

Measuring the influence of M&A knowledge flow on open innovation

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Abstract

The concept of open innovations has been around for some time with recent literature seeking to understand how this phenomenon takes place in practice and its benefits. Dahlander and Gann (2010) have built on the concept of purposive knowledge flows and the types of open innovation that occur as a result. This study saw a business and academic need to explore what the influences are from inter-organisational knowledge flows due to a merger or acquisition (M&A) on open innovation.

This research used a multiple case study approach with firms that have undertaken M&A transactions, in order to extract themes or influences on open innovation. These influences are determined as either negatively or positively impactful on open innovation. Four key subsets of open innovation – acquiring; sourcing; revealing; and selling - enabled a deeper understanding of M&A external and internal knowledge flow influences and how they impact on the firm's open innovation activities.

Keywords

Open innovation, knowledge flows, mergers & acquisitions, acquiring, sourcing, revealing, innovation

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction

This research paper seeks to provide a deeper understanding of innovation, specifically open innovation, through the lens of merger and acquisition (M&A) transactions. The main objective is to understand how open innovation is influenced by interorganisational knowledge transfer during the merger and acquisition transaction. The strategic intent behind the M&A will also be explored as a means to categorise and compare these influences. This exploration will assist firms who engage in these transactions to maximise their innovation objectives by managing their M&A knowledge activities, in the pursuit of growth. Furthermore, this research will contribute to the developing literature around open innovation theory by assessing inward and outward knowledge flows that take place during transactions. This topic looks at the research problem from the perspective of the M&A the transaction and its influences on open innovation in order to add to theory building within the extant literature. This chapter will reinforce the need for the research by identifying the problem within both literature and the commercial environment. It will develop the background to the aims and scope of the research.

1.1 Definition of the problem

Over the past five years M&A transactions have seen an increasing trend globally, reflecting some of the highest number of transactions and transaction values (Institute of Mergers Acquisitions and Alliances, 2021). While M&A is certainly not a new business tool used to try and create greater value, their rising rate is indicative of firms using these transactions as a part of their growth strategy. Aside from the financial gain and market competitiveness that larger firms seek from M&A (Cefis & Marsili, 2015), there has been a surge in research related to innovation activities and performance, as a consequence of M&A (Dezi, Battisti, Ferraris, & Papa, 2018). The reason for this is based on the understanding that innovation is critical to building higher returns and survival into their future (Dezi, Ferraris & Santoro, 2017). The academic interest from scholars in trying to unpack the link between these two fields has been vast, revealing positive impacts from a Resource Based View (Ahuja & Katila, 2001) and an economies of scale perspective, through exploitation (Entezarkheir & Moshiri, 2018). It is then explicable to see the increase of M&A as a growth lever for firms in the future. Therefore, organisations that are engaged in M&A activities would have the need to understand the link to innovation within their strategic intent, which is one contribution this thesis makes to business practice.

A key component to the success of a M&A is the inter-organisational knowledge flow which is either used to gain new knowledge (explore) or leverage their existing knowledge (exploit) (Dunlap, McDonough III, Mudambi & Swift, 2016). There is an explicit link with M&A's and open innovation (OI) which is defined as a paradigm in which external and internal knowledge or ideas flow in and out of the business freely (Chesbrough, 2003). Despite a clear overlap between the necessity of knowledge within M&A and OI, there is little research into the impact on innovation in this way and this presents the theoretical gap for this research paper. This is important to the field as it enables firms to enhance their strategic M&A choices and may benefit firms currently looking to engage in OI activities. Furthermore, it may stimulate other areas of research within open innovation by contributing a unique perspective through the phenomena of M&A.

Although there are complexities within both the process of M&As and innovation activities, involving many facets of the business, the benefits of M&A knowledge resources are well studied, specifically through technologically driven M&A's, with evidence to suggest that they increase innovation levels (Han, Jo & Kang, 2018). Hence, this study will define innovation as a new resource that has been implemented within the organisation or made available to any potential users (Gault, 2018), internally or externally, which enable firm competitiveness and future survival (Dezi et al., 2017) A resource would include any knowledge, ideas, products (goods and services) or processes. Despite the apparent benefits of innovation, organisations involved in M&A do not generally take innovation into account as a measure of their performance, skewing towards the economic, cost, and competitive benefits when structuring the deal (Eaton, Liu, & Officer, 2021). There seem to be disparities in the literature around the link between M&A and innovation, which may be attributed to the varying definitions and measurements for innovation. Open innovation as defined by Dahlander and Gann (2010), who created a conceptual framework in order to assist with a clearer exploration of M&A's impact on innovation. This paper posits that the disparity above presents a gap within the research that needs to be explored: what influence does the flow of M&A knowledge have on open innovation?

Bower (2001) presents the framework which will be used to assess types of M&A strategies, however, there is no set parameter on how to measure innovation outcomes. The causes of M&A are generally to gain market insights and knowledge or drive firm value for growth (Dezi et al., 2018). Given that firms with these strategic intents rely on

a broader base of ideas and inputs to succeed, open innovation (as a category of broader innovation) becomes a critical component in ensuring that the necessary knowledge and intellectual capital that is sought after by the firm is obtained.

1.2 Purpose statement

The research seeks to contribute to the existing academic literature by providing an additional assessment of innovation, specifically OI, from M&A knowledge flow given differing strategies. This, in turn, might help to connect some of the differences within the literature findings. In a more integrated and accessible global business world, firms may find advantages from opening their innovation which may differ in terms of value creation (Oltra, Flor, & Alfaro, 2018). From a practice perspective, firms and professionals who engage in M&A may use this research as insights into how knowledge flows during their transactions affect open innovation performance as part of the process of integrations and due diligence. It additionally could assist firms to assess the strategic best fit M&A for their innovation needs. This may be particularly beneficial when the acquiring firm is seeking strategic growth by using open innovative means. Additionally, the importance of understanding this link presents benefits for M&A businesses that may partake, currently or in future, in open innovation activities.

1.3 Research objectives

The main aim of this research is to:

1. Understand what influences M&A knowledge flow have on inbound and outbound open innovation within the firm.
2. Assess the influences of M&A knowledge flow on open innovation as an entire paradigm, taking into account their strategic intent.

1.4 Conclusion

There is a link between innovation and M&A transactions in that they both sought as growth tools which a business could use. Further to this, M&A encourage knowledge flows between organisations which may have an influence on innovation, specifically open innovation. From an academic perspective there will be value in furthering the exploration of innovation research through researching open innovation and from a business perspective, firms ought to understand the implications of their transactions on innovation, in the pursuit of growth.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

There are two main pillars of literature embedded within this research: M&A and innovation. This review will look at the extant literature individually within these two fields and finally provide an assessment of the literature in relation to open innovation within both these areas. There is a wealth of work within each of the fields, so this literature review seeks to try and provide insights into each in order to isolate the relevance of this research in terms of the literature. Section 2.2 deals with the merger and acquisition literature in order to try and pinpoint focal points for the research in relation to knowledge flow. Sections 2.3 and 2.4 speak to innovation and open innovation respectively; giving an understanding of the complexity of this area of research as well as the definitions to be used in addressing inbound, outbound and to a lesser extent coupled open innovation (a combination of both). The review closes with a combination of all the main areas of research in section 2.5 to understand where the theoretical overlaps are and to strengthen the motivation for this research.

2.2 M&A & knowledge flow

While the M&A literature spans across multiple fields, there has been a clear split between the corporate and management view, which looks at the strategic and organisational impacts of M&A (Cartwright & Schoenberg, 2006; C. Cheng & Yang, 2017a), and the economic and financial literature, which accounts for consequences to the various stakeholders (Arvanitis & Stucki, 2015). This research will focus predominately on the former with the aim to explore the strategic and management impacts of M&A on innovation.

Acquisitions are generally deemed to be an effective strategy in a firm's pursuit for growth (Ahuja & Katila, 2001; Dezi et al., 2018). Bower (2001) indicates that, despite the noise within the literature, M&As take place for only a few reasons including: overcapacity, geographical expansion, extended products or markets, research and development (R&D) and converging industry. He combined both the resource and process views of the firm to M&A and suggested that these classifications are based on the strategic levers which firms intend on utilising. This illuminates the strategic rationale behind M&A transactions in a simple manner and can enable a clearer exploration of how knowledge flow intentions have a varying impact on open innovation.

The research generally takes on a technological or non-technological focus, with the technological focus taking prominence. This could be attributed to technology being a critical success factor to firm performance and indeed the merger or acquisition is generally sought after for the ability to increase the acquiring firms' technological capabilities (Sears & Hoetker, 2014) or vice versa. Knowledge acquisition is firmly planted as a contributor within the technological M&A literature and suggests that the knowledge allows for access to technologies which assists in creating capabilities and quicker entry into the market (Ferraris, Santoro, & Bresciani, 2017; Shin, Han, Marhold, & Kang, 2017). Furthermore, the vast literature on knowledge emphasises it as a critical resource for competitive advantage and long-term performance (Berraies, Hamza, & Chtioui, 2021).

Ahuja and Katila (2001) have generally set the pace for M&A knowledge impacts, asserting that an acquiring firm gains not only the internal knowledge of the acquired but a new external knowledge base that is understood and used by the acquired firm. The research has subsequently found that the success of an acquisition is also dependent on the extent that the knowledge of the acquiring firm is relevant and applicable to the firm being bought (Sears & Hoetker, 2014). Further to this, the knowledge compatibility of the firms is shown to be a critical component to effective knowledge transfers, where a lower compatibility would mean less effective knowledge flow (Wang, Xi, Xie, & Zhao, 2017).

Although the literature makes the distinction between explicit and implicit (tacit) knowledge with further distinctions into acquired, transferred, and integrated forms (Calipha, Brock, Rosenfeld, & Dvir, 2018), knowledge flow for this research will refer to explicit forms of knowledge transfer along all various types. Berraies et al. (2021) describe explicit knowledge as a categorised knowledge which is easily shared through written or spoken means. Therefore, knowledge flow will be defined as the process of incorporating internal and external explicit knowledge in order to provide and enhance "experiences or information" (del Vecchio, Secundo, Rubino, Garzoni, & Vrontis, 2019, p.980). This is a relevant distinction away from knowledge management which will not be explored in this research. The explicit nature of knowledge and to what end a firm uses internal or externally based knowledge is the fundamental linkage in the literature between knowledge flow and open innovation.

2.2.1 External & Internal Knowledge

Firms seek to maximise or increase their existing knowledge for various reasons. One of the ways in which they do this is by acquiring external knowledge (Berraies et al., 2021) through M&A or other means – which from an M&A perspective becomes internal knowledge. One of the reasons that the literature provides for this is the need for firms to enhance or renew their internal knowledge base (Díaz-Díaz & de Saá -Pé Rez, 2014). Doubling down on internal resources through new ideas generated from an acquisition could eliminate the time and expense of outdated internal practices (Pinarello, Trabucchi, Frattini, & Latilla, 2021) by ensuring that there are synergies related to the knowledge flows. An opposing view is that sources of external knowledge could be more cost-effective way of obtaining knowledge (Díaz-Díaz & de Saá -Pé Rez, 2014).

The interplay of external and internal knowledge with knowledge flow can be reflected through the use of networks, relationships with stakeholders, skills, and internal staff attitudes (del Vecchio et al., 2019). Leveraging these internal and external knowledge sources would require the use of knowledge management interventions (Natalicchio, Ardito, Savino, & Albino, 2017) which is discussed in the literature as part of a separate body of work.

2.3 Innovation

The importance of innovation is supported by the wealth of literature on the subject, which continues to seek the essence of what defines innovation and its various outcomes or measurements (Dziallas & Blind, 2019; Kline & Rosenberg, 2010). The overarching theme within the existing body of work reflects the complexity of innovation practices and the difficulties associated with i) a lack of uniformity in defining innovation, which would allow for a broader application to various fields (Gault, 2018) and ii) the various factors that need to be accounted for when assessing innovation practices, in order to mitigate the risk of oversimplification of this complex phenomenon (Kline & Rosenberg, 2010). This has been a step away from previous literature which viewed innovation as mainly a technologically driven practice (Anzola-Román, Bayona-Sáez, & García-Marco, 2018).

While innovation is scattered between various other areas of interest, it seems there is a growing interest in its evolution into more specific disciplines. This is evidenced by the various branches within the innovation literature including process product and marketing innovation (Demircioglu, Audretsch, & Slaper, 2019), disruptive innovation

(Christensen, Raynor, & McDonald, 2015) and open innovation (Chesbrough, 2003). The manner in which scholars have dealt with these varying types is non-uniform given its broad applicability across several areas including economics, management studies, engineering. Some scholars like Prange and Schlegelmilch (Prange & Schlegelmilch, 2018) have attempted to combine all these facets in order to create a more dynamic view by an “innovation cube” of different types of innovation in terms of three impact factors: strategy, change and market shown in Figure 1.

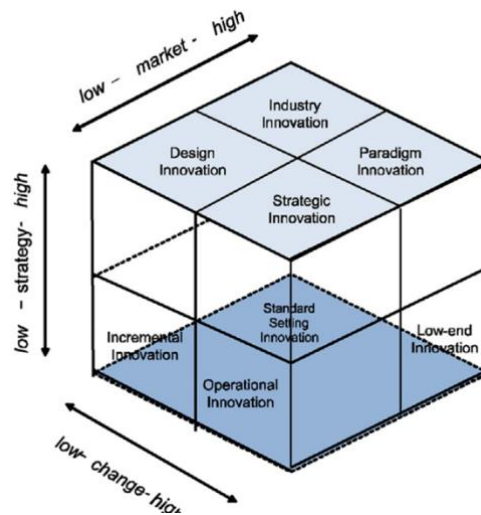


Figure 1: Innovation cube (Prange & Schlegelmilch, 2018)

This is relevant to the research as it re-emphasises the dynamic nature of innovation and the need to explore open innovation and M&A given that they arguably weave through many of these innovation types. Furthermore, it reinforces that the strategy may dictate the innovation method selected by a firm. The treatment of innovation in its varying forms seems to be either as dependent variable or as an independent variable. We see the latter focused on innovation outcomes such as performance and efficiencies whereas the former looks at how other factors impact innovation, which would be the preferred method that this research adopts. Given the inconsistencies with quantifying innovation through measurements like patents (Demircioglu et al., 2019), a contribution that this research attempts to make is researching a specific type of innovation in order to find more clarity for a smaller piece within innovation rather than adding to the existing scattered views of innovation as a whole.

Innovation is widely used as a solution to an array of social and business issues because it is seen to enable economic growth and helps to initiate change (OECD, 2018). From a business perspective the application of innovation is directly related to product, production, organisational and marketing/communication (Gault, 2018). Though this

research accepts a broader definition of innovation, it may encapsulate any of these areas within the open innovation paradigm. Like the M&A research, some of the innovation literature is described as either exploitative and explorative with the distinction being the leveraging of existing or new knowledge respectively (Guan & Liu, 2016).

2.4 Open Innovation

A recent development area within the field of innovation has been open innovation (OI), where the current published papers are abounding (Dahlander, Gann, & Wallin, 2021). The concept of innovation capabilities being derived from outside the organisation had been around for an extended period, particularly sparked when firms started to look to the internet for new models of business (Magretta, 2002). A seminal piece of work around OI by Chesbrough (2003) initially described it as a paradigm in which external and internal knowledge or ideas flow in and out of the business freely. Chesbrough more recently amended this to account for varying business models and proposed that OI is a “distributed innovation process based on purposive managed knowledge flows...” dependant on the business model (Chesbrough, 2014). This link between knowledge flows and open innovation is made apparent in this literature, yet very little has been done to understand how these knowledge exchanges, through business mechanisms such as M&A impact OI.

This work has been expanded on by Dahlander and Gann (2021; 2010) in their review of the literature where they intimate that firms cannot innovate in isolation i.e. only through internal R&D. They further created a conceptual framework in order to classify open innovation through inbound and outbound OI, recognising that it was fragmented. This literature is the grounding framework which the research uses for further exploration and hence is briefly described. Inbound: acquiring is using the marketplace to gain inputs for innovation into the firm i.e. “acquiring expertise” (Dahlander & Gann, 2010) and inbound: sourcing is using external sources for their own innovation requirements. Outbound: selling refers to firms externalising their innovations to the marketplace such as licensing out their inventions, while outbound: revealing is when the firm freely shares its internal resources externally for indirect benefit (see Figure 2). The classification of these into pecuniary and non-pecuniary is used mainly to assess the advantages and disadvantages, however, this will not be considered within this research.

This lays a more defined guideline to build on and has successfully been used in subsequent literature as the means for more consistent OI analysis (Bruno Cassiman &

Valentini, 2016; Eftekhari & Bogers, 2015; West & Bogers, 2014). This research will remain open to all four forms of OI in order remain explorative to the entire paradigm while remaining agnostic to the pecuniary benefits – seeing it only a differentiator between OI types.

There has been a trend in the literature which focuses on closed versus open innovation (Felin & Zenger, 2014) with a recent move towards understanding the implications of OI on businesses along with the advantages and disadvantages of both inbound and outbound OI (Dahlander et al., 2021). The need for this move towards OI could be attributed to the rapidly changing business landscape from an access and technological perspective. More recent findings have justified this by asserting that OI influences more radical innovations, when compared to a closed innovation method (Cammarano, Michelino, & Caputo, 2019).

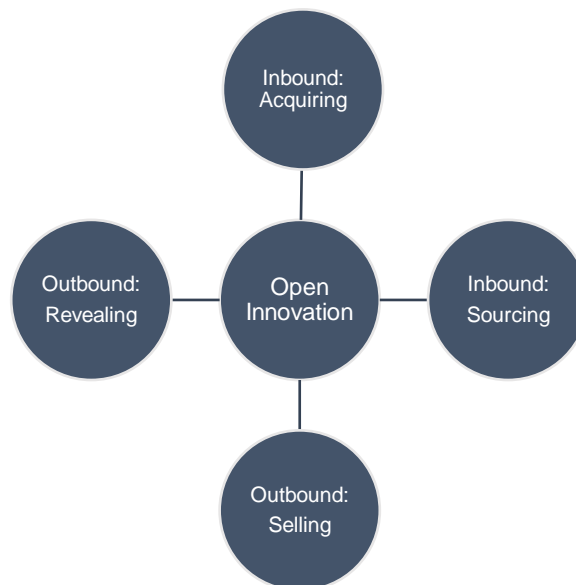


Figure 2: Forms of open innovation adapted from (Dahlander & Gann, 2010)

2.4.1 Inbound OI

Typically, the business literature refers to inbound open innovation from the perspective of collaboration for external knowledge gain through research or consultants (L. Cheng, Lyu, Su, & Han, 2020). Leveraging these external sources may help decrease the costs associated with insourcing innovative practices such as R&D cost (Pinarello et al., 2021) however they may hamper a firm’s internal innovation capabilities. This reiterates the previous literature’s perspective that there needs to be alignment with a firm’s business model and its innovation practices. R&D expenditure has also been shown to have a

positive moderating effect, with a marginal benefit to product innovation through the use of outsourcing externally (Bianchi, Croce, Dell'Era, Benedetto, & Frattini, 2016). This reaffirms that R&D expenditure for external sources brings positive influences to innovation but does not have a tipping point.

Much of the inbound research is around external relationships and networks. Some scholars have further suggested that an M&A transaction is itself a form of open inbound innovation (Mawson & Brown, 2016). This might indicate that organisations acquire entities with the sole purpose of expanding their expertise through acquiring an organisation which validates the need for the research. The literature does not consider what the reverse implications are from such a transaction i.e. the acquisition's empirical consequences on innovation separate to the intentions of the deal.

Some literature has delved into the impact of inbound OI on innovation performance (Moretti & Biancardi, 2020); however, these only briefly consider M&A transactions and also grapple with the concept of firm performance as it relates to open innovation from a quantitative perspective, despite unclear theoretical constructs. The literature does usefully assert that the extent of the external search a firm undertakes or the "search breadth" (Ardito, Petruzzelli, Dezi, & Castellano, 2020; Moretti & Biancardi, 2020) indicates some positive effects on innovation and performance. Furthermore, firms tend to exploit this paradigm when the need for specific knowledge arises such as technological knowledge or market knowledge. These M&A transactions are noted as an act of open innovation in themselves and encouraging unique knowledge flows, this depends on the specifics of the transaction. That being said, there is some recent literature which posits that knowledge flow positively impacts asset specificity i.e. whether it is able to be redeployed to alternative, and act more dynamically under open innovation (Zheng, Jiao, Gu, Moon, & Yin, 2021). The argument made is that resourcing externally could positively influence open innovation activities. Therefore, it would be expected that M&A knowledge flows, as an extreme form of external sourcing, would positively impact open innovation.

In partial agreement with this are papers that specifically deal with sourcing as a form of open innovation. Grigoriou and Rothaermel (2017) posit that a firm's sourcing strategies are only as effective as their ability for "recombination" (p. 396) and cost coordination of their internal knowledge base. While M&A transactions are seen as dyadic in that they are initially a form of external sourcing, once the firm is acquired, the knowledge becomes part of an internal base. This suggests that the research may find a combination of both

external and internal knowledge flows, where one may depend on the other for positive innovation outcomes.

2.4.2 Outbound OI

The literature has taken up outbound open innovation recently given a move towards open-source perspectives, especially within technology. External technology commercialisation (ETC) is one of these areas. Scholars have indicated that firms have opened their technology and innovation process in order to further enhance their R&D capabilities (Helm, Endres, & Hüsigg, 2017), further alluding to the potential negative consequences such as the weakening of a firm's own competitive advantage to the benefit of competitors.

The overarching benefit of outbound OI, however, is the exploitation of internal knowledge by external market players (Bigliardi, Ferraro, Filippelli, & Galati, 2020). Research has shown both positive and negative impacts (Masucci, Brusoni, & Cennamo, 2020), suggesting that the efficient management of outbound OI is critical to avoid the potential threats that are posed. Some literature that has touched on the benefits of outbound OI refer to intangible benefits such as brand reputation and goodwill increases (Verreynne, Torres de Oliveira, Steen, Indulska, & Ford, 2020). Other motivations are more recently shown are companies that have relied on crowdsourcing initiatives in order to bolster their own innovation (Piezunka & Dahlander, 2015). A recent and relevant example of revealing in this way is Tesla's approach to crowdsourcing development of their intellectual property (IP) to the business community, ultimately to improve their own technologies. Although the literature has also identified some scales within which to measure revealing such as "enhancements, diffusion, strategic spill-overs..." (Verreynne et al., 2020, p. 293), this is yet to be explored within the context of M&A transactions and their impacts on OI.

Literature on "selling" as a OOI mechanism posit that firms need a complementary offering with a firm in order to maximise their value capture (Masucci et al., 2020), especially with business ecosystems.

2.5 M&A knowledge flow, Innovation and Open Innovation

The intersection between M&A and innovation is developed and relatively well explored. Yet, the literature seems torn in that it indicates both negative (Hitt, Hoskisson, Ireland, & Harrison, 1991; Ma & Liu, 2017) and positive (B. Cassiman & Colombo, 2006; C.

Cheng & Yang, 2017b) effects of M&A on innovation, reiterating the need for further research and empirical testing through varied frameworks. Around the positive effects, the literature provides a view on achieving innovation by using M&A for technological and digital outcomes (Ahuja & Katila, 2001; Ferreira, Fernandes, & Ferreira, 2019) or for knowledge acquisition (Ferraris et al., 2017). Depending on the definition used for innovation, there is an intersection between knowledge and open innovation; in some cases, they are seemingly interchangeable (Castaneda & Cuellar, 2020; Ham, Choi, & Lee, 2017). Acquiring firms obtain knowledge through M&A and therefore expand their own knowledge base which, in turn, could increase their propensity to innovate (Cefis & Marsili, 2015). Absorption Capacity Theory (Cohen & Levinthal, 1990) reiterates this by stating that the ability of a firm to internalise external knowledge or ideas is an accepted way to increase innovative capacity. This provides an example of inbound open innovation and justifies the need to explore whether M&A firms are using OI in order to drive innovative capabilities and to what end.

The findings on knowledge flow and open innovation reveal a positive effect. External knowledge is shown to be a proponent of a higher rate of original innovations (Cammarano et al., 2019), leaving internal knowledge more applicable to expanding existing technologies (Anzola-Román et al., 2018). This assertion justifies the increase of OI and M&A literature being biased towards the inbound OI relationship. The M&A literature has described the same external and internal knowledge flow as transferred knowledge and integrated knowledge, respectively (Calipha et al., 2018), reinforcing some type of linkage between M&A knowledge and open innovation. The lesser-studied of these relationships is the coupled open innovation with a need to understand whether there is an inclination towards combining inbound and outbound depending on the strategy employed (West & Bogers, 2017). The assertion in the literature is that OI is more suitable for diversification strategies (Cammarano et al., 2019).

The nod in the direction of open innovation can also be attributed to the literature only having lightly touched on the linkage between M&A and open innovation, leaving a clear gap in understanding the extent of this relationship. This is unlike M&A and innovation which is well researched but dispersed in consensus. The published works on OI include implicit papers dealing with M&A and open innovation with very few explicit in their focus (Dezi et al., 2018). Additionally, the consensus around the complexity of innovation and the lack of generally applicable theories (Gault, 2018; Kline & Rosenberg, 2010), may present a theoretical basis for furthering this field of study and providing a unique contribution to the literature. Open innovation suggests an interconnectedness of

external and internal environments which agrees with the necessary view that innovation is part of system and is not an isolated activity (Kline & Rosenberg, 2010), making the research of OI an important piece of the overall innovation puzzle.

Conclusion

The literature on Innovation, OI and M&A's knowledge flow are plentiful with a small degree of certainty on definitions and impacts with scattered results (Dahlander & Gann, 2010; Dziallas & Blind, 2019; Ma & Liu, 2017). This leaves a gap in the literature to continue towards theory building which this research seeks to address, particularly within growing literature on open innovation. The lens of how OI can be influenced from other business activities, will contribute to the continuing debate on the impact of OI and, by extension, innovation as a separate subject. The literature has defined OI in terms of knowledge flows (Chesbrough, 2003) which is still generally accepted and used today. The overlap with external and internal M&A knowledge flows is therefore evident with little exploration into the extent or manner of the relationship. Figure 2 will be used throughout this research as the grounding theory on OI and form the basis on the research questions posed.

CHAPTER 3: RESEARCH QUESTIONS

Research Question 1:

How does the knowledge flow within a merger or acquisition impact inbound open innovation?

This research question looks at an outside-in approach to OI, in order to assess the various ways that a merger or acquisition's internal and external knowledge flow influences the firms acquiring and sourcing activities. These reflect the firms propensity to bring in external sources in order to innovate and drive growth.

Research Question 2:

How does the knowledge flow within a merger or acquisition impact outbound innovation?

This research question looks at an inside-out approach to OI, in order to assess the various ways that a merger or acquisition's internal and external knowledge flow influences the firms selling and revealing activities. These reflect the firms propensity to externalise their internal knowledge in order to innovate and drive growth.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

There were no clearly defined constructs for general theories on open innovation or M&A knowledge that can be measured therefore the research method was qualitative in nature (Saunders & Lewis, 2012). Given the lack of consensus in the literature on accepted theories, the papers by Gann (2010; 2021) will be used as the conceptual measurement for innovation in this study: Inbound (acquiring and sourcing) open innovation and outbound (selling and revealing) open innovation. The fundamental purpose of the study is to explore both the effects of M&A knowledge flow on open innovation to induce a better understanding of their overall link. The research design will be reflective of this with the aim to gain in-depth insight and allow the space for open data gathering through the various research layers in Figure 3 which is deemed the most appropriate way to achieve the outcomes, as set out in the research questions.

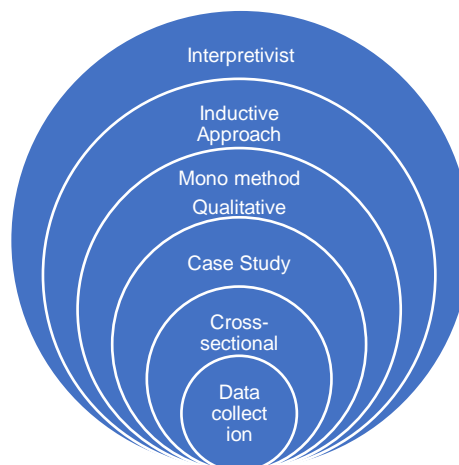


Figure 3: Selected research choices, adapted from (Saunders & Lewis, 2012)

The remainder of this chapter explores the research design and methodology. It aligns the scope defined in chapter 1 to the population, unit of analysis, sampling choices and methodology. Sections 4.6 and 4.7 detail the measurement instrument (data collection tool) and the manner in which this data was collected. Section 4.8 details how the data was analysed while section 4.9 and 4.10 details the rigour and the data quality controls that were used to maintain ethical compliance. Section 4.11 then discusses the limitations that were discovered as part of the methodology and data gathering processes

4.2 Research methodology and design

The intent of the research was to discover themes using a qualitative method because theory still needs to be built, and there is little substantive theory in the literature to enable valuable quantitative testing. The researcher, therefore, adopted an interpretivist philosophy, appropriate for the research which seeks to look at a multiple view of innovation through the lens of participants (Greener, 2008 p.17), more specific the phenomenon of open innovation within the context of M&A's. Furthermore, the study sought to find generalisations from within the context of M&A cases which reflected that there would be inductivity throughout the research.

Approach selected

There are presented research questions that sought to build alternative explanations or new themes onto the existing body of work by remaining flexible to changes during the exploration of this topic. Furthermore, the study looks to find generalisations from within the context of M&A which reflects that the research remained largely inductive whilst using elements of theory in some areas which resulted in a more abductive approach.

Methodological choices

In terms of the time and resource limitations a mono-method will be used to collect data through one technique only.

Strategy

The multiple case study method allowed for an "in-depth inquiry" (Eisenhardt, 1989) into the phenomenon of open innovation. It is generally applied within a real-life setting and is suitable for organisational and change studies (Saunders, Lewis, & Thornhill, 2008), making it the most ideal strategy to underpin this methodology. Specifically, a multiple-case study approach was adopted to enable the research to explore firms engaged in varying M&A activities and as means for comparison (Rashid, Rashid, Warraich, Sameen Sabir, & Waseem, 2019).

Time horizon

The timeframe of collection was cross-sectional given the time limitations for research and due to the nature of the study, which looked at phenomena at a specific time.

Proposed research methodology

The proposed research methodology needed to speak to the four key elements of field research: the research question, prior work, the research design and the literature (Edmondson & Mcmanus, 2007). It was paramount that when designing the methodology, which was centred around M&A and innovation, that an appropriate fit in all the above areas was considered. A “bottom-up” approach was employed in order to build theory from gathered data (Myres, 2021a).

4.3 Population

The population was the entire group (Saunders & Lewis, 2012) that would be applicable for this research. In this study the population was any organisation that had been through a merger or an acquisition. The study had a leaning toward two different M&A strategy types and knowledge flow. Therefore, the applicable M&A's cases would have to fit into two of the below categories (Bower, 2001):

1. Product or market expansion where the M&A focuses on an extension of the organisation's product or current market.
2. Industry convergence where the organisation takes the view that a new industry has or will emerge and wants a market position within this.

4.4 Unit of analysis

The units of analysis are those mentioned in 4.3, specifically organisations who have undertaken a merger or acquisition transaction.

4.5 Sampling method and size

The sample would take a sub-set of the population in 4.3 and given that there was no manner to obtain a full list of M&A organisations, the method required a non-probability sampling technique (Saunders & Lewis, 2012). Purposive or purposeful driven sampling refers to when only participants that fit certain criteria or research judgement are included in the selected sample (Merriam, Sharan; Tisdell, 2016). This was important to ensure that the M&A organisations remained a true representation of the organisations of interest i.e. they fitted into the allocated two of five M&A strategy types (Bower, 2001).

Leveraging off the researchers contacts within M&A and finding information from government and the private sector reports may have aided in isolating a list of

organisations fit for sampling. Case study research might be most valuable if the extreme cases are able to be selected (Eisenhardt, 1989) to easily gain insights; however, heterogenous sampling will be considered in order to gain enough diversity for themes and patterns to emerge. Eisenhardt (1989) further motivates for a multiple case study approach in order to build theory, which is the grounding for the chosen methodology.

The total target sample size for the multiple-case study was 10 - 12 organisations, with a minimum of 4 companies within each of the two cases which was an optimal size fit for case study research (Myres, 2021a). This meant that each case study was observed based on the type of their M&A strategy. This resulted in at least 4 sample organisations in each of the two categories as per the sampling objectives. Homogenous purposive sampling was used to control the specific cases so that enough depth within each case was obtainable.

Initially, 11 cases were identified for the sample, one case was terminated due to data sensitivities. The analysis on the original primary data that was collected revealed that the 10 cases produced qualitative data until no new information was being surfaced (Merriam, Sharan; Tisdell, 2016). This is justified through the number of codes that each case produced (see Figure 4 below) representing that the data reached saturation.

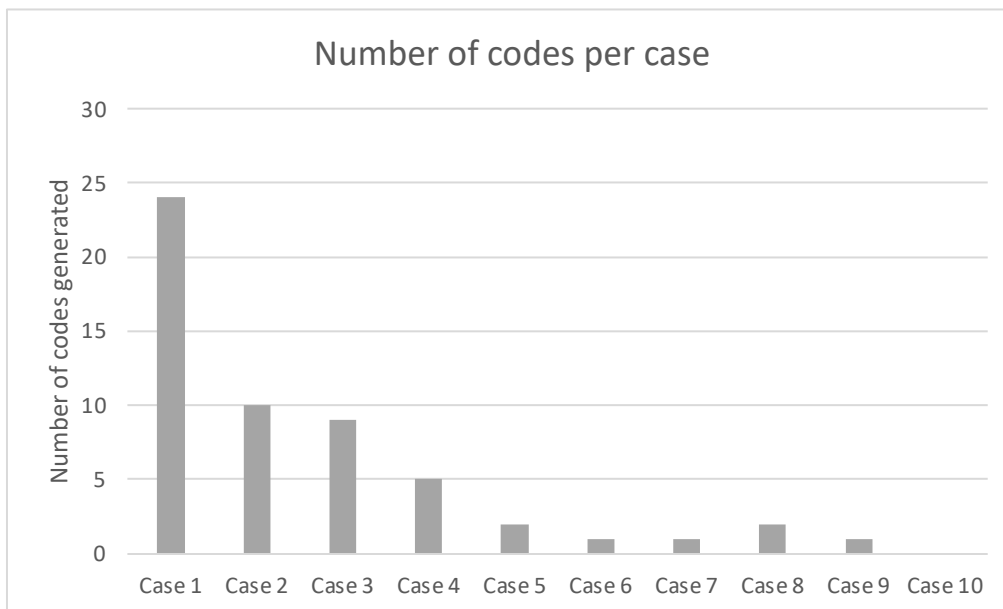


Figure 4: New codes generated per case interview

4.6 Data collection tool

During the qualitative study, the commonly used method of semi-structured interviews was used. Interviews for business and management relates to the collection of information through “face-to-face verbal exchanges” (Rowley, 2012). The researcher developed a set of topics for discussion as well as guiding questions through the interview guide presented in Annexure B.

| Research questions | Supporting Literature | Interview Questions | Analysis technique |
|--|--|--|--------------------|
| How does knowledge flow within a merger or acquisition impact inbound open innovation? | Mergers & Acquisitions, Innovation and Open Innovation, Pages 7 - 8. (Cefis & Marsili, 2015) | 1. Can you identify any new innovations or research that have been/will be freely shared or traded/exchanged with the market since the transaction? | Thematic Analysis |
| How does knowledge flow within a merger or acquisition impact outbound innovation? | Mergers & Acquisitions, Innovations and Open Innovation (OI) Pages 7 - 8 (Ferraris et al., 2017) | 2. During the M&A process what external knowledge or expertise were used? How was this exploited by either firm for new ventures or ideas? 3 How did the transaction change how the firm leveraged the external environment for R&D? | Thematic Analysis |
| What differences do the M&A strategic types present on their knowledge flow influences on coupled open innovation. | M&A section pages 5 - 8 (West & Bogers, 2017) | 3. Explain the strategic rationale/reasons behind this specific M&A transaction? | Content Analysis |

Table 1: Consistency Matrix of interview questions and research questions

These interview questions were specifically related to innovation and open innovation activities as well as the M&A knowledge flows between the organisations. Relevant literature was used to map the questions, linked to research questions as shown in Table 1. The initial questions helped the researcher understand a bit more around the strategic rationale behind the transaction which helped provide context for the analysis of the data.

4.7 Data gathering process

As mentioned, the sources used for the research generally dictated the questions and topics that need to be addressed (Rowley, 2012). In this research these were clustered around M&A knowledge flow, open innovation practices, general innovation outcomes and their strategic intentions.

The initial aim was for 30 to 45 minute interviews, given that participants were professionals within businesses. This was generally consistent across all 10 interviews however a few were longer and terminated at 60 minutes. The aim was to be as adaptive as possible with the interviewees (Saunders & Lewis, 2012) to ensure that the relevant topics were discussed within the allotted time using prompts for each section. One pilot interview was completed with a participant with similar characteristics to the ideal participant before commencement of data gathering. The interviewer amended some of the questions and then used a final interview guide (see Annexure B), as the data collection instrument, in order to facilitate a semi-structured interview approach. "Face-to-face" in this research included video interviews which were recorded via the Microsoft teams application, as be the preferred software for the interviewing process. No personal information was retained and all disclosures around recording and storage of data were presented in advance to the interviewees through consent documents, shown as Annexure A, collected prior to the interviews and again before recording commenced.

Interview participants provided responses which were further explored in order to ensure that case information was accurately understood and that this was interpreted as the participant intended (Merriam, Sharan; Tisdell, 2016). Interview responses were transcribed using a software called Descript and personal identifier and descriptors were removed: participants were given country pseudonyms and company information was changed to "the acquirer", "the acquiree" or "the company", in order to keep confidentiality of the cases and participants.

4.8 Data Analysis

The researcher aimed to obtain recorded interviews to assist with the analysis of the data. The data collected was predominately text, with no supplementary exhibits or diagrams provided by participants during the interview.

The process of analysis through the coding the text interview data will be as follows (Myres, 2021b):

1. Identify and code transcript quotations.
2. Sort the quotations into coding categories.
3. Sort quotations within categories in groups.
4. Present the data in a relevant format according to cases.
5. Interpret the data outputs within and across cases.

Atlas.ti version 9 was the coding programme that was employed to assist the researcher with developing useful categories and valuable linkages. The analysis will aim to find common open innovation and innovation themes within the various M&A cases accounting for their strategies within the coding method by using groupings. These cases should be separately analysed given the mixed case strategy. This enabled the researcher to cross-analyse the output to further interpret any innovation output themes that may emerge for theory building. The analysis will include some elements of content analysis.

4.9 Data quality controls

Ensuring trustworthy data is premised on credibility, transferability, dependability and confirmability (Myres, 2021c). Within each there are specific strategies that can be employed to ensure quality control of the study and to avoid it losing its utility (Morse, Barrett, Mayan, Olson, & Spiers, 2002).

The research used the following matrix to guide its quality control:

| Criteria | Strategy selected |
|-----------------|---|
| Credibility | Coding quality and triangulation through other data sources |
| Transferability | Purposive sampling |
| Dependability | Transparent notes and triangulation |
| Confirmability | Recorded sessions and documents stored |

Triangulation of data was particularly important for this research as it ensured that the study remained true to its research questions. In this way the researcher sought for external data validation as well as follow-up questions for clarity to some participants post interview to ensure credibility and dependability. The use of accurately recorded data from M&A interviews as well as the use of some secondary data (Dialogic, 2016),

including M&A regulatory organisation websites, assisted in sense-checking the researcher's findings along the timeline of the project.

4.10 Limitations

Some of the limitations of this study were around the access to meaningful M&A transactions and the information around these from a knowledge resource perspective given the long duration of M&A's. As noted with case 11 and other declined interviewees, much of the information around the cases are guarded through confidentiality agreements and access to quality information remains difficult in both M&A and innovation spaces. The researcher has undertaken a qualitative study to further explore and explain the influences of M&A knowledge flow on open innovation. The lack of sufficient generalisable theory and data did not allow for a quantitative method which may be more useful for understanding the causal nature of M&A knowledge flow on innovation and open innovation. The innovation literature, specifically around M&A and innovation is scattered with little consensus on a generally acceptable definition or measurements. The researcher, therefore, also limited the scope to his own definitions of innovation and used an existing suggested framework open innovation (Dahlander & Gann, 2010) respectively, however this could be expanded on for purposes of further exploration.

Given the vast nature of M&A's there is scope to widen the interview sample number for non-case based research in order to achieve better comparative data and varied industry perspectives. This may allow for more enhanced questions that target open innovation through different frameworks to the one used in this research. Furthermore, the specifics of firm size and location were also not considered for the selected sample, which may help future studies to gain more granular details into M&A knowledge flows and their influences on open innovation.

CHAPTER 5: RESULTS

5.1 Introduction

This chapter will present the results of the methodology described in the previous section. The semi-structured face-to-face interviews are labelled as the cases 1 -10 as a reflection of the data collection. Alignment between the interview questions and literature was ensured as per the consistency matrix provided in Chapter 4. These data results are presented by using the initial qualitative themes discovered as part of the research analysis and literature review. The main themes and findings from the case interviews will be presented in this chapter. For each case, the question of whether M&A knowledge flow as the main driver for how these entities openly innovate will be discussed and, if so, and how it has influenced their open innovation activities. Section 5.2 will contextualise the cases and participants before presenting the qualitative results.

5.2 The sample description

Although the methodology necessitated a purposive sampling selection, which was through the M&A strategic categories, a diverse industry sample was sought to ensure a fair sample representation and to encourage richness of data. The list of the cases and participants is shown in Table 2 below. This reflects the M&A strategy type, industry of the company as well as the job descriptions for the participants. Each participant was directly involved with the merger or acquisition transaction from either an operational or financial perspective. All participants were privy to the management level decisions and initiatives that were taken on during the M&A. Therefore, the entire sample would have the relevant knowledge around the research questions on knowledge flow and innovation

The research maintained confidentiality of the participants, 4 females and 6 males representing 10 companies, by using the case numbers or participant pseudonyms during analysis and discussion. The entire sample were interviewed remotely through virtual meetings. All interviewees returned signed consent forms and were provided with a written brief overview of the research topic in order to create the space for any clarity on the topic. One participant did make use of this opportunity and decided not to participate based on confidentiality agreements around innovations in the organisation.

Knowledge flow was coded through internal and external knowledge occurrences mentioned by the participants. These flows took various forms and have been

diagrammatically shown in figure 5 as the network of knowledge tools that made up firms M&A knowledge flow practices.

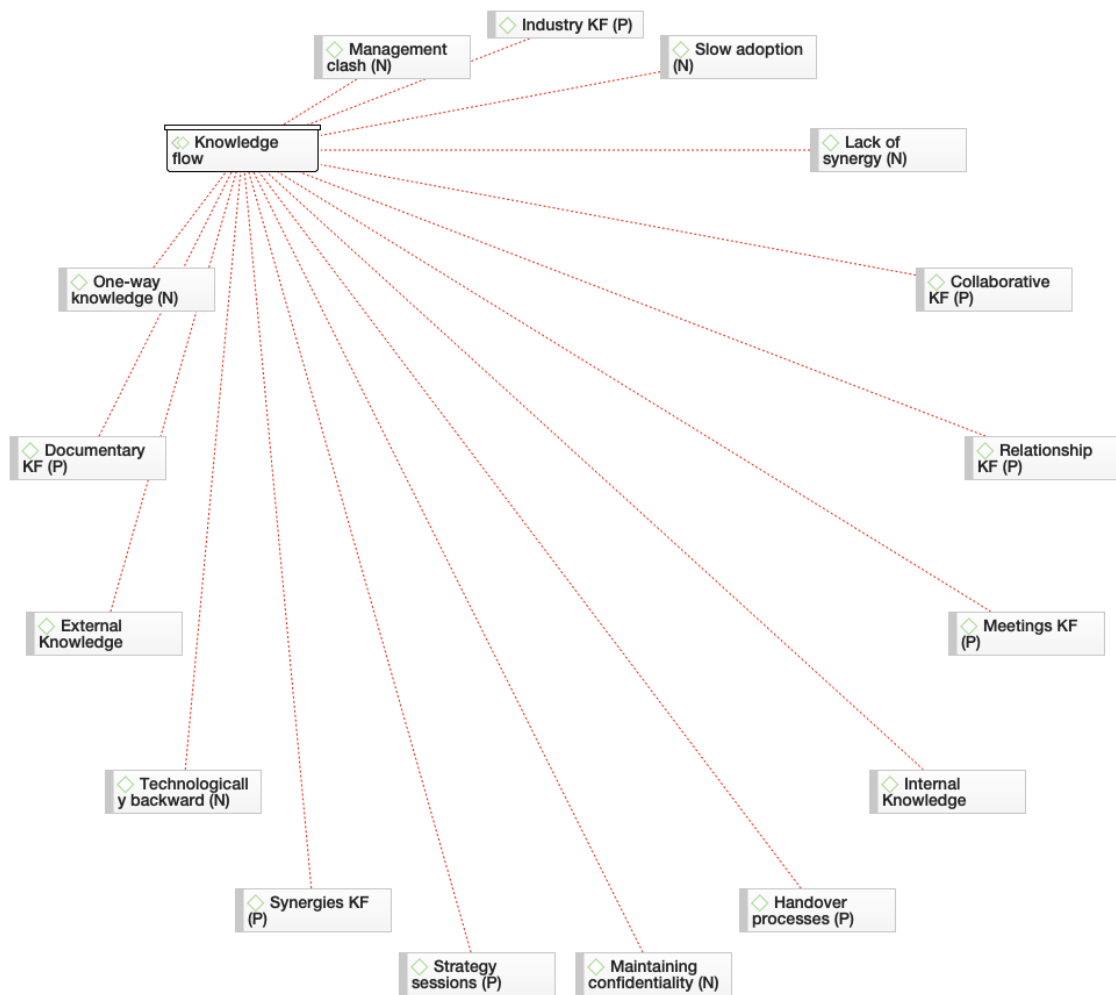


Figure 5: Forms of internal and external knowledge that make up knowledge flow

Table 2: Summary of the cases

| Case Number | M&A strategy type | Industry | Acquirer/Acquiree | Participant Name | Job role |
|-------------|---------------------------------------|--------------------------|-------------------|------------------|--------------------|
| 1 | Product expansion | Environmental consulting | Acquirer | Kenya | Senior Associate |
| 2 | Market expansion | Mining | Acquirer | Argentina | In-house Legal |
| 3 | Product expansion | Engineering | Acquirer | Monaco | General Manager |
| 4 | Industry Convergence | Energy | Acquirer | Croatia | Engagement Manager |
| 5 | Market expansion | Mining | Acquirer | Senegal | Treasurer |
| 6 | Industry Convergence | Insurance | Acquired | Samoa | General Manager |
| 7 | Industry Convergence | Payments | Acquirer | Kuwait | Head of M&A |
| 8 | Market expansion | Information Technology | Acquired | Cameroon | Founder |
| 9 | Industry Convergence | FMCG retail | Acquirer | Russia | Head of Innovation |
| 10 | Market expansion/Industry Convergence | Fintech | Acquired | Mauritius | CEO & Co-Founder |

5.2.1 Cases

This section seeks to provide a substantial case analysis by leveraging off the findings from the semi-structured interviews. It seeks to contextualise the cases by exploring some of the strategic reasons for their M&A transactions, and to present the case findings from a knowledge flow and open innovation perspective. Cases were grouped into product or market expansion (PE) and industry consolidation (IC) as shown in table 2 above – this will provide an opportunity to do a cross case analysis in later chapters. Sections 5.3 and 5.4 then present the overall case findings through themes and influences for each research question, as a thematic cross-case analysis.

Case 1: Doubling-up

This transaction involved two entities who were considered competitors but had strategic with placements in similar industries. The potential to expand into these new industries in addition to leveraging new expertise was a key strategic rationale behind the cases. “Kenya” was the interviewee who had been involved in integrating the existing and new skills into various projects. The growth intention behind the acquisition was centred around access to new clients in new industries while doubling-up on their existing share in the industry.

Kenya described their knowledge flow during the transaction as predominately internal knowledge from both entities that was shared “I think the knowledge share is lovely for both, especially for [The Acquired] in the various industries that they haven't worked in and then for [The Acquirer] to really get some of the insights and to some of the world's best mining engineers and scientists.” This was mainly done through sharing their industry knowledge and internal collaboration as positive knowledge flows.

A finding from this knowledge flow was the firms increased and enhanced internal abilities which saw less of a need for external skills that may have otherwise needed to be sourced. In this regard Kenya stated: “we would have ordinarily outsourced a lot of the time where we can combine our knowledge to bring together a new specialisation, which we can do.” On the other hand, the increased client and project base has meant that the company have need to remain opened to some external experts and partnerships, which as positively impacted their need to openly innovate.

Case 2: External optimising

“Argentina”, the participant interviewee for case 2, was the in-house legal lead for a mining company who completed an acquisition in order to increase supply of coal and diversify their mining portfolio. In addition to this goal, the strategic intent of the transaction was to further to increase exporting of their mining product into new markets.

Knowledge flow between the organisations included internal and external sources citing documents and relationships as the main positive mechanisms for these flows. Argentina mentioned: “All the ownership, documents, the survey documents, and then sitting in, and speaking through the history of the organization, working through the documents and raising questions because you're trying to puzzle together how this company has lived its life previously”, adding that: “So I think specifically within the mining industry, gathering knowledge is very much dependent on relationship, especially when you want insider knowledge.”

The impact of this from an open innovation perspective was largely filling in the gathered information through experts in order to find ways of optimising and building on the new firm's resources. Argentina described this process: “So that was where you get the experts in, you get all the documentation, you get to go through everything. They grant you a period of three months where you go out, you drill holes, you do quality testing, you go through all the documents that they've supplied you and pick up if there's any concerns.” This use of external expertise enabled technological advancement but also enabled discovering new revenue streams for the acquired business.

Case 3: Synergies for innovation

This was a the last of a few by the acquiring entity which wanted to diversify their business into tangential sectors by acquiring a firm that had the products to sell into these sectors. Monaco mentioned that this acquisition was particularly successful as they had learnt from previous transactions to gradually integrate a new entity. From a knowledge flow perspective Monaco stated that their knowledge flow worked “both ways”, where the acquired company saw synergies as an important factor to base who they would sell to: “They just said, the big machines have not changed in the last thirty three years. These people are more brand companies than innovation companies. And as a result, they chose to be sold to us because they thought it was more fitting to their culture.”

These positive knowledge flows also took place by the use of strategy sessions and documentary processes given that the acquired firm was a family run business with very little corporate structures and documented procedures. Finally the use of more informal methods was mentioned by Monaco: “I think it was done purposefully because we did have a large acquisition that didn't go well. I think they wanted to put the people close enough so that they do interact, and put things in place so that they're forced to interact, but not to a point where they feel that their way of doing things is just changing overnight. Look it is changing but you're changing it over years.”

These collaborative knowledge flows resulted in the combination of skills, which facilitated the development of new products but also saw a greater propensity to focus inwardly for their innovation needs – centralised at the local R&D centres. Where there has been a skills gap due to new knowledge, Monaco mentioned that they use academics and buying new technologies to fill the gaps.

Case 4: A new strategy

This merger between 3 entities was predominately undertaken to find ways to resolve financial distress of the largest entity in the transaction. Croatia was an in house engagement manager who said that “company number one, really bad with no real way out. Really just in a very deep hole, financially, operationally, all those things. Whereas the other two were doing relatively well, cash flush. Yeah, no huge problems within them”. This left very little room for knowledge flow between the firms but there were “natural synergies” between all the entities given that they all operated in the same industry.

This precarious position meant that the entities looked for help externally in the form of consultants in order to leverage the knowledge they had between themselves. The result of this was an entirely new strategy which centred around renewable energy. This use of external knowledge to enhance their own internal knowledge saw a need to build innovation capabilities within the renewable space by using strategic partnerships: “And the way we had envisioned the sort of knowledge transfer happening in the new company would be through forming these sorts of strategic partnerships”.

Case 5: Financial efficiency

Senegal, a treasurer for case 5, was naturally inclined to see many of the financial benefits from their acquisition mentioning that “instead of buying mining rights we bought an operating business as a purchase of shares”. This was significant because of their strategic intent to start exporting their raw material and in this was expand into new markets.

Mainly internal knowledge flows were evident in this case with Senegal reporting on positive flow such as strategy sessions, documented handover processes and leveraging relationships. Senegal stated that they played a dominant role in transferring information with little around them gaining knowledge: “we found that the in vast majority, there was a one way transfer of knowledge, right? If you're acquiring an asset, it's easier to ask questions about that asset and understand it a little bit better, and there's a whole data room established for that.”

Much of the internal skills were then leveraged to find ways to in-house some aspects with few instances of innovation that were spoken about apart from the financial improvements and overall efficiencies that the new firm gained.

Case 6: Fragmented innovations

Samoa related this transaction was a start-up company that was sold off to a hardware supplier after realising there was no alignment by the group the previously owned it. This was then considered a “nice piece of vertical integration” by the new owner. The knowledge flow, however, was extremely slow and almost non-existent. Samoa stated that this was because they kept all the headcount and did not know enough to get involved with the regulatory aspects around payment and decided to not get involved from a knowledge perspective. The one positive influence was the acquirer insisting on a “codified” processed for all their processes and operations.

This uncertainty around relevant knowledge flows was coupled with scattered forms of open innovation. External consultants were used for technology advancements and partnerships with telecommunication and banks. Samoa reflected this uncertainty: “The previous IT environment was thirty years old. So they got consultations, spoke to a couple of the very large OEMs and they said, what is it that you think we should be doing? So they used the transition from the one environment to the next to improve upon it.”

Case 7: Cross-border innovations

This transaction was a UK-based company's second acquisition in South Africa within the same industry in order to further expand their product offering to a new sector and in so doing becoming the largest player in the market. Kuwait, Head of M&A for the UK company described the strategic rationale behind the transaction: "There were two strategic and financial rationales, I would say, one was building up in South Africa, which is an underserved market, generally. So there is limited competition that we saw in the market and healthy margins, healthy growth, despite there being a bit of choppy macroeconomic, and political volatility there in the region. So underserved market and then an underserved segment, which was this IFA segment, independent financial advisor segment."

Knowledge flows were mainly internal and structured around gaining insight into this new market as well as providing updated technology infrastructure in collaboration with local managers. Mainly unintentional knowledge flows through due diligence and reporting mechanisms to enable a sales-led initiative in South Africa. The global collaboration on these were noted by Kuwait: "having that experience of having the salespeople, so that sales leadership in [The Acquired] working with the technology people in London and in India to bring the requirements together with the software people, that's something that is repeatable".

These positive knowledge flows encouraged technological advancements for the local entity through acquired systems and API's. It also led to some initiatives of working with regulators to enable industry-wide benefits. Despite the use of consultants to further explore the market, Kuwait also mentioned a global cross-brand innovation strategy that helped local and international markets innovate internally.

Case 8: Culture clash

A lack of synergy from management to staff is something Cameroon reiterated for case 8's transaction. It was a purchase of an IT services company as a strategy to expand into South Africa, specifically Cape Town. The lack of knowledge flow was attributed to the immense cultural differences between the two companies, Cameroon expanded on this: "So the two cultures were so different. The one wanted to take over the IT completely for the company. Whereas the [The Acquired] component, we were happy to let them do

their own IT, and we would come and support them by doing various components that they needed. They were two different cultures, and they were not going to mix.”

There were attempts in the form of meetings and lectures which the acquired entity gave, however this was framed as “one-sided” and largely a one way culture knowledge flow. The lack of synergy, culture clash and confidentiality agreements were all conveyed as negative attempts to force knowledge onto the acquired which was largely resisted.

Cameroon mentioned little in the way of open innovation with some occurring by in the form of external partnerships and new product offerings.

Case 9: R&D priority

Russia, who is the Head of Innovation for the acquiring company reflects on one of the transactions which was strategically made to claim and consolidate the grocery e-commerce space. The acquiring business utilised a variety of internal knowledge flows and leveraging external knowledge in order to maximise their businesses potential. Russia stated that apart from the conventional flows around meetings, documenting processes, they attempted to use some others: “...transfer of innovation is considered one of those success metrics. Certainly positioning is an element to it”. He further adds that it is difficult to add a measure or metric to innovation.

The business used R&D spend on both internal and external initiatives to find new innovations and sales mechanisms for the newly acquired brand. He mentioned: “I think part of our strategy process would definitely be looking external, what's happening in the market, what's happening globally, what's happening within our client space.” The idea of weighting internal or external innovations is something he admits the business has since still been grappling with. The business has also used its R&D spending for data enhancements and external projects which may or may not materialise into commercially viable opportunities.

Case 10: Tech partnerships

This transaction was made by an overseas financial firm into a South African fintech business in order to expand its offering into the African continent as the main strategic imperative. Mauritius, the co-founder of the business, explained that the expectations of the technological advancement and general synergies were misaligned: “they have no

exposure to those products. So that's a bit of a challenging one because those products now, so going back to the strategic side, where we thought that doing this deal would bring resources and funds towards those products, which have a lot of upside potential, those products have really been pushed to the side at this point”.

From a knowledge flow perspective, he elaborated that they were found to be far ahead of their acquirer from a technology perspective and therefore much of the knowledge centred around sharing this along with the depth of niche South African regulatory knowledge they had gained over the years. Much of the positive flows to the acquirer was therefore internal industry and documentary flows.

Nevertheless, from these exchanges some valuable partnerships with banks and the South African Reserve Bank have taken place. He stated: “...we've effectively set up a FinTech partnership, we call it a FinTech partnership, and that's how it's been presented to the Reserve Bank...” which has also aided in the development of work with competitors and regulatory licencing.

Table 3: Cross-case analysis by word count

| Cases | External Knowledge | Internal Knowledge | IOI: Acquiring | IOI: Sourcing | OOI: Revealing | OOI: Selling |
|---------|--------------------|--------------------|----------------|---------------|----------------|--------------|
| Case 1 | | | | | | |
| Case 2 | | | | | | |
| Case 3 | | | | | | |
| Case 4 | | | | | | |
| Case 5 | | | | | | |
| Case 6 | | | | | | |
| Case 7 | | | | | | |
| Case 8 | | | | | | |
| Case 9 | | | | | | |
| Case 10 | | | | | | |

5.3 Results: Research question 1

Research question 1: How does the knowledge flow within a merger or acquisition impact inbound open innovation?

The main aim of the question was to understand in what manner outbound open innovation takes place in order to assess influences resulting from the M&A knowledge flow. When a theme is spoken about as a positive influence it is annotated with a “P” and when negative a “N”. All 10 cases reflected that knowledge flow occurred during the transaction and acknowledged some instances of open inbound innovation that occurred through acquiring and sourcing as shown in table 3.

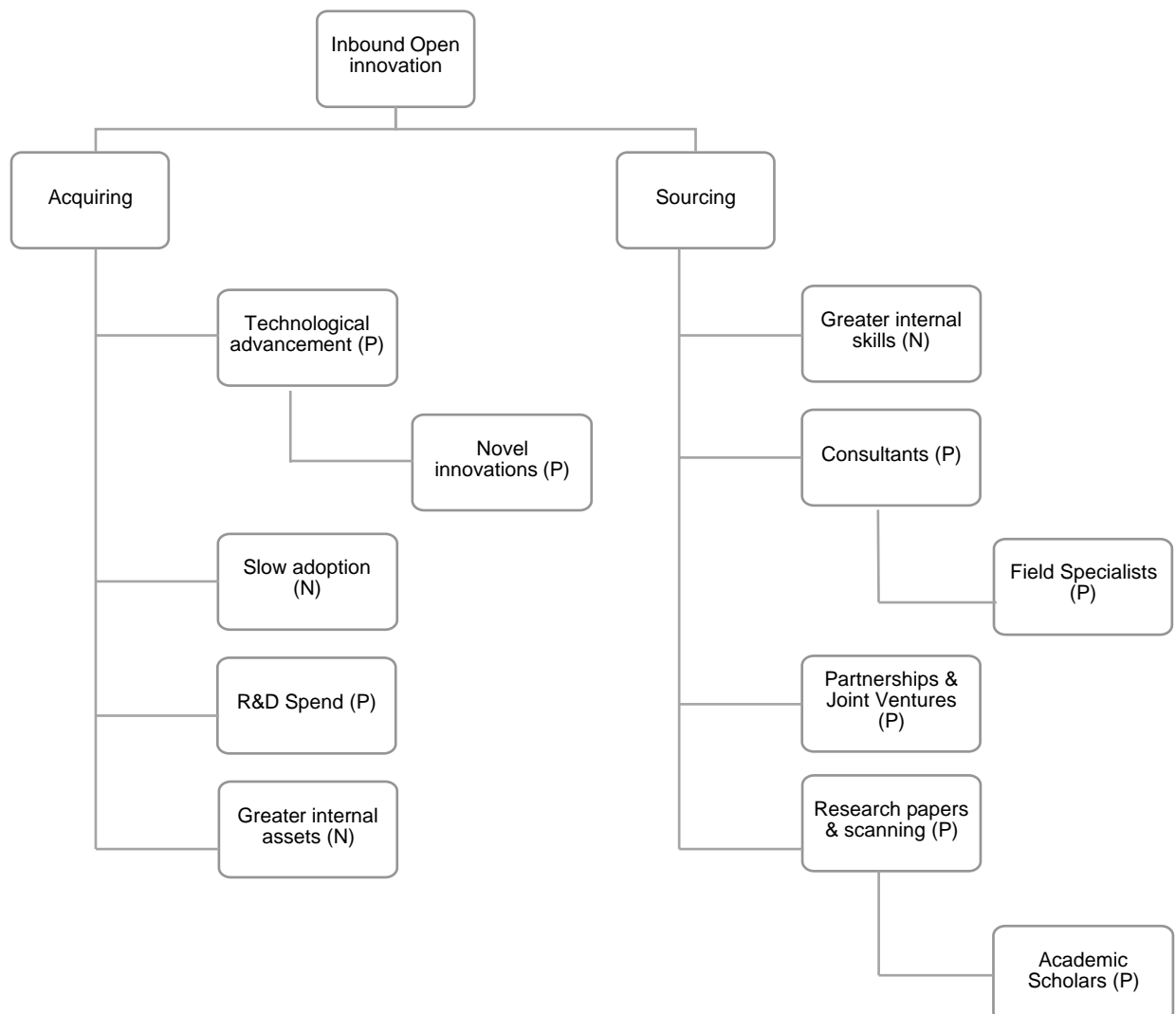


Figure 6: The main influences of M&A knowledge flow on inbound open innovation

Table 4: Frequency of cases for inbound open innovation

| Form of IOI | Frequency |
|-------------|-----------|
| Acquiring | 10 |
| Sourcing | 10 |

5.3.1 Acquiring open innovation influences

There were some prevalent themes that were identified from the cases in relation to acquiring as a form of open innovation. Technology advancements, novel innovations, R&D expenditure, and operating efficiencies were all found to have positively impacted on the firms propensity to openly innovate. Conversely, the negatively frames themes were slower adoption and greater internal sales (see figure 6). Cases 1 to 10 all contributed towards acquiring as an open innovation practice, from knowledge flows that were gained through their respective transactions. The below will present each of the open innovations listed by highest frequency within which they occurred.

5.3.1.1 Technological advancement

Using technology as tool for innovation or as the innovation itself was a prominent feature among the cases. These were generally acquired forms of technology, driven by the transaction's knowledge dissemination.

In case 2, Argentina gave examples of the updated technology that was purchased as a result of their acquired mine's inclination towards the use of technology. One instance of two is explained below.

Case 2, Argentina: "And then the next uptake we did was [an] automated weighbridge with an automated system that generated the tickets that automatically weighed the trucks, again, going from a manual system, where each element was captured manually with weighbridge slips and then the weighbridge slips are then read into manually into a computer where there was a system on another side called TomTrack. So it's an automated system, basically connecting the drivers access to site without having to sign in or anything."

Some technologies were gained by the acquiree directly from technological integration with the acquired firm. For case 3, this was in the form of updated CRM systems and corporate governance tools. The acquirer "had a much more sophisticated corporate governance system, [including] the Salesforces of the world..." which was referred to as

a common technology for the current time. These sentiments were echoed in cases 4 and 7 by Croatia and Kuwait respectively which saw the acquisition of improved technologies for the acquired firms.

Case 4, Croatia: I think in addition to that from an IT architecture point of view, I don't know the right terminologies specifically which is scary because I worked on this stream briefly, but they had to basically overhaul their whole IT systems landscape, or their overall enterprise architecture. Which then involved a lot of streamlining of the various applications, software's and ERP systems”.

Case 7, Kuwait: “So it was a very fragile technology system with virtually no automation. So a lot of paper or PDFs and paper. So that really wasn't the hook, the opportunity there was to bring [The Company's] tech to [The Acquiree] and then married up with their service knowledge, their service capabilities, their relationships within the industry”.

Conversely, case 10 gave an example of where technological innovation was enhanced and adopted by the acquiree from the transaction, which has caused a redesign of existing technology for the acquiring firm:

Case 10, Mauritius: “Particularly you'll know around compliance transactional reporting, a lot of the systems that we've built, and risk scoring matrixes, and things like those are definitely things that they want to bring into their platform. One practical example is that they are rebuilding like a client frontend register and transactional system. And they are taking a lot of ideas from our systems. So they've actually gone through our client registration process, both personal and business clients, and they are adopting a lot of what we've built in there. So they're definitely using a lot of ideas and things that we have built. And obviously all our Reserve Bank reporting stuff, they're going to that and improving that code and things like that.

Novel innovations

Technological advancements reflected an uptake of new innovations as a positive influence on outbound open innovation for cases 1, 2, 3, 4 and 10. These were innovations that were considered to be completely new to the firms. Cases 1, 2 and 3 had novel innovations resultant from staff ideas and initiatives.

Case 2, Argentina: “So there is something these guys are working on. Which is starting to turn, well they started small, with like belt scales on the beneficiation plants to basically keep track of how much tons going in, how much comes out, what the exact yields are, how many losses are you facing because of what?”

Case 3, Monaco: “...what's quite nice is we started with all the collaboration between us and the people sitting together in the same branches. There was an organic transfer of knowledge between both parties and we actually created very cool stuff. Like one of the stuff that we have created is a dredging unit. So a dredging unit is quite cool. It's got a pump and pumps out one of our main products. But it can't just pump normally because you throw it where there's a sludge dam and there's rocks and stuff there. So the pump actually has got two, two sets of teeth that spins on the side of it. It breaks up the sludge, or whatever you want to call it, and then it sucks the material out. So we actually integrated 100% like their impact technology and our abrasion technology into something, which there's really nothing like that in the market. And that literally happened over just learning of each other's products and the cooler water talk and putting it together. So that was, I think, quite a nice win.”

Croatia (case 4), spoke about a new strategy within the businesses as a result of the merger. This new strategy created the need for a globally novel pursuit: “One of the sort of strategic plays we had put forward for the new company was around some very nascent energy technologies, for example, like green hydrogen, blue hydrogen, that kind of thing. Where on a global scale, it's still a very nascent technology, let alone in South Africa where it's like non-existent right”

Another example of acquired novel innovations was through regulators in case 10. This was different to the other examples as it reflected a new processes or procedure as the innovation.

Case 10, Mauritius: “So what we did was we went to the Reserve Bank with a third option... We'll open bank accounts for all our clients at the bank. So for example, transfer wise, world remit, visa, MasterCard, they now all have their own bank accounts at [Bank X], so similar to what an intermediary would do. And they contract directly with the bank themselves and not with us. So all the payments go through each client's own bank accounts.”

5.3.1.2 Slow adoption

The more gradual adoption of new processes and ways of business was negatively associated with the businesses ability to openly innovate, specifically prohibiting acquiring external innovations. Argentina in case 2 mentioned that “due to a lack of innovation with, or the slow adaption to the innovations that were out there and the ones busy coming out, I think you're losing out on opportunities to enhance your own efficiencies...”. This recurred as a theme in cases 5, 6 and 7 where slower adoption in addition to recognising the benefits that accrue from newly acquired external innovations.

Case 7, Kawait: “But having that experience of having the salespeople, so that sales leadership in [The Acquiree] working with the technology people in London and in India to bring the requirements together with the software people, that's something that is repeatable. So the more we do that, the better we get at it, but it's still a slow process to actually get them done.”

This was reiterated by Senegal while speaking about the uptake of new processes for case 5 from an outbound perspective: “People are attached to their processes, this is how we've always done things, and all of those implications. So that's going to take much, much longer than the low hanging fruit we've been able to identify so far.”

5.3.1.3 R&D Spend

The ability to spend to acquire innovations was a theme identified in cases 3 and 9 specifically, although there were indirect traces of this in other cases when exploring the ability to acquire innovation. Monaco mentioned that the acquirer in case 3 spends “2% of our turnover on R&D, at any time like 15 doctorate students and in Scotland our biggest brand is [brand W]. Charles Warmen is the guy that created that pump. And in Scotland, at the Strathclyde University, we built the Charles Warman Hall and all the engineering students graduate there, so high aftermarket is nice, but if it's not engineered, anyone can copy it”. He further pointed out that there was an increased use of their R&D local units, with each region having their own.

In case 9 the acquiring firm has been introspecting since their acquisition on how best to spend their R&D budget. Russia mentions that they are “moving into a phase of understanding, which is really the first step of a design thinking process around empathising and now, understanding the needs and then prioritising based on that, what

are we going to focus on. And then based on what comes out of that understand process, we can either move into a build or buy process within the business, or a bioprocess right. So if something already exists out there, who could we go and acquire or partner with to achieve the same thing.” Their positive knowledge flows during have created a more focused R&D spend and mention, albeit a tenuous link, that the recent acquisition’s learnings have prompted “two new projects” from an research perspective.

5.3.1.4 Greater internal assets

The nature of some cases was that the acquisition provided a greater number of internal resources which negatively influenced the need to acquire any external innovations. This was expressed by cases 2, 3 and 6. This “in-house” concept is directly attributed to the M&A transaction and the knowledge gained as a result.

Case 2, Argentina: “So definitely the innovative things we acquired through these processes we implemented throughout even as far as creating our own offsite control room based on these innovations and gathering of data, which really made a huge difference.”

Case 3, Monaco: “And now we could actually in-source it and actually grow that business. And also we could, and it's always a problem with foundries, they never run at full capacity and they're very capital-intensive. So they were maybe running at, for argument sake, like 70% and now we could move on to our combination business there as well. So now all of their foundries were running at 90, 95%. It's a much higher utilisation, which we are gaining to benefit from.”

Case 6, Samoa: “Until we moved across, there was no urgency in developing or making changes to our software. Now that it was in-house those could be prioritized. Also because it's such a small company and they were dealing with the banks we had very little input from our accountant manager. So the person that's supposed to support us, we basically never saw, and we did our thing.”

Operational efficiencies

Achieving greater operational efficiencies was noticed as a positive outcome on innovation from a process perspective. Not necessarily from an open innovation perspective. Argentina said that case 2’s firms used experts which enabled them to

leverage compliances processes: “they're not actually a hindrance, even though all these compliance things are seen as a hindrance, but if your expert is knowledgeable, they know how to leverage it, to actually help you attain, what you want to achieve. And, it also assists with efficiencies.”

Efficiencies were also mentioned in case 5 by Senegal in relation to improvement on internal processes as an innovation for the acquired firm: “I think they're still on a steep learning curve, and it might not be on SDG's specifically, because remember they were part of a listed entity before. So their reporting was robust and mature and routine for them. Their SDG and their reporting processes were probably better than the previous [company], but because they were part of such a monolith, the speed of addressing matters, they're not accustomed to that. The speed of decision making is "wow", they're flabbergasted.”

5.3.2 Sourcing open innovation influences

Sourcing for open innovation is using external pools of knowledge in order to advance innovations within the firm. All 10 cases contributed to sourcing knowingly or unknowingly as an open innovation practice. There was consensus that the need for external knowledge in order to solve for challenges is necessary. Greater internal skills, as a negative influence on sourcing, occurred in a few cases more frequently than others. The use of consultants, partnerships, experts in field, environment scanning, and research sources were all confirmed as positive influences associated with M&A knowledge flow.

5.3.2.1 Greater internal skills

While ‘acquiring’ in 5.3.1.5 noted greater internal assets, which spoke specifically to explicit and physical items, greater internal skills was referred to in a similar vein. An acquisition, in some cases meant that a skills gap was fulfilled and created less need to look externally for these skills. This was mentioned by cases 1,3,5, 6, 7 and 8.

Kenya mentioned that prior to the acquisition sourcing would have been utilised in case 1: “we would have ordinarily outsourced a lot of the time where we can combine our knowledge to bring together a new specialization, which we can do.” Further adding that “strategically [it's] worked very well, accessing other colleagues, not just within the same country, but globally”. In another instance Kenya mentioned that the internal skills and

not sourcing would actually be a cost saver for the firm: “I’m a soil scientist and [The Acquirer] have had some soils projects and they’ve gone external, but they’ve had to pay them extra, and if they want to get someone back to check various things, they would have to pay for that whereas they don’t having the internal expertise.”

Monaco mentions skills that were sourced before the acquisition, which were now in-house for new types of products. He also spoke about a centralised R&D unit internally which the acquired firm now makes use of, however, it was not mentioned whether that unit uses sourcing internally. The below refers to the skills that complemented their increased internal acquired assets mentioned in in the previous section.

Case 3, Monaco: “So it’s completely different foundry practices and we actually have product ranges, like crushes and stuff like that, which we outsourced that functionality, because we didn’t have the skill in-house to actually cast those types of things.”

In case 5, there were some outsourcing initiatives that related to legal problem solving, which was now in-housed. However, the innovation that Senegal refers to is around innovation within their governance and risk processes in the firm, given the expertise they had between both entities. She elaborates: “Now having it all in-house required, new thinking. So there’s going to be a big piece of innovation in that space. And without going into details there’s an insurance implication where, you can Google it, people just don’t want to insure and it’s getting astronomically expensive, like year on year the increases are in the ordinal percentages of 30% increase. It’s getting insanely expensive to procure insurance.”

In case 7, soft skills were moved internally due to the multiple acquisitions made. Kuwait describes this cross-brand skill collaboration, where an outsourced potentially high innovation unit was moved in-house. He said: “We try to use our multi-brand strategy to do that while we have a bit of overlap in terms of who’s running sales in each region, sometimes we have multiple brands competing in the UK. We have we have three brands really running in the UK, so we get ideas coming up in each of those and try to cross pollinate. So we’ve done that in digital media, web advertising, where [an acquired brand], one of our brands in the UK has done a very good job. So we’ve actually, at that point, had turned that into a service centre where the digital media of that business became the centre of excellence for all of the business and actually now run South Africa as well.”

The negative impacts of the having complacency with greater internal skills were made clear by Samoa in case where he stated: “I think any official efficiencies that really came up was as natural business when you get people in, new ideas and that's just how a business grows. I don't think merger and acquisition itself aided anything in those efficiency. In fact, probably, initially, those efficiencies were a lot worse because of a new company...”. This reflected his belief that there were natural benefits from an M&A transaction but specifically felt that the additional skills actually detracted from gains in innovation (efficiencies). A reason for this might be found in case 8 where Cameroon mentions: “we had a lot of skills, but they did not leverage our skills.”.

5.3.2.2 Consultants

The use of sourced expertise in the form of consultants was an influence that was referred to in cases 1, 3, 4, 5, 6, 7, 9 and 10. These were generally framed around innovating to solve problems or around easier transitioning as part of the acquisition process. Case 4 mentioned the exclusive use of consultants for an entirely renewed strategy and company.

Case 4, Croatia: “[We] almost exclusively used external knowledge in the form of consultants. So they designed a whole new strategy, new operating model, new processes or structures, job descriptions, the whole story. So in terms of how that happened, I would say it was almost exclusively external.”

When asked to further expand, Croatia provided a description of some of the new innovations that had been sourced by the consultants in the renewable energy space:

“And same story for wind, it was very much like a where in the country is the greatest wind potential? What are some of the players in, like Germany and Switzerland and Holland and stuff doing? Because they're like leaders in that area. What are the best practices we can leverage there? What kinds of technologies are they using? Will that work in South Africa? And putting that puzzle together.”

Case 5 made use of consultants for financial modelling purposes. This was used to supplement the financial innovations which Senegal mentioned in a previous section. Case 6 used consultants “on the technology side” exclusively, whereas, case 7 made

use of consultations for technology and as a mechanism to understand the external market during their transaction. Kuwait stated the following on the work done: “So their report was pretty comprehensive, 200 something pages I believe. And they went through more than the accounts, they looked at the market size, so how many people is the company serving or is there available market in that space, a bit of a breakdown of what that looks like, the structure of the competition in the market.” The firm is currently engaging in more external sourcing work to find ways of gaining more market share.

Mauritius mentioned that very recently “they've actually just hired one of the executives from [Bank X], who actually left [Bank X], and they've hired him but also in a consulting capacity” post the case 10 transaction. However, it was too early to comment on the work that would be done by the consultants and also mentioned issues around new management clashes.

Field experts

These were mentioned as separate sourcing needs from consultants in cases 1, 2, 3, and 9, however, in some respects they fulfilled exactly the same role. They related to the need of very specialised services rather than general problem solving activities. While case 1 mentioned in 5.3.2.1 that there are instances where their internal skills negatively impact their need to source or acquire, Kenya further spoke of instances where post acquisition there are still needs for niche specialists to help build on their work internally.

Case 1, Kenya: “There're specialist studies that overlap where our knowledge and the specialists we'd have, would be taken to a certain level and no further, because we didn't have almost the next specialist along the line. So to explain that by way of an example the goal, the group have bio-monitoring and ecology specialists, which we don't have, and we have some soils, water and other hydrogeological specialists since the wetland specialists, but we've never really been able to develop our own, and neither have [The Acquirer].”

Argentina gave several instances where their mining acquisition in case 2 led to the need of field specialists such as geologists and environmental specialists (similar to that of case 1). A comment which summated this was “So having the external experts advice, gives fresh perspective into how to exploit the current acquisition more optimally.”

Cases 3 and 9 presented the need for culture experts and data experts respectively in order to help stimulate knowledge flows even further.

5.3.2.3 Partnerships and joint ventures

The use of external strategic partners in various forms was prevalent in seven cases. These relationships are mainly described as partnerships with companies based on new needs that arose from the M&A transaction. Kenya (case 1) mentioned “using sub-consultants and in some cases, we've had the occasional joint venture. One of the things we are not great at is dams, for example engineering and dam hydrology, and we've used again a competition to learn a bit more about that. Just because we have, we wouldn't have had a foot in the door at all without other companies”.

The use of these strategic partnerships in helping to drive new strategic initiatives was a key influence to sourcing.

Case 4, Croatia: “what would happen within this function in the overall operating model is that it would be a team of people whose job it is to effectively form strategic partnerships with think tanks, other operators, other corporates, yeah, basically other banks, other entities of relevance to the new company. And the way we had envisioned the sort of knowledge transfer happening in the new company would be through forming these sort of strategic partnerships”.

Partnerships with banks as a point of leverage in the financial sector seemed to be the main influencer for cases 6 and 10 in order to enhance product offerings within the acquired firms, where the acquirer provided some impetus for this to take place.

Case 6, Samoa: “So if it's a merchant that needs three or four machines, then you can have one on [Bank W], one on [Bank Y], or one of [Bank Z], or whatever the case is, and they can select which one to use. So they can say, okay I'm only going to process [Bank Y] cards on this machine because I have my settlements quicker, my rates better, all those kinds of things.”

Case 10, Mauritius: “We've effectively set up a FinTech partnership, we call it a FinTech partnership, and that's how it's been presented to the Reserve Bank, with [X] Bank. Now, under that deal we've obviously taken a lot of our technology over to [X] Bank. A lot of the technology that the banks don't have to provide our

service, we've taken over to the bank, we've integrated it into the banking systems and vice versa...”

The need for outsourcing to a different country was mentioned by Kuwait in case 7, who stated that they “outsource a lot of [their] actual coding or development to a third party that's also based in India. So we have well over a hundred people, generally working on product and technology for us”.

5.3.2.4 Research papers & environment scanning

Sourcing external knowledge in the form of research and internal R&D activities which ‘scan’ the environment in order to facilitate new innovations were identified as one theme mentioned less frequently by 3 cases.

In order to explore new practices and knowledge internally, case 1 sought to obtain knowledge from various research institutions and combine it with internal sources. Kenya stated: “There were a number of guys in the engineering power group who had some interest in nuclear studies, so we got those students together, as well as looking more broadly within the company. So a couple of people from the UK that have a bit of nuclear background and then bringing the University of Pretoria, and later, Wits on board as well. So to get, cause nuclear, you don't want to do, you don't want to not have really good knowledge in that area. So bringing a couple of the professors on, so it would have been a combination, a little bit of what we knew about nuclear, so authorisations, we knew a little bit and the engineers knew a little bit about the power side, but none of us really knew enough about old school nuclear theory effectively, which is what the universities do.”

Using research and external scanning as part of an internal R&D process was something that Russia mentioned as part of the acquisition strategy.

Case 9, Russia: “I think part of our strategy process would definitely be looking external, what's happening in the market, what's happening globally, what's happening within our client space. And I guess those sources would range quite widely from industry papers to research houses.”

5.4 Results: Research question 2

Research question 2: How does the knowledge flow within a merger or acquisition impact outbound innovation?

The main aim of the question was to understand in what manner outbound open innovation takes place in order to assess influence resulting from the M&A knowledge flow. In reference to Figure 7, when a theme was spoken about as a positive influence it has been annotated with a “P” and when negative a “N”. All 10 cases reflected that knowledge flow occurred during the transaction and acknowledged some instances of open outbound innovation that occurred. All cases did not, however, have each theme mentioned, these were split among the various cases.

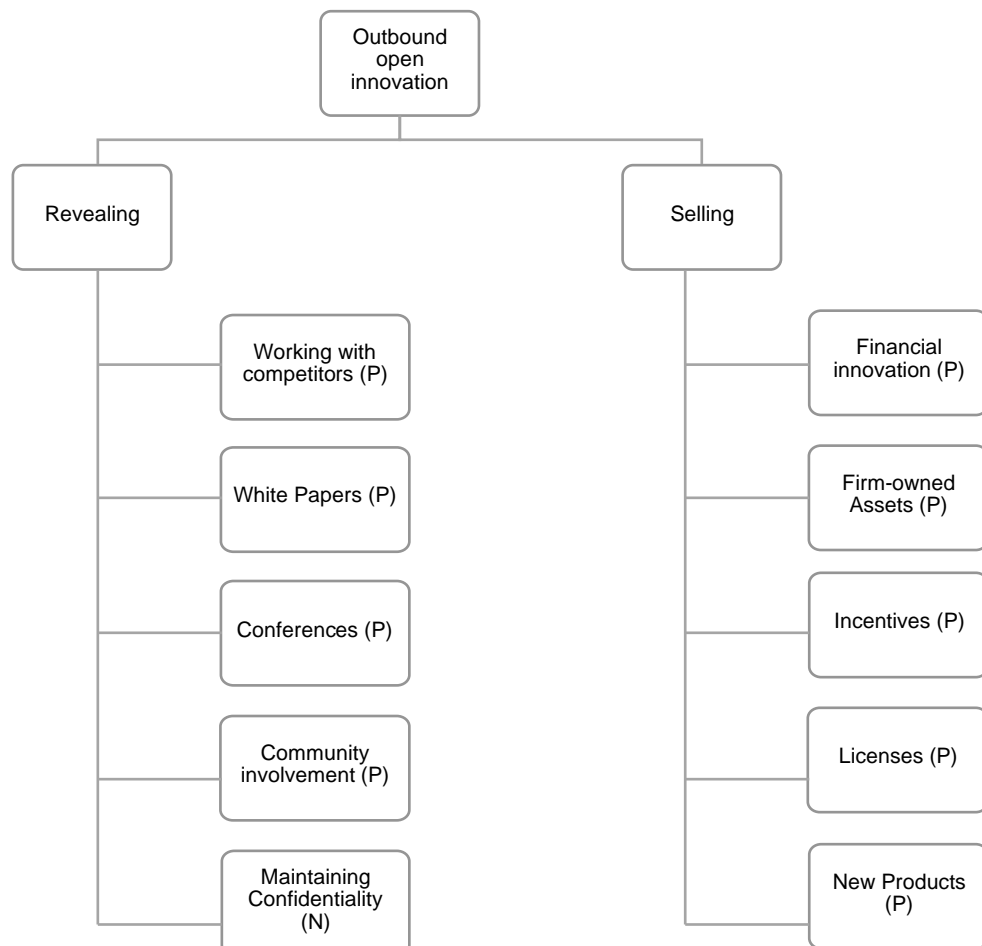


Figure 7: The main influences of M&A knowledge flow on outbound open innovation

5.4.1 Revealing open innovation influences

There were some prevalent themes that were identified from the cases in relation to revealing as form of open innovation. Those spoken about positively included working with competitors, white papers, conferences, community involvement. (see figure 7). Cases 1,3, 7, 8, 9 and 10 all used revealing as an open innovation practice from knowledge flows gained through their respective transactions. The frequencies of cases that mentioned these are presented in table 4 and are indicative of the recurrence of each influence on open innovation.

Table 5: Frequency of cases for outbound open innovation

| Form of OOI | Frequency |
|-------------|-----------|
| Revealing | 6 |
| Selling | 10 |

5.4.1.1 Working with competitors

Cases 1, 7 and 10 have seen a positive influence from working with competitors as a result of the exchanged knowledge flows during the transaction. In case 1, Kenya, referred to working on projects that were cross-border due to the acquisition by saying: "...people would have tenders and stash tenders when doing a study, where we have to use a certain in-house, sorry, 'in-country' competitors or certain proportion of the funds have to stay in-country in country." as an example of revealing. She further added that "...here's a group that will be a competitor, a bit smaller, but they do compete with us - where we share. We do just share our information constantly. So with the work that we don't do, we'll always recommend them and work that they don't do, they'll recommend us. And then when we do end up working, sub-contracting or working on a project together we'll always share all our data that just makes both studies better and, in that case, viewing each other as competition is just counterproductive."

This was reiterated from a regulatory body requirements perspective within the financial industry by Kuwait who mentioned, "It's not clear how the FCA wants things done. They give guidance, but the implementation, they say just do whatever you think based on what the rule says. So grouping together with peers or with competitors to understand the regulation and maybe have more standards around how that should be done." The associated risks of freely revealing with competition was mentioned by Mauritius in case 10 who partnered with a bank as a competitor of their in the Fintech space. He mentioned

that “when it comes to [Bank X] we've been very transparent with them. So just to answer that last part of that question we've been very open. To get this deal over the line and this partnership approved internally at [Bank X], and then also to get it approved at the reserve bank, [00:42:00] we've really had to be super open and transparent and pretty much give them real insight into our business, our systems, our processes. In fact, they even have access to our backend systems, the [Bank X] guys, to be able to monitor transactions and things like that, so they can see a lot of what we've got going on. One of the risks of that, is [Bank X] could technically copy what we've done, but we are signed into a pretty tight, exclusive agreements.”

5.4.1.2 White papers

The use of publishing white papers was spoken about as an outcome of acquiring a new entity's knowledge. Publishing findings about the transaction, new shared knowledge or innovations was an experience that cases 3 and 9 had in common.

Case 3, Monaco: “We do have a lot of white papers that we [now] publish”, adding that So the white papers, “we've got a lot of doctorate people in-house, which assist us with the writing of it. But generally what happens is there's some really nice thing that, that we created, or benefit that has happened. And then obviously people that do have experience with it, like doctorate [students], they do help us to refine it and to get it accurate.”

Russia, in Case 9, describes a potential white paper that resulted from a project branched off from a knowledge gap in their acquisition. He said that “we're busy with a project at the moment...which was looking at what is the opportunity for us in that delivery intermediary or on demand grocery space. And they conducted a huge amount of research into that space. It seems like this may be a project where we don't end up having a viable product, but our intention is certainly to try and extract value from the project by sharing the insights that came out of it. And again it becomes a white paper, a thought leadership article, something that we can put out into the market to say, we're thinking about this, we might not have [00:28:00] the solution for it, but here is a whole bunch of kind of insight and food for thought.”

5.4.1.3 Conferences

Another positive influence on openly innovating through revealing was attending conferences in order to share new knowledge gained or fresh ideas and problems. Kenya

in case 1 reflect that attend “symposia and conferences [which] is where you'll present work you did and how you solved it. And that's the point of those, it was pretty much just to share information and the new ideas with, very much with your competitors.” Open sharing in this form was also experienced in case 3 by Monaco who mentioned a white paper in section 5.3.1.2. He reiterated that once this paper had gone through the relevant marketing processes, that they usually then “show case to the industry” and that they would be “...presenting it in October, to the South African Coal Processing Society, at their annual two or three day seminar programme.” Further stating that they would then “distribute it to everyone” after they had presented.

5.4.1.4 Community involvement

This was only mentioned in one case and provide to be a unique finding in this way. Kenya in case 1 mentioned a problem that the business was facing in a region which they were working in and through new expertise that was brought in from the acquirer they were “looking at ways in which to get the community involved instead of building a large concrete dam and pollution dam...”. This was mentioned a fundamental shift away from the normal which would have been “throwing money at the problem” which was “unsuitable” for this project. The new expertise from the acquirer was a specific employee who Kenya described to be “...top of his field and a very innovative guy”.

5.4.1.5 Maintaining confidentiality

Cases 1 and 8 described a negative influence on their ability to engage in open innovation, more specifically to revealing. This was described as confidentiality or contractual enforcements that prohibited such activity. Kenya in case 1 describes instances where the acquired company would normally share information with other companies during a project but since “have to password protect the various folders on the servers or the entire server in some cases, because the information will be mine companies trying to buy land or equipment, or an entire business from another, which is highly confidential. So in those cases, there are very much limits”. From a contractual perspective, Cameroon in Case 8 mentioned that the acquiring entity “was more contractual. Everything that they did was a contract. Customers had to sign a contract with lots of, ‘if you don't do this’, ‘you don't do that’, there's penalties.”

5.4.2 Selling open innovation influences

All cases had at least theme of selling as a form of open innovation activity as a consequence of the external and internal knowledge flows during the transaction as verified in table 3. All themes are mentioned positively towards inbound OI and were discussed as a means of achieving some pecuniary gain which differentiated them from revealing. These forms are financial innovation, firm-owned assets, incentives, new licenses, and new products as shown in figure 6. The below will present these influences and the case findings.

5.4.2.1 Financial innovation

Small innovations that directly impact clients which are effectively sold are instances that cases 5 and 6 mentioned as a consequence of the knowledge flows during the acquisition. Senegal in case 5 refers to financial contractual agreements that were reformed in order to meet financial needs of suppliers and the business. She stated that “one innovation, is just looking at the contracts, trying to get the payment terms extended. So if a person is on seven days, can you responsibly negotiate them seven more days. If the person's on 15 days, are you able to responsibly negotiate them to 30 days, et cetera. And so the biggest benefit is actually in the big OEM suppliers, it's 20 suppliers who are 80% of the expenditure in the company, for instance, that you negotiate from a 30 day payment term to 60 day payment term.” Samoa in case 6 mentions financial innovations as an integral component to advancing the payment services that was being sold: “I think one of the other things that was very important at the time was net settlement. What net settlement means is if you have a higher risk merchant that you don't know if he's going to be paying you the rental and all those. When you do your daily banking, your daily settlements to that client, what happens is you already deduct your fees.” He further said that this was a challenging innovation for its time.

5.4.2.2 Firm-owned assets

As part of the transactions some cases confirmed that there were new or existing assets that were leveraged and made financially beneficial. All of these were as a direct result of knowledge flows during the merger or acquisition which highlighted existing or newly bought in asset potentials. Argentina explains that in case 2 they “acquired a mining right with a beneficiation plant. The beneficiation plant can do 200,000 tons a month of washing the coal, basically bringing it up to spec, like washing all the nonsense out and at that stage, our mine plan was only for 50,000 tons a month because of the way the

seams were running. And we only had so much kept. So we could only open a box cut at a time. And then, the people we got in to manage the plant for us, they, for example, said, listen, I know the guys next door needs washing allocation. You can open this as a toll washing facility and people can come and pay you per ton to wash it, to wash their coal through your plants. And that way you can earn extra income". The second instances in case 2 relates to the same acquired mining company where Argentina explains "our surveyor was doing an entire layout plan of the area and he said, oh, do you like Transnet, one of Transnet's old railway lines, still runs through the property at the far east end. And he advises his says there's a shortage of sidings in the area so maybe look at opening a siding. So a railway siding is where you go drop off the coal, it gets loaded onto the trains and then the trains, take it to RBCT, where it's offloaded to be loaded onto vessels. Basically that opened a new opportunity for us on extrapolating value from something that just happened to be on our land, and the areas also that we identified, that we will not be mining."

In another mining acquisition, Senegal mentions the case 5 transaction noticed that "revenues are being made, not primarily from mining on that mine now, it's by selling or renting and leasing out the entitlement to its TFR lease as well as it's entitlement at the RPCT. So we're making money that our predecessors didn't make in the space, just through trading."

5.4.2.3 Incentives

This form of influence was only mentioned by Monaco for case 3 and centred around the transaction and encouraging staff to innovate within in order to sell new products. He explained that "we do have certain initiatives and a lot of incentives for the integration of products. So if you integrate stuff or if you sell their products, or if they sell our products, you actually get incentivised to do that. So that forces the people to organically learn about other stuff as well". This is a form of selling which he provisioned by saying "creativity doesn't really work if it's forced" in relation to why incentivises were used for this type of open innovation.

5.4.2.4 Licences

Cases 1, 6 and 10 mentioned licensing as a form of OI that could be optimised for financial gain. Kenya (case1) shows reflects on a licence gained due to the acquisition: "even water-use licensing, which is something I've been involved in a bit reluctantly, [The

Acquirer] have a very good water-use licensing team, and they're very clever about the way in which they go about storing and using information in our market and pricing for water-use. It's largely because that entire team worked for the government department that now authorises water-use licensing. Other forms of licensing mentioned were all internally based and not shared with the market.

Cases 6 and 10 used external party licenses in order to enable the selling of their own product as opposed to gaining their own. Samoa in case 6 mentions “the scalability from the learnings, how we could quickly move to more merchants they looked at acquiring, or not acquiring but gaining as licensing bank to sponsor the license. So they had a bank that originally, because it's a small company, you don't want to buy your own banking licenses, that's very expensive, but you can get a sponsoring bank and then you will be a merchant services provider, MSP”. This was reinforced as an inbound OI by case 10 participant where he explains that they are “in a very unique position here in South Africa, where we've got a very unique approval from the South African Reserve Bank to do cross border payments into the country and report those transactions into the reserve bank system, which pretty much nobody else in the market has.” This approval is a type of license that enables them to report directly into the balance of payments system.

5.4.2.5 New products

Generating revenues from products that are externally sourced or innovated on were mentioned by cases 3, 4, 6, 7, 8, 9 and 10. One instances of this was in case which benefited from a “partnership” from the acquisition where a product was being sold under a different brand.

Case 3, Monaco: “they've got a partnership and we start to sell their products packaged without ours to see if it's a fit and then to develop some new stuff. So we do that. I won't say we do it as a rule, but we do that. And it's usually a precursor to an acquisition going to happen.”

Similarly in case 4, Croatia alluded to new products that are going to be developed using external knowledge in order to optimise on a new revenue stream.

Case 4, Croatia: “I think again, it wasn't necessarily a secret that there was room to expand across the whole energy value chain, and bearing in mind the various macro trends throughout the world, which are also no secret, towards the energy

transition, moving away from fossil fuels and coal and oil and more towards things like renewables, natural gas, hydrogen very clean sources of energy. Those are all not secrets, they knew those were all options on the table. Where we brought in the value which was then making it a bit more concrete for them and actually defining, this is the size of the renewables opportunity, for example, and this is how you can tangibly capture a piece of that pie.”

The ability to white-label as a selling solution of a new product due to relationships gain from the acquisition is something that was evident in case 10.

Case 10, Mauritius: “So the advantage that we brought is that we went to [Bank X] and we said, listen guys, number one, we've got these clients, so we've got the client base and we've got the flows, and number two, we've got the technology to be able to provide the service. You guys don't have that technology and you guys don't have these clients, so yes, you can go and copy what I've built, which will take you years as a bank, and you then need to go and sign on all these clients, get them transacting and things like that. So we went to the bank and we said listen guys, we'll bring our technology to the bank, so we will integrate our FinTech technology and our platforms into the bank, we'll white label them for the bank, so everything's white labelled as [Bank X], and we'll deliver these clients and their flows and this type of solution too.

CHAPTER 6: DISCUSSION

6.1 Introduction

This section will compare the results and data analysis in Chapter 5 with the current literature in order to provide insights into how M&A knowledge flows influence open innovation. In addition, this chapter will delve into the various impacts of external and internal knowledge on inbound and outbound innovation through a multiple case exploration. Each case will be discussed individually and together using the presented results as the grounding for discussion. This chapter, therefore, seeks to add depth to the results and contribute to the open innovation literature through the lens of M&A transactions.

6.2 Discussion: Research question 1

Research question 1: How does the knowledge flow within a merger or acquisition impact inbound open innovation?

This research question sought to investigate the specifics of inbound open innovation, particularly how it is influenced by M&A transaction knowledge flows. Further understanding whether the transaction does adhere to the framework presented by (Dahlander & Gann, 2010) on inbound innovation. This section seeks to combine the findings on acquiring and sourcing with the extant literature in relation to the relevant cases.

6.2.1 Acquiring

As noted in the previous chapter, acquisition was a prominent finding among the M&A cases as a form of open innovation. The cases knowledge flows indicated four positive influences and two negative influences on acquiring

6.2.1.1 Technological advancement

Technological advancements refer to the innovation gains that are directly related to the firms new systems, information technology infrastructure and upgraded products or services. These gains are associated with firm growth and can be a direct or indirect consequence of M&A transactions in pursuit of enhancing their core technological areas (Shin et al., 2017). This is especially pertinent in technologically intensive firms.

This was an important source of open innovation for several firms in leveraging their newly acquired knowledge flows into valuable technologies that could aid in their expected M&A growth outcomes. Some firms experienced acquisitions of automated systems in order to manage their staff and regulatory requirements more efficiently. Case 6 had found systems to do away with manual entry checks for miners through new technologies on their mines. This in turn positively impacted their ability to decrease injury rates (increase productivity) and decrease losses through theft and bribery.

Technological M&A's are a frequent discussion within the literature with contrasting views on the positive or negative impacts on firm innovation. However, Sears and Hoetker (2014) have mentioned the importance of relevant knowledge for the success of these types of acquisition. This has certainly been supported by the cases which reflected technological advancements where knowledge synergies were mentioned, as positive factor for knowledge flow.

Novel innovations

In some instances, these technological advancements along with new knowledge flows create novel innovations within firms. The literature indicates that this occurs when a firm intentionally utilises knowledge from an acquired firm to exploit existing technologies and capabilities (Cammarano, Caputo, Lamberti, & Michelino, 2017). This use of leveraging internal knowledge flows in order to develop new innovations was supported by cases 1, 2, 3, 4 and 10 in varying degrees. In each case there was at least one instance of a novel innovation as an advancement to their existing or acquired technologies. Furthermore, knowledge flow efforts such as informal collaborations, new strategies and external parties also contributed to the development of these new innovations for commercial or internal use.

6.2.1.2 Slow adoption

Slower adoption was a finding from two cases who referred to the impact of knowledge flows, particularly where they are directionally one way flows. These negatively influenced acquiring as an open innovation source. The slower adoption meant that there was little need to purchase external resources for innovation and generally cause slumps in innovation

6.2.1.3 R&D spend

Research and development has a strong theoretical link to innovation. It is often spoken of as an occurrence which is inwardly focused. The cases confirmed this, however, the research also found that firms use their R&D spend on activities that are externally driven, particularly when positive or negative M&A knowledge flows present a need to acquire resources. R&D intensity has been accepted in the literature as a tool to successful innovations (Anzola-Román et al., 2018) and is hence often used in studies as the measurement for innovation.

Some cases have shown that positive M&A knowledge flows have accelerated their needs their R&D spend for product innovation and general use of their internal R&D teams. This is confirmed by the literature indicated that the role of a dedicated R&D department can be a positive moderator of inbound OI (Bianchi et al., 2016) with marginal benefits. These benefits extend to instances where a firm has used R&D spend for outsourcing. Herein lies the positive influence on OI from an acquisition or product innovation perspective.

6.2.1.4 Greater internal assets

Having greater internal assets is a direct consequence of many M&A transaction. These increased assets in several cases have shown to have a negative impact on open innovation, specifically it encouraged a closed innovation perspective for assets that that would have otherwise been outsourced. The literature, however, looks at asset specificity (defined earlier), as a having a positive outcome on open innovation given their knowledge flows (Zheng et al., 2021). The factor of M&A transactions could be the point of difference within these conflicting findings, recognising that the M&A knowledge flows are a form of insourcing.

This would be consistent with the Resource-Based View (RBV) of the firm which labels asset specificity as a “core competence” that firms should internalise rather than outsource (Zheng et al., 2021)– a clear closed innovation perspective. It is, therefore, arguable that M&A transaction knowledge flows are consistent with a RBV approach and discourage the further outsourcing of internal assets in order to safeguard competitive advantages. Which, in turn, negatively impacts a firm's open innovation by retaining critical knowledge flows on newly acquired assets internally.

6.2.2 Sourcing

Bringing in of external sources, not necessarily for monetary gain, is the essence of sourcing. It had the highest frequency among the cases, in relation to all the other forms of open innovation within this research. Using external knowledge strategies can help a firm remain competitive and also keep abreast of market changes or emerging technologies (Grigoriou & Rothaermel, 2017). This can, however, be dependent on how internal knowledge has been extracted from acquisition. The cases reflect and combine these learnings through themes discovered in chapter 5.

6.2.2.1 Greater internal skills

Not dissimilar to greater internal assets discussed in 6.2.1.4, several cases brought forward the observation that after the M&A transaction their knowledge flows enabled a greater understanding of the skillsets that they had. In case 1, a largely knowledge driven business, gaps that usually would be filled with external experts were now able to be filled with newly acquired skills or by combining existing skills with the new. This negatively impacted a firm's propensity to openly innovate, with less need for sourcing.

This movement towards closed innovation is not verified in the literature as a move towards better performance, however, it stands to reason that a mixture of both internal and external knowledge sources is one method towards creating value. The literature does suggest that knowledge flow within a firm helps to maintain a competitive advantage (Ham et al., 2017), and therefore would encourage a closed innovation approach from M&A firms post transactions. This was also an unexpected finding, when viewed with the literature in chapter 2 but does seem consistent with some RBV approaches. Furthermore, not all cases saw this to be true and even in cases where this was true, it did not necessarily prohibit firms from seeking external expertise as mentioned in the next few themes.

6.2.2.2 Consultants

The majority of the cases mentioned the use of consultants in some manner. These consultants were predominately used for depth of knowledge into certain areas but also for the development of unique solutions to existing problems. Cases 6 and 7 both gave instances of IT consultants; both also had an industrial consolidation strategy for their M&A transactions. In all other cases, consultants were used for general innovations and solutions within new spaces discovered from their knowledge flow efforts. These were

outsourced expertise as a direct result of the M&A and are the antithesis of the previous theme. Business consulting seems to be a more widely used form of open innovation with growth being spurred by specialists consulting firms like auditors branching out into management and strategy consulting. Generally, there might also be a greater need for external expertise, especially within an M&A context, which has also been on the rise. This is reiterated by the consulting being the only theme to house 9 of the 10 cases as an outcome from M&A knowledge flow.

This is consistent with literature which suggests that external consultants produce marginal benefits (positive) as a moderator to outsourcing and open innovation (Bianchi et al., 2016). However, this does not consider the element of M&A transactions with little research in this area to confirm this as an extension to other literature. It can be deduced from the cases that there is in fact some positive association between M&A knowledge flows the need for consultants from an open innovation perspective. These include field experts as highlighted in the results section.

Most cases highlighted the complexity of new knowledge which required field experts to validate and expand on potential opportunities from a product, market, and revenue perspective. Furthermore, this validates the intersection of M&A's and innovation which is the pursuit of growth. Field experts were also a reflection of cases that were highly industrialised sectors which is reliable given the need for specialised skills in areas like mining and engineering where "decentralisation" (Oltra et al., 2018, p 821) might occur for a best fit knowledge given the firms internal knowledge base

6.2.2.3 Partnerships & joint ventures

Strategic alliances encourage exploration and learning about new products and enable the development of new innovations (Cammarano et al., 2019). This is an additional way to acquire external knowledge, which 8 of the cases confirm are influenced from knowledge gained around existing partnerships in the acquired firm. In some ways this overlaps with the "working with competitors" theme mentioned later. The fundamental difference being the rationale behind the open innovation. Many of the mentioned partnerships are differentiated by the fact that they are with firms who bring some type of technological collaboration or product enhancements for the cases.

This has been touched on by the open innovation literature and less in the M&A literature. As boundaries become less delineated there are through M&A's (Mawson & Brown, 2016) there are arguably greater opportunities to form strategic partnerships with

external firms in the pursuit of growth. Certainly what has been noticed in case 4 has been a reliance on newfound partnerships given the transaction's internal knowledge indicating that an entirely new strategy needs to be formed.

6.2.2.4 Research papers and environment scanning

The use of existing research was a positive influence brought into the new entity in most cases. Although there were fewer firms that mentioned this as a source of external knowledge directly resultant from the M&A knowledge flow, it did seem to be a constructive non-pecuniary method of inbound open innovation. Some cases had internal R&D units were prompted by M&A knowledge to can externally for new innovations and opportunities. The method of leveraging external knowledge directly related to internal knowledge flows allows a firm to expand their open innovation efforts to a greater degree than if they focused on a singular knowledge flow.

Academic scholars

An example of using academic scholars in practice is Vodafone which uses universities as an external knowledge source. This has been mirrored in cases 1 and 3 who leverage off existing relationships with scholars, either in-house or external to enhance their ability to develop new innovations. As a source of academic knowledge, both cases work in specialist fields that would demand cutting edge technologies and knowledge for their clientele base. The acquired entities seem to fold into this culture with the acquired firm taking their shared knowledge through their academic scholars for areas that require structured research. Case 1 discovered an interest overlap between the two firms within nuclear studies, which would otherwise have not been pursued due to the low interest as single entities. The M&A transaction was the catalyst to using academic scholars to propel this potential area of interest.

6.3 Discussion: Research question 2

Research question 2: How does the knowledge flow within a merger or acquisition impact outbound innovation?

This research question sought to explore the phenomenon of outbound open innovation through M&A knowledge flows. The categories of revealing and selling were used to build on the knowledge flow influences that were observed from the cases. This was not a form of open innovation was observed across all cases; nevertheless, cases that did not show any OOI influences will still be examined in order to remain open to the research question. The following sections discuss the results by use of the themes mentioned in chapter 5 - this will be considered a part of the cross-case analysis.

6.3.1 Revealing

Revealing is form of open innovation which encourages a firm to share its internal knowledge base with external parties. These “inside-out” flows are not necessarily only with competitors, they could also be sharing with suppliers, customers, the market etc. This strategy does not have any short-term financial gains. Firms may be more reluctant to pursue this form of innovation, the reasons for this will be discussed as part of the themes below.

The literature provides some ways that firms use revealing, outside of the knowledge flow and M&A space. Some of these revealing motivations include: problem disclosure, capability seeking, co-creation, enhancement and strategic spill-overs (Verreynne et al., 2020). These could in, some ways, overlap with other themes.

6.3.1.1 Working with competitors

In order for the firm to collaborate with competitors there needs to be a strategic benefit i.e. co-creation or enhancement of capabilities. These benefits in some cases were found through knowledge flows. Case 1 identified competitors that the acquired firm had previously used for projects which further influenced the use of these firms for new projects in specific regions or with specialised skills. This process would mean that internal knowledge would need to be shared in order to build client solutions.

These findings in case 1 differed to the scarce literature around this theme, which posit that firms share technologies for the purposes of setting future industry standards (Helm et al., 2017). They were however agreeable to case 7 who used some competitors to

develop industry standards and case 10 which sought to leapfrog ahead of other competitors from a technological perspective by using an existing market competitor.

6.3.1.2 White papers

Developing research articles or other industry knowledge outputs in the form of white papers was mentioned by cases 3 and 9 as a method of revealing internal learnings to the external environment. These are not necessarily distributed to specific parties but more generally to enable innovation growth externally that can potentially be used for general expansion and perhaps even brand recognition. This was not necessarily an explicit way of revealing mentioned in the literature nor was it a major finding, however, it is worth noting that M&A knowledge flows were direct instigators of research that led to some firms publishing white papers or the equivalent.

Conferences

Conferences were another method that some firms used to openly share their internal knowledge. These methods were, however, loosely linked to M&A knowledge flow and were not necessarily attributed to this.

6.3.1.4 Community involvement

Community involvement might initially seem to be a form of inbound innovation, however, in order for firms to involve community and “crowdsource” their solutions, they first need to share some of their internal knowledge in the form of the problem they would like to solve (Verreynne et al., 2020). This dynamic is evident in some cases where solving a problem is linked to a specific group of people. Enabling this selected community to have some access to internal knowledge for problem solving is a less frequently mentioned form of open innovation. This was a direct, positive influence of M&A knowledge flows where newly acquired clients presented new community specific challenges or where one firms brings in community involvement as a new form of revealing OOI to the other entity.

6.3.1.5 Maintaining confidentiality

A prohibitor to pursuing revealing was put forward by some cases as the need for confidentiality, either through contractual obligations, limitations of information that can be shared or due to M&A knowledge protection. Case 8 contained an abnormally higher

amount of negative knowledge flows in comparison to the other cases. The case also reflected predominately negative impacts to open innovation – the acquiring entity subscribed to stringent contracts that reinforced penalties for clients. This, in turn, meant that staff were bound to confidentiality agreements and kept knowledge insulated within the firm, discouraging any form of external sharing, or revealing. This was particularly pertinent to case 8 which was a technological merger and could have made significant innovative gains from outbound OI (Shin et al., 2017). Other cases which showed many positive influences on open innovation explained the need for privacy on new information obtained from the transaction which excluded them from sharing problems in order to gain solutions externally.

6.3.2 Selling

This form of open innovation describes how firms appropriate value from existing forms of knowledge, specifically in relation to their M&A activity. Selling allows the firm an opportunity to leverage their existing technologies and intellectual property for commercial gain. Sharing externally in this instance is linked to a pecuniary gain. These are put forward in the literature as being underpinned by strategic objectives which would maximise the value captured by a firm (Masucci et al., 2020).

6.3.2.1 Financial Innovation

These innovations were mentioned in only a few cases where firms were able to find ways of restructuring their financial bearings and arrangements in a way that either the acquired or the acquiring firms could benefit. These financial models were cited as fundamental gain from the transaction and a key innovation which spoke to ways the businesses were able to financially gain from external parties, reflected well in case 5. Financial innovations in case 6 refers to financial improvements of the product offering which potential and existing customers are able to benefit from.

These types of innovations are not explicitly mentioned in the literature as forms of innovation and may be attributed to the M&A transaction's knowledge flow. Newly acquired firms knowledge present the opportunity to reinvent the financial models from an organisational and product level. These innovations can then be sold on to stakeholders for monetary gain and in comes cases cost savings.

6.3.2.2 Firm-owned assets

A few cases mentioned the assets that they had come to own or share through their transactions which positively impacted on the firm's ability to use these in renewed ways for varied purposes for a monetary gain. This bears similarity to greater internal assets mentioned in 6.2.1.4 as a negative influence on inbound OI. Cases under theme mentioned how these acquired assets worked in favour of outbound open innovation by being able to reinvent and repurpose firm-owned assets. The positive knowledge flows on new assets that each firm has gained through the transaction led in some cases to an exploitation in the form of selling. Both cases 2 and 5, both mining companies, were prominently mentioned across this theme. They found innovative solutions to make their assets profitable by leveraging knowledge flows, which included repurposing and even leasing out spare capacities or products to other firms.

Dahlander et al. (2021) mention that assets which are unleveraged can be used for the benefit of other companies who may make better use of the asset, which is consistent with this thematic finding. Additionally, there are mentions of not seeing this kind of OI in the literature despite its potential value, which can be attributed to the closed innovation mindset that is adopted when looking at strategy through a RBV lens.

6.3.2.3 Incentives

Incentives were related to driving innovations for the benefit of the firm, either internally or externally. Although this was not a frequently mentioned method of selling, it was pertinent to the research when looking at the influences of an M&A transaction. This is not widely reflected in the literature, however, it is mentioned as a potential way to influence open innovation from a policy perspective (Gault, 2018). In order for institutions and individuals to be driven to innovate (improve on or produce novel innovations) there may need to be some incentivisation. Case 3, depicts this from an M&A perspective where external and internal stakeholders were offered incentives in exchange for new innovations, including integrated products, given the newly acquired products from the M&A transaction.

6.3.2.4 Licences

Licenses are mentioned in the literature often in relation to selling as a means to outbound open innovation (Oltra et al., 2018). This poses some challenges, particularly from an IP perspective, within a growing digital world. Firms keeping a very tight hold on

new innovations as opposed to sharing this or “licencing” this out is the intricate balance which licencing presents. From an M&A perspective, knowledge flow indicated renewed access to licenses and innovations that, may not immediately benefit the firm and could be sold or licenced out in order to build on the acquired innovations from either organisation. Being able to leverage licenses to the benefit of other market providers or to gain partnerships, as shown in case 10 within the financial sector, may assist firms to continue building new additions to their fintech platform. It may also improve the overall industry from a regulatory perspective, which could also be to the benefit of the firm. This positive OI outcome from M&A knowledge flow suggest that innovation and profit could still be derived from resources that may not be in alignment with the business core competencies.

6.3.2.5 New Products

M&A knowledge flows positively increased the ability for firms to produce new products that could be used or sold externally for profit but also for further innovation to products. While these did not take on the form of licencing, which is often linked to selling in the literature, it was a pertinent pecuniary influence on open innovation. Several cases found novel products that could be developed from new acquired knowledge and sold on. The literature does link product innovation to knowledge acquisition (Dunlap et al., 2016) through the use of exploitation using M&A. This encourages growth for the firm but also continued internal improvements and potential new partnerships or joint ventures, positively impacting inbound OI.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This research sought to understand what influence M&A knowledge flows have on open innovation during transactions. The research questions looked to delve into inbound and outbound OI as defined by (Dahlander & Gann, 2010), in order to fully explore the paradigm. It was established that OI is the purposive flow of knowledge into and out of a firm, and that M&A transactions act as an enabler to external and internal knowledge flows. Both innovation and M&A do overlap in the literature and in practice they are used as tools for business growth - it is therefore, pertinent that the link between the two phenomena needed to be better understood in order for business and academia to gain insight and value.

7.2 Principal conclusions

The key finding from the research relate the influences that M&A knowledge flow had on open innovations. These were finding that related to positive and negative impacts on both outbound OI and inbound OI. These findings are depicted in figure 8 and indicate the various flows of knowledge which form a framework based on the observed case studies.

7.2.1 Inbound open innovation influences

The case studies revealed that M&A knowledge flows, where mainly positive, produce positive influence in open innovations. These influences are specific to either acquiring or sourcing and were the most frequently mentioned. The cases revealed that there were some similarities across industries, such as the mining cases, these influences spanned across few of the influences in this way. Inbound was also shown to be significantly more spoken about than outbound open innovation influences. The inference here was that it was a more popular method among the cases and perhaps has a more direct link to M&A knowledge flows than outbound OI.

7.2.2 Outbound innovation influences

The cases reflected some consistencies with the literature particularly reiterating how uncommon this form of OI is, although growing. This may be due to the nature within which OOI takes place, where it seemingly encourages free sharing with little direct benefit to the firm. Although this is not true from an M&A knowledge flow perspective

because several cases alluded to how they were able to serve back innovations from others through the sharing of their internal resources. Furthermore, there were more influences – mainly positive - found for outbound open innovation, however table 3 shows that the frequency within which outbound OI was mentioned was far less than inbound OI.

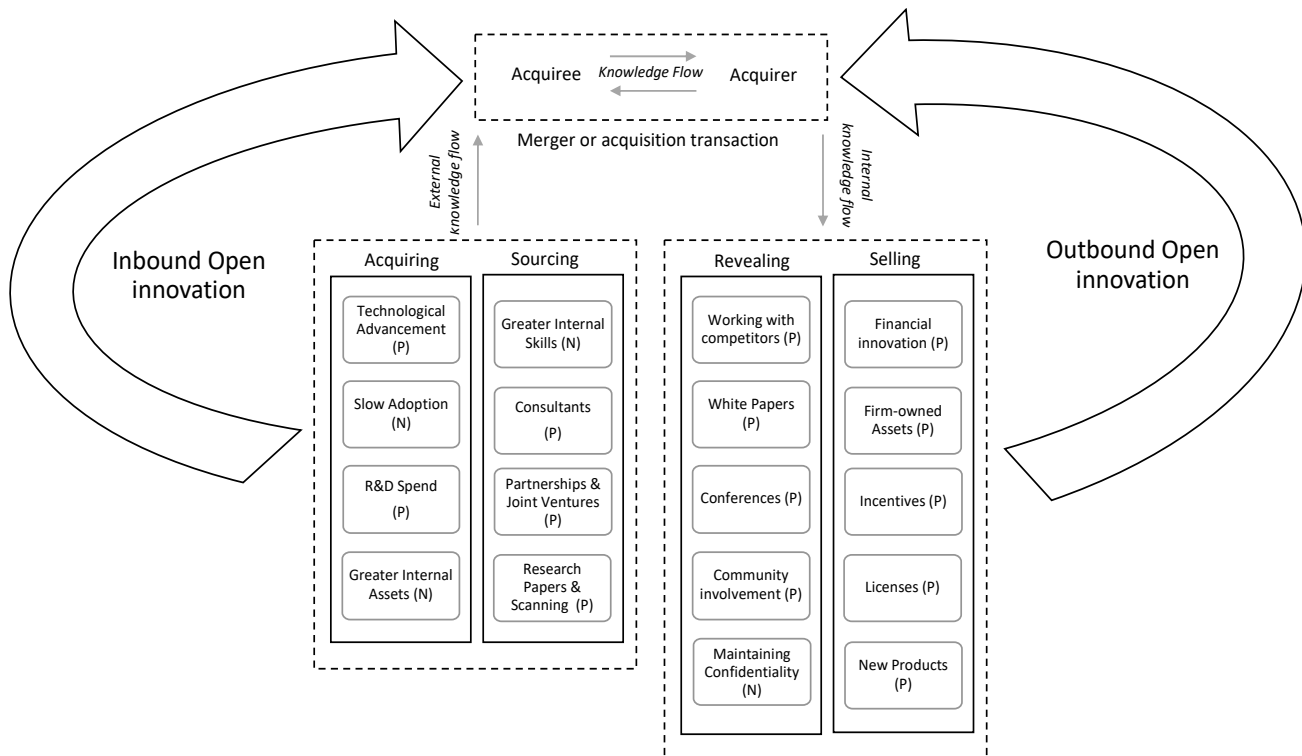


Figure 8: Proposed framework of M&A knowledge flow influence on open innovation

7.3 Implications for firms and management

Firms which have used or will use M&A as a strategy for economic growth could use the finding within this paper to ensure that the structuring and synergies of the acquired and acquirer are intentionally. The research has suggested that M&A knowledge flows can produce positive innovative influences which may could have financial benefit or innovative capability building benefits – both of which are not touched on in this paper.

Management is able to forecast what each influence will be and how best to ensure positive influences are enhances and negative influences are deterred. Further to this, there are learnings around how organisations can leverage their internal knowledge flows in order to optimise on open innovation initiatives – specifically on how a RBV approach, which encourages closed innovation, can negatively impact the initiatives on open innovation. It may further help management that do have or would like to adopt an OI strategy decide on an appropriate acquisition with the necessary synchronicities.

7.4 Limitations of the research

This research sought to investigate OI through M&A knowledge flow – the exploration of therefore limits the generalisability to of the findings to these aspects. The approach taken aided in understanding these influences, however, there were some notable limitations:

- The geographical location of the cases was skewed towards Johannesburg and Cape Town which introduced a level of geographical bias.
- The limited timeframe for the research meant that information collected was relevant to varied timeframes with cases being within a range of 1 – 15 years old. This was introduce aspects that are no longer relevant to the current period.
- The sample size from a case perspective was larger than generally required. While this may have helped with generalisability, the industries were not all varied with some cases operating in very similar markets.
- The manner in which the interviewer addressed questions, including tonality and perspective may contain elements of the researcher's bias (Saunders & Lewis, 2012).
- Research cases could also contain data bias depending on whether the participant's position and whether they were part of the acquiring or acquiree.

7.5 Suggestions for future research

The below details some future areas of research that may be undertaken, given the insights obtained in this study:

- The agnostic approach of a transactions being an acquisition or a merger was not taken into account. Further papers may look to separate these out to obtain more granularity on each.
- The research adopted a qualitative methodology in order to explore the OI influences, this could have been supplemented in a mixed-method in order to do qualitative testing of the extent of these relationships.
- There are new papers suggesting further research of open innovation and M&A's needs to occur within the SME sector (Dezi et al., 2018). There were elements of this research which suggested that different sized entities could provide varying results to those firms that were larger.

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ANNEXURE A: Consent Form



Dear Participant

I am currently a student at the University of Pretoria's Gordon Institute of Business Science and completing my research in partial fulfilment of an MBA.

I am conducting research to explore the impact that knowledge flow as part of mergers and acquisitions (M&A) have on innovation, specifically open innovation. Our interview is expected to last about 45 - 60 minutes and will help us understand the empirical links between M&A knowledge flow and open innovation.

Your participation is voluntary, and you can withdraw at any time without penalty. All data will be reported without identifiers and confidentiality will be maintained. If you have any concerns, please contact my supervisor or me. Our details are provided below.

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Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

ANNEXURE B: Interview guide

| Focus area | Primary questions |
|--|--|
| M&A background information (5 minutes) | <p>Chat briefly around where the organisation was strategically before and after the M&A?</p> <p>Please explain the strategic rationale/reasons behind this specific M&A transaction?</p> |
| M&A knowledge transfer processes (20 minutes) | <p>What types of knowledge did the organisation/s gain specifically from the M&A?</p> <p>How was knowledge transferred between the firms during the M&A process?</p> <ul style="list-style-type: none"> - Was this internal, external knowledge or both? <p>What were the success factors considered for the effective transfer of knowledge post the M&A?</p> |
| Open Innovation – inbound & outbound (20 minutes) | <p>How have the organisations used external or internal knowledge to explore new products/service and processes* before the M&A?</p> <p>Did the transaction change how the firm leveraged the external environment for R&D?</p> <p>Can you identify instances where changes or uptake of innovation took place as a direct or indirect consequence of the transaction?</p> <p>During the M&A process what external knowledge or expertise were used?</p> <ul style="list-style-type: none"> - How was this exploited by either firm for new ventures or ideas? - Improvements to existing products or processes? - New partnerships for improvements? - Were an external party consulted for the transaction e.g. management consultants? - What value was derived from this? <p>What opportunities or efficiencies did you identify as an outcome of knowledge flows?</p> <p>How has the overall gained knowledge from the transaction helped to solve problems or enhance product/service development?</p> <p>Can you identify any new innovations or research that have been freely shared or traded/exchanged with the market?</p> <ul style="list-style-type: none"> - What impact did/would such open sharing have on the company? <p>Did the transaction shift the way the business views innovation?</p> |

**New products/processes or improvement of products/processes could include code, software, or intangible assets.*

ANNEXURE C: ATLAS.TI Codebook

Academic Scholars (P)
Collaborative KF (P)
Community involvement (P)
Conferences (P)
Consultants (P)
Cost saving (N)
Documentary KF (P)
Due Diligence
Exploitation
External assets (N)
External Knowledge
Field Specialists (P)
Financial innovation (P)
Firm-owned assets (P)
Gradual integration (P)
Greater internal assets (N)
Greater internal skills (N)
Handover processes (P)
Incentives (P)
Increased regulations (P)
Industry KF (P)
Innovation metrics (P)
Inter-brand sharing (P)
Internal Knowledge
IOI: Acquiring
IOI: Sourcing
Lack of synergy (N)
M&A Industry Consolidation
M&A Product Expansion
Maintaining confidentiality (N)
Management clash (N)
Meetings KF (P)
New acquisition (P)
New Licences (P)
New Products (P)

New strategy
No open innovation (N)
Novel innovation (P)
One-way knowledge (N)
OOI: Revealing
OOI: Selling
Operational efficiencies (P)
Partnerships & Joint ventures (P)
R&D Spend (P)
Relationship KF (P)
Renewable energy (P)
Research papers & environment scanning (P)
Slow adoption (N)
Strategy sessions (P)
Synergies KF (P)
Technological advancement (P)
Technologically backward (N)
White Papers (P)
Working with competitors (P)