek to understand how attractive they are to potential Strategic Alliance partners.

In order to complete this questionnaire, please consider your experiences with a current alliance you are involved in. For each of these questions, please consider if these strategic questions were considered either before or during the alliance.

Please rate each question using the following 5-point scale:

1. *Strongly disagree*
2. *Disagree*
3. *Neither agree nor disagree*
4. *Agree*
5. *Strongly agree*

Topic		Category	Question		Rating (1 - 5)
1.	With regards to your firm's Alliance Strategy, the following questions were considered	Design of an alliance	1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?	
			1Aii	What is the goal of the alliance? As such, what is included and excluded? Which markets or products, technologies, and business systems does it include?	
			1Aiii	What are the criteria for selecting a partner?	
			1Aiv	What are the options for structuring the alliance, and what would inform selection of each option?	
			1Av	How should the alliance be negotiated and by who?	
		Management of an Alliance	1Bi	What might the partner's stated and implied objectives be? How can the alliance be designed and managed to ensure it is mutually beneficial?	
			1Bii	What should be done in the first 30 to 180 days?	
			1Biii	What culture do we want to promote within the alliance?	
			1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	
			1Bv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?	

			1Bvi	How will escalations be resolved, and by who?	
			1Bvii	How will the performance of the alliance and the relationship between the partners be measured? How will these measures be linked to individual incentives?	
			1Bviii	What is the criteria and process for adjusting or terminating the alliance?	
		Design and Management of an Alliance Constellation	1Ci	Which alliances are required to achieve our goals?	
			1Cii	What is the relationship among the various alliances and partners in the constellation, or network? What position should be taken within the constellation?	
			1Ciii	How will interactions among alliances of different divisions be managed?	
			1Civ	How will our constellation of alliances compete, and with who?	
			1Cv	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?	
		Development of an Internal Alliance Capability	1Di	What skills, human resources, processes, tools, and systems are needed in each area?	
			1Dii	How will our firm capture and disseminate learning from our own experience with alliances?	
			1Diii	What will encourage incorporation of alliance thinking into the business?	
		Alliance Strategy Communication	1Ei	Who needs to know about our alliance strategy?	
			1Eii	What does the firm want to be known for as an alliance partner?	
2	With regards to your firm's Previous Alliance Performance, the following questions were considered	Alliance Outcomes	2Ai	How satisfied was the firm with the overall performance of the alliance?	
			2Aii	Was the partnering firm satisfied with the overall performance of the alliance?	
			2Aiii	To what degree were the firm's alliance goals fulfilled?	
			2Aiv	To what degree were the partner's alliance goals fulfilled?	
			2Av	Would the alliance partner work with the firm again?	
		Operational Measures	2Bi	How effectively were issues resolved between the firm and the alliance partner?	
			2Bii	How effective was the decision making across the alliance?	
			2Biii	Were adjustments made to the alliance as and when necessary?	

3	With regards to your firm's Attractiveness as Alliance Partner, the following questions were considered	Hard elements	3Ai	How strong are the firm's financial assets?	
			3Aii	How strong are the firm's overall foundational capabilities?	
			3Aiii	To what degree has the firm got desired unique capabilities?	
			3Aiv	How strong is the firm's geographical footprint?	
			3Av	How strong is the firm's management's reputation?	
			3Avi	How significant an investment is the firm willing and likely to give to the alliance?	
		Soft elements	3Bi	How strong firm's market knowledge?	
			3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?	
			3Biii	To what degree is the firm perceived to be trustworthy?	
			3Biv	How many successful alliances has the firm had?	
			3Bv	To what degree is the firm willing to share its knowledge and experience?	
			3Bvi	To what degree is the firm willing to learn from a partner?	
4	With regards to your firm's Alliance Portfolio Diversity, the following questions were considered	Organisational type	4Ai	To what degree has the firm entered in alliances with different overarching goals?	
			4Aii	To what degree has the firm entered in alliances with partners from different industries?	
			4Aiii	To what degree has the firm entered in alliances with partners based in a different nation states?	
			4Aiv	To what degree has the firm entered in alliances with partners from different organisations, e.g. Big/Small Pharma, Biotech, Universities, Hospitals?	
		Functional purpose	4Bi	To what degree has the firm entered in alliances providing differing commercial activities, e.g. marketing, manufacturing, and distribution?	
			4Bii	To what degree has the firm entered into alliances at different stages of their life cycle, e.g. Pre Proof of Concept or Post Proof of Concept?	
		Governance structure	4Ci	To what degree has the firm entered in alliances with different governance structures, e.g. non equity, equity, joint ventures?	

4.3 Developing the survey

Having finalised the questionnaire, considerations were made about how best to turn it into an instrument that was simple and could be shared online to a large number of respondents in order to fully test the model and the hypothesis.

The overall aim of this research is to understand how a firm's alliance strategy can moderate the relationship between a firm's Attractiveness as an Alliance Partner and its antecedents. As such, the survey is aimed at companies that have experience and/or an interest in forming alliances with pharmaceutical firms. This can be either pharmaceutical firms, hospitals, biotechs or even government bodies. Further, companies that support such alliances will also be targeted for this survey, as they will be able to provide a unique breadth of perspective about what they see as being key factors within the conceptual model. Within these companies, the survey in mainly intended for two types of individuals. First, those that work directly within those alliances – for instance within Marketing teams, Business Development teams or the Alliance Management teams. Second, and crucially, for teams that are looking to build their firm's attractiveness as a potential alliance partner – for instance Corporate Strategy or Portfolio Strategy teams. The survey is designed to share in electronic format, primarily over email, but also using platforms such as LinkedIn.

With these factors in mind, the following section describes how the questionnaire was turned into a survey.

4.3.1 Survey design and assumptions

The survey comprises of two sections. The first section consists of demographic items to understand the respondents' breadth and depth of experience with alliances. This is captured within the participant profiles that is shared in the Methodology. The second section of the survey is the actual survey instrument, discussed here. This instrument has three parts – the first is the questionnaire topic. The second is the topic category. And finally, the specific questions.

As described in Chapter 3, the rating aspect of a survey instrument is key and the likert scale is one of the most fundamental and frequently used tools across sociology, psychology, economics and other research fields (Taherdoost, 2019). As such, the survey instrument was designed to be answered with the five-point Likert scale (1: strongly disagree, 2: disagree, 3: neither agree not disagree regularly, 4: agree 5: strongly agree).

Finally, the survey was designed to have a total number of 20 items so that it was able to be used in practice.

When designing the survey, consideration was made to the assumptions that might impact the analysis and, or credibility of the results. The key assumptions are more conceptual than statistical and relate to two areas:

    I.   Understanding of the questions

The survey instrument assumes that respondents will understand the questions in the same way. To mitigate the risk of this assumption, they have been written in the most simple way possible so that little room for interpretation is left.

II.   Application of the likert scale

The survey instrument assumes that, broadly, respondents will consider the five-point scale in the same way. In order to mitigate the risk of this assumption, the demographic section will include questions related to respondents experience in the alliance area. In this way, when the analysis is conducted, it can be done on respondents with similar alliance degrees of experience. For instance on those with more than three years on alliance experience. In doing this, the likelihood that respondents will apply the scales in different ways due to their differing degrees of experience will be minimised.

Taking these design principles into consideration, the following changes were made:

Table 37: Summary of changes made to survey instrument

Variable		Final questionnaire	Changes made to survey
Design of an alliance	1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?	The goal of the alliance is fully considered and understood
	1Aii	What is the goal of the alliance? As such, what is included and excluded? Which markets or products, technologies, and business systems does it include?	Integrated with other items
	1Aiii	What are the criteria for selecting a partner?	The criteria for selecting a partner are fully considered
	1Aiv	What are the options for structuring the alliance, and what would inform selection of each option?	Integrated with other items
	1Av	How should the alliance be negotiated and by who?	Integrated with other items
Management of an Alliance	1Bi	What might the partner's stated and implied objectives be? How can the alliance be designed and managed to ensure it is mutually beneficial?	Integrated with other items
	1Bii	What should be done in the first 30 to 180 days?	There is a plan for the first 180 days of the alliance that is adhered to as required
	1Biii	What culture do we want to promote within the alliance?	Integrated with other items

	1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	Integrated with other items
	1Bv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?	Integrated with other items
	1Bvi	How will escalations be resolved, and by who?	Integrated with other items
	1Bvii	How will the performance of the alliance and the relationship between the partners be measured? How will these measures be linked to individual incentives?	It is clear how performance of the alliance and the relationship between the partners will be measured.
	1Bviii	What is the criteria and process for adjusting or terminating the alliance?	Integrated with other items
Design and Management of an Alliance Constellation	1Ci	Which alliances are required to achieve our goals?	The firm's alliance needs are strategically mapped against the corporate goals
	1Cii	What is the relationship among the various alliances and partners in the constellation, or network? What position should be taken within the constellation?	The relationship between and within the alliance constellation is fully considered
	1Ciii	How will interactions among alliances of different divisions be managed?	Integrated with other items
	1Civ	How will our constellation of alliances compete, and with who?	Integrated with other items
	1Cv	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?	It is clear who in the firm is responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation
Development of an Internal Alliance Capability	1Di	What skills, human resources, processes, tools, and systems are needed in each area?	There is a clear what skills, human resources, processes, tools, and systems are needed in each area of the alliance capabilities
	1Dii	How will our firm capture and disseminate learning from our own experience with alliances?	The firm knows how to capture and disseminate learning from alliance experiences

	1Diii	What will encourage incorporation of alliance thinking into the business?	Integrated with other items
Alliance Strategy Communication	1Ei	Who needs to know about our alliance strategy?	The firm effectively communicates its alliance strategy to potential partners
	1Eii	What does the firm want to be known for as an alliance partner?	Integrated with other items
Alliance Outcomes	2Ai	How satisfied was the firm with the overall performance of the alliance?	Our firm is satisfied with the performance of our alliances
	2Aii	Was the partnering firm satisfied with the overall performance of the alliance?	Our partners are satisfied with the performance of our alliances
	2Aiii	To what degree were the firm's alliance goals fulfilled?	Integrated with other items
	2Aiv	To what degree were the partner's alliance goals fulfilled?	Integrated with other items
	2Av	Would the alliance partner work with the firm again?	Integrated with other items
Operational Measures	2Bi	How effectively were issues resolved between the firm and the alliance partner?	Operational issues were managed and resolved throughout the alliance lifecycle
	2Bii	How effective was the decision making across the alliance?	Integrated with other items
	2Biii	Were adjustments made to the alliance as and when necessary?	Adjustments were made to the alliance as and when necessary
Hard elements	3Ai	How strong are the firm's financial assets?	The firm has the required 'hard' assets, to include financials and capabilities
	3Aii	How strong are the firm's overall foundational capabilities?	Integrated with other items
	3Aiii	To what degree has the firm got desired unique capabilities?	Integrated with other items
	3Aiv	How strong is the firm's geographical footprint?	Integrated with other items
	3Av	How strong is the firm's management's reputation?	The firm has a strong management reputation
	3Avi	How significant an investment is the firm willing and likely to give to the alliance?	Integrated with other items
Soft elements	3Bi	How strong firm's market knowledge?	The firm has the required 'soft' assets, to include trustworthiness, flexibility and learning agility

	3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?	Integrated with other items
	3Biii	To what degree is the firm perceived to be trustworthy?	Integrated with other items
	3Biv	How many successful alliances has the firm had?	Integrated with other items
	3Bv	To what degree is the firm willing to share its knowledge and experience?	Integrated with other items
	3Bvi	To what degree is the firm willing to learn from a partner?	Integrated with other items
Organisational type	4Ai	To what degree has the firm entered in alliances with different overarching goals?	The firm has a diversity of alliance partner types
	4Aii	To what degree has the firm entered in alliances with partners from different industries?	Integrated with other items
	4Aiii	To what degree has the firm entered in alliances with partners based in a different nation states?	Integrated with other items
	4Aiv	To what degree has the firm entered in alliances with partners from different organisations, e.g. Big/Small Pharma, Biotech, Universities, Hospitals?	Integrated with other items
Functional purpose	4Bi	To what degree has the firm entered in alliances providing differing commercial activities, e.g. marketing, manufacturing, and distribution?	The firm has a diversity of alliance goals
	4Bii	To what degree has the firm entered into alliances at different stages of their life cycle, e.g. Pre Proof of Concept or Post Proof of Concept?	Integrated with other items
Governance structure	4Ci	To what degree has the firm entered in alliances with different governance structures, e.g. non equity, equity, joint ventures?	The firm has a diversity of alliance structures

The table below summarises the total number of items within the survey instrument.

Table 38: Total number of items by category

Category	Final Questionnaire	Survey instrument
Design of an alliance	5	2
Management of an Alliance	8	2
Design and Management of an Alliance Constellation	5	3
Development of an Internal Alliance Capability	3	2
Alliance Strategy Communication	2	1
Alliance Outcomes	5	2
Operational Measures	3	2
Hard elements	6	2
Soft elements	6	1
Organisational type	4	1
Functional purpose	2	1
Governance structure	1	1
Total	50 questions	20 items

4.4   Final survey instrument

The final survey instrument that can be used to empirically test the conceptual model is presented in Table 39 below.

Table 39: Final survey instrument

The following survey is intended to be used by pharmaceutical firms that seek to understand how attractive they are to potential Strategic Alliance partners.

In order to complete this survey, please consider your experiences with a current alliance you are involved in. For each of these questions, please consider if these strategic questions were considered either before or during the alliance.

Please rate each question using the following 5-point scale:

1. *Strongly disagree*
2. *Disagree*
3. *Neither agree nor disagree*
4. *Agree*
5. *Strongly agree*

Topic		Category	Question		Rating (1-5)
A.	With regards to your firm's Alliance Strategy, the	Design of an alliance	1.	The goal of the alliance is fully considered and understood	
			2.	The criteria for selecting a partner are fully considered	

	following questions were considered	Management of an Alliance	3.	There is a plan for the first 180 days of the alliance that is adhered to as required	
			4.	It is clear how performance of the alliance and the relationship between the partners will be measured.	
		Design and Management of an Alliance Constellation	5.	The firm's alliance needs are strategically mapped against the corporate goals	
			6.	The relationship between and within the alliance constellation is fully considered	
			7.	It is clear who in the firm is responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation	
		Development of an Internal Alliance Capability	8.	There is a clear what skills, human resources, processes, tools, and systems are needed in each area of the alliance capabilities	
			9.	The firm knows how to capture and disseminate learning from alliance experiences	
		Alliance Strategy Communication	10.	The firm effectively communicates its alliance strategy to potential partners	
B.	With regards to your firm's Previous Alliance Performance, the following questions were considered	Alliance Outcomes	11.	Our firm is satisfied with the performance of our alliances	
			12.	Our partners are satisfied with the performance of our alliances	
		Operational Measures	13.	Operational issues were managed and resolved throughout the alliance lifecycle	
			14.	Adjustments were made to the alliance as and when necessary	
C.	With regards to your firm's Attractiveness as Alliance Partner, the following questions were considered	Hard elements	15.	The firm has the required 'hard' assets, to include financials and capabilities	
			16.	The firm has a strong management reputation	
		Soft elements	17.	The firm has the required 'soft' assets, to include trustworthiness, flexibility and learning agility	
D.	With regards to your firm's Alliance Portfolio	Organisational type	18.	The firm has a diversity of alliance partner types	
		Functional purpose	19.	The firm has a diversity of alliance goals	

Diversity, the following questions were considered	Governance structure	20.	The firm has a diversity of alliance structures	

This final questionnaire and survey marks the third and final overarching research contribution, a reminder of which is below.

[Repeated table] Table 12: Summary of research contributions

Overall Research Contribution	Specific Research Contribution	Thesis section
1. Identification of two key antecedents of Attractiveness	P. Identification of key topics and theories of interest within the alliance space i. Identification of how topics and theories have evolved post 2016 ii. Assessment of theories that have been applied to topics of interest iii. Identification of four potential research areas and gaps iv. Presentation of theories by key question Q. New variable 'Alliance Strategy' developed and examined as a Moderator i. Role of 'Alliance Strategy' examined as a Moderator ii. Research propositions developed R. Previous Alliance Performance examined as an Antecedent S. New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable T. Alliance Portfolio Diversity examined as an Antecedent	Chapter 2
2. Development of research propositions for how an Alliance Strategy moderates the relationship between Attractiveness and its antecedents	G. Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner H. Research propositions developed for the role of Alliance Strategy as a Moderator between: x. Alliance Portfolio Diversity and Attractiveness as Alliance Partner xi. Previous Alliance Performance and Attractiveness as Alliance Partner xii. Alliance Portfolio Diversity and Previous Alliance Performance	Chapter 2
3. Development of a Questionnaire for	G. Final questionnaire developed to empirically test the conceptual model	Chapter 4

	firms to test their Attractiveness	H. Final survey developed for use online	

The research contributions will now be discussed in the final chapter.

Chapter 5: Research conclusions

Having discussed the research findings, the following and final Chapter details the key contributions of this research, including practical implications. The intention of this Chapter is to acknowledge and celebrate the research and the contribution it makes. This Chapter will follow the structure below:

5.10   Addressing the research objectives
      5.10.1   Addressing the specific research questions
5.11   Research contributions
      5.11.1   Overarching research contributions
      5.11.2   Specific research contributions
      5.11.3   Major research contributions
5.12   Theoretical contributions
      5.12.1   Theories appraised
      5.12.2   Contributions to Network theory
      5.12.3   Contributions to other fields
5.13   Practical implications
      5.13.1   Implications of research aims
      5.13.2   Implications of research objectives
      5.13.3   Implications of conceptual model
5.14   Practical recommendations
      5.14.1   Recommendations for Originators
      5.14.2   Recommendations for Pharmaceutical Executives
5.15   Applicability of findings to other sectors
5.16   Research limitations
5.17   Future research
5.18   Research conclusion

The ultimate contribution of this research is the questionnaire, which was developed through 4 empirical studies delivered through a mixed method approach. The final questionnaire and survey instrument, aims to address the overarching research questions. A key future suggestion of this research is to empirically validate or disprove the research propositions using the questionnaire.

Progress towards the research aims and objectives will be discussed in the following section. In addition, broader considerations of the research and its applicability in practice and to other fields will also be discussed.

This research had two overarching research questions:

    i.   How does Alliance Portfolio Diversity and Previous Alliance Performance increase a firm's Attractiveness as an Alliance Partner?

ii.   What is the moderating role of an Alliance Strategy on Attractiveness as an Alliance Partner and its antecedents?

A reminder of the steps taken to address the overarching research questions were:

[Repeated table] Table 20: Summary of research steps

Step	Objective	Outcome	Method	Thesis
Development of conceptual model				
1. Review of alliance articles	Identify the research gaps in the alliance literature and develop the main research elements	Research gaps	Literature Review of previous alliance literature using Google Scholar & Web of Science	Chapter 1, Section 1.3
2. Literature Review	Explore the literature of the research variables and define the research variables and dimensions	Draft conceptual model and research propositions	Literature Review of research variables using Google Scholar & Web of Science	Chapter 2, Section 2.2
3. Empirical Study 1	Selection, adoption and adaption of research variables	Final research variables, dimensions and items	Qualitative written and verbal interviews with four subject matter experts using open ended questions	Chapter 4, Section 4.1
4. Empirical Study 2	Explore the relationships between the research variables and incorporate within a conceptual model		Qualitative written and verbal interviews with five subject matter experts using semi-structured interview questions	
Development of questionnaire and survey				
5. Empirical Study 3	Develop the questionnaire by exploring the formatting and formulation of the questions and testing the questionnaire	Final questionnaire and survey instrument	Written mixed method approach with 20 participants using structured interview questions and the developed questionnaire	Chapter 4, Section 4.2
6. Empirical Study 4	Finalise the questionnaire by exploring and addressing unresolved issues		Qualitative verbal focus group on Teams with four subject matter experts using a closed question	

The key achievements of this research in addressing the research objectives will now be discussed.

5.1   Addressing the research objectives

This research outlined four key research objectives:
 i.   To contribute to the theoretical literature base by exploring new perspectives of the concept of an Alliance Strategy that goes beyond its individual dimensions but considers its impact on a firm more broadly
 ii.   To identify the core dimensions of an Alliance Strategy and explore the impact of each of its dimensions on previously tested alliance variables
 iii.   To build on the empirical literature base through field work, in order to specify which dimensions of Alliance Portfolio Diversity and Previous Alliance Performance contribute to Attractiveness as an Alliance Partner
 iv.   To offer alliance executives a tangible way to understand their perceived attractiveness by potential partners, through the development of a self-assessment questionnaire

The key achievements of this research in addressing the objectives have been described below.

Table 40: Addressing the research objectives

Research Objectives		Achievements
i.	To contribute to the theoretical literature base by exploring new perspectives of the concept of an Alliance Strategy that goes beyond its individual dimensions but considers its impact on a firm more broadly	• Literature review conducted to identify where existing knowledge and gaps within the Alliance Strategy space • Network Strategy explored in detail and its relationships, and differences, with Alliance Strategy examined
ii.	To identify the core dimensions of an Alliance Strategy and explore the impact of each of its dimensions on previously tested alliance variables	• Dimensions of Alliance Strategy identified and refined quantitative survey and follow-up interviews with subject matter experts • Questionnaire created to empirically test the impact of Alliance Strategy and its dimensions on previously tested alliance variables; 1) Alliance Portfolio Diversity 2) Previous Alliance Performance and 3) Attractiveness as an Alliance Partner
iii.	To build on the empirical literature base by specifying which dimensions of Alliance Portfolio Diversity and Previous Alliance Performance contribute to Attractiveness as an Alliance Partner	• Literature review conducted to identify where existing knowledge and gaps within Alliance Portfolio Diversity and Previous Alliance Performance knowledge • Dimensions of Alliance Portfolio Diversity and Previous Alliance Performance identified and refined quantitative survey and follow-up interviews with subject matter experts

iv.	To offer alliance executives a tangible way to understand their perceived attractiveness by potential partners, through the development of a self-assessment questionnaire	• Questionnaire created to empirically test the impact of Alliance Portfolio Diversity and Previous Alliance Performance on Attractiveness as an Alliance Partner • Implications to both pharmaceutical executives and alliance suiters have been thoroughly considered and described in Chapter 5

5.1.1   Addressing the specific research questions

Research propositions for each research questions were proposed through a thorough review of the alliance literature and the Empirical Studies 1 and 2. A summary of the research questions and their propositions as developed through this research have been elaborated on within this section.

I. Specific Research Question 1.0: What is the impact of Alliance Portfolio Diversity on a firm's Attractiveness as an Alliance Partner?

Alliance Portfolio Diversity positively impact a firm's innovation and commercialization success (Hora and Dutta, 2013) financial performance (Baum et al., 2000) innovative performance (Hagedoorn et al., 2017) and organization growth (De Leeuw et al., 2014). As such, it is proposed to be a key antecedent of a firm's attractiveness as an alliance partner. However, very high Alliance Portfolio Diversity has been seen to enhance the coordination costs of the alliance, this offsetting its positive effect.

As such, this research proposes that there is a U-shaped relationship between Alliance Portfolio Diversity and a firm's attractiveness as an alliance partner.

II. Specific Research Question 2.0: What is the impact of Previous Alliance Performance on a firm's Attractiveness as an Alliance Partner?

Firms value previous alliance experience and performance from potential alliance partners (Hitt et al., 2004) and enhances the likelihood of alliance formation by the firm in future (Duysters et al., 2012) as knowledge gained should help the firm more effectively manage future alliances (Park and Ungson, 1997) and devise better conflict resolution mechanisms due to their developed collaborative know-how (Nielsen and Nielsen, 2009).

As such, this research proposes that high previous alliance performance increases a firm's attractiveness as an alliance partner.

III. Specific Research Question 3.0: What is the impact of Alliance Portfolio Diversity on Previous Alliance Performance?

Increasing Alliance Portfolio Diversity allows firms to benefit from synergies resulting from alliances because they can exploit interdependencies among different partners (Vassolo, 2004)

and as such indicates the firms capabilities and status (Stuart, 2000). However, at a certain point Alliance Portfolio Diversity leads to managerial challenges – such as conflicts and competing objectives – that limit and hinder optimal decision-making and exploitation of synergies between alliance partners. As such, alliance portfolios that have both high partner type variety and high importance of different partner types, have been seen to cause inferior innovation performance (Hagedoorn et al., 2017).

As such, this research proposes that there is a U-shaped relationship between APD and previous alliance performance.

IV. Specific research question 4.0: What is the moderating role of an Alliance Strategy on Alliance Portfolio Diversity and Attractiveness as an Alliance Partner?

Research has started to consider the contexts and contingencies that might explain or change the relationship between Alliance Portfolio Diversity and the individual items of attractiveness. For instance, Cui and O'Connor (2012) found that alliance management function positively moderates the relationship between portfolio resource diversity and firm innovation – a key item of attractiveness.

As such, this research proposes that alliance strategy positively moderates the relations between Alliance Portfolio Diversity and attractiveness.

If the alliance is designed and managed effectively as a result of an alliance strategy, this research proposes that the benefits arising from diversity should be further enhanced. A firm might be seen as being even more attractive if their diverse portfolio is strategic and not consequential. Conversely, a high alliance strategy might minimise or even over-turn the negative relationship seen when Alliance Portfolio Diversity becomes very high. Without a clear strategy, such high diversity might be coupled with the negative effects as has been noted however these might be reduced in the presence of a high strategy. As such, the firm might still be seen as attractive even when diversity is very high.

On the other hand, a low alliance strategy coupled with very high levels of diversity could result in low attractiveness - if the diversity is not considered or strategic, partners could consider that the firm will be unable to manage the additional complexities.

As such, this research proposes that when Alliance Portfolio Diversity is medium/high, high alliance strategy would further enhance the positive impact on attractiveness. When Alliance Portfolio Diversity is very high, high alliance strategy would reduce the negative effect on attractiveness.

V.a. Specific research question 5.0: What is the moderating role of an Alliance Strategy on Previous Alliance Performance and Attractiveness as an Alliance Partner?

Shah and Swaminathan (2008) found that the alliance project type, or the design of an alliance as found within an alliance strategy, moderates the relationship between partner characteristics, like Previous Alliance Performance, and attractiveness.

As such, this research proposes that high Alliance Strategy positively moderates the relations between Previous Alliance Performance and Attractiveness as an Alliance Partner.

> V.b. Specific research question 5.1: Does a high Alliance Strategy change the relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner?

This research proposes that a firm that has a clear alliance strategy would be able to leverage the insights and the learnings from their previous alliances into their future alliances.

As such, this research proposes that when Alliance Strategy is high, the positive relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner is further enhanced.

> VI.a.   Specific research question: What is the moderating role of Alliance Strategy on Alliance Portfolio Diversity and Previous Alliance Performance?

Studies on the Alliance Portfolio Diversity and performance have been inconclusive (Russo and Vurro, 2019; Shah and Swaminathan, 2008; Duysters et al., 2012) and have not consistently found that more diversity leads to more performance. Recent research has begun to explore potential contingencies in order to explain inconclusive findings, and alliance strategies, in particular capabilities, have largely paved the way as decisive factors

As such, this research proposed that high alliance strategy positively moderates the relationship between Alliance Portfolio Diversity Previous Alliance Performance

> VI.b.   Specific research question: Does a high Alliance Strategy change the relationship between Alliance Portfolio Diversity and Previous Alliance Performance?

Duysters et al., 2012 found that portfolio management capabilities moderate the relationship between Alliance Portfolio Diversity and performance such that when alliance capabilities are higher alliance performance is maximized at a higher level of Alliance Portfolio Diversity. Degener et al., (2018) furthered this research by concluding that alliance capability, and specifically the portfolio coordination capability, supports the flow of relevant resources, capabilities, and knowledge between different partners, and as a result even a highly diverse alliance portfolio can be more than the sum of its parts and foster innovation. Both these studies suggest that firms realize performance benefits from a diverse set of external alliance partners only when they focus on and apply internal coordination to manage these alliances – a key dimension of alliance strategy. Further, a recent study on the moderating role of an alliance function found that diversity of its members emerged as especially relevant to achieve effective alliance know-how collection and deployment for superior alliance performance (Russo and Vurro, 2019).

As such, this research proposes that when Alliance Strategy is high, the positive relationship between Alliance Portfolio Diversity and Previous Alliance Performance is further enhanced.

A summary of the research questions and their propositions as developed through this research is presented in the table below.

[Repeated table] Table 14: Final research propositions

	Overarching Research Question	Specific Research Question	Proposition
1	How does Alliance Portfolio Diversity and Previous Alliance Performance help firm's Attractiveness as an Alliance Partner?	RQ1.0: What is the impact of Alliance Portfolio Diversity on a firm's Attractiveness as an Alliance Partner? RQ1.1: What are the key dimensions or Alliance Portfolio Diversity? RQ1.2 Do some dimensions of Alliance Portfolio Diversity impact Attractiveness as an Alliance Partner more than others?	RP1.0: There is a U-shaped relationship between Alliance Portfolio Diversity and a firm's Attractiveness as an Alliance Partner
		RQ2.0: What is the impact of Previous Alliance Performance on a firm's Attractiveness as an Alliance Partner? RQ2.1: What are the key dimensions of Previous Alliance Performance? RQ2.2: Do some dimensions of Previous Alliance Performance impact Attractiveness as an Alliance Partner more than others?	RP2.0: High Previous Alliance performance increases a firm's Attractiveness as an Alliance Partner
		RQ3.0: What is the impact of Alliance Portfolio Diversity and Previous Alliance Performance? RQ3.1: Do some dimensions of Alliance Portfolio Diversity impact Previous Alliance Performance more than others?	RP3.0: There is a U-shaped relationship between Alliance Portfolio Diversity and Previous Alliance Performance
2	What is the moderating role of an alliance strategy on Attractiveness as an Alliance Partner and its antecedents?	RQ4.0: What is the moderating role of an Alliance Strategy on Alliance Portfolio Diversity and Attractiveness as an Alliance Partner? RQ4.1: Does a high alliance strategy change the relationship between Alliance Portfolio Diversity and	RP4.0: Alliance Strategy positively moderates the relations between Alliance Portfolio Diversity and attractiveness. RP4.1: When Alliance Portfolio Diversity is medium/high, high alliance strategy would further enhance the positive

		Attractiveness as an Alliance Partner?	impact on attractiveness. When Alliance Portfolio Diversity is very high, high alliance strategy would reduce the negative effect on attractiveness.
		RQ5.0: What is the moderating role of an Alliance Strategy on Previous Alliance Performance and Attractiveness as an Alliance Partner? RQ5.1: Does a high Alliance Strategy change the relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner?	RP5.0: High alliance strategy positively moderates the relations between Previous Alliance Performance and Attractiveness as an Alliance Partner. RP5.1: When Alliance Strategy is high, the positive relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner is further enhanced
		RQ6.0: What is the moderating role of alliance strategy on Alliance Portfolio Diversity and Previous Alliance Performance? RQ6.1: Does a high Alliance Strategy change the relationship between Alliance Portfolio Diversity and Previous Alliance Performance?	RP6.0: High Alliance Strategy positively moderates the relationship between Alliance Portfolio Diversity and Previous Alliance Performance. RP6.1: When Alliance Strategy is high, the positive relationship between Alliance Portfolio Diversity and Previous Alliance Performance is further enhanced

Empirical Studies 3 and 4 drafted, developed and finalised the questionnaire which was turned into a survey. Importantly, the questionnaire and the survey can be used to test these research propositions in future research.

Having discussed the key research findings in relation to the research objectives and research questions, the research contributions will now the discussed.

5.2   Research contributions

This next section considers the research contributions made, that is, the new knowledge it brings, as well as the research implications, that is the benefits of the derived knowledge.

The practical recommendations have been considered from two perspectives: Originators and Pharmaceutical Executives. The term 'Innovators' has been used regularly within the alliance literature instead of 'Originators' (Özdemir and van den Ende, 2021; Babu et al., 2020; Soh and Roberts, 2003) however this research contends that this term reflects an outdated perspective of alliances. Specifically, the term describes a historical landscape when alliances were formed between one innovator firm (for instance a bio-technology company) and a larger company with resources and therefore the power to negotiate the alliance on their terms (for instance, a large Pharmaceutical firm). However, during Empirical Study 1, subject matter experts described their more recent experiences with alliances where the balance of power was much more equally distributed as a result of both sides of the alliance partnership having an equal contribution of value to the partnership. In this way, both partners can be innovators.
"It's not like it used to be, when alliances were formed with a small biotech with a couple of people and a novel asset. Now, two big companies can form an alliance, where both bring equal value to the table with respect to a new product or capability. That's why we need to think about what makes us attractive – what is it that we are doing that the biotech might want. What is our innovation". Subject Matter Expert, Empirical Study 1.

This is supported by the alliance literature itself which notes that firms engage in alliances because they expect their ability to create value will be improved in comparison to what they would achieve on their own (Das and Teng, 2000; Madhok and Tallman, 1998). The research has demonstrated consistently that firms seek to improve performance through complementarities and collaboration between firms through alliances (Dyer et al., 2008; Dyer et al., 2018). As such, to call one firm an innovator minimizes the contribution of the partnering firm. For this reason, this research has made the novel contribution to use the terminology of 'Originator' defined as 'the firm with the originating innovation'. In doing this, the partnering firm's contributing innovation which enables value to be improved, is acknowledged.

Recommendations have also been considered for Pharmaceutical Executives specifically, given this research is based within the Pharmaceutical sector where alliance success has shown to be variable. During the period Recap 1977–2010 as many as 71% of all product alliances were terminated before the drug reached the market, with only 33% of alliances terminated because of a lack of efficacy or safety, according to Recap Deloitte. In addition, according to the same research, of all product alliances that had been terminated, 55% were still pursued by the licensor post termination (Havenaar and Hiscocks, 2012). This research suggests that, on top of the expected technical hurdles, a significant portion of alliances are terminated for strategic or economic reasons.

As such, this research has focused on this industry and has therefore made recommendations specifically for and to the executives within it. Moreover, the author of this research has spent

over a decade working in the Pharmaceutical industry and, adopting a pragmatic approach to the research, is keen to apply her experiences accordingly.

5.2.1 Overarching research contributions

This research has made three key overarching research contributions. These contributions are discussed below, to include where in this thesis the contributions are made. Next, this section includes a summary table of the specific contributions made. Of those specific contributions, the major contributions which signify the uniqueness of this research have been recognised.

  I.   Identification of two key antecedents of Attractiveness

Having completed a thorough literature review, this research identified four key alliance variables. By understanding the key theories and topics that have been applied to alliance literature, the research was able to both build on areas of interest whilst also focusing specifically on where gaps in the literature exist. Further, the final variables were refined following on quantitative and qualitative feedback from subject matters during Empirical Study 1 and 2 to ensure the variables were not only applicable in practice but also understandable and meaningful. As a result of this process, two novel variables were identified and have been explored within this research: Alliance Strategy and Attractiveness as an Alliance Partner.

Chapter 2 describes the literature review undertaken, including the key topics and gaps identified. Chapter 3 and 4 begins to bring the theoretical work into practice by discussing how research was conducted and the consequences to the final research variables.

  II.   Development of research propositions for how and Alliance Strategy moderates the
         relationship between Attractiveness and its antecedents

The second overarching research contribution made was the conceptual model. Specifically, the research proposed relationships between the four variables. These propositions were developed through both a literature review and a second empirical study involving different subject matter experts.

This research contribution can be found in Chapter 2, the Literature Review. Further, Empirical Study 2 is also detailed within Chapter 4, which describes the subject matter experts' view of the relationships based on their experience in practice.

  III.   Development of a Questionnaire for firms to test their Attractiveness

The third and final overarching research contribution is the most significant one – the questionnaire and survey. The questionnaire looks to empirically test the conceptual model and either validate or disprove the research propositions. The questionnaire was drafted and finalised through Empirical Study 3 and 4. The questionnaire was then turned into a survey instrument in order for it to be used practically.

This research contribution can be found in Chapter 4, which concludes with the final questionnaire and survey – the third contribution of this research.

5.2.2　Specific research contributions

Within each of the overarching research contributions, there are specific contributions made. A summary of the overall and the specific research contributions has been outlined in the table below.

[Repeated table] Table 12: Summary of research contributions

Overall Research Contribution	Specific Research Contribution	Thesis section
1. Identification of two key antecedents of Attractiveness	U. Identification of key topics and theories of interest within the alliance space 　i. Identification of how topics and theories have evolved post 2016 　ii. Assessment of theories that have been applied to topics of interest 　iii. Identification of four potential research areas and gaps 　iv. Presentation of theories by key question V. New variable 'Alliance Strategy' developed and examined as a Moderator 　i. Role of 'Alliance Strategy' examined as a Moderator 　ii. Research propositions developed W. Previous Alliance Performance examined as an Antecedent X. New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable Y. Alliance Portfolio Diversity examined as an Antecedent	Chapter 2
2. Development of research propositions for how an Alliance Strategy moderates the relationship between Attractiveness and its antecedents	I. Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner J. Research propositions developed for the role of Alliance Strategy as a Moderator between: 　xiii. Alliance Portfolio Diversity and Attractiveness as Alliance Partner 　xiv. Previous Alliance Performance and Attractiveness as Alliance Partner 　xv. Alliance Portfolio Diversity and Previous Alliance Performance	Chapter 2
3. Development of a Questionnaire for firms to test their Attractiveness	I. Final questionnaire developed to empirically test the conceptual model J. Final survey developed for use online	Chapter 4

5.2.3 Major research contributions

Of these specific research contributions, seven were considered to be major based on their potential impact and advancements towards the alliance literature or theory, or towards alliance practice. The table below outlines how the impact, or contribution, was categorised by the researcher and then validated by the supervisor. Other contributions outlined above in Table 12, whilst significant, where felt to be less impactful than those categorised as 'major', based on their potential to advance the field of strategic alliances.

Table 42: Validation of research contributions as 'major'

Applicability	Validation mechanism	Criteria for 'major'
Alliance literature or theory	Reference checked against literature review conducted in Chapter 2	- Research contribution addresses an insufficiently answered research question, or - Research contribution poses a new research question
Alliance practice	Qualitative interviews during Empirical Studies 1, 2 and 4	- Research contribution received disproportionately positive feedback or interest from subject matter experts, or - Subject matter experts commented on the relevance and/or impact of the contribution to alliance practice

Based on the criteria outlined in the above Table 42, the seven major specific contributions of this research are outlined below.

I. Identification of four potential research areas and gaps (1Aiii.)
II. New variable 'Alliance Strategy' developed and examined as a Moderator (1Bi. & 1Bii.)
III. New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable (1D)
IV. Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner (2A)
V. Research propositions developed for the role of Alliance Strategy as a Moderator (2Bi. – 2Biii.)
VI. Final questionnaire developed to empirically test the conceptual model
VII. Final survey developed for use online

Based on the validation method described in Table 42, Table 43 below summarises which area the major research contribution applies to – alliance literature or theory, or to alliance practices. If the major contribution is not associated with a particular field, it is not to say there is no

applicability to that field. However, based on the criteria described, only the major contributions have been denoted.

Table 43: Applicability of major research contributions

Major Research Contribution		Alliance literature or theory	Alliance practice
I.	Identification of four potential research areas and gaps (1Aiii.)	Y	N
II.	New variable 'Alliance Strategy' developed and examined as a Moderator (1Bi. & 1Bii.)	Y	N
III.	New variable 'Attractiveness as Alliance Partner' developed as a Dependent, Latent Variable (1D)	Y	N
IV.	Research propositions developed for the relationships between Alliance Portfolio Diversity, Previous Alliance Performance and Attractiveness as an Alliance Partner (2A)	Y	Y
V.	Research propositions developed for the role of Alliance Strategy as a Moderator (2Bi. – 2Biii.)	Y	Y
VI.	Final questionnaire developed to empirically test the conceptual model	Y	Y
VII.	Final survey developed for use online	Y	Y

5.3 Theoretical contributions

5.3.1 Theories appraised

This research has explored eleven different theories in relation to its application in the alliance literature. The theories have been discussed and explored in different ways and for different reasons across this research. A summary of these theories and how they have been discussed within the scope of this research is summarised in Table 44 below.

Table 44: Theories appraised

	Theory	Theory critical appraisal within this research
1	Resource Based View	As a theory to explain the success of alliances
2	Social network theory	
3	Transaction cost theory	As a theory underpinning strategic alliances
4	Institutional economics	
5	Resource Dependence theory	
6	Contingency theory	
7	Knowledge-based theory	
8	Entrepreneurial orientation	
9	Game theory	

10	Service Dominant Logic	As a potential new theory to underpin strategic alliances
11	Networks and network theory	Main theory to underpin the research area and conceptual model

Previous works have explored alliance theories and their application over the years in some detail, and the theories have categorised in varying ways. Child et al., (2019) categorised strategic alliance theories into three groups: (i) economic perspectives, (ii) managerial and organizational perspective, and (iii) behavioural perspectives. He et al., (2020) maps the existing theoretical underpinnings of strategic alliances on a timeline of their theoretical development, as well as by research methodology.

Based on the theory description and their application with the alliance strategy literature, this research makes the novel contribution of mapping the alliance strategy theories that have been explored with this research, by the key question the theory is looking to examine. The basis of the conceptual model and of the questionnaire that will be developed to test the model, is one of asking questions. The intention of the questionnaire is to test the model by presenting key questions to respondents. As such, this foundation is extended to categorisation of alliance theories. Further, as far as this research could tell, no previous studies have taken this approach to categorising alliance strategy theories.

Figure 4: Categorisation of alliance theories explored within research

Why form an alliance?	How should the alliance be managed?	Why do some alliance fail and why do some succeed?
☐ The resource based view	☐ Social network theory	☐ The resource-based view
☐ Entrepreneurial orientation	☐ Transaction cost theory	☐ Social network theory
☐ Resource Dependence theory	☐ Institutional economics	☐ Knowledge-based theory
	☐ Resource Dependence theory	☐ Game theory
	☐ Contingency theory	☐ Service Dominant Logic
	☐ Knowledge-based theory	
	☐ Networks and network theory	

Source: own collaboration

This research has made contributions to three theories. First, it has extended the application of Network theory, this research's main theory, to the focus of "attractiveness". Secondly, it has

made some important contributions to the theory of eentrepreneurship, and thirdly to the theory of strategic entrepreneurship. These contributions are introduced below.

5.3.2   Contributions to Network Theory

The theories outlined in Chapter 2 describe the theories that have been used in alliance research previously or those that describe the relationships between the variables within the conceptual model. The main theory, network theory, is discussed in detail. The two most common types of network theories as discussed; Strength of Weak Ties theory (Granovetter, 1973) and Structural Hole theory (Burt, 1992). Chapter 2 then goes on to describe how network theory has been applied to alliance research, and how the findings differ to studies that have applied a dyadic, or firm level perspective of the alliance instead (Duysters et al., 1999). Next, this section discusses the relationship between network theory and alliance performance – the original main research variable of the draft conceptual model. Finally, the section discusses "social capital" – an important way in which networks promote alliance formation and success. In simple terms, social capital refers to a firm's relationships with other companies that have important resources (Ireland et al., 2002). In strategic alliances, social capital develops as firm's interact with each other and is therefore often referred to as relational capital, characteristic of each partnership rather than of individual firms (Kale et al., 2000). Thus, firms may seek partners with significant social capital to gain access to their partner's network resources (Chung et al., 2000). Studies have shown social capital is increased in alliances with greater diversity of networks (Baker, 2000) and quality of relationships between partners (Glaister and Buckley, 1999). As such, this theory plays a key part in explaining the findings of this research.

Table 9 in Chapter 2 summarises the key literature conclusions and papers that informed the research questions and propositions. Table 45 below builds on this by outlining how network theory explains the research propositions. Network theory, and in particular social network theory, emphasizes the socially embedded context of firms (Norheim-Hansenb and Meschi, 2021) creating a more comprehensive understanding of inter-organizational linkages (Zhang and Pezeshkan, 2016). Further, social network perspective helps explain alliance formation within a rich social context in which firms collect, disperse and exchange information with prospective partners and thus help firms learn about new alliance opportunities. It also describes changes in inter-organizational relationship as a consequence of a firm's attributes and competencies (Zhang and Pezeshkan, 2016) and as such, can be used to explain how the benefits firms receive as a consequence of their network is not distributed evenly between or within alliance partners (Walter et al., 2007). Such benefits are referred to as social capital, broadly defined as the benefits that actors derive from their social relationships (Bourdieu, 1986; Coleman, 1988, 1990; Bolino et al.,2002). In other words, the purposeful behavior of an actor, or the alliance partners, is influenced by the network of social relationships in which the unit is embedded (Uzzi, 1996). As such, this research extends that view to ascertain that the attractiveness of that actor, or alliance partner, will also be influenced by the network of relationships of the firm and, specifically, by the performance of those relationships (Previous Alliance Performance) and the diversity of those relationships (Alliance Portfolio Diversity).

As such, whilst the research propositions can be explained, in part, by social network theory and social capital, the research has also made the key contribution to the theory by extending its application to this field of 'attractiveness'. This new variable 'Attractiveness as Alliance Partner' has been developed as a Dependent, Latent Variable within this research and provides a novel context within which to apply this theory to. This stream can be applied not only to alliances, but also to a wide variety of other fields. For instance, social network theory has been largely used in recent years in the field of media and communications. This novel variable can be used to consider which Twitter or NGO accounts would be seen as "attractive" to follow based on their networks.

The table below summaries the research propositions as they were developed during Chapter 2, and considers key papers relating to social network theory and social capital which might explain them.

Table 45: Research propositions as explained by Network Theory

Research propositions	Network Theory explanation	Application to research
RP1.0: There is a U-shaped relationship between Alliance Portfolio Diversity and a firm's Attractiveness as an Alliance Partner	Partnering with many firms reinforces a firm's reputation as desirable collaborators. In addition, their partners can serve as sources of information about their varied capabilities and behaviors (Gulati, 1998). However being associated with the dominant technical standard or requirement can help a firm obtain legitimacy, explaining the potential negative association of portfolio diversity (Galaskiewicz and Zaheer, 1999;	A firm will be perceived as attractive if they have a portfolio of partners that can signal their breadth of capabilities, without impacting their credibility as having the depth of knowledge in the required area.
RP2.0: High Previous Alliance performance increases a firm's Attractiveness as an Alliance Partner	Social capital gained from positive relationships signals the reliability of potential partners on the basis of their prior collaborative behavior and provides information on collaboration opportunities (Gulati,1995)	The higher the performance of a firm's previous alliances, the greater the social capital and as such the greater the signal of their reliability and attractiveness as an alliance partner.
RP3.0: There is a U-shaped relationship between Alliance Portfolio Diversity and Previous Alliance Performance	As RP2.0	The social capital generated from difference alliance partners will increase the knowledge transfer between the two firms. However at too

		high diversity density, the risks, for instance in relation to the extra management costs, reduce the social capital generated.
RP4.0: Alliance Strategy positively moderates the relations between Alliance Portfolio Diversity and attractiveness. RP4.1: When Alliance Portfolio Diversity is medium/high, high alliance strategy would further enhance the positive impact on attractiveness. When Alliance Portfolio Diversity is very high, high alliance strategy would reduce the negative effect on attractiveness.	Organizational arrangements within a network coordinate linkages and manage the tasks within the alliance and related activities (Westney, 1988), thereby minimizing the risks of high Alliance Portfolio Diversity	All alliance strategy will ensure the right organizational arrangements are embedded within the firm, and so if present, will reduce the risks of high Alliance Portfolio Diversity, making it more attractive.
RP5.0: High alliance strategy positively moderates the relations between Previous Alliance Performance and Attractiveness as an Alliance Partner. RP5.1: When Alliance Strategy is high, the positive relationship between Previous Alliance Performance and Attractiveness as an Alliance Partner is further enhanced	Private social capital varies depending on positioning strategies, and mainly facilitates the pursuit of individual firm goals. While other actors might also benefit from such a private good, access is controlled by those who create the social capital (Leana and Van Buren, 1999)	If a firm is able to state and work towards their individual goals through an alliance strategy, they will have high social capital that might further enhance their attractiveness as a consequence of their alliance performance.
RP6.0: High Alliance Strategy positively moderates the relationship between Alliance Portfolio Diversity and Previous Alliance Performance. RP6.1: When Alliance Strategy is high, the positive relationship between Alliance Portfolio Diversity and Previous Alliance Performance is further enhanced	As RP6.0	The high private social capital gained from an alliance strategy will enhance the gains that alliance diversity brings to alliance performance

5.3.3   Contributions to other fields

This research has also contributed to other research areas, namely entrepreneurship and strategic entrepreneurship. The purpose of this next section is to introduce these research streams and describe the contribution of this research to those areas.

At its core, this research is about the intersection between opportunity and strategy. Historically, successful alliances were seen as consequence of opportunism. As one subject matter explained in Empirical Study 1 "*firms would invest primarily in market scouting capabilities. If they found a drug that filled a gap in their forecast, they would look to enter into negotiations – it didn't matter who the company was*". As such, a firm was seen as successful in the field of alliances if they were able to identify and capitalize on such opportunities better than the competition. However more recently, those concerned with Strategic Alliances within the pharmaceutical industry have considered major shifts that result in more considered and conscious efforts to be made. Two major shifts were described in Empirical Study 1 of this research. Firstly, the balance of power has shifted away from larger firms with resources, towards the firms with the solicited drug, technology or capability – which this research terms "Originators". Originators are looking for more than financial resources and as such, larger firms are having to consider and develop their attractiveness as an alliance partner. Secondly, alliance experience has demonstrated that some partnerships require less effort and investment than others, and pharmaceutical executives are keen to capitalize on such experiences in order to drive more efficient and effective alliance partnerships.

To understand this balance between opportunity and strategy from a theoretical perspective, three streams of research have been explored and discussed further; the study of entrepreneurship, strategic management and strategic entrepreneurship. Whilst these theories are not the main theories that underpin this research, significant contributions have been made within these areas. As such, this research proposes that future areas be explored within these streams. Such areas have been outlined in Section 5.8 of this Chapter.

I.   Entrepreneurship Theory

Entrepreneurship considers the science of opportunities (Shu et al., 2014). Entrepreneurial Orientation (EO) concerns a firm's strategic postures, including the processes, structures, and behaviors that enables it to be innovative, proactive, aggressive, and risk-taking (Covin and Slevin, 1989, Miller, 1983, Wiklund and Shepherd, 2003, Wiklund and Shepherd, 2005). Whilst EO traditionally has three dimensions—innovativeness, proactiveness, and willingness to take risks, other dimensions have been suggested and tested, such as competitive aggressiveness and autonomy (Lumpkin and Dess, 1996; Shu et al., 2014). Application of Entrepreneurship within the alliance research was discussed in Chapter 2. This research builds on this important area in two ways.

Firstly, despite the body of conceptual and empirical work in this space, questions exist as to whether enough solid empirical evidence exists to validate the link between entrepreneurship

and long-term performance of alliances (Covin and Slevin, 1991; Sexton and Bowman-Upton, 1991; Zahra, 1991) or whether entrepreneurship is simply a quick fix, temporarily and superficially affecting strategic alliance performance (Wiklund,1999). The empirical studies conducted within this research add to the body of evidence favoring the latter perspective. Based on the practical experience of the subject matter experts interviewed, firms believe more than entrepreneurship is required to make a partnership work, and that understanding these factors are key to building their attractiveness as an alliance partner – which this research considers an important and new indicator of a firm's overall performance.

The second important contribution of this research within the EO space concerns the role of an Alliance Strategy. EO literature has focused primarily on entrepreneurship at varying levels of the organization (Welter, 2011). Although strategic alliances create opportunities for entrepreneurship, few EO studies have considered the impact and influence of strategic alliance contexts, leaving a gap in understanding the EO-performance relationship in strategic alliances (Jiang et al., 2016). As such, this research makes an important and novel contribution in developing our understanding of Alliance Strategy as a key alliance context. In doing this, future EO research can consider the impact of Alliance Strategy on Attractiveness as an Alliance Partner specifically. Further, the entrepreneurial aspect of alliances is rooted in the Network theory (Granovetter, 1985; Sarkar et al., 2001) which argues that structural holes in the social structure in which firms do business present entrepreneurial opportunities through information access, referrals, timing and control (Burt, 1992). As discussed in Chapter 4, a key change in this research based on the results of Empirical Study 1 was to extend the use of Network theory to consider an Alliance Strategy more broadly. As such, this research enables extension of research to consider how an Alliance Strategy might influence or moderate the relationships between EO and firm or alliance performance.

II.   Strategic Management Theory

Similar to EO, Strategic Management theory concerns a firm's behavior and performance. Whilst EO calls for firms to search for competitive advantages through product, process, and market innovations (Ireland et al., 2003), Strategic Management theory focuses on how firms can establish and exploit competitive advantages within particular environments.

Application of Strategic Management theory within the alliance research has been discredited due to the fact that it has virtually no room for a theory of collective action that explains phenomena such as power-sharing often found in collaborations (Gray and Wood, 1991), explaining its limited application in the literature as identified in the systematic review of the alliance literature (Chapter 1, Section 1.3).

III.   Strategic Entrepreneurship Theory

Whilst both fields of entrepreneurship and strategic management have been advanced independently over the decades at a significant rate, the relationship between the two have been slower to uncover (Kyrgidou and Hughes, 2010). Although early studies argued that

entrepreneurship and strategy are conceptually inseparable (Venkataraman and Sarasvathy; 2001), more recent studies have challenged this notion, arguing instead that the two are distinct and that strategic entrepreneurship is the intersection between entrepreneurship and strategic management (Hitt et al. 2001). Mintzberg (1973) first introduced the notion of strategic entrepreneurship, which has since been investigated in relation to a firm's financial performance and growth (Ansoff, 1965; Burgelman, 1983; Mintzberg, 1973). Strategic Entrepreneurship theory suggests that, whilst the actions involved within entrepreneurship and strategic management processes independently contribute to firm growth and success, when integrated, these actions can create synergies that enhance the value of their outcomes (Ireland et al., 2003).

Whilst only a small number of studies have developed this notion into practical frameworks or constructs (Hitt et al., 2001; Ireland et al. 2003; Ireland an Webb, 2007; Ketchen et al. 2007), Ireland et al., (2003) made the important advancement that networks are a key domain in providing access to resources and thus central to strategic entrepreneurship. Further, their study presented the only known model for strategic entrepreneurship by a firm. This model consists four parts:

I.   Employment of an entrepreneurial mindset to identify opportunities
II.   Managing resources strategically to tackle the opportunity
III.   Applying creativity and innovation, and
IV.   Generating competitive advantage

This research builds on the current Strategic Entrepreneurship literature in a number of ways. Firstly, by providing a narrower unit of analysis for this area to be applied – namely in the field of strategic alliances, an important type of network. Next, this research looks at an important and novel outcome within the pharmaceutical industry namely Attractiveness as an Alliance Partner. This provides a new dependent variable to test this theory on. Further, however important Ireland et al., (2003) research in extending the relationship between entrepreneurship and strategic management, their research is still conceptual in nature and this research was unable to find any empirical evidence within this space. This research makes the critical contribution in providing a questionnaire to empirically test the theory in practice within Strategic Alliances.

A summary of the theoretical contributions of this research is outlined in Table 46 below.

Table 46: Summary of theoretical research contributions

	Research Theory	Research Contribution
1.	Social Network Theory	- Extends the research to attractiveness of a firm and proposes that attractiveness will also be influenced by the network of relationships of the firm and, specifically, by the performance of those relationships (Previous Alliance Performance) and the diversity of those relationships (Alliance Portfolio Diversity).

2.	Entrepreneurship Theory	- Validated the perspective that entrepreneurship is a quick fix, temporarily and superficially affecting strategic alliance performance (Wiklund,1999). - Introduces the impact and influence of strategic alliance contexts, such as the presence or strength of an alliance strategy, in understanding the EO-performance relationship in strategic alliances (Jiang et al., 2016).
3.	Strategic Entrepreneurship Theory	- Providing a narrower unit of analysis for this area to be applied – namely in the field of strategic alliances, an important type of network - Providing a new dependent variable, Attractiveness as an Alliance Partner, to test this theory on - Providing a questionnaire to empirically test the theory in practice within Strategic Alliances

5.4 Practical implications

The practical implications of this research have been considered through three viewpoints:

I. Research aims
II. Research objectives
III. Conceptual model and the key relationships

5.4.1 Implications of research aims

The overall aim of this research was to understand how a firm's alliance strategy moderates the relationship between a firm's Attractiveness as an Alliance Partner and its antecedents. In doing this, the research has three important practical implications. First, it challenges and broadens the perceptions of 'attractiveness as an alliance partner' and its antecedents. Secondly, the research aims enable firms to understand their own attractiveness through the application of a simple and evidence-based self-assessment questionnaire. Finally, the research will amplify the importance and the ability of firms to develop an Alliance Strategy. Each of these implications are considered further.

I. Challenging and broadening the perceptions of 'attractiveness as an alliance partner'

Empirical Study 2 uncovered the key insight that executives believe that, despite the fact that many pharmaceutical firms are working towards becoming a 'Partner of Choice', only two true antecedents of a firm's attractiveness as an alliance partner exist; a firm's capabilities, and their resources. Executives believe that if a firm has the right capabilities and are able to offer the right price for a partnership, then they are an attractive alliance partner. Moreover, the measure of attractiveness is believed to be a reflection of the strength of those capabilities and the price they are willing to offer. The relevant literature almost unanimously validates this and acknowledges that resources are a primary strategic motive for alliance formation (Ahuja 2000;

Galaskiewicz 1985; Gulati and Gargiulo 1999). Moreover, the literature shows that having crucial complementary assets or capabilities across the alliance increases the likelihood it will succeed (Brouthers et al. 1995) and that this complementarity drives the most effective search for partners (Harrigan 1985). As such, it can be assumed that a firm with the relevant resources and capabilities will be an attractive alliance partner. Despite this however, the research also shows the important role of other factors that also informs a firm's attractiveness as an alliance partner. These factors are key to understand so that firms can consider the full breadth antecedents that inform their attractiveness.

As well as challenging the significance of a firm's capability on its attractiveness, the aim of this research also challenges the implication of this belief.

"The most important factor that will influence attractiveness is the presence or absence of the desired capability. If we have the capability the biotech wants, for example experience in the therapy area, then we are attractive. If not, we aren't" Senior executive, Empirical Study 2

The implication of this statement and this belief is that alliances can only be formed when a firm is looking to "buy in" a capability. to deepen a capability, rather than to develop a new one. However, the alliance literature provides sufficient evidence to the contrary. A company can configure its alliances to increase access to external resources and gain new skills owned by partners (Hoffmann, 2007). In particular, the learning process, obtained through an alliance, allows a company to transform external resources held by cooperative partners (Lin and Wu, 2014). Thus, alliance decisions help firms to develop new capabilities. Within the pharmaceutical industry specifically, the increasing complexity and multidisciplinary nature of the industry's innovation process forces pharmaceutical firms to concurrently access external knowledge to support both upstream and downstream value chain activities (Arora and Gambardella, 1990; Rothaermel and Hess, 2007). Firms can enter into upstream alliances for the purpose of exploring for new opportunities, while downstream alliances are undertaken to exploit an existing capability (Rothaermel et al., 2004).

Further, alliance success has been shown to lie in each firm's alliance management capabilities (Schilke and Goerzen, 2010), specifically, in complementarity capabilities (Cotta and Dalto, 2010). Whilst this might indicate support for the notion that firms only need the 'right capabilities' to be attractive, a stream of research has investigated the effects of other factors on heightening the importance of complementarity capabilities. Such factors include the heterogeneity of firms human and internal development routines (Doving and Gooderham; 2008), organisation structure and culture (Fang and Zou; 2009) and alliance motivation (Vandaie and Zaheer; 2015). This research highlights the additional factors that are implicated in alliances beyond a firm's capabilities.

The second antecedent executives believed defined their attractiveness was availability of resource, specifically the financial resources a firm is able to devote to the alliance. From a resource-based perspective, strategic alliances promote the integration and development of valuable and distinctive resource combinations otherwise unavailable to the firm

(Gopalakrishnan et al., 2008) however these resources go beyond financial. Furthermore, similar to the capability research stream, a stream of research has investigated the effects of other factors on heightening the importance of resource complementarity such as trust Robson et al., 2019), alliance capabilities (Kale and Singh, 2007) and strategic fit (Elmuti et al., 2012).

As such, this research has two important implications; the first is in measuring attractiveness across both 'hard' and 'soft dimensions'. In doing this, firms can think beyond the hard measures of capabilities and financial resources and start to consider what other measures, including soft measures, they can develop to increase their attractiveness as an alliance partner. This is discussed further in the next section. The second implication considers how firms can apply the antecedents discussed within their own plans, specifically in relation to their Previous Alliance Performance and their Alliance Performance Diversity. Firms can consider both their Previous Alliance Performance and Alliance Portfolio Diversity through the lens of their Attractiveness scores, and consider how both can be increased or adapted to impact their overall attractiveness. Key questions that can be considered in relation to these antecedents are:

- Is the firm's Previous Alliance Performance well understood internally and well communicated externally?
- What aspects of the firm's Previous Alliance Performance can be better communicated in order to improve our Attractiveness as an Alliance Partner?
- Does the firm have a diverse alliance portfolio? What dimensions of diversity can be improved? Which can be further communicated in order to improve the firm's Attractiveness as an Alliance Partner?

II.   Enables firms to understand their own Attractiveness as an Alliance Partner

The second implication if this research is that is enables firms to be able to assess their own attractiveness, and, importantly, why. This research has been conducted at a critical time in alliance practice. The industry has recognized that the balance of power has shifted from large companies with the capabilities and resources, towards the innovators who are now looking to partner with a firm with more. As such, for firms wishing to enter into alliances in order to expand their portfolio or to develop their capabilities, there is a move towards understanding and developing their attractiveness as an alliance partner first. Pharmaceutical firms have already made the first step towards adapting to this new dynamic by considering Attractiveness as an Alliance Partner as a key firm outcome for which they need to work towards.

A number of subject matter experts interviewed during Empirical Study 1 shared examples of recent research that they had been involved with to ascertain their firms, or a client firm's level of attractiveness. One alliance executive working in a consultancy firm commented that the majority of business development work over the past 18 months had come from pharmaceutical companies wanting to understand why they had lost out on a major alliance, despite having the desired capabilities and the financial resources.

"Companies want to understand what they are doing wrong – why they are missing out on big alliance deals". Subject matter experts, Empirical Study 1.

With this research, firms can use the questionnaire to assess their attractiveness and understand the impact of their scores through the measures they adopted. Key questions that can be considered in relation to their attractiveness are:

- What is the firm's current level of attractiveness as an alliance partner? In which dimensions is the firm strong and which are they weak?
- How has the firm's attractiveness changed? Which dimensions or items have had the most impact?

III. Amplifies the importance and the ability of firms to develop an Alliance Strategy

As discussed in Chapter 2, Section 2.1, Network Theory is the most common theory applied to understanding the impact of a firm's network choices in relation to their alliances, specifically in relation ot the firms selected network position. However, this research was unable to find any theoretical knowledge or empirical evidence to broaden.

With this research, firms can begin to understand the value of an alliance strategy and also develop clear plans to build one. Key questions that can be considered in relation to an alliance strategy are:

- What questions should be considered when developing an Alliance Strategy
- How can the firm leverage their alliance strategy to improve their attractiveness as an Alliance Partner?
- How can firms leverage their alliance strategy to improve their alliance performance and their alliance portfolio diversity?

5.4.2   Implication of research objectives

The implications of the research objectives more broadly have been considered within the table below.

Table 47: Implications of research objectives

Research Objectives		Practical questions	Practical implications
i.	To contribute to the theoretical literature base by exploring new perspectives of the concept of an Alliance Strategy that goes beyond its individual dimensions but considers its impact on a firm more broadly	- What other industries or areas might the existence of an Alliance Strategy be important?	- An Alliance Strategy can be considered as a key variable of interest that can be examined through different theoretical perspectives

ii.	To identify the core dimensions of an Alliance Strategy and explore the impact of each of its dimensions on previously tested alliance variables	- What constitutes an Alliance Strategy and how might this differ across industry or contexts?	- Understand when and how to apply the different dimensions of an alliance strategy
iii.	To build on the empirical literature base by specifying which dimensions of Alliance Portfolio Diversity and Previous Alliance Performance contribute to Attractiveness as an Alliance Partner	- How might the dimensions be influenced by different industries or contexts?	- Prioritize efforts when building capabilities to become and attractive alliance partner towards the areas of most impact
iv.	To offer alliance executives further direction on how to build their Attractiveness as an Alliance Partner	- Where should firms prioritize their efforts and resources to build their attractiveness?	- Efforts to optimise a firm's attractiveness as an alliance partner can be more strategically considered and resource allocation optimized

5.4.3   Implications of conceptual model

The conceptual model implications have been described below. Ultimately, these contributions help with the overarching aim of the research.

Table 48: Implications of conceptual model

#	Conceptual Model Relationship	Practical questions	Practical implications
1	Alliance Portfolio Diversity and Attractiveness as an Alliance Partner	- What dimensions of diversity should a firm prioritize and/or invest in in order to be a more attractiveness alliance partner?	- Current alliance portfolio can be assessed and plan developed to increase and/or communicate diversity levels
2	Previous Alliance Performance and Attractiveness as an Alliance Partner	- What aspects of a firm's previous alliance performance should a firm articulate or reinforce in order to improve its attractiveness as an alliance partner?	- Review of current and previous alliances can be done with a focus on the key aspects in order to articulate relevant experience to potential partners
3	Alliance Portfolio Diversity and Previous Alliance Performance	- What dimensions of diversity have the most impact on a firm's alliance performance	- Previous alliance experiences can be linked back to the firm's portfolio diversity
4	Alliance Strategy as a Moderator	- Why should a firm prioritise and/or invest in its Alliance Strategy if they are to succeed	- All firm alliances can be considered through the same

		in being an attractive alliance partner?	strategic lens in order to drive consistency - Aspects of alliances strategy that are the most important to increase attractiveness can be communicated to potential partners

5.5   Practical recommendations

One of the most consistent findings from research within the healthcare industry is the failure to translate research into practice (Grimshaw et al., 2012). As a result of these evidence to practice gaps, patients ultimately fail to benefit optimally from advances in healthcare. This research was conducted within the pharmaceutical industry, and thus not translating the insights from this research into practice ultimately means that product innovations from the alliance risk not meeting patient needs optimally. Further in not translating the research findings, there is a risk that firms involved are exposed to unnecessary expenditure as a consequence of a un-optimised alliances.

As such, the practical recommendations have been deeply explored, and have been considered for both innovation Originators and for Pharmaceutical Executives. The recommendations have been developed on the basis of this research as well as the literature review conducted throughout this research. As such, some of the recommendations are broader than the research objectives will have explored specifically.

5.5.1   Recommendations for Originators

This research uses the terminology of 'Originator' defined as the firm with the originating innovation. In doing this, the partnering firm's contributing innovation which enables the total value to be improved, is acknowledged.

This research makes three key recommendations to Originators.

I.   Assess a firm's diversity in partners and previous alliance experience

Conceptual and empirical research has shown that a firm's alliance portfolio experience and diversity have a significant contribution to the likely success of an alliance (Lane and Lubatkin, 1998; Ahuja, 2000a; Lahiri and Narayanan, 2013). This research proposes that a firm's alliance portfolio diversity also has a substantial impact on their attractiveness. As such, this research recommends that originators understand who their potential partners have allied with. Specifically, what is their diversity in relation to the organisation types they have allied with, the purpose of those alliances and the governance structures of their alliances. This research recommends that originators consider what types of diversity is important to them. For instance, if the alliance suiter is looking for a firm that has experience in true collaborative partnerships,

then this research recommends that suiters assess what types of strategic motivations their partners have entered into with and select partners with the relevant experience.

In addition, this research has demonstrated that a firm's alliance experience has a positive impact on their attractiveness. As such, this research recommends that originators deeply understand the potential partners previous alliance experience, both in terms of their operational effectiveness and their organisational effectiveness. The goal is not to select partners who only have positive alliance experiences, but instead to understand those experiences as a key indicator to the types of opportunities, and challenges, that the potential partner might present. For instance, if both firms within the previous alliance achieved their goals but it required several operational changes to contracts, this might indicate the firm is willing to be flexible and agile. As such, as reflected in the alliance literature, a deep understanding of previous alliance experience is an antecedent of a firm's attractiveness as an alliance partner

II.   Investigate partners' motivations by understanding their alliance strategy

This research proposes that a firm that has an alliance strategy is more attractiveness as an alliance partner. As part of that, this research recommends that an Originator investigate the potential partners' alliance strategy to understand not only their overall attractiveness, but specifically their motivations and expectations of the partnership. A firm's alliance strategy is a good indicator of their true intentions – both in the short term and in the long term. Originators can use the items within this research to ask partner's the relevant questions in order to assess their motivations.

III.   Consider and develop your own alliance strategy

Whilst this research has focused on the alliance strategy of a pharmaceutical firm, alliance suiters should also have their own alliance strategy, and adapt the items within this research accordingly. In doing so, they will have a better view of the type of alliance partner they are looking for and will therefore be able to search accordingly and conduct the relevant analysis. In addition, they can more clearly communicate from the beginning of their search what they are looking for, and potential suiters can respond accordingly.

5.5.2   Recommendations for Pharmaceutical Executives

The previous section considered recommendations for 'Originators,' defined as the firm with the originating innovation. This section considers recommendations for pharmaceutical executives specifically in order to speak to the majority of subject matter experts that took part in this research, despite the fact that pharmaceutical companies can also be Originators.

This research makes three key recommendations to Pharmaceutical Executives.

I.   Consider an alliance as the strategic goal – not a consequence of a failed buy-out

Despite the fact that 85% of the senior executives believe alliances are and will continue to be essential or important to their business (Powerlinx, 2014), this research found that alliances within the pharmaceutical industry were seen as a consequence to a failed merger. As one subject matter explained in Empirical Study 2 "*firms mainly invest in market scouting capabilities. The goal is to find a drug that fills a gap in their forecast and try and buy the company out. This allows them to have total control. If they aren't able to do that, an alliance is considered the fall-back or a short-term measure until an acquisition is possible somewhere down the line*".

Within the biotechnology industry specifically, the growth of strategic alliances has been found to outweigh that in other sectors, with an annual average growth rate of 25% (Scillitoe et al., 2015), so there is an urgent need to change attitudes around alliances. In order to do this, firms and executives need to revisit the fundamental concept of competitiveness, moving away from single-minded and siloed attitudes to recognizing that if a network is created and becomes competitive, the firms within it also become competitive. This was discussed in detail within Section 2.1.2 'Synergistic effect of networks' which discussed the utility of alliance ties between multiple actors relative to the sum of the individual ties. Within the alliance stream of research within political studies, studies found that network effects are the only consistent predictors of the tendencies of states to form alliances with one another, and that the density of the network is more important to alliance formation than political similarity (Cranmer et al., 2012).

As such, this research urges executives to regard and work towards alliances as an ambitious target in itself, and as such carefully consider what type of alliance would best satisfy their strategic goals.

II.   Start with an alliance strategy

When assessing the various definitions of alliances and terms used interchangeably with them, for instance partnering, the term "strategic alliances" was found to primarily be used within the literature when the relationship between the partnership and the firms' strategies was emphasized. In this way, strategic alliances should set out the strategic nature or motivation behind the partnership.

As such, this research makes the key recommendation that in order to ensure alliances are truly "strategic", firms and executives should first make clear the relationship between the alliance and the firm's broader strategy. A firm's long-term corporate goals and objectives should influence the choice of alliance type, partner criteria, timing of the alliances and the relationship process affecting the alliances (Koko and Prescott, 2008).

Once the relationship to the corporate strategy has been considered, this research recommends that executives develop a specific alliance strategy for each alliance it enters. This research originally intended to examine network position however based on the Empirical Study 1, the focus was shifted to examine an alliance strategy more broadly. This shift in focus was initiated by the subject matter experts interviewed, signaling a real interest and desire to understand the

subject more. In order to leverage this interest and direct the efforts of firms to practical and meaningful ways the build an alliance strategy, this research recommends using the dimensions and items outlined in the Final Questionnaire in Chapter 4. The four key dimensions that this research recommends be included within the development of a firm's alliance strategy is:

1) The design of the Alliance – specifically it's goals, rationale and scope

2) How the Alliance will be managed, recognizing that organizational issues in alliance management are as important as strategic issues in alliance design (Bamford et al., 2003)

3) How the firm's multiple alliances, or Alliance Constellation, is designed and managed

4) The firm's Alliance Capability, recognizing that the success of external alliances often depends on having a supportive internal infrastructure.

Together, these four dimensions represent much more than the alliance deal itself—together they articulate the intent, dynamic process, and the logic that guides the alliance decision (Bamford et al., 2003). As such, each dimension should be considered at the individual alliance level and the network level.

> III. The importance of "soft" dimensions of attractiveness as an alliance partner should not be undermined

Of all of the draft variables discussed within Empirical Study 1, respondents were the most passionate and excited about 'Attractiveness as an Alliance Partner' given both the recent interest in the topic within the industry and the lack of empirical evidence in the literature. However, the empirical studies uncovered common assumptions, or 'blind spots', around perceptions of attractiveness. Subject matter experts repeatedly stated that a firm's attractiveness would be considered high if they had sufficient degree of just a few key factors. Specifically, if the company had either a key capability or product, or if they had significant financial resources, they would be perceived as attractive, irrespective of their other attributes. In this way, executives believe that the "hard" elements of attractiveness, such as capability or resources, would always outweigh the "soft" elements, like top management team's credibility or alliance reputation.

However, this research has highlighted the importance of the mix of "hard" and "soft" elements and recommends that executives take seriously the importance of both. Shah and Swaminathan (2008A) review of 40 studies concluded four factors consistently identified as being important to partner attractiveness and selection; (1) trust; (2) commitment; (3) complementarity; and (4) value, or financial payoff. Items of 'trust' and 'commitment' can be found in the 'soft' dimension of attractiveness, for instance '3Biii: Is the firm perceived to be trustworthy' and '3Bv: Is the firm willing to share its experience?'. Thus, in using the questions laid out within this research, firms can feel confident that they will be assessing and understanding their attractiveness through both hard and soft dimensions. However, the questions, and therefore the responses, are and can only be subjective in nature. What one company finds trustworthy, another might not. It is

therefore the signals of trust and the other soft elements that companies must truly explore. This is proposed as a potential future research agenda.

IV.   Key antecedents should be considered when developing a firm's attractiveness as an attractive alliance partner

Alliance Portfolio Diversity and Previous Alliance Performance were investigated as part of this research as key antecedents of Attractiveness as an Alliance Partner.

The direct impact of Alliance Portfolio Diversity on alliance success has been investigated, however this research makes the novel contribution of exploring its direct impact as an antecedent on Attractiveness as an Alliance Partner – a new variable. As part of the literature investigating its impact on alliance success, Alliance Portfolio Diversity has been explored through a number of different dimensions to include diversity within and across the firm's alliance portfolio (Goerzen and Beamish, 2005; Jiang et al, 2010; Wuyts et al, 2004), diversity of alliance functions held within the portfolio, such as manufacturing, marketing, and research and development (Jiang et al., 2010), and geographical diversity (Ganesan et al, 2005; Jiang et al., 2010 and Cui and O'Connor, 2012). As such, this research makes the key recommendation to firms and pharmaceutical executives to first proactively, strategically and consciously develop a diverse alliance portfolio.

During the research interviews, one subject matter expert commented that, as with alliances being the consequence of failed mergers, diversity was simply a consequence of a lack of an alliance approach, albeit a fortunate consequence, dictated by opportunity. Further, a lack of an overarching alliance strategy resulted in firm's not understanding how or why to build a diverse alliance portfolio. Executives also discussed how every firm had comfort-levels with regards to alliances, both in terms of their type but also the partner types.

However, this research demonstrates the significance of Alliance Portfolio Diversity and as such recommends that firms proactively broaden the diversity of their alliances through the dimensions of:

1) Organizational type
2) Function purpose
3) Governance structure

As stated in Section 2.2, there is an important and proven U-shared relationship associated with Alliance Portfolio Diversity and Alliance Performance (Golonka, 2015) and thus, this research has proposed such a relationship may also exist between Alliance Portfolio Diversity and Attractiveness. As a result, it is important that firms only build in diversity within their portfolio to the degree it satisfies and is aligned with their alliance strategy in order to mitigate the negative impact caused by too high diversity. For instance, the enhanced coordination costs attributed to offsetting the positive effects of Alliance Portfolio Diversity can be addressed through the

'Development of alliance Internal Alliance Capability' as stated in the fourth dimension of Alliance Strategy.

The second key antecedent of Attractiveness that has been explored within this research is Previous Alliance Performance. During the empirical studies, executives were not confident in their firm's recent history of alliance performances. When asked how they would rate and explain their previous alliance performance, most executives shared a similar sentiment that some were good, some were not so good. However, given the importance of alliance experience on perceived value as partner (Hitt et al., 2004), managing future alliances (Park and Ungson, 1997; Duysters et al., 2012) and conflict resolution in alliances (Nielsen and Nielsen, 2009), this research suggests that firms have a process of understanding their alliance performance, and importantly, sharing this knowledge across different teams within the division so that the successes and learnings can be shared when trying to build new partnerships. In doing so, this research proposes that the firm will be seen a more attractive alliance partner.

As such, this research recommends that firms proactively consider and then communicate their previous alliance performance through the dimensions of:

1) Organizational effectiveness
2) Operational measures

5.6   Applicability of findings to other sectors

This research was conducted within the pharmaceutical industry. Several conceptual and empirical studies relating to strategic alliances have been conducted with this (Scillitoe et al., 2015; Xu and Cavusgil, 2019; Nirjar et al., 2018; Cui et al., 2018), in part due to the significant rise of alliances in this area (Smith, 2012; Anscombe et al., 2009). However, the research can be attributed to other industries, in part due to the way in which the methodology was developed. As outlined in Section 3.1, a Pragmatist approach was taken to the research design using interviews, observations from my own experience, and empirical testing. The combination of these measures, in particular the use of qualitative measures, means that the findings can be more easily attributable to other industries, relative to, for instance, a Positivist approach. In this way, the research has tried to balance the cross-sector applicability of the findings with the specificity required to ensure the findings were credible.

5.7   Research limitations

As with all research, there are limitations across the conceptual theory and methodology that was carefully balanced with ensuring credibility of findings. The following three limitations were believed to be the most significant, however does not impact the quality of the research significantly or the credibility of the research propositions and contributions.

Table 49: Research limitations

	Limitation	Consequence	Future considerations to minimize impact on research
1.	Questionnaire not validated	The outcome of instrument development is validation and psychometric testing, however this has not been done at this stage of the research and the key contribution was the questionnaire and the research propositions.	Validate the research propositions
2.	Attractiveness is not definitive or objective	The subjective nature of the soft dimension of attractiveness, for instance with items such as "trust" and "perception", could reduce the consistency of results and therefore undermine it's credibility	Explore methods that reduce subjective nature of results and build these into the questionnaire
3.	Alliance Experience and Alliance Performance can be misconstrued	The difference between Alliance Experience (an item of attractiveness) and Previous Alliance Performance (an antecedent of attractiveness) may not be fully understood by those completing the questionnaire, and therefore could be double-counted	All interviews can be conducted verbally so the difference between the two explained
4.	Limited number of participants in each study	The research prioritized quality of insights through the studies, over quantity. As such, all the studies were quantitative and as such, fewer participants were included in each of the studies. However this may impact the validity of the findings	Empirically test the questionnaire using quantitative methods on a large sample

The four main research limitations are outlined above however the key limitation is understood to be the first one. This research made the novel and critical contribution of developing research propositions and a questionnaire for firms to test their attractiveness. Based on the immediate needs in practice, this contribution was felt to be sufficient however a key next step would be to validate the questionnaire and test the propositions.

A second key limitation was the participant numbers across the studies, as this might impact the degree to which the questionnaire can be considered validated for respondents whose first language is not English. A number of alliances within the pharmaceutical industry take place outside of the western countries so this limitation is an important consideration, however given the degree to which the questions were robustly interrogated for simplicity and understandability, this limitation, whilst important, does not restrict the use of the questionnaire. However as well as empirically testing the questionnaire using a larger quantitative sample, another future consideration could be to validate the research questionnaire with non-English speakers specifically.

5.8   Future research

Throughout this research, a number of future research streams were considered and have been listed below. The breadth of these areas reflects not only the depth of the alliance topic, but the applicability of the research findings to other areas. The research streams listed were considered throughout this research process, but in particular during Empirical Study 1 when subject matter experts were asked about their interest in the alliance area more broadly.

The table below summarizes the potential future research areas.

Table 50: Future research questions

Future research area	Research questions
1. Empirically test the conceptual model	i. Are the research questions and propositions outlined in Table 14 valid?
2. Aligning corporate strategies to Alliance Strategies	i. What is the relationship between a corporate strategy and an alliance strategy? ii. How can an alliance strategy be developed through a corporate strategy?
3. Exploring the moderating impact of Alliance Strategies on different types of Strategic Alliances	i. What is the impact of an Alliance Strategy on different types of Strategic Alliances – for instance, bilateral, unilateral or multilateral alliances, or R&D, manufacturing and commercial alliances?
4. Exploring the relationship between Business Models and Alliance Strategies	i. How does a firm's corporate strategy influence its alliance strategy? ii. How does a firm's business model influence its alliance success?
5. Understanding the relationship between brand positioning and firm attractiveness	i. Is brand positioning and firm positioning within the context of wanting to be an attractive alliance partner, the same? How can firm's leverage brand positioning expertise to help build their attractiveness as a firm?
6. Exploring the relationship between entrepreneurship and strategy	i. When should firm's prioritize entrepreneurship and when should they prioritize strategy? ii. Is there a tension between the two and how can this tension be created so it optimise firm performance?
7. Exploring the integration of two partnering firms' alliance strategies	i. How can two partnering firm's alliance strategies be integrated to develop the final alliance or partnership strategy? ii. What aspects of the firms' individual alliance strategies would be most important to the partnership strategy?
8. Investigated the role of interfunctional coordination	i. How can the different elements of the conceptual model be integrated?
9. Understanding objective signals of the 'soft' subjective dimensions of alliance strategy	i. What are the signals of trust and the other soft elements that companies must truly explore and understand?

The first and main future research area is to empirically test the conceptual model using Exploratory Factor Analysis. In this way, the key relationships and research questions can be tested and the research propositions validated. Another relevant area of interest would be to incorporate the concept of interfunctional coordination for a deeper understanding of how the different factors of this model can be integrated (Auh and Menguc, 2005; Ruiz-Alba et al. 2020). Further, during the empirical studies it became evident that the participants were naturally interested in the 6th future research area listed below. Specifically, to understand further the tensions between entrepreneurship and agility, and strategic direction. Although this discussion point and future research area stemmed from alliances, it is a key research area for a number of phenomena. For instance, the questions could also be applied to brand marketing campaigns – when should these be aligned to a central strategy to build a uniform brand, and when should campaigns be developed through a more agile, entrepreneurial approach based on customer trends. Perhaps more fundamentally, this research question could interrogate the actual difference between entrepreneurship and strategy, both in terms of the way the literature defines it and in the way it is understood and applied in practice.

5.9   Research conclusion

Strategic alliances within the pharmaceutical industry have been a focus of interest and research for many years (Ireland et al., 2002; Chung et al., 2000; Baker, 2000; Glaister and Buckley, 1999) as, despite their high prevalence, only 50% are considered stable or achieve performance perceived by the partners as satisfactory (McCutchen et al., 2008). Nevertheless, 85% of the senior executives still believe alliances are and will continue to be essential or important to their business (Powerlinx, 2014), and as such companies have invested significantly in becoming desirable and attractive alliance partners.

Despite this investment, there is currently no validated methodology or approach whereby firms can quantitatively assess their own attractiveness score. As such, despite their investments to become more desirable, there is no evidence to show these investments are placed in the right areas or increasing their attractiveness. this research addresses this gap by developing a questionnaire and a survey for firms to use.

Further, this research has addressed a key gap in both the alliance literature and in practice of clearly articulating what informs a firm's attractiveness as an alliance partner. The research proposes that attractiveness has two key antecedents – Alliance Portfolio Diversity and Previous Alliance Performance. Critically, this research proposes that the positive impact of both these antecedents are further enhanced if the firm has an Alliance Strategy. Another key contribution of this research is explicitly describing what informs that Alliance Strategy. In this way, firms can develop plans directly from this research that will build their Attractiveness as an Alliance Partner.

Innovation in the pharmaceutical industry has contributed some of the most important successes in modern medicine—e.g., for the treatment of high cholesterol and heart disease, highly active antiretroviral therapy for the treatment of HIV, tyrosine kinase inhibitors (TKIs) for the treatment of chronic myeloid leukemia, and many other breakthroughs (Lakdawalla, 2018). Thus, a well-functioning firm, which is able to attract partners to fulfil their firms' innovations, can

contribute directly and significantly to human wellbeing and the reduction of ill health and suffering (Taylor, 2015). For this reason, this research and its propositions will not only contribute meaningful to the literature, but potentially to the future of patient's lives.

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7.1   Appendix

Final questionnaire

The following questionnaire is intended to be used by pharmaceutical firms that seek to understand how attractive they are to potential Strategic Alliance partners.

In order to complete this questionnaire, please consider your experiences with a current alliance you are involved in. For each of these questions, please consider if these strategic questions were considered either before or during the alliance.

Please rate each question using the following 5-point scale:

6. *Strongly disagree*
7. *Disagree*
8. *Neither agree nor disagree*
9. *Agree*
10. *Strongly agree*

Topic		Category	Question		Rating (1 - 5)
1.	With regards to your firm's Alliance Strategy, the following questions were considered	Design of an alliance	1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?	
			1Aii	What is the goal of the alliance? As such, what is included and excluded? Which markets or products, technologies, and business systems does it include?	
			1Aiii	What are the criteria for selecting a partner?	
			1Aiv	What are the options for structuring the alliance, and what would inform selection of each option?	
			1Av	How should the alliance be negotiated and by who?	
		Management of an Alliance	1Bi	What might the partner's stated and implied objectives be? How can the alliance be designed and managed to ensure it is mutually beneficial?	
			1Bii	What should be done in the first 30 to 180 days?	
			1Biii	What culture do we want to promote within the alliance?	
			1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	
			1Bv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?	

			1Bvi	How will escalations be resolved, and by who?	
			1Bvii	How will the performance of the alliance and the relationship between the partners be measured? How will these measures be linked to individual incentives?	
			1Bviii	What is the criteria and process for adjusting or terminating the alliance?	
		Design and Management of an Alliance Constellation	1Ci	Which alliances are required to achieve our goals?	
			1Cii	What is the relationship among the various alliances and partners in the constellation, or network? What position should be taken within the constellation?	
			1Ciii	How will interactions among alliances of different divisions be managed?	
			1Civ	How will our constellation of alliances compete, and with who?	
			1Cv	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?	
		Development of an Internal Alliance Capability	1Di	What skills, human resources, processes, tools, and systems are needed in each area?	
			1Dii	How will our firm capture and disseminate learning from our own experience with alliances?	
			1Diii	What will encourage incorporation of alliance thinking into the business?	
		Alliance Strategy Communication	1Ei	Who needs to know about our alliance strategy?	
			1Eii	What does the firm want to be known for as an alliance partner?	
2	With regards to your firm's Previous Alliance Performance, the following questions were considered	Alliance Outcomes	2Ai	How satisfied was the firm with the overall performance of the alliance?	
			2Aii	Was the partnering firm satisfied with the overall performance of the alliance?	
			2Aiii	To what degree were the firm's alliance goals fulfilled?	
			2Aiv	To what degree were the partner's alliance goals fulfilled?	
			2Av	Would the alliance partner work with the firm again?	
		Operational Measures	2Bi	How effectively were issues resolved between the firm and the alliance partner?	
			2Bii	How effective was the decision making across the alliance?	
			2Biii	Were adjustments made to the alliance as and when necessary?	

3	With regards to your firm's Attractiveness as Alliance Partner, the following questions were considered	Hard elements	3Ai	How strong are the firm's financial assets?	
			3Aii	How strong are the firm's overall foundational capabilities?	
			3Aiii	To what degree has the firm got desired unique capabilities?	
			3Aiv	How strong is the firm's geographical footprint?	
			3Av	How strong is the firm's management's reputation?	
			3Avi	How significant an investment is the firm willing and likely to give to the alliance?	
		Soft elements	3Bi	How strong firm's market knowledge?	
			3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?	
			3Biii	To what degree is the firm perceived to be trustworthy?	
			3Biv	How many successful alliances has the firm had?	
			3Bv	To what degree is the firm willing to share its knowledge and experience?	
			3Bvi	To what degree is the firm willing to learn from a partner?	
4	With regards to your firm's Alliance Portfolio Diversity, the following questions were considered	Organisational type	4Ai	To what degree has the firm entered in alliances with different overarching goals?	
			4Aii	To what degree has the firm entered in alliances with partners from different industries?	
			4Aiii	To what degree has the firm entered in alliances with partners based in a different nation states?	
			4Aiv	To what degree has the firm entered in alliances with partners from different organisations, e.g. Big/Small Pharma, Biotech, Universities, Hospitals?	
		Functional purpose	4Bi	To what degree has the firm entered in alliances providing differing commercial activities, e.g. marketing, manufacturing, and distribution?	
			4Bii	To what degree has the firm entered into alliances at different stages of their life cycle, e.g. Pre Proof of Concept or Post Proof of Concept?	
		Governance structure	4Ci	To what degree has the firm entered in alliances with different governance structures, e.g. non equity, equity, joint ventures?	

Final survey instrument

The following survey is intended to be used by pharmaceutical firms that seek to understand how attractive they are to potential Strategic Alliance partners.

In order to complete this survey, please consider your experiences with a current alliance you are involved in. For each of these questions, please consider if these strategic questions were considered either before or during the alliance.

Please rate each question using the following 5-point scale:

6. *Strongly disagree*
7. *Disagree*
8. *Neither agree nor disagree*
9. *Agree*
10. *Strongly agree*

Topic		Category	Question		Rating (1-5)
A.	With regards to your firm's Alliance Strategy, the following questions were considered	Design of an alliance	1.	The goal of the alliance is fully considered and understood	
			2.	The criteria for selecting a partner are fully considered	
		Management of an Alliance	3.	There is a plan for the first 180 days of the alliance that is adhered to as required	
			4.	It is clear how performance of the alliance and the relationship between the partners will be measured.	
		Design and Management of an Alliance Constellation	5.	The firm's alliance needs are strategically mapped against the corporate goals	
			6.	The relationship between and within the alliance constellation is fully considered	
			7.	It is clear who in the firm is responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation	
		Development of an Internal Alliance Capability	8.	There is a clear what skills, human resources, processes, tools, and systems are needed in each area of the alliance capabilities	
			9.	The firm knows how to capture and disseminate learning from alliance experiences	
		Alliance Strategy Communication	10.	The firm effectively communicates its alliance strategy to potential partners	

B.	With regards to your firm's Previous Alliance Performance, the following questions were considered	Alliance Outcomes	11.	Our firm is satisfied with the performance of our alliances	
			12.	Our partners are satisfied with the performance of our alliances	
		Operational Measures	13.	Operational issues were managed and resolved throughout the alliance lifecycle	
			14.	Adjustments were made to the alliance as and when necessary	
C.	With regards to your firm's Attractiveness as Alliance Partner, the following questions were considered	Hard elements	15.	The firm has the required 'hard' assets, to include financials and capabilities	
			16.	The firm has a strong management reputation	
		Soft elements	17.	The firm has the required 'soft' assets, to include trustworthiness, flexibility and learning agility	
D.	With regards to your firm's Alliance Portfolio Diversity, the following questions were considered	Organisational type	18.	The firm has a diversity of alliance partner types	
		Functional purpose	19.	The firm has a diversity of alliance goals	
		Governance structure	20.	The firm has a diversity of alliance structures	

Consent form

Title of Study: How does a firm's network position moderate the relationships between its alliance portfolio diversity, its attractiveness as an alliance partner and its overall performance?

Lead researcher: Millie Pari

	Yes	No
I have been given the Participation Information Sheet and/or had its contents explained to me.	❐	❐
I understand I have a right to withdraw from the research at any time and I do not have to provide a reason.	❐	❐
I understand that if I withdraw from the research any data included in the results will be removed if that is practicable (I understand that once anonymised data has been collated into other datasets it may not be possible to remove that data).	❐	❐
I would like to receive information relating to the results from this study.	❐	❐
I confirm I am willing to be a participant in the above research study.	❐	❐
I note the data collected may be retained in an archive and I am happy for my data to be reused as part of future research activities. I note my data will be fully anonymised (if applicable).	❐	❐

Participant's Name or Initials: _____

Date: _____

_____

I confirm I have provided an opportunity to participants to retain a copy of Participant Information Sheet approved by the Research Ethics Committee to the participant and fully explained its contents.

Researcher's Name: Millie Pari

Date: 18th July 2021

Participation Information Sheet and Consent Form

Hello,

Thank you very much for taking part in this study titled: How does a firm's network position moderate the relationships between its alliance portfolio diversity, its attractiveness as an alliance partner and its overall performance?

Confidentiality

The researchers will take the following steps to protect your identity during this study: (1) Each participant will be interviewed using video conference. No face to face interaction will happen to avoid any risk due to Covid-19; (2) The researchers will NOT record any session; (3) the researchers only will take some notes from the interviews without noting any personal information at all; (4) anonymity of participants is guaranteed: no information about names or companies of participants will be disclosed. No personally identifying information (e.g., your name, IP address, etc.) will be recorded, but we will ask general demographic information such as your age and gender; (5) the notes from the interviews will be fully anonymised and stored in the laptop of the Principal Investigator of this study and will be fully encrypted. These notes will be deleted once the analysis is conducted.

Voluntary Participation

Your participation in this research is voluntary. You may decide not to participate. You may discontinue participation at any time during the research activity.

I have read and understand the information above, and want to participate in this study.

If you click on "no", you will not be offered to take this study again.

You may take a screen shot of this page for your records.

- Yes
- No

For any question or clarification about this study you may contact the Principal Investigator Millie Pari on w1775750@my.westminster.ac.uk

WHAT IS THE IMPACT OF A FIRM'S ALLIANCE NETWORK POSITION ON ITS PERFORMANCE?

Study 1 Protocol
July 2021

Interview Duration: approx 25 Minutes
Interview Format: Teams

Thank you for your time and participation in this research. The purpose of this study is to refine my proposed conceptual model, which has been created based on a review of the alliance literature. Specifically, I am looking to understand:

1. Does the proposed conceptual model make sense to you from your business perspective?

2. Are the proposed research questions useful in practice?

The conceptual model is outlined below, together with definitions of each variable and the research questions. The remainder of this document is split into 3 sections of questions which I would be grateful if you could complete via email and then for discussion through a follow up call on Teams meeting at your convenience.
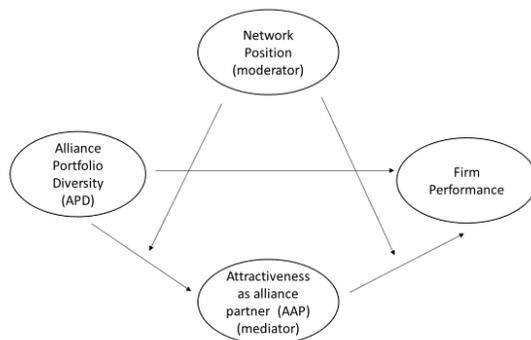
Network Position: concerns the influence of a firm within its network. Specifically, 1) its significance; how much of the networks resources flow through the firm and 2) its criticality; can the firm be replaced

Alliance Portfolio Diversity: The degree of variance in partners, functional purposes, and governance structures across the firm's alliance portfolio

Attractiveness as an Alliance Partner: The degree to which a firm meets the criteria of being an attractive alliance partner to another firm or institution

The key research questions are:

1.0 What are the key characteristics of an open or a closed 'alliance network position'?

2.0 What are the main antecedents, or components, of a firm's 'attractivess as an alliance partner'?

3.0 What are the main antecedents, or components, of a 'diverse aliance portfolio'?

4.0 What are the key market and financial performance metrics pursed through alliances in pharma?

5.0 How do the 3 variables within the model impact and influence each other and, ultiamtely, a firm's performance?

The primary contributions I hope to make through this research is to give companies an understanding of what makes a firm an attractive alliance partner, and to develop a self-assessment questionnaire for firms. Furthermore, I intend to further the current research on the importance of an alliance strategy, or network position, to a firm's performance.

I appreciate your input into this work.

Introduction (~3 minutes)

Please provide a brief overview of your professional background, emphasizing your experience with alliances both within and outside of the pharmaceutical industry
   a) What is your age range?
        35-40
        40-45
        45-50
        50-55
        55-60
        60-65
        65-70
   b) What is your gender?
        M
        F
        Prefer not to say
   c) What is your current role?
        Business Development
        Alliance Management
        New Product Planning
        Corporate Strategy
        Alliance Consultant
        Marketing
        Other (please specify)
   d) What sector are you in?
        Pharma (Big)
        Pharma (Med. sized)
        Bio tech
        University / Hospital
        Private / consultant

e) How many years of experience have you had in alliances?
    5-10
    10-15
    15-20
    20+
f) What types of alliances have you had experience in, primarily? (please select 1)
    Commercial (post PoC)
    Research and Development (pre PoC)
    Manufacturing
    Multi
    Other

Conceptual Model Variables (~20 minutes)

The purpose of this section is to explore the conceptual model proposed above and ascertain your understanding of the specific variables within it. I can discuss the model with you further during a telephone discussion or via email if you would prefer. Please also note the definitions of each variable above.

Please explain your thoughts around 'Alliance Portfolio Diversity'
   a) How would you define a diverse alliance portfolio? What would "high" Alliance Portfolio Diversity include?
   b) How aware are firms of their own alliance portfolio diversity? How important is a diverse alliance portfolio to your firm? Why?
   c) What do you believe is the current level of Alliance Portfolio Diversity in your firm; high, medium or low? Please explain.

Please explain your thoughts around 'Attractiveness as an Alliance Partner'
   a) What would render a firm an attractive alliance partner to other firms or institutions? What would "high" attractiveness include?
   b) How aware is your firm of their attractiveness? How important is it for your firm to be perceived as an attractive alliance partner? Why?
   c) How does your firm measure or assess it's Attractiveness as an Alliance Partner?
   d) What do you believe is your firm's current Attractiveness as an Alliance Partner rating; 1 (low attractiveness) to 5 (high attractiveness)? Please explain.

Please explain your thoughts around 'Firm Performance'
   a) What is your firm ultimately aiming to achieve through its alliances? Are the aims different over the short and long term? How?
   b) How and when do you measure the impact of alliances to your firm?
   c) How important is alliance success to your firm's overall performance?

Please explain your thoughts around 'Network Position', which is further described below.

Closed network: (alternatively referred to as cohesive, redundant, prominent):

   • a completely closed network means that all of a firm's partners are also partners of each other

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- research suggests this position facilitates cooperation, sharing and access to resources that reinforces a firm's knowledge base

Open network: (alternatively referred to as sparse, nonredundant, entrepreneurial)

- a completely open network is one where a firm's partners have no alliances among themselves

- research suggests this position facilitates access to a range of resources that increase the diversity of the firm's knowledge base

a) How aware is your firm of their position within its alliance network? How important is this to your firm?
b) Based on the above explanation and considering your experience to date, what do you believe the implications of an "open" Network Position would be to your firm? Why?
c) To what degree have you experienced alliances operating within a "closed" network? Please outline some of those experiences
d) What do you believe the implications of an "closed" Network Position would be? Why?
e) What do you believe is your firm's Alliance Network Position?

Other (~2 minutes)

Based on the model and the research questions above, do you have any further comments or suggestions about the research?

WHAT IS THE MODERTING ROLE OF AN ALLIANCE STRATEGY?
Study 2 Protocol
August 2021

Introduction

My name is Millie Pari and I am a second year PhD candidate at the University of Westminster. This is an interview protocol to investigate the influence of a firm's alliance business model. This study has received approval from Research Ethics Committee of the University in coordination with my supervisors.

Along with this study protocol you will have received two other documents: a personal information sheet (PIS) and a consent form (CS). Please could you read and complete both before answering the questions within this questionnaire. All the data collected will be confidential and fully anonymized.

Please send your completed PIS and CS form, together with the responses to this questionnaire to me on w1775750@my.westminster.ac.uk. Please also feel free to get in touch should you have any questions.

Thank you for your time and participation in this research.

Interview Duration: approx 35 Minutes
Interview Format: Email followed by Teams or Phone disucssion

The purpose of this study is to explore the four variables listed below. The definitions of each of the variables are summarised below, however if you have any questions or would like to know more please do not hesitate to contact me.

Strategic Alliances: Inter-organisational collaborative arrangements whose purpose is to achieve the strategic targets of partners. This research will examine all commercial alliances, including those for market access purposes.

Alliance Portfolio Diversity: Variance in partners, functional purposes, and governance structures across the firm's alliance portfolio

Attractiveness as an Alliance Partner: The degree to which a firm meets the criteria of being an attractive alliance partner to another firm or institution

Alliance Performance: The overall performance of a firm's alliances to include both market and financial measures

Alliance Strategy: The degree to which a firm has a formalized alliance strategy, to include; an alliance design, alliance management, plans to use of a constellation of alliances and to build an internal alliance capability

The key intended contribution of this research is to give companies an understanding, through emperical research, of the value of having an alliance strategy.

I would be grateful if you could please complete the questions below via email and then for discussion through a follow up call on Teams meeting at your convenience.

Introduction (~3 minutes)

Please provide a brief overview of your professional background, emphasizing your experience with alliances both within and outside of the pharmaceutical industry

What is your age range?
- ☐ 35-40
- ☐ 40-45
- ☐ 45-50
- ☐ 50-55
- ☐ 55-60
- ☐ 60-65
- ☐ 65-70

What is your gender?
- ☐ M
- ☐ F
- ☐ Prefer not to say

What is your current role?
- ☐ Business Development
- ☐ Alliance Management
- ☐ New Product Planning
- ☐ Corporate Strategy
- ☐ Alliance Consultant
- ☐ Marketing
- ☐ Other (please specify)

What sector are you in?
- ☐ Pharma (Big)
- ☐ Pharma (Med. sized)
- ☐ Bio tech
- ☐ University / Hospital
- ☐ Private / consultant

How many years of experience have you had in alliances?
- ☐ 5-10
- ☐ 10-15
- ☐ 15-20
- ☐ 20+

What types of alliances have you had experience in, primarily? (please select 1)
- ☐ Commercial (post PoC)
- ☐ Research and Development (pre PoC)
- ☐ Manufacturing
- ☐ Multi
- ☐ Other

Exploring the Variables (~30 minutes)

Please explain your thoughts around 'Alliance Portfolio Diversity'
      i. What are the components of Alliance Portfolio Diversity? What would a highly diverse alliance portfolio have?
     ii. How does your firm measure or assess its alliance portfolio diversity?
    iii. If a firm has a highly diverse alliance portfolio, what impact might this have on their perceived attractiveness as an alliance partner? What components of diversity listed in 2.1 would impact its attractiveness the most?

Please explain your thoughts around 'Attractiveness as an Alliance Partner'
      i. What would render a firm an attractive alliance partner to other firms or institutions? What would "high" attractiveness include? Please put these factors in order of importance, the highest being the most important
     ii. How does your firm measure or assess its Attractiveness as an Alliance Partner?

Please explain your thoughts around 'Alliance Performance'
      i. What would make an alliance successful?
     ii. How do you measure the performance of your alliances? Which indicators do you use for assessing the market and financial impact on your alliances?

Please explain your thoughts around 'Alliance Strategy'
      i. What would an Alliance Strategy have, or include?
     ii. How would the presence or absence of an alliance strategy be measured? Would it be possible to measure the degree to which a clear and explicit strategy exists? If so, how?

What do you believe is the relationship between the variables outlined above?

Other (~2 minutes)

Would you be happy for the research author to contact you to discuss your answers further, either by email or phone?

WHAT IS THE MODERTING ROLE OF AN ALLIANCE STRATEGY?
Study 3 Protocol
January 2022

Introduction

My name is Millie Pari and I am a third year PhD candidate at the University of Westminster. This is a survey protocol to investigate the influence of a firm's alliance strategy. This study has received approval from Research Ethics Committee of the University in coordination with my supervisors.

Along with this study protocol you will have received two other documents: a personal information sheet (PIS) and a consent form (CS). Please could you read and complete both before answering the questions within this questionnaire. All the data collected will be confidential and fully anonymized.

Please send your completed PIS and CS form, together with the responses to this questionnaire to me on w1775750@my.westminster.ac.uk. Please also feel free to get in touch should you have any questions.

Thank you for your time and participation in this research.

Survey Duration: approx 35 Minutes
Format: Email

The purpose of this study is to further develop the research questionnare, the draft of which is below and was also emailed to you as an attachment. The definitions of each of the variables are summarised below, however if you have any questions or would like to know more please do not hesitate to contact me.

Strategic Alliances: Inter-organisational collaborative arrangements whose purpose is to achieve the strategic targets of partners. This research will examine all commercial alliances, including those for market access purposes.

Alliance Portfolio Diversity: Variance in partners, functional purposes, and governance structures across the firm's alliance portfolio

Attractiveness as an Alliance Partner: The degree to which a firm meets the criteria of being an attractive alliance partner to another firm or institution

Alliance Performance: The overall performance of a firm's alliances to include both market and financial measures

Alliance Strategy: The degree to which a firm has a formalized alliance strategy, to include; an alliance design, alliance management, plans to use of a constellation of alliances and to build an internal alliance capability

The key intended contribution of this research is to give companies an understanding, through emperical research, of the value of having an alliance strategy.

I would be grateful if you could please complete the questions below either via email and then for discussion through a follow up call on Teams meeting at your convenience.

Survey Questions

Introduction (~5 minutes)

Please provide a brief overview of your professional background, emphasizing your experience with alliances both within and outside of the pharmaceutical industry
What is your age range?
- ☐ 35-40
- ☐ 40-45
- ☐ 45-50
- ☐ 50-55
- ☐ 55-60
- ☐ 60-65
- ☐ 65-70

What is your gender?
- ☐ M
- ☐ F
- ☐ Prefer not to say

What is your current role?
- ☐ Business Development
- ☐ Alliance Management
- ☐ New Product Planning
- ☐ Corporate Strategy
- ☐ Alliance Consultant
- ☐ Marketing
- ☐ Other (please specify)

What sector are you in?
- ☐ Pharma (Big)
- ☐ Pharma (Med. sized)
- ☐ Bio tech
- ☐ University / Hospital
- ☐ Private / consultant

How many years of experience have you had in alliances?
- ☐ 5-10
- ☐ 10-15
- ☐ 15-20
- ☐ 20+

What types of alliances have you had experience in, primarily? (please select 1)
- ☐ Commercial (post PoC)
- ☐ Research and Development (pre PoC)
- ☐ Manufacturing
- ☐ Multi

☐ Other

Exploring the Questionnaire (~30 minutes)

Please complete the questionnaire below and then consider the following questions

1. Do you feel any questions are missing that would help address the overarching topic? Would these questions give a complete response to the overarching topic?

2. Are any of the questions duplicative? Can it be simplified in any way without losing the specificity of the questions?

3. Is the terminology and phrasing reflective of what is used within the industry and the area?

Topic		Question		Rating
1	With regards to your firm's Alliance Strategy, to what degree have the following questions been considered? *(Please rate on a scale of 1-7)*	1Ai	Why use an alliance, as opposed to relying on internal resources, acquiring a company, or buying services and products on the market?	
		1Aii	What is the scope of the alliance, that is, what is included and excluded? Which markets or products, technologies, and business systems does it include?	
		1Aiii	What are the criteria and methods for selecting a partner?	
		1Aiv	What are the options for structuring the alliance, and what effects will these structures have on governance and value sharing?	
		1Av	How should the alliance be negotiated, that is, what are the priorities, who should be on the negotiating team, how will the relationship be affected by bargaining, and so on?	
		1Avi	What are the partner objectives and how can the alliance be designed and then managed to ensure it is mutually beneficial?	
		1Bi	How should the relationship be launched, that is, what should be done in the first 30 to 180 days?	
		1Bii	What culture do we want to promote within the alliance and how does this sit with each partners culture?	
		1Biii	What is the process for making decisions in the alliance when issues arise that have not been resolved in advance, as they surely will?	
		1Biv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?	
		1Bv	How will the performance of the alliance and the relationship between the parents be measured and monitored, and how will these measures be linked to individual incentives?	

		1Bvi	What is the process for adjusting the alliance design (or even terminating the alliance) as the partners accumulate experience working together?	
		1Bvii	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	
		1Ci	Where in the business value chain and in the market space of the company should the alliances be formed, how many alliances should there be, and of what type?	
		1Cii	What should be the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?	
		1Ciii	How will interactions among alliances of different divisions be identified and managed?	
		1Civ	How should our firm's multiple linkages be structured; for example, should there be a loose network, a stand-alone consortium, or an equity joint venture?	
		1Cv	How will our firm's constellation compete with rival constellations and to whom will added value ultimately flow?	
		1Di	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?	
		1Dii	What skills, human resources, processes, tools, and systems are needed in each area?	
		1Diii	How centralized or decentralized and how formal or informal should the alliance capability be?	
		1Div	How will our firm capture and disseminate learning from our own experience with alliances?	
		1Dv	What will encourage incorporation of alliance thinking into the general management of each business?	
		1Ei	How is the alliance strategy communicated and reviewed?	
2	With regards to your firm's Previous Alliance Performance, please consider the following. *(Please rate on a scale of 1-7)*	2Ai	How far is the firm satisfied with the overall performance of the alliance?	
		2Aii	To what degree were each of the firm's alliance goals fulfilled?	
		2Aiii	To what degree were each of the partner's alliance goals fulfilled?	
		2Aiv	How positive or negative are the net side effects of the alliance to the firm?	
		2Av	How effectively were issues resolved between the firm and the alliance partner?	

		2Avi	How effective was the decision making across the alliance?	
		2Bi	Longevity measure: how many years have elapsed between the moment the alliance was formed and the moment it was terminated? If the alliance is still operating; how many years have elapsed between the moment the alliance was formed and today?	
		2Bii	Contractual changes measure: how many changes has there been in ownership structure or to the alliance contract?	
3	With regards to your firm's Attractiveness as Alliance Partner, please consider the following. *(Please rate on a scale of 1-7)*	3Ai	What are the firm's financial assets?	
		3Aii	What are the firm's overall foundational capabilities?	
		3Aiii	What are the firm's overall unique capabilities?	
		3Aiv	What is the firm's market access in relation to an alliance you wish to make?	
		3Av	What are the firm's technical capabilities in relation to an alliance you wish to make?	
		3Avi	What are the firm's managerial capabilities and reputation?	
		3Avii	How much investment is the firm willing and likely to give to the alliance?	
		3Bi	What is the firm's market knowledge?	
		3Bii	What is the firm's perception and reputation within the industry, in particular with regards to their adaptability and flexiblity?	
		3Biii	Is the firm perceived to be trustworthy?	
		3Biv	What are the firm's previous alliance experiences, and are these perceived externally to have been successful?	
		3Bv	Is the firm willing to share its experience?	
		3Bvi	Does the firm have an ability to acquire skills?	
		3Bvii	Does the firm have the skills to learn from alliance partners?	
		3Bviii	Is the firm willing and wanting to enter into a mutually beneficial partnership or are they wanting full control?	
4	With regards to your firm's Alliance Portfolio Diversity, please consider the following. *(Please rate on a scale of 1-7)*	4Ai	Has the firm entered in alliances with different underlying strategic motivations?	
		4Aii	Has the firm entered in alliances with partners with characteristics?	
		4Aiii	Has the firm entered in alliances with partners from different industries?	
		4Aiv	Has the firm entered in alliances with partners based in a different nation states?	
		4Av	Has the firm entered in alliances with partners from different organisations; e.g. Big/Small Pharma, Biotech, Universities, Hospitals etc?	

		4Bi	Has the firm entered in alliances providing differing functional activities across commercial, to include marketing, manufacturing, and distribution (i.e. exploitation activities)?	
		4Bii	Has the firm entered into alliances at different stages of their life cycle?	
		4Ci	Has the firm entered in alliances with different governance structures, e.g. non equity, equity, joint ventures?	

WHAT IS THE MODERTING ROLE OF AN ALLIANCE STRATEGY?
Study 4 Protocol
March 2022

Introduction

My name is Millie Pari and I am a final year PhD candidate at the University of Westminster. This is a focus group protocol to investigate the influence of a firm's alliance strategy. This study has received approval from Research Ethics Committee of the University in coordination with my supervisors.

Along with this study protocol you will have received two other documents: a personal information sheet (PIS) and a consent form (CS). Please could you read and complete both before answering the questions within this questionnaire. All the data collected will be confidential and fully anonymized.

Please send your completed PIS and CS form, together with the responses to this questionnaire to me on w1775750@my.westminster.ac.uk. Please also feel free to get in touch should you have any questions.

Thank you for your time and participation in this research.

Focus Group Duration: approx 45 Minutes
Format: Teams Meeting

The purpose of this study is to finalise the research questionnare, the draft of which is below and was also emailed to you. The definitions of each of the variables are summarised below, however if you have any questions or would like to know more please do not hesitate to contact me before the focus group.

Strategic Alliances: Inter-organisational collaborative arrangements whose purpose is to achieve the strategic targets of partners. This research will examine all commercial alliances, including those for market access purposes.

Alliance Portfolio Diversity: Variance in partners, functional purposes, and governance structures across the firm's alliance portfolio

Attractiveness as an Alliance Partner: The degree to which a firm meets the criteria of being an attractive alliance partner to another firm or institution

Alliance Performance: The overall performance of a firm's alliances to include both market and financial measures

Alliance Strategy: The degree to which a firm has a formalized alliance strategy, to include; an alliance design, alliance management, plans to use of a constellation of alliances and to build an internal alliance capability

The key intended contribution of this research is to give companies an understanding, through emperical research, of the value of having an alliance strategy.

I would be grateful if you could please come prepared to discuss the follwing questions, and look forward to discussing next week.

Introduction

Please provide a brief overview of your professional background, emphasizing your experience with alliances both within and outside of the pharmaceutical industry
What is your age range?

- ☐ 35-40
- ☐ 40-45
- ☐ 45-50
- ☐ 50-55
- ☐ 55-60
- ☐ 60-65
- ☐ 65-70

What is your gender?

- ☐ M
- ☐ F
- ☐ Prefer not to say

What is your current role?

- ☐ Business Development
- ☐ Alliance Management
- ☐ New Product Planning
- ☐ Corporate Strategy
- ☐ Alliance Consultant
- ☐ Marketing
- ☐ Other (please specify)

What sector are you in?

- ☐ Pharma (Big)
- ☐ Pharma (Med. sized)
- ☐ Bio tech
- ☐ University / Hospital
- ☐ Private / consultant

How many years of experience have you had in alliances?

- ☐ 5-10
- ☐ 10-15
- ☐ 15-20
- ☐ 20+

What types of alliances have you had experience in, primarily? (please select 1)

- ☐ Commercial (post PoC)
- ☐ Research and Development (pre PoC)
- ☐ Manufacturing
- ☐ Multi
- ☐ Other

1. Do you agree with the proposal made to address the two outstanding issues highlighted below?

Unresolved Issue		Proposal to address
1.	The definition of alliance performance is not clear	The definition of alliance performance has been made clearer through the changes made to the questions
2.	A firm's Alliance Strategy and their Attractiveness as an Alliance Partner would depend on who the potential partner was	Ask respondents to consider the same alliance across all topics within the questionnaire

The developed questionnaire can be found below.

Topic		Category	Question	
1.	With regards to your firm's Alliance Strategy, to what degree have the following questions been considered? *(Please rate on a scale of 1-7)*	Design of an alliance	1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?
			1Aii	What is the goal of the alliance? As such, what is included and excluded? Which markets or products, technologies, and business systems does it include?
			1Aiii	What are the criteria for selecting a partner?
			1Aiv	What are the options for structuring the alliance, and what would inform selection of each option?
			1Av	How should the alliance be negotiated and by who?
		Management of an Alliance	1Bi	What might the partner's stated and implied objectives be? How can the alliance be designed and managed to ensure it is mutually beneficial?
			1Bii	What should be done in the first 30 to 180 days?
			1Biii	What culture do we want to promote within the alliance?
			1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?
			1Bv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?
			1Bvi	How will escalations be resolved, and by who?
			1Bvii	How will the performance of the alliance and the relationship between the partners be measured? How will these measures be linked to individual incentives?
			1Bviii	What is the criteria and process for adjusting or terminating the alliance?
		Design and Management of an Alliance Constellation	1Ci	Which alliances are required to achieve our goals?
			1Cii	What is the relationship among the various alliances and partners in the constellation, or network? What position should be taken within the constellation?
			1Ciii	How will interactions among alliances of different divisions be managed?
			1Civ	How will our constellation of alliances compete, and with who?
			1Cv	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?

		Development of an Internal Alliance Capability	1Di	What skills, human resources, processes, tools, and systems are needed in each area?
			1Dii	How will our firm capture and disseminate learning from our own experience with alliances?
			1Diii	What will encourage incorporation of alliance thinking into the business?
		Alliance Strategy Communication	1Ei	Who needs to know about our alliance strategy?
			1Eii	What does the firm want to be known for as an alliance partner?
2	With regards to your firm's Previous Alliance Performance, please consider the following. *(Please rate on a scale of 1-7)*	Alliance Outcomes	2Ai	How satisfied was the firm with the overall performance of the alliance?
			2Aii	Was the partnering firm satisfied with the overall performance of the alliance?
			2Aiii	To what degree were the firm's alliance goals fulfilled?
			2Aiv	To what degree were the partner's alliance goals fulfilled?
		Operational Measures	2Bi	How effectively were issues resolved between the firm and the alliance partner?
			2Bii	How effective was the decision making across the alliance?
			2Biii	Were adjustments made to the alliance as and when necessary?
3	With regards to your firm's Attractiveness as Alliance Partner, please consider the following. *(Please rate on a scale of 1-7)*	Hard elements	3Ai	How strong are the firm's financial assets?
			3Aii	How strong are the firm's overall foundational capabilities?
			3Aiii	To what degree has the firm got desired unique capabilities?
			3Aiv	How strong is the firm's geographical footprint?
			3Av	How strong is the firm's management's reputation?
			3Avi	How significant an investment is the firm willing and likely to give to the alliance?
		Soft elements	3Bi	How strong firm's market knowledge?
			3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?
			3Biii	To what degree is the firm perceived to be trustworthy?
			3Biv	How many successful alliances has the firm had?
			3Bv	To what degree is the firm willing to share its knowledge and experience?
			3Bvi	To what degree is the firm willing to learn from a partner?
4	With regards to your firm's Alliance Portfolio	Organisational type	4Ai	To what degree has the firm entered in alliances with different overarching goals?
			4Aii	To what degree has the firm entered in alliances with partners from different industries?

	Diversity, please consider the following. *(Please rate on a scale of 1-7)*		4Aiii	To what degree has the firm entered in alliances with partners based in a different nation states?
			4Aiv	To what degree has the firm entered in alliances with partners from different organisations, e.g. Big/Small Pharma, Biotech, Universities, Hospitals?
		Functional purpose	4Bi	To what degree has the firm entered in alliances providing differing commercial activities, e.g. marketing, manufacturing, and distribution?
			4Bii	To what degree has the firm entered into alliances at different stages of their life cycle, e.g. Pre Proof of Concept or Post Proof of Concept?
		Governance structure	4Ci	To what degree has the firm entered in alliances with different governance structures, e.g. non equity, equity, joint ventures?

Question formulation: summary of question considerations on draft questionnaire

Draft Questionnaire Topic		Draft Questionnaire Question	QL	G	S&S	SD	DBQ	NWQ	QO
1.	With regards to your firm's Alliance Strategy, to what degree have the following questions been considered? *(Please rate on a scale of 1-7)*	1Ai	Why use an alliance, as opposed to relying on internal resources, acquiring a company, or buying services and products on the market?				Y			
		1Aii	What is the scope of the alliance, that is, what is included and excluded? Which markets or products, technologies, and business systems does it include?							
		1Aiii	What are the criteria and methods for selecting a partner?					Y		
		1Aiv	What are the options for structuring the alliance, and what effects will these structures have on governance and value sharing?			Y				
		1Av	How should the alliance be negotiated, that is, what are the priorities, who should be on the negotiating team, how will the relationship be affected by bargaining, and so on?			Y		Y		
		1Avi	What are the partner objectives and how can the alliance be designed and then managed to ensure it is mutually beneficial?							Y
		1Bi	How should the relationship be launched, that is, what should be done in the first 30 to 180 days?	Y				Y		
		1Bii	What culture do we want to promote within the alliance and how does this sit with each partners culture?				Y			
		1Biii	What is the process for making decisions in the alliance when issues arise that have not been				Y			

			resolved in advance, as they surely will?							
		1Biv	How will operational decisions be made within the alliance, on both routine business and new strategic directions?							
		1Bv	How will the performance of the alliance and the relationship between the parents be measured and monitored, and how will these measures be linked to individual incentives?			Y				
		1Bvi	What is the process for adjusting the alliance design (or even terminating the alliance) as the partners accumulate experience working together?	Y		Y			Y	
		1Bvii	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?							Y
		1Ci	Where in the business value chain and in the market space of the company should the alliances be formed, how many alliances should there be, and of what type?			Y				
		1Cii	What should be the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?		Y					
		1Ciii	How will interactions among alliances of different divisions be identified and managed?			Y				
		1Civ	How should our firm's multiple linkages be structured; for example, should there be a loose network, a stand-alone consortium, or an equity joint venture?							

#	Section	ID	Question						
		1Cv	How will our firm's constellation compete with rival constellations and to whom will added value ultimately flow?		Y	Y			Y	
		1Di	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?							
		1Dii	What skills, human resources, processes, tools, and systems are needed in each area?							
		1Diii	How centralized or decentralized and how formal or informal should the alliance capability be?			Y				
		1Div	How will our firm capture and disseminate learning from our own experience with alliances?							
		1Dv	What will encourage incorporation of alliance thinking into the general management of each business?		Y					
		1Ei	How is the alliance strategy communicated and reviewed?							
2	With regards to your firm's Previous Alliance Performance, please consider the following. *(Please rate on a scale of 1-7)*	2Ai	How far is the firm satisfied with the overall performance of the alliance?		Y					
		2Aii	To what degree were each of the firm's alliance goals fulfilled?							
		2Aiii	To what degree were each of the partner's alliance goals fulfilled?							
		2Aiv	How positive or negative are the net side effects of the alliance to the firm?		Y					
		2Av	How effectively were issues resolved between the firm and the alliance partner?							
		2Avi	How effective was the decision making across the alliance?							

		2Bi	To what degree was the alliance maintained for as long as originally intended?								
		2Bii	To what degree were there appropriate amounts of changes in ownership structure or to the alliance contract?		Y	Y					
3	With regards to your firm's Attractiveness as Alliance Partner, please consider the following. *(Please rate on a scale of 1-7)*	3Ai	How strong are the firm's financial assets?								
		3Aii	How strong are the firm's overall foundational capabilities?								
		3Aiii	To what degree has the firm got desired unique capabilities?								
		3Aiv	How strong are the firm's market access in relation to an alliance you wish to make?				Y				
		3Av	How strong are the firm's technical capabilities in relation to an alliance you wish to make?				Y				
		3Avi	How strong are the firm's managerial capabilities and reputation?			Y					
		3Avii	How significant an investment is the firm willing and likely to give to the alliance?					Y			
		3Bi	How strong firm's market knowledge?								
		3Bii	How strong is the firm's perception and reputation within the industry, in particular with regards to their adaptability and flexiblity?					Y			
		3Biii	To what degree is the firm perceived to be trustworthy?								
		3Biv	How much experience does the firm have in alliance, and are these perceived externally to have been successful?					Y			
		3Bv	To what degree is the firm willing to share its experience?								

				1	2	3	4	5	6	7
		3Bvi	To what degree does the firm have an ability to acquire skills?					Y		
		3Bvii	To what degree does the firm have the skills to learn from alliance partners?							
		3Bviii	To what degree is the firm willing and wanting to enter into a mutually beneficial partnership?					Y		
4	With regards to your firm's Alliance Portfolio Diversity, please consider the following. *(Please rate on a scale of 1-7)*	4Ai	To what degree has the firm entered in alliances with different underlying strategic motivations?			Y				
		4Aii	To what degree has the firm entered in alliances with partners with different characteristics?							
		4Aiii	To what degree has the firm entered in alliances with partners from different industries?							
		4Aiv	To what degree has the firm entered in alliances with partners based in a different nation states?							
		4Av	To what degree has the firm entered in alliances with partners from different organisations?							
		4Bi	To what degree has the firm entered in alliances providing differing functional activities across commercial?		Y	Y				
		4Bii	To what degree has the firm entered into alliances at different stages of their life cycle?							
		4Ci	To what degree has the firm entered in alliances with different governance structures?							

Question formulation results: summary of changes as a result of question formulation considerations

Draft Questionnaire Question			Final Draft Questionnaire Question
1.	1Ai	Why use an alliance, as opposed to relying on internal resources, acquiring a company, or buying services and products on the market?	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?
	1Aiii	What are the criteria and methods for selecting a partner?	What are the criteria for selecting a partner?
	1Aiv	What are the options for structuring the alliance, and what effects will these structures have on governance and value sharing?	What are the options for structuring the alliance, and what effects will these structures have on governance and the partnership?
	1Av	How should the alliance be negotiated, that is, what are the priorities, who should be on the negotiating team, how will the relationship be affected by bargaining, and so on?	How should the alliance be negotiated and by who?
	1Avi	What are the partner objectives and how can the alliance be designed and then managed to ensure it is mutually beneficial?	Move to 1Bi
	1Bi	How should the relationship be launched, that is, what should be done in the first 30 to 180 days?	What should be done in the first 30 to 180 days?
	1Bii	What culture do we want to promote within the alliance and how does this sit with each partners culture?	What culture do we want to promote within the alliance? Does this desired culture differ to that of the partners?
	1Biii	What is the process for making decisions in the alliance when issues arise that have not been resolved in advance, as they surely will?	What is the process for making decisions in the alliance when issues arise that have not been resolved in advance?
	1Bv	How will the performance of the alliance and the relationship between the parents be measured and monitored, and how will these measures be linked to individual incentives?	How will the performance of the alliance and the relationship between the parents be measured? How will these measures be linked to individual incentives?
	1Bvi	What is the process for adjusting the alliance design (or even terminating the alliance) as the partners accumulate experience working together?	What is the criteria and process for adjusting or terminating the alliance?
	1Bvii	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	Move after 1Bii
	1Ci	Where in the business value chain and in the market space of the company should the alliances be formed, how	Where in the business should the alliances be formed, how many alliances should there be, and of what type?

		many alliances should there be, and of what type?	
	1Cii	What should be the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?	What is the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?
	1Ciii	How will interactions among alliances of different divisions be identified and managed?	How will interactions among alliances of different divisions be managed?
	1Cv	How will our firm's constellation compete with rival constellations and to whom will added value ultimately flow?	How will the alliance compete and who will receive value from it?
	1Diii	How centralized or decentralized and how formal or informal should the alliance capability be?	How centralized or decentralized should the alliance capability be?
	1Dv	What will encourage incorporation of alliance thinking into the general management of each business?	What will encourage incorporation of alliance thinking into the business?
2	2Ai	How far is the firm satisfied with the overall performance of the alliance?	How satisfied was the firm with the overall performance of the alliance?
	2Aiv	How positive or negative are the net side effects of the alliance to the firm?	How positive or negative were the net side effects of the alliance to the firm?
	2Bii	To what degree were there appropriate amounts of changes in ownership structure or to the alliance contract?	Were adjustment made to the alliance as and when necessary?
	3Aiv	How strong are the firm's market access in relation to an alliance you wish to make?	How strong is the firm's market access?
	3Av	How strong are the firm's technical capabilities in relation to an alliance you wish to make?	How strong are the firm's technical capabilities?
	3Avi	How strong are the firm's managerial capabilities and reputation?	How strong are the firm's management capabilities and reputation?
	3Bii	How strong is the firm's perception and reputation within the industry, in particular with regards to their adaptability and flexiblity?	To what degree is the firm perceived to be adaptable with regards to alliances?
	3Biv	How much experience does the firm have in alliance, and are these perceived externally to have been successful?	How many successful alliances has the firm had?
	3Bvi	To what degree does the firm have an ability to acquire skills?	To what degree can the firm acquire new skills?
	3Bviii	To what degree is the firm willing and wanting to enter into a mutually beneficial partnership?	To what degree is the firm willing to enter into a mutually beneficial partnership?
4	4Ai	To what degree has the firm entered in alliances with different underlying strategic motivations?	To what degree has the firm entered in alliances with different underlying strategic motivations?

	4Bi	To what degree has the firm entered in alliances providing differing functional activities across commercial?	To what degree has the firm entered in alliances providing differing commercial activities?

Empirical Study 3 - Summary of changes made

Final Draft Questionnaire Topic		Final Draft Questionnaire Question		Empirical Study 3 question feedback
1. With regards to your firm's Alliance Strategy, to what degree have the following questions been considered? *(Please rate on a scale of 1-7)*		1Ai	Why use an alliance, as opposed to internal resources, acquiring a company, or buying services and products on the market?	No change
		1Aii	What is the scope of the alliance, that is, what is included and excluded? Which markets or products, technologies, and business systems does it include?	What is the goal of the alliance? As such, what is included and excluded? Which markets or products, technologies, and business systems does it include?
		1Aiii	What are the criteria for selecting a partner?	No change
		1Aiv	What are the options for structuring the alliance, and what effects will these structures have on governance and the partnership?	What are the options for structuring the alliance, and what would inform selection of each option? See also survey themes
		1Av	How should the alliance be negotiated and by who?	No change
		1Bi	What are the partner objectives and how can the alliance be designed and then managed to ensure it is mutually beneficial?	What might the partner's stated and implied objectives be? How can the alliance be designed and managed to ensure it is mutually beneficial?
		1Bii	What should be done in the first 30 to 180 days?	No change
		1Biii	What culture do we want to promote within the alliance? Does this desired culture differ to that of the partners?	What culture do we want to promote within the alliance?
		1Biv	What are the alliance 'working principles' or rules, to ensure trust is developed and maintained?	No change
		1Bv	What is the process for making decisions in the alliance when issues arise that have not been resolved in advance?	How will escalations be resolved, and by who?
		1Bvi	How will operational decisions be made within the alliance, on both routine business and new strategic directions?	No change – move up before 1Bv
		1Bvii	How will the performance of the alliance and the relationship	See survey themes

			between the parents be measured? How will these measures be linked to individual incentives?	
		1Bviii	What is the criteria and process for adjusting or terminating the alliance?	No change
		1Ci	Where in the business should the alliances be formed, how many alliances should there be, and of what type?	Which alliances are required to achieve our goals?
		1Cii	What is the relationship among the various alliances and partners in the constellation? What position should be taken within the constellation?	See overarching changes
		1Ciii	How will interactions among alliances of different divisions be managed?	No change
		1Civ	How should our firm's multiple linkages be structured; for example, should there be a loose network, a stand-alone consortium, or an equity joint venture?	Remove
		1Cv	How will the alliance compete and who will receive value from it?	How will our constellation of alliances compete, and with who?
		1Di	Who in our firm should be responsible for specific tasks in alliance design, alliance management, and in coordinating the alliance constellation?	No change
		1Dii	What skills, human resources, processes, tools, and systems are needed in each area?	No change
		1Diii	How centralized or decentralized should the alliance capability be?	Remove
		1Div	How will our firm capture and disseminate learning from our own experience with alliances?	No change
		1Dv	What will encourage incorporation of alliance thinking into the business?	See survey themes
		1Ei	How is the alliance strategy communicated and reviewed?	Who needs to know about our alliance strategy?
2	With regards to your firm's Previous	2Ai	How satisfied was the firm with the overall performance of the alliance?	See survey themes

	Alliance Performance, please consider the following. *(Please rate on a scale of 1-7)*	2Aii	To what degree were each of the firm's alliance goals fulfilled?	To what degree were the firm's alliance goals fulfilled?
		2Aiii	To what degree were each of the partner's alliance goals fulfilled?	To what degree were the partner's alliance goals fulfilled?
		2Aiv	How positive or negative were the net side effects of the alliance to the firm?	See survey themes
		2Av	How effectively were issues resolved between the firm and the alliance partner?	No change
		2Avi	How effective was the decision making across the alliance?	No change
		2Bi	To what degree was the alliance maintained for as long as originally intended?	Remove
		2Bii	Were adjustments made to the alliance as and when necessary?	No change
3	With regards to your firm's Attractiveness as Alliance Partner, please consider the following. *(Please rate on a scale of 1-7)*	3Ai	How strong are the firm's financial assets?	No change
		3Aii	How strong are the firm's overall foundational capabilities?	See survey themes
		3Aiii	To what degree has the firm got desired unique capabilities?	See survey themes
		3Aiv	How strong is the firm's market access?	How strong is the firm's geographical footprint? See survey themes
		3Av	How strong are the firm's technical capabilities?	See survey themes
		3Avi	How strong are the firm's management capabilities and reputation?	See survey themes
		3Avii	How significant an investment is the firm willing and likely to give to the alliance?	No change
		3Bi	How strong firm's market knowledge?	No change
		3Bii	To what degree is the firm perceived to be adaptable with regards to alliances?	No change
		3Biii	To what degree is the firm perceived to be trustworthy?	No change
		3Biv	How many successful alliances has the firm had?	No change
		3Bv	To what degree is the firm willing to share its experience?	To what degree is the firm willing to share its knowledge and experience?
		3Bvi	To what degree can the firm acquire new skills?	Remove

		3Bvii	To what degree does the firm have the skills to learn from alliance partners?	To what degree is the firm willing to learn from a partner?
		3Bviii	To what degree is the firm willing to enter into a mutually beneficial partnership?	Remove
4	With regards to your firm's Alliance Portfolio Diversity, please consider the following. *(Please rate on a scale of 1-7)*	4Ai	To what degree has the firm entered in alliances with different underlying strategic motivations?	To what degree has the firm entered in alliances with different overarching goals?
		4Aii	To what degree has the firm entered in alliances with partners with different characteristics?	See survey themes
		4Aiii	To what degree has the firm entered in alliances with partners from different industries?	See overarching changes
		4Aiv	To what degree has the firm entered in alliances with partners based in a different nation states?	No change
		4Av	To what degree has the firm entered in alliances with partners from different organisations?	See overarching changes
		4Bi	To what degree has the firm entered in alliances providing differing commercial activities?	See overarching changes
		4Bii	To what degree has the firm entered into alliances at different stages of their life cycle?	See overarching changes
		4Ci	To what degree has the firm entered in alliances with different governance structures?	See overarching changes

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