Using open innovation to enhance capabilities by seizing external innovation

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Abstract

Open innovation involves a business model that incorporates internal and external expertise, emphasising external collaboration employing inflows and outflows of knowledge. The focus of the study was open inbound innovation, which talked about the inflow of information that a company obtains from the external environment to capture knowledge and technologies from sources such as customers, suppliers, competitors, universities, and research organisations. The study explored how organisations implement open innovation and address the internal practices necessary to seize external innovations to achieve success.

The purpose of the research was to understand how companies implement open innovation to adapt to the environment. The dynamic capability theory was used as a framework for the study. The research followed an interpretive qualitative research design by implementing interviews to gain insight into open innovation used by senior managers to adapt to the environment.

The findings revealed that inbound innovation enables companies to acquire skills and knowledge that may not exist internally. Engaging in internal and external collaboration for Research and Development was viewed as beneficial for gaining external knowledge for innovation, reducing cost and time, and enhancing product quality and competitiveness. The study highlighted the absorptive abilities, such as technology, communication and culture, as action strategies necessary to absorb external knowledge. This research contributes to the theory of open innovation, using the practice to leverage and enhance internal capabilities, and not just view it as taking internal tasks to external suppliers to solve problems. The study targeted Senior Managers from private companies who had experience in open innovation.

Key words

Open innovation, dynamic capability, inbound innovation

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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 Philosophy in Corporate Strategy 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 TO THE RESEARCH PROBLEM

1.1. Introduction

Companies constantly face changes in the environment, the world evolves, and technology changes how businesses operate and provide products and services. The purpose of business is to create value based on the needs and wants of customers, where customers are no longer interested in just consuming products and services from companies but are interested in sharing their knowledge (De Mattos, Kissimoto & Laurindo, 2018). Their needs and wants are constantly changing, also sometimes driven by a change in technology.

Boons and Stam (2019) indicate that the fast-moving business environment compels businesses to improve their products and services to meet demands better and to fulfil continuous innovation; as a result, companies are opening their innovation practices to ideas from parties outside the organisation. Bogers, Chesbrough, Heaton and Teece (2019) suggest that technological evolution has made it possible for businesses to gain knowledge about their customers and be more accessible to external skills and knowledge to improve products and services.

Knowledge has become a commodity, and it is dispersed in many places around the globe, which changes the geographical footprint of innovation. Ruiz, Brion and Parmentier (2020) add that companies nowadays need to be open digitally to compete and survive. Enkel, Bogers and Chesbrough (2020) say due to the business environment, managers need to transform from the traditional logic of knowledge management and shift to managing an ecosystem of collaborations with partners to co-innovate.

Given the dynamic environment where businesses operate, it is necessary to investigate the open innovation phenomenon, approach companies use to access knowledge or skills lacking or non-existent within a company. Open innovation has been around for a while; therefore, it would be interesting to explore how organisations implement the strategy and what internal practices are necessary to succeed.

To survive the uncertain environment, organisations need to be agile and sense changes and new opportunities in the external environment. An organisation should absorb any information

required to improve performances and transform internal systems and processes to be competitive. Consequently, this highlights dynamic capability, which is the anchoring framework and theory applied for this research.

1.2. Background to the research problem

In this digital era, companies realise the limitations of inside-out innovation when meeting market needs and developing new capabilities (Helal, 2017). Chesbrough (2020) allude that opening organisational boundaries to source knowledge speeds up internal innovation process by taking advantage of the knowledge from others. Bogers et al. (2019) mention that the driver of the implementation of open innovation is the decrease of internal Research & Development (R&D) and highlights that the best ideas and people lie outside the boundaries of an organisation. Bogers et al. (2019) further emphasise in their study that businesses should monitor new developments by bringing in external information.

Organisations, whether large corporations or Small Medium Enterprises (SMEs), seek innovative ideas to improve performance. Thus, businesses adopt open innovation to complement their internal knowledge and use the strategy to seek innovation from individuals or organisations outside the company boundaries. Thompson, Bonnet and Ye (2020) study suggests that some companies acknowledge that their internal capabilities are not as good as those of market leaders, hence organisations source innovation from outside the organisation. According to Thompson et al. (2020), many companies do not just source innovation from those they have built relations with but seek novelties from external sources such as think tanks, Universities, customers, or online communities.

This research develops from an opportunity presented by Bogers et al. (2019) suggestion that future research should not view open innovation as just outsourcing R&D to somebody else but instead focus on attributes related to leveraging and enhancing internal capabilities. Therefore, the research problem is to explore the use of open innovation by organisational managers to enhance their internal capabilities by seizing external innovation through inbound innovation to adapt to the changing environment.

The investigation of this research problem will augment studies about open innovation and its connection to the dynamic capability theory. Both theories focus on integrating internal and external competencies to enhance capabilities and adaptation to the external environment. It will contribute to how organisations can seize external knowledge to leverage and enhance their internal capabilities. The research question suitable for this investigation is, how companies implement open innovation to adapt to the environment?

The propositions will in the study address the stipulated research question include:

1. Proposition one: Managers choose to implement open innovation to seize knowledge absent to them to address innovation needs and enhance internal capabilities.
2. Proposition two: Organisations that have solid seizing capabilities can absorb external innovation knowledge and capture value.
3. Proposition three: Open innovation method is implemented to enhance internal innovation for better performance.
4. Proposition four: open innovation practices should align with organisational strategy to accumulate and integrate externally acquired innovation.

Because innovation does not have to be confined to the boundaries of an organisation, open innovation has emerged as the solution to gain external knowledge. Lauritzen and Karafyllia (2019) suggest that practitioners can benefit from what open innovation has to offer.

1.3. Significance of the study

1.3.1. Business significance

Companies that work in siloes fall behind compared to those that engage in open innovation collaboration. Open innovation is a dynamic capability that could benefit large and small organisations by accessing knowledge absent to them to adapt to environmental changes. Changing times require a change in approach for businesses. Due to the changes in the environment, suggestions by Teece, Peteraf and Leih (2016) is that businesses should have capabilities that meet those environmental changes using dynamic capabilities to support innovation and adaptivity. The dynamic environment has encouraged most organisations to adopt

open innovation techniques. According to Ghezzi, Gabelloni, Martini and Natalicchio (2018), it has become an attractive approach for companies to obtain intelligence and knowledge. Open innovation provides an opportunity to access skills and information that businesses do not have internally (Bal, Weidner, Hanna & Mills, 2017).

No man is an island concept can also be used in the concept of the business environment. Open models have enabled organisations to interact and seek knowledge from experts outside organisational boundaries. Open innovation is one of the go-to methods that organisations seek skills and knowledge to improve or review their innovation. This innovation strategy is applied by businesses to address internal innovation problems to improve products, services, or even new product development. Sometimes, a company may not have the necessary skill or knowledge to achieve what it needs; therefore, it taps into open innovation methods, whether through business-to-business or between business and customers.

According to De Marco, Martelli and de Minin (2020), small businesses make a meaningful contribution to the innovation ecosystem through employment and economic growth, and they have embraced open innovation by engaging in R&D collaborations. Popa, Soto-Acosta, and Martinez-Conesa also add to the necessity of open innovation by Small and Medium-Sized Enterprises, stating that an increasing number of companies, including SMEs, rely on open innovation for collaboration, innovation and competitiveness.

Large organisations and SMEs all face the same challenges of an uncertain dynamic environment. Therefore, open innovation has provided a space where companies from large enterprises to SMEs can collaborate and share knowledge for mutual benefit and competitive performance. It would be interesting to explore how the companies use open innovation to adapt to the external environment. This exploration will contribute to research around open innovation within the dynamic capability framework. The research delves into the experiences of Senior Managers about how they use open innovation to adapt to the external environment.

1.3.2. Academic significance

Studies have discussed open innovation; however, there are few studies about open innovation and its relation to firm performance (Popa et al., 2017). Also, few studies about the significance of the open innovation method to enhance capabilities that affect company innovativeness (Bogers et al., 2019). Popa et al. (2017) also state that research literature that addresses the antecedents of using open innovation is lacking. Scholars or practitioners nowadays are interested in open innovation influenced by the dynamic and globalised business environment.

This study examines the use of open innovation and the link of the phenomena to dynamic capability. It explores how the open innovation method can seize outside knowledge or skills to enhance capabilities to adapt to the external environment. There are studies about open innovation, but discussions about the internal abilities necessary to capture external knowledge are limited.

Dynamic capability is the anchoring framework because the theory addresses strategic management issues to adapt to the turbulent and uncertain environment. Companies are required to be agile and tackle the knowns and unknowns of the business environment. Studies of dynamic capability have gained academic momentum because, as Warner and Wäger (2019) explain, strategic management influences the way firms react to rapid technological and market changes. Lee and Yoo (2019) suggest that using open innovation requires a company to consolidate, structure and reconstitute its resources and imply that open innovation can be explained in the context of dynamic capability. The dynamic capability framework is applied to augment the open innovation theory.

1.4. Purpose of the research

The research aims to explore and understand the open innovation phenomenon and explore how is it a viable method for managers to obtain the knowledge they need for innovation. Since there are few studies about using open innovation to enhance internal capabilities, the aim is to explore how organisational managers adopt the method to enhance capabilities to improve company products and services or even pursue new product development.

The objective of this study is to explore:

- The use of open innovation is a suitable practice for company managers to seize external knowledge and skills to address innovation needs and enhance capabilities.
- The necessary capabilities can enable the seizing of knowledge using open innovation and distributing the acquired knowledge within an organisation.
- Whether organisational managers would adopt open innovation to heighten their innovation capabilities
- How knowledge acquired through open innovation can be aligned to the strategies of a company?

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

The literature review provides a theoretical analysis of open innovation and investigates the theory connection to dynamic capability. The business environment is dynamic and competitive; therefore, companies should implement activities that can improve performance. Open innovation has been studied by scholars and pursued by firms to enhance innovation performance. First, is the discussion of the theoretical framework.

2.2. Dynamic Capability

The theoretical framework adoption of this report is dynamic capability. The reason behind using this theoretical framework is because open innovation relates to dynamic capability. After all, it involves the integration of internal and external abilities to improve innovation, similar to dynamic capability. Dynamic capability is a strategic management aspect because the concept involves the way firms react to rapid technological and market changes (Warner & Wäger, 2019). The section explains the nature of dynamic capability, its antecedents, and its purpose for an organisation.

2.2.1 Dynamic capability definition

In Teece et al. (2016), dynamic capability refers to a firm's capability to manage how a company integrates, builds, and reconfigures internal and external competencies to address the changing environment. This definition is found in many studies whereby similar concepts are used to describe what dynamic capability means. Bitencourt, Santini, Ladeira, Santos and Teixeira (2020) also show the same explanation of the concept in their study to adjust internal and external skills to address the turbulent environment. Zhao, Wei, and Yang (2021) mention that in dynamic capability theory, companies should integrate, build, and reconfigure internal and external competencies to adapt to the fast-changing environment.

However, Zhao et al. (2021) provide a prior definition of dynamic capability, stating that it means the organisation's routine to coordinate change in resources-base whereby it creates a match between the resource and the situation in the environment. All the explanations reveal the

importance of matching internal resources with the rapidly changing external environment when creating value.

In a report, Helal (2017) mentions that other authors extended this definition by moving the focus from an organisation and the use of the resource to accomplishing resource configuration as markets in the environment change. The big picture of dynamic capability is the company's capability to innovate and adjust to change advantageous to clients and adverse to competitors (Teece et al., 2016) and achieve outcomes envisioned by the primary decision-makers (Helal, 2017).

2.2.3 Antecedents of dynamic capability

Bitencourt et al. (2020) highlight knowledge, alliances, resources, and environmental dynamism as antecedents of dynamic capability.

Resources refer to tangible and non-tangible owns, such as people and intellectual property, which are the resources a company can reconfigure to sustain competitiveness (Bitencourt et al., 2020). According to Zhao et al. (2021), resources are an essential factor of dynamic capability because an organisation needs to match the resource portfolio and the conditions in the environment. A needs analysis of company resources is vital so that internal resources can be reconfigured with external resources to enhance performance.

Bitencourt et al. (2020) consider knowledge as a means by which companies learn about new ideas and concerns about customers and competitors' current and future needs in response to the market. When it comes to assessing knowledge about strategies of future needs, it relates to Haarhaus and Liening (2020). They offer another antecedent of dynamic capability, strategic foresight, needed to survive and grow performance (Haarhaus & Liening, 2020). Strategic foresight enhances organisational flexibility and learning within an uncertain environment (Haarhaus & Liening, 2020). Bitencourt et al. (2020) suggest that knowledge can create new awareness, allowing a company to broaden the spectrum of future actions. Strategic foresight as a dynamic capability enables the company to sense and learn the emerging opportunities and risks in the environment (Haarhaus & Liening, 2020). Knowledge as an antecedent of dynamic

capability meaning that organisations learn the current information and monitor future development in the uncertain market environment to ensure that the organisation is agile.

Alliances refer to the organisation's ability to formulate strategic partnerships to gain complementary knowledge and capabilities because a company cannot solely rely on its resources (Bitencourt et al., 2020). Jiang, Mavondo and Zhao (2020) support the alliances' approach by stating that a fast-changing environment does not make it conducive to relying only on their resources. The authors that are Jiang et al. (2020) suggest that "engaging in business networks is necessary for an organisation to acquire capabilities to access valuable information "(p, 1240). Bitencourt et al. (2020) and Jiang et al. (2020) recaps Lauritzen and Karafyllia (2019), Bogers et al. (2019) and Helal (2017) theories that finding external knowledge enables an organisation to unlock a significant commercial potential and effective response to environmental changes.

Environmental dynamism refers to the changes in the environment that influence how organisations respond (Bitencourt et al., 2020). The quicker the changes in the environment, the more an organisation needs to rely on dynamic capability and develop new or improved products, moving with the pace of changing environment (Bitencourt et al., 2020). Environment dynamism is vital; according to Haarhaus and Liening (2020), the environment has characteristics of uncertainties whereby it is not easy to gather and understand the information about the organisational environment fully. There are constant changes in the competitor spectrum, change in consumer needs and wants, and technology. Thus, organisations function within an environment that is unstable and ambiguous.

2.2.4 Dynamic capability scope

Dynamic capability builds from resource-based view theory that involves moving organisational thinking of relating resources to a static environment to determining how resources can be used to enhance performance or competitiveness in the ever-changing environment (Helal, 2017). Bitencourt et al. (2020) mention that the critical aspect for a company to achieve competitive advantage is to consider dynamics, which refers changing character of the environment and

capabilities, which involves the ability for strategic managers to adapt by integrating and reconfiguring internal and external competencies aligning with the changing environment.

The theory of dynamic capability determines the difference between how an organisation uses its resources available to them and how an organisation uses the resources in the processes to achieve the desired outcomes (Helal, 2017). Bitencourt et al. (2020) add to this notion by stating that organisations that have dynamic capability have a process of using their resources to understand and create changes in their capabilities in the market.

Jiang et al. (2020) allude that the role of dynamic capability is a deliberate renewal, extension, and deployment of resources to gain growth and achieve extended survival. This statement also highlights Helal (2017) study that dynamic capability is more than just capabilities an organisation possesses but represent a set of capabilities to drive competitive advantage. Thus, it is one thing to have capabilities, but do those abilities related to market changes and provide a competitive advantage.

 It is relevant to differentiate between ordinary and dynamic capability. Matysiak, Rugman and Bausch (2018) suggest that an organisation's ordinary capabilities and dynamic capabilities differ. Ordinary capabilities enable an organisation to make a living in the present, whereas dynamic capability enables a company to change how it makes a living (Matysiak et al., 2018). Teece et al. (2016) also elaborate on the matter of ordinary and dynamic capabilities. According to Teece et al. (2016), ordinary capabilities allow an organisation to produce and sell products and services and assume a static environment, whereby a company can proficiently perform its tasks. However, that type of capability does not assist an organisation to respond creatively to the turbulent environment (Teece et al., 2016). As discussed, the dynamic capability is about embracing environmental dynamism and alters capabilities to meet the changing environment.

Teece et al. (2016) discuss the three clusters of a dynamic capability known as, firstly, sensing, which involves recognising and evaluating new technological prospects. The sensing ability can assist companies to identify and evaluate crucial external knowledge and establish collaboration outside the business; the company can attract ideas, evaluate them, and remove the bad ones

(Bogers et al., 2019). Matysiak et al. (2018) explain that sensing is about the company recognising opportunities and threats.

Secondly, it involves seizing, which focuses on organising resources to meet the opportunities and implement and adopt open innovation processes to get things done (Teece et al., 2016). Matysiak et al. (2018) concur with the seizing statement saying it involves addressing the opportunities through investments that create competitive advantage. An organisation needs to have internal capabilities to capture the sensed information or knowledge to achieve desired goals.

Thirdly, transformation means continuous renewal to adapt to the environment by learning, adjusting quickly, and improving (Teece et al., 2016). Matysiak et al. (2018) explained it as reconfiguring resources and capabilities in the organisation to enhance them.

Haarhaus and Liening (2020) studied Teece et al. (2016), highlighting that the three clusters of dynamic capability, sensing, seizing, and transformation improve an organisation's response and shape an unknown future. Haarhaus and Liening (2020) further elaborate by stating that sensing enables an organisation to detect changes in the corporate environment early to respond in time. That capacity to seize opportunities and transform resources enables a company to rapidly adapt to the turbulent environment (Haarhaus & Liening, 2020).

Fig 1 below illustrates the flow of the three clusters of dynamic capability. An organisation with dynamic capability can sense new trends in an environment, be flexible and use its capacity to seize opportunities discovered in the environment and transform its internal capabilities by adjusting and adapting to the dynamic environment.

Sensing: identify and evaluate crucial external knowledge. Teece et al., 2016	→	Seizing: organising resources to meet the opportunities and implement and adopt. Teece et al., 2016	→	Transformation: renewal to adapt to the environment by learning, adjusting quickly, and improving. Teece et al., 2016
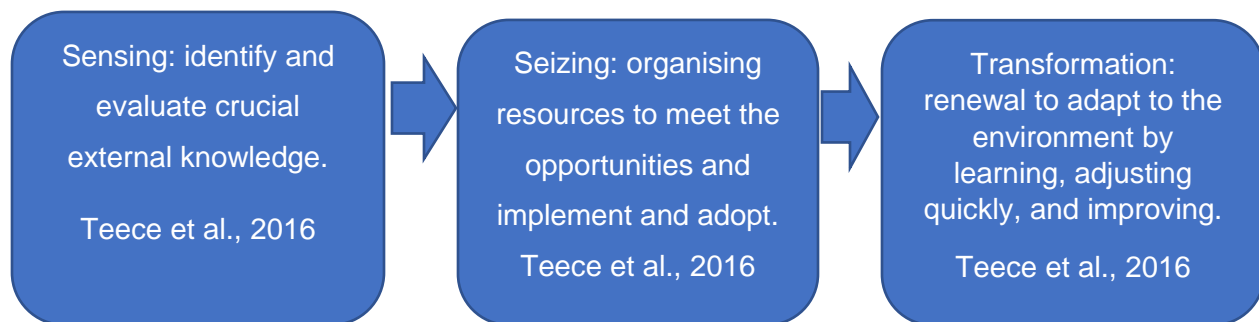
Fig 1. Conceptual model of the three clusters of dynamic capability

Source: Researchers' compilation

Schoemaker, Heaton and Teece (2018) suggest that a company with a solid dynamic capability leads to a unique collection of knowledge and skills required to capture market opportunities. Therefore, organisations need to know which abilities to adapt to depending on the internal situation (Day & Schoemaker, 2016). Entrepreneurial management skills within an organisation are an essential element for an organisation to combine and recombine technologies to adjust to the environment (Teece et al., 2016) and to sense opportunities and seize opportunities for the organisation to adapt.

Sensing, seizing, and transforming are about monitoring the turbulent environment, and organisations should be agile enough to learn, adapt and implement internal changes. All three clusters are significant; however, the subsequent discussion focuses on how an organisation seizes to transform. It is one thing to sense the environment, but if an organisation cannot seize opportunities to adjust to the changing environment, it loses competitiveness. Therefore, this study focuses on seizing capability.

2.2.5 Seizing capability

Seizing is known to refer to realising sensed opportunities (Matysiak et al.,2018); also, Teece et al. (2016) has mentioned that seizing involves identifying and deploying resources to address the opportunities and capture value. After sensing trends in the environment, managers need to explain a response and lead the organisation to the way forward (Teece et al., 2016).

Seizing involves getting things done and being agile to perform changes such as sourcing arrangements and adopting new open innovation processes (Teece et al., 2016). Haarhaus and Liening (2020) state that organisations with the capacity to seize opportunities and reconfigure resources are better equipped to adapt to a turbulent environment. Seizing capability involves an organisation taking action to respond to the changes in the environment and meeting those changes to enhance or maintain competitiveness.

Day & Schoemaker (2016) suggest that being able to seize information, organisations need to have a mindset that is willing to experiment, promote a trial- and error learning environment and look beyond their boundaries for insight from other companies and partners. Teece et al. (2016) support this where they mention that entrepreneurial management skills are necessary within an organisation to combine and recombine technologies to adjust to the environment. Warner and Wager (2019) support Day and Schoemaker (2016) state that seizing is an experimental capability that enables actions and commitment.

The question is what type of internal capabilities organisations should possess and their processes to seize the sensed information from the environment. Technology has become an authentic influencer of the environment; therefore (Teece et al., 2016) suggest that dynamic organisations should identify, assess technological opportunities, and mobilise resources to meet the opportunities to capture the value and continue to renew. Warner and Wager (2019) add to Teece et al. (2016) that organisations should use information technology infrastructure to build capabilities that organise external partners and co-creating user experience. Technological advances such as the internet provide a pool where companies can source knowledge to enhance their internal innovation; therefore, the capability to seize opportunities and transform by adopting novel innovation can significantly impact organisational competitiveness.

2.3. Innovation

Innovation is a source of competitiveness in products, services, and technological design (Robertson, Caruana & Ferreira, 2021). Bhimani, Mention and Barlatier's (2019) suggest that companies strive to remain innovative in a complex multi-stakeholder environment to develop new approaches and tools to connect within the innovation ecosystem. Robertson et al. (2021) add to Bhimania et al. (2018) suggest that the innovation ecosystem involves innovation and

knowledge clusters within the business environment in which an organisation can interact with its environment by sharing and absorbing knowledge.

Singh, Del Giudice, Tarba, and De Bernardi (2019) theory can also add value. They suggested that firm innovation involves collecting relevant market information and knowledge, which an organisation can leverage to develop new products and services to satisfy customers needs and maintain relevance in the market (Singh et al., 2019). Robertson et al. (2021) further suggest that the key to innovation is innovation performance. Innovation capability assists companies to differentiate themselves from competitors, whereby businesses with innovative capabilities outperform competitors and provide high survival attributes (Robertson et al., 2021).

Innovation thus is a fundamental part of organisational performance to meet market needs and adapt to the dynamic environment in which businesses operate. It also means that for any organisation to sustain its performance and competitive advance, it must continuously be innovative to adapt to the dynamic, complex, multi-stakeholder environment.

2.4. Open Innovation

The following discussion is about open innovation and its impact on organisational performance and how management balances the inflows and outflows of innovation. There are two types of open innovation, inbound and outbound innovation (Cheng, Yeng & Sheu, 2016).

2.4.1. Open Innovation Definition

Wikhamn (2020) defines open innovation as inflows and outflows of knowledge to fast-track internal innovation. Lauritzen and Karafyllia (2019) expand the definition from Wikhamn (2020) by describing open innovation as a modification from the secure method of relying on internal R&D to an open model that emphasises external collaboration employing inflows and outflows of knowledge. This highlight moves from a closed innovation model to an open innovation model by integrating novelty inside and outside the organisation.

 In other literature, such as Sengupta and Sena (2020), open innovation is a concept where an organisation can use external and internal ideas to innovate new products and technologies for

the market through internal and external paths. Popa et al. (2017) also offer a similar definition of open innovation as "the use of goal-directed inflows and outflows of knowledge to fast-track internal innovation for external use of innovation" (p.135). Chen and Liu (2019) explanation of open innovation is that it is a distribution of innovation process of deliberate management of flows of knowledge across organisational boundaries, in the form of inbound and outbound open innovation. In their study, De Mattos et al. (2018) also offer a sound definition of open innovation, stating that organisations promote open ideas, processes, thoughts, and research to improve customer service, increase efficiency, and enhance added value.

These definitions highlight the nature of open innovation, which means incorporating internal and external expertise of knowledge capabilities to benefit organisational innovation needs for adapting to environmental changes.

2.4.2. Inbound and outbound innovation

There are two types of open innovation known as Inbound and outbound (Cheng et al., 2016). Inbound innovation involves a purposive inflow of information obtained from the external environment to capture knowledge and technologies from sources such as customers, suppliers, competitors, universities, and research organisations (Popa et al., 2017). Bogers et al. (2019) provide a similar explanation of inbound innovation, stating that an organisation relies on its ideas or research and invites external sources to contribute to the innovation process. Singh, Gupta, Busso and Kamboj (2021) mentioned that inbound innovation involves identifying, selecting, and internalising new ideas flowing into an organisation from the external environment. This frame of innovation requires a deliberate pursuit of strategic alliance and collaborations to enhance innovation.

The benefit of inbound innovation is that companies can gain new ideas and grow problem-solving capabilities (Popa et al., 2017) and Chen and Liu (2019) suggest that the inbound innovation approach exposes a company to external knowledge to drive the innovation requirements. Essentially, open inbound innovation is an initiative to capture external knowledge to benefit organisational internal research and development practices. Helal (2017) provides a comprehensive description of Inbound open innovation. It is an activity dependent on a company's

ability to establish channels to acquire external knowledge and expertise and convert that information into an asset to support innovation process organisational strategy (Helal, 2017). It is about the internal investigation of where the organisation is lacking and going outside boundaries to close the weakness gaps such as company technology portfolio. Through acquiring and internalising the external knowledge, an organisation can enrich its knowledge and strengthen innovation capabilities (Chen & Liu, 2019).

Chen and Liu (2019), Helal (2017), Popa et al. (2017), as well as Singh et al. (2021) theories agree that outbound innovation is when a company exploits its internal technologies or ideas whereby knowledge flows out of the company for mainly monetary gain by exploiting internal resources. In Helal (2017) study, outbound innovation refers to the outflow of ideas to the market. Singh et al. (2021) saw outbound innovation as commercialising interior ideas to the external environment. According to Chen and Liu (2019), Outbound innovation involves the learning capability of a company and taking those capabilities to the market through the external use of innovation. Popa et al. (2017) claimed that many companies are prone to perform inbound innovation because of the innovation opportunities. The authors provide similar descriptions, Chen and Liu (2019) even suggests that inbound and outbound innovation thinking approaches can be interconnected reflecting in figure 1.

Figure 2 illustrates the researchers understanding of the connection between inbound and outbound innovation according to the explanation of Chen and Liu (2019) and Popa et al. (2017). Companies acquire knowledge and skills by pursuing external sources and then collaborate or partner with the external sources to enhance the internal innovation capabilities of an organisation. After the learning process, the acquired innovation is taken back to the external environment for monetary gain. The process continues again back to the organisation after sensing new changes in the environment.

Fig 2: Illustration of the connection between inbound and outbound open innovation.
Source: Researchers' compilation

Given the two types of open innovation, this research will concentrate on inbound innovation where an organisation pursues external knowledge using outside-in collaboration to enhance internal capabilities to adapt to the changes in the business environment, which involves seizing opportunities.

2.4.3. Managing organisational open innovation ambidexterity

The purpose of open innovation is to use internal and external sourced knowledge to fast-track innovation for the benefit of an organisation, using the inflows and outflows of knowledge (Khoza, 2016). The motivation behind open innovation is that companies can look to external and internal ideas to advance their innovation (Bogers et al., 2019). Open innovation enables companies to explore outside knowledge and exploit internal resources (Popa et al., 2017). Collaborating with external partners gives companies easy access to external ideas, skills, and knowledge (Popa et al., 2017). Open innovation improves quality, quantity, diverse ideas, knowledge, and skills, which complements internal resources and capabilities (Bagherzadeh, Markovic, Cheng and Vanhaverbeke. 2020).

Chen and Liu (2019) agree with Bogers et al. (2019) and Popa et al. (2017) by explaining that due to current environmental challenges, organisational ambidexterity is necessary where there is a need to explore and exploit innovation. Pursuing explorative innovation involves seeking new

knowledge while exploiting innovation focuses on refining existing knowledge and achieving efficiency Chen and Liu (2019). Strategic managers should find a balance between exploring and exploiting competencies to preserve long-term performance. According to Chen and Liu (2019), the feature attributes of open innovation is the internal and external knowledge management process by complementing internal and external practices. In their study, Chen and Liu (2019) propose that inbound and outbound open innovations are strategic options that assist a company to have ambidexterity that provides differentiation and integrated knowledge. Bagherzadeh, Markovic and Bogers (2021) suggest five relevant factors that a company needs to manage open innovation successfully. The authors theorise that companies need to consider the level of openness, choosing the external partners, the suitable mechanism, managing collaboration processes, and managing internal practices (Bagherzadeh et al., 2021).

2.4.4. Open Innovation in business practice

Popa et al. (2017) explain that open innovation is a practice that is not new to companies as it coincides with outsourcing and collaboration as companies seek to be agile and flexible in a networked world. There is room for innovation in all industries, even searching for new capabilities outside a company (Byrum & Bingham, 2016) to solve problems. Bhimani, Mention and Barlatier's (2019) emphasise that companies strive to remain innovative in a complex multi-stakeholder environment to develop new approaches and tools to connect within the innovation ecosystem. To sustain long term organisational performance in the dynamic environment, Byrum et al. (2016) and Bhimani et al. (2019), as well as Popa et al. (2017), agree that open innovation is an agile approach to gain new ideas and tools from the external innovation business ecosystem.

Popa et al. (2017) mention that company adoption of open innovation is driven by social-economic influence, technological changes, which include the rise of collaboration technologies such as crowdsourcing. Enkel et al. (2020) suggest that organisations need to anticipate changes in the environment, leading to the need to transform and adopt strategic renewal. The strategic renewal is influenced by opening the R&D boundaries acquire capabilities by partnering with external sources. Chesbrough, Lettl and Ritter (2018) support Enkel et al. (2020) that the uncertain environment and complexities in innovation require penetrable boundaries of organisations to enable the combination of resources, thus openly interacting with stakeholders in the innovation process.

As organisations operate in the ever-changing environment, especially during this era of digitisation, they realise the limitations of inside-out innovation when meeting market needs and developing new capabilities (Helal, 2017). Another realisation is that knowledge has become a commodity, and it is in many places around the globe, which changes the geographical footprint of innovation (Bogers et al., 2019). Thus, it is unnecessary to focus on internal knowledge and only implement outbound innovation focused on monetary gain. Inbound innovation can enable access to new knowledge, which can be beneficial for internal use from anywhere in the world.

Enkel et al. (2020) expand the influence of open innovation, arguing that it should be about leveraging internal capabilities (Enkel et al., 2020). Managers need to change from traditional management and adopt a new working system where complementary partners cooperate for solutions to address business problems (Enkel et al., 2020). Enkel et al. (2020) is supported by De Mattos et al. (2018) that organisations require the creation of a mechanism that supports open innovation, highlighting that senior management plays an essential role in organisational change, cohesion, and strategic alignment of company's functions to achieve successful open innovation. Helal (2017) explains that the co-creation of value whereby organisations engage in collaboration relationships is part of the inbound open innovation strategy. Companies do not have all they need for internal innovation; therefore, new strategies to acquire knowledge are necessary to effectively respond to the competitive environment (Helal, 2017). To realise this need, Lauritzen and Karafyllia (2019) suggest that sourcing external knowledge enables an organisation to create a blend of information and unlock a significant commercial potential.

The open innovation phenomenon enables firms to use external ideas and internal capability to advance innovations. Therefore, through this method, companies do not only rely on their ideas but collaborate with external sources (Bogers et al., 2019). Elia, Petruzzelli and Urbinati (2020) state that leveraging open innovation involves companies opening their innovation to absorb ideas and technologies from outside to gain internal knowledge and effectively reduce costs and time. Sengupta and Sena (2020) also suggest that open innovation assists organisations to improve on their performance by accessing knowledge outside their boundaries to gain breakthrough innovations which have a probability of resulting in business growth. It also reduces the costs of R&D (Sengupta & Sena, 2020). Bagherzadeh et al. (2020) agree on cost reduction, including the matter of time, by stating that collaborating with external partners enables a company to obtain

resources quickly and reduces innovation-related costs and risks. This fluidity of the knowledge movement has free access to ideas that organisations would typically not know about or capture through closed organisational systems.

Thompson et al. (2020) suggest that when companies realise an absence in their internal capabilities to enable competitiveness, they search outside organisational boundaries for new technologies, looking for the "unknowns" that could disrupt their business in a novel way (p. 57). Thompson et al. (2020) suggest that some companies acknowledge that their internal capabilities are not as good as market leaders. Hence organisations source innovation from outside the organisation, and according to the authors, many companies do not just source innovation from those with whom they have built relations (Thompson et al., 2020). However, companies seek novelties from external sources such as think tanks, Universities, and crowdsourcing platforms (Thompson et al., 2020). According to Teece (2020), due to the fast-changing technological environment and global competition, organisations found themselves expanding their internal innovation efforts by tapping into external ideas and resources. Companies need for collaboration networks with external partners is driven by the need to access and benefit from new technologies, skills, and expertise (Popa et al., 2017).

Open innovation is crucial in today's economy because it purposively involves managing knowledge on organisational borders using mechanisms in line with the business model (Bogers et al., 2019). This means that in this context of innovation explained by Bogers et al. (2019) and Byrum and Bingham (2016), open innovation has brought an opportunity for positive novelties to business models to pursue quality performance and competitiveness. It is crucial to consider the degree of openness to balance internal and external collaboration (Teece,2020). Helal (2017) found that the question is not whether to adopt an open strategy but how to leverage this type of innovation to contribute to company competitiveness.

Naqshbandi and Jasimuddin (2018) theorise that open innovation is essential for multinational companies to maintain competitive advantage and be market leaders by acquiring knowledge from outside sources. Through open innovation, organisations can gain knowledge as a strategic resource where an organisation such as MNEs can obtain value by exploring and exploiting the knowledge, thereby gaining competitiveness (Naqshbandi and Jasimuddin, 2018). However,

Bagherzadeh et al. (2020) state that open innovation does not directly enhance innovation performance. The critical aspects are knowledge sharing and innovation strategies because some open innovations are successful, and others are not (Bagherzadeh et al., 2020).

Some regard open innovations as a method that increases innovation performance. Others have an opposite sentiment saying that it does not. Bagherzadeh et al. (2020) further state that open innovation has been found not to affect innovation performance, nor does it have a negative effect. Some open innovation projects do not even meet the determined objectives (Bagherzadeh et al., 2020). What is vital are the internal practices where an organisation needs to be internally prepared by developing innovation strategies and knowledge sharing processes that are believed to be a dynamic capability to boost innovation performance (Bagherzadeh et al., 2020). One could ask whether competitiveness exists because a company performs open innovation to enhance performance or it depends on how internal practices are managed, meaning a company can practice open innovation, but that does not guarantee high performance, ultimately competitiveness.

2.4.5. Open innovation and digitisation

Sengupta and Sena (2020) state that the antecedents of open innovation from closed models are the changing environment and consumer demands, which motivate companies to pursue open innovation practices. According to Bogers et al. (2019), the driver of the implementation of open innovation is the decrease of internal R&D and digitisation, which have changed the flow of information and the widespread adoption of the internet. In their study, they highlight that today, the best ideas and people lie outside the boundaries of an organisation. Bogers et al. (2019) also emphasise in their study that there is no R&D unit that can be self-sustaining, and companies should monitor new technological developments by bringing in external information.

In the study of Mubarak and Petraite (2020) study about the influence of technology on open innovation, the authors suggest that technologies in combination with traditional methods can be used to form digital trust collaboration amongst stakeholders for effective open innovation performance. Mubarak and Petraite (2020) mention blockchain as one digital data storage system that authorised stakeholders can use to share and access similar information and data. In Santoro, Vrontis, Thrassou and Dezi (2018) study, ICT capability is regarded as a critical

information management system to foster knowledge flow. According to Santoro et al. (2018), the knowledge management system powered by technology is vital to improving the creation, storage, and transfer of knowledge using information technology infrastructure and collaborative technologies to enable discussion forums. The Information Technology Knowledge Management System is necessary for internal employees' absorptive capacity to leverage their knowledge capability.

Digitisation has changed the landscape of the flow of information and has made open innovation a necessity (Bogers et al., 2019). Due to technology, mainly the internet, all this is possible to source skills and knowledge that an organisation lacks. The internet technologies have enabled spread partnerships where information is distributed fast and is cost-effective. According to Enkel et al. (2020), the digital age has influenced how organisations manage their boundaries, making it possible to generate and share knowledge and information. Given the influence of digitisation, organisations can achieve hybrid innovation by externally co-opting individuals or organisations on the web to contribute to the innovation process, bringing about solutions to problems or new products. Bhimani et al. (2019), in their study, mention that in the fourth wave global annual survey by Mckinsey, which was conducted after the global financial crisis, it was discovered that 65% of companies that integrated the web 2.0 technologies in their processes gained market share and margins. Bhimani et al. (2019) also discovered that in a Global Innovation Survey, 79% of solid, innovative firms that integrate digitised innovation processes bring novel ideas from external sources. These percentages might be due to a situation where users of products have become active interviewees in the value creation process of product design and development and not just passive product receivers (Liu, Du, Hong, Fan & Wu, 2020). Meaning, this is the case whereby a company utilises other institutions for open innovation initiatives and engages with individuals interested in the brand to be part of the innovation process.

Businesses can now connect with online communities through technology which results in a more effective way to obtain the right solutions for problems that might have been hard to solve within the organisation (Bogers et al., 2019). Teece (2020) adds that open innovation is a technology management approach that recognises the value of external sources and markets. Organisations seek innovative ideas to improve performance; thus, businesses adopt open innovation to depend

on internal knowledge and use the internet to seek innovation from individuals outside the organisation.

2.4.6. Level of openness

The level of openness differs from one company to another, and sometimes it differs internally as well depending on the task a company would like to solve. Popa et al. (2017) highlight that organisational culture plays a vital role in open innovation. De Marco et al. (2020) highlighted that internally, cultural changes affect open innovation. The culture of the organisation and employee characteristics play a significant role when companies adopt open innovation (Popa et al., 2017).

Employees' resistance can hinder the adoption of open innovation, which means employees' commitment is an essential factor (Popa et al., 2017). Enkel et al. (2020) support the aspect of culture by stating that business strategies and the level of an organisation's openness should connect and be supported by corporate culture because it enables the company's inflow and outflow of knowledge. Both authors, Enkel et al. (2020) and Popa et al. (2017), highlight that the issue of the Not-Invented-Here syndrome can lead to a situation where employees see external knowledge as a threat to their expertise.

Innovation climate plays an essential role in a company's openness, which means that companies with a robust internal innovation climate motivate a culture of thinking and taking risks, taking advantage of the external knowledge offered by the environment (Popa et al., 2017). Bagherzadeh et al. (2021) believe that organisations that invest in open innovation provide outstanding support for open innovation practices. In that regard, employees will support open innovation for the sake of the project (Bagherzadeh et al., 2021). More theories about the right culture are discussed in Naqshbandi and Tabche (2018), where they discuss the role of proper leadership in managing open inbound innovation. Naqshbandi and Tabche (2018) posit that empowering style leadership in an organisation model promotes a culture of open inbound innovation where employees are encouraged to create and acquire knowledge from the external markets. A company's learning culture is also believed to contribute to sourcing ideas and exploration of knowledge. Therefore, organisations that support a learning culture can facilitate

outside-in innovation (Naqshbandi &Tabche, 2018). However, in the results of their study, the authors could not confirm.

The use of open innovation also depends on the condition of the external environment because due to the dynamic technological environment, companies rely on external knowledge because their internal technical knowledge becomes obsolete (Popa et al., 2017). Bagherzadeh et al. (2021) add that no individual firm knows to solve all the solutions for organisational projects. Also, the unstable market requires companies to constantly search for novel knowledge and technologies to satisfy customer changing demands and preferences (Popa et al., 2017).

Given that technologies are constantly changing, the environment brings different types of complexities to innovation processes. Bagherzadeh et al. (2021) suggest that the level of company openness depends on the complexity of a project that needs to be solved. The authors, Bagherzadeh et al. (2021), enlighten that innovation projects are not the same because they have different features, such as the strategic importance of the project, level of complexity, and type of skills or knowledge required for a project and the level of uncertainty. The competitiveness of companies depends on the internal alignment of open innovation strategies to organisational factors meaning there should be a fit between organisational strategies and the business environment (Popa et al., 2017). High complex projects require high external collaboration with partners, which drives high-level openness and allows a company to access knowledge that would be hard to obtain. Carmano-Lavado, Guevas-Rodriguez, Cabello-Medina and Fedriani (2021), in their study, state that the level of openness is determined by the interactions that a company has with a different type of partners. However, Bagherzadeh et al. (2021) emphasise understanding project attributes to have successful open innovation management.

The bottom line is that openness depends on the organisation's culture, the external complexities presented by the project, and the suitable partners or alliances needed to collaborate to perform its successful open innovation mandate.

2.5. Open Innovation Mechanisms

Bagherzadeh et al. (2021) highlight that in the management of open innovation, a mechanism is essential if a company wants to implement a successful open innovation because projects have different features and require different collaboration mechanisms. This consideration is important because the big picture, according to Teece et al. (2016), is that dynamic organisations should identify, assess technological opportunities, and mobilise resources to meet the opportunities to capture the value. Day and Schoemaker (2016) also mention that organisations need to evaluate the available method depending on the internal situation. In this regard, Bagherzadeh et al. (2021) offer directional and cognitive solutions to open innovation management. The directional solution involves testing a solution after implementation to check if it met the needs of a project; if not, an adjustment should be made accordingly (Bagherzadeh et al., 2021). Cognitive refers to a process where project members assess the results of a potential solution before implementation, which requires deep collaboration and exchange of knowledge between partners to ensure the relevant knowledge is available to all partners involved in a project (Bagherzadeh et al., 2021). Given that projects differ in their knowledge requirements, organisations need to investigate the right partner to collaborate with, depending on the project's complexity. The following points are the open innovation mechanisms companies can implement to obtain knowledge that they do not have internally.

2.5.1. External alliances

External alliances involve innovation with, Universities, which according to Bagherzadeh et al. (2021), can provide highly original knowledge, external suppliers, users, entrepreneurs, and research centres (Bagherzadeh et al.,2021). A partnership that provides different kinds of knowledge, for example, Universities and research centres, is claimed to provide actual knowledge, providing companies with novel ideas (Bagherzadeh et al., 2021). The reason for using partners is because an organisation cannot innovate in isolation and that external resources are necessary (Carmano-Lavado et al., 2021). Carmano-Lavado et al. (2021) further state that alliances or partnerships enable an organisation to access complementary knowledge posed by partners, helps reduce innovation costs, and enable an organisation to maximise profits on new products. Based on openness, organisations choose the types of alliances they can pursue their innovation needs.

Customers are the other external role players whom organisations use to receive knowledge about their products and services (de Zubielqui, Fryges & Jones, 2019). Companies collaborate with them because they provide market-based knowledge (de Zubielqui et al., 2019). It is necessary to include customers in the internal and external collaboration. Customer knowledge is vital for cases such as New Product Development, and that can assist companies in producing customised and commercially viable products (de Zubielqui et al., 2019). Nguyen and Harrison (2019) add that going after customer knowledge is believed to assist organisations to have reduced uncertainty and gain rich market knowledge; leveraging customer knowledge allows companies to improve and transform their internal knowledge. Geilinger, Woerter and Krogh (2020) also support de Zubielqui et al. (2019) and Nguyen and Harrison (2019), where they suggest that involving customers in product development results in commercial benefits such as the quicker release of a product to the market, increased product quality and higher customer value. Through customer, collaboration organisations can access unknown valuable ideas and needs (Geilinger et al.,2020). Geilinger et al. (2020) further theorise that engaging with customers in innovation is known as customer co-development, which provides organisations with the benefit of reducing the internal cost of innovation labour and improving product performance.

2.5.2. Online communities' collaboration

Due to the growth of the internet of things, as highlighted, Lui (2020) and De Mattos et al. (2018) suggest that companies have access to a network of contributors and collaboration efforts have become more manageable. Bogers et al. (2019) and Ghezzi et al. (2018) articulate that digitisation has encouraged organisations' adoption of the internet and that crowdsourcing has become one of the open innovation methods to acquire knowledge from external sources to enhance innovation. Due to its ambiguity characteristic, the internet has brought opportunities for businesses to improve their internal operations and be able to collaborate with business partners, suppliers, and customers (De Mattos et al., 2018).

As Bogers et al. (2019) stated, knowledge has become a commodity, and it is dispersed in many places around the globe, which changes the geographical footprint of innovation. Crowdsourcing is rooted in open innovation and involves individuals who actively participate in a company's innovation process (Ghezzi et al., 2018). It is defined in Palacios, Martinez-Corral, Nisar and Grijalvo (2016) as an act of taking a task to a crowd in an open call. The open call means the

crowd engages in interactions to provide solutions, knowledge, and ideas to a seeking organisation (Palacios et al., 2016). Johnson, Fisher and Friend (2019) define crowdsourcing as a company's utilisation of online infrastructure to openly lobby and gather proposals for innovation from a large, scattered population.

Wilson, Bhakoo and Samson (2018) explanation of crowdsourcing is similar to that of Ghezzi et al. (2018) that the method is about taking tasks usually performed by company employees to an unidentified group of people in an open call. In other words, crowdsourcing is an activity of outsourcing a particular task to an unknown crowd instead of a known agent or individual in an open call (Palacois et al., 2016). Meaning the crowd can engage openly to generate ideas and knowledge, using crowd platforms and social networking platforms to facilitate the task (Palacois et al., 2016).

Bhimani et al. (2019), in their study, use the term crowdsourcing interchangeably with social media and suggests that crowdsourcing is a driver and enabler that can support a company's innovation needs. Thuan et al. (2016) suggest that crowdsourcing can be used for information processing, solving problems, and gathering ideas to build solutions. It is an approach that provides a company competitive advantage due to its ability to provide a global workforce, varied skills, and lower cost (Thuan et al., 2016). De Mattos et al. (2018) also adds that crowdsourcing involves platforms that enable people to participate in problem-solving and innovation processes through the collective intelligence of communities. Problem-solving in this regard does not mean that a company has operational difficulties, but a problem in need to improve or develop new products for competitiveness.

Enkel et al. (2020) suggest that the degree of openness and business strategy must connect and follow the corporate culture. Companies will differ depending on their need analysis (Enkel et al., 2020). Companies using open innovation should map out how the external knowledge will be seized (Thompson et al., 2020). Bagherzadeh et al. (2020) state that companies should have an innovative strategy with the planning process, budget cycle, review procedures to improve internal coordination and synchronisation of external knowledge, which will, in turn, assist with the absorption, assimilation, and exploitation of external knowledge to boost innovation performance. Therefore, companies should understand the capabilities to acquire innovation and require seizing capabilities, which bring the discussion to dynamic capability.

2.6. Dynamic capability and open innovation

Studies of dynamic capability have gained academic momentum because, as Warner and Wäger (2019) explain, it is a strategic management aspect that focuses on the way firms react to rapid technological and market changes. Organisations face a radically changing environment, and according to Cheng et al. (2016), open innovation is a driver of producing radical innovation to expand market opportunities. Academia suggests that organisations implement open innovation activities to enhance radical innovation. Therefore, what better way to match a radically changing environment with radical open innovation resources. This report is more interested in the inbound side of open innovation than outbound, which focuses on acquiring knowledge from external partners. Cheng et al. (2016) also suggest that organisations that practice outside-in(inbound) innovation have the prospect of generating cutting-edge ideas that lead to radical innovation.

Enkel et al. (2020) suggest that due to the changing business environment, managers need to transform from the traditional logic of knowledge management and manage the ecosystem of collaborations with partners to co-innovate new solutions. Enkel et al. (2020) emphasise that achieving positive results with open innovation may influence the organisational culture that embraces open innovation. In this regard, Teece et al. (2016) mentioned that entrepreneurial abilities could shift organisations from a traditional framework to dynamic capability management.

Enkel et al. (2020) offer the diagram below to illustrate the cultural change of management perception from a traditional closed view that does not embrace open innovation to changing perspective where a dynamic environment requires dynamic capabilities to take advantage of the external knowledge and skills to enhance competitiveness. Figure 3 shows the traditionalism view, which sees the outside as a threat and depends on internal resources for innovation. The modernist view embraces open innovation, which is in strategic processes. The visionary understands the dynamism of the environment and its benefits of ecosystems of knowledge that can be taken advantage of by sensing opportunities, seizing what is necessary for an organisation and transforming to be indispensable.

Traditionalist management **Modernist management** **Visionary**

| No OI(open innovation) Depending on internal resources | Sees the outside as a threat. Not invented here syndrome | Using OI strategically and integration at a late-stage | Dynamic OI and using the ecosystem, using dynamic capabilities |

Closed Open Dynamic
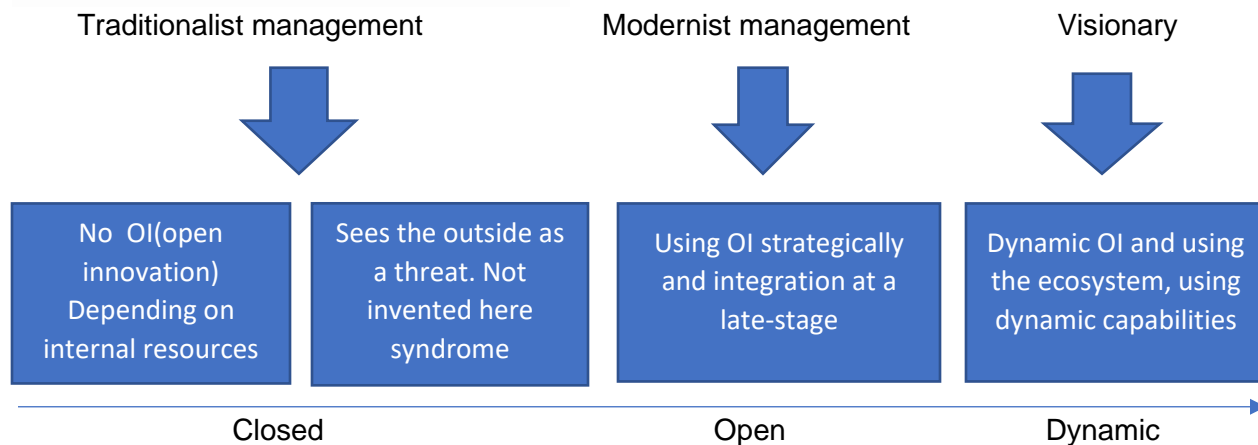
Fig 3: Simulation of Enkel et al. (2020) illustration of a move from closed innovation to a dynamic, open innovation model

Gong (2017) states that it is not enough to respond to the turbulent environment with just internal capabilities; therefore, organisations use the open innovation method to contact knowledge absent to them to solve business problems usually implemented in-house. Warner and Wager (2019) suggest that dynamic capability combines internal and external competencies, which is an innovation-based approach. Enkel et al. (2020) stipulate that the top five publicly traded companies, such as Amazon and Apple, expect changes and adjust their business models, showing that businesses should embrace transformation and strategic renewal for long-term survival and competitiveness.

Bogers et al. (2019) suggest open innovation and dynamic capability are entangled. Both concepts are about integrating internal and external competencies to gain knowledge to address the changing environment (Bogers et al., 2019). Teece (2020) supports the statement that open innovation and dynamic capability fit because they are about integrating internal and external competencies. To add to this theory, Chesbrough et al. (2018) argued that open innovation capability is a dynamic capability because it involves changing an organisation's resource base. Open innovation enhances new product development and alliance management, which are features of dynamic capability (Chesbrough et al.,2018).

The table one below illustrates the concept comparison between dynamic capability and open innovation, elaborated by articles highlighted in this report. Both concepts imply accessing and

integrating internal and external knowledge or competencies from the environment to achieve innovation. This means open innovation can be viewed from the perspective of dynamic capability theory.

Table 1: Dynamic capability and open innovation concept comparison

Open Innovation	Dynamic capability
An open model that emphasises external collaboration using inflows and outflows of knowledge (Wikhamn, 2020).	A capability to manage how a company integrates builds and reconfigures internal and external competencies to address the changing environment (Teece et al., 2016).
A practice of using external and internal ideas to develop new products for the market (Sengupta & Sena, 2020).	An organisation's routine to coordinate change in Internal resources-base where an organisation creates a match between the resource and the external situation in the environment (Zhao et al., 2021).
Acquiring external knowledge to influence internal innovation capabilities.	It is internally sensing and seizing external knowledge to influence innovation within the organisation for transformation.

Source: Researchers' compilation

The three clusters of dynamic capability mentioned can apply an outside-in innovation practice by sensing to identify and evaluate external knowledge (Bogers et al., 2019). Solutions from outside need to be integrated into the market, which means a successful open innovation requires seizing capability (Bogers et al., 2019). When it comes to sensing, Teece (2020) states that sensing is vital to direct which open innovation practices should pursue. An essential factor that Thompson et al. (2020) mention, related to Teece (2020), is that sensing is essential to recognise which capabilities can fill up an existing gap and which external sources will allow a company to access required competencies. All this is necessary to enhance internal capabilities and to enhance performance and competitiveness.

Given that this report focuses on the seizing capability, it is stated in Teece (2020) that solid seizing is needed to ensure that open innovation is successful in capturing value. Bagherzadeh

et al. (2021) also state that collaborating with external partners comes with managerial challenges, which involve understanding the absorbed knowledge and making the absorbed knowledge available to all employees. This requires appropriate internal practices that will allow an organisation to explore, assimilate and exploit the external innovation (Bagherzadeh et al., 2021). This means capturing external knowledge is critical and referring to Thompson et al. (2020), they suggest that one of the mistakes that companies make is not developing a transfer strategy from the beginning of using open innovation practice. Absorptive capacity enables the success of open innovation (Bagherzadeh et al., 2021).

There needs to be knowledge sharing for different open innovation projects (Bagherzadeh et al., 2021). Two essential internal practices include knowledge incentives, whereby an employee is awarded for acquiring and sharing new knowledge, and internal communication between and amongst project team members (Bagherzadeh et al., 2021). Bogers et al. (2019) support Bagherzadeh et al. (2021) by stating that companies should use internal practices such as delegation and vertical and lateral communication when it comes to absorbing external knowledge. According to Bagherzadeh et al. (2020), these internal practices reconcile the relationship between open innovation and innovation performance. To add to this matter of internal practices, de Zubielqui et al. (2019) suggests a new management theory called modern Human Resource practices. It involves the use of intense vertical and lateral communication to manage external knowledge, providing rewards for the acquisition and sharing of knowledge by employees and delegation decision rights, which they regard as an appropriate internal set-up to leverage customer knowledge (de Zubielqui et al., 2019). de Zubielqui et al. (2019) posits that to have solid, innovative performance, customer interaction combined with modern Human Resource Management practices is necessary. It involves robust vertical and lateral communication to manage external knowledge, rewards employees' acquisition and sharing of knowledge, and delegates decision rights (de Zubielqui et al. (, 2019).

Elia et al. (2020) suggest that the openness of innovation relies on organisational culture and mindset, behaviour and attitude, which are vital to successful partnerships. This highlights the importance of communication and delegation to absorb outside-in innovation. Achieving positive behaviour and mindset will result in transformation within the organisation, which according to Bogers et al. (2019), can promote the culture of collaboration. Adding to the theories of Bogers et

al. (2019), Elia et al. (2020); Teece. (2020) and Thompson et al. (2020), Singh et al. (2019) theory suggest that top management teams shared leadership is one of the aspects that drive innovation. Singh et al. (2019) is supported by Singh et al. (2021), where they suggest that the influence and support of leadership direction and knowledge sharing play a vital role in open innovation.

An essential factor that Bogers et al. (2019) state is that open innovation is not just about taking internal tasks to external suppliers to solve problems; it is about leveraging and enhancing internal capabilities. Thompson et al. (2020) support Bogers et al. (2019) that organisations should use external innovation to expand portfolios and not substitute for internal innovation. This highlights Kohler and Nickel (2017) where they mention that "the way companies conduct businesses is more significant than what they do" (p. 25) and that business are reinventing their business models due to the dynamic, rapidly growing digital business brought by the external environment. Singh et al. (2021) found that the capability for organisations to seize from open innovation differs from business to business and that organisations that can create solid connections with external channels contributes to the effectiveness of inbound innovation and enhance performance.

Figure 4 illustrates the discussion associated with the implementation of open innovation. Inbound/outside-in open innovation is the core of seizing external innovation to gain novel ideas. The purpose and information of inbound innovation need to align with organisational strategy to integrate the knowledge into the organisation. Inbound innovation is implemented to enhance organisational performance to improve internal innovation. Absorption capability is essential, which means organisations require action absorption abilities to absorb the knowledge.
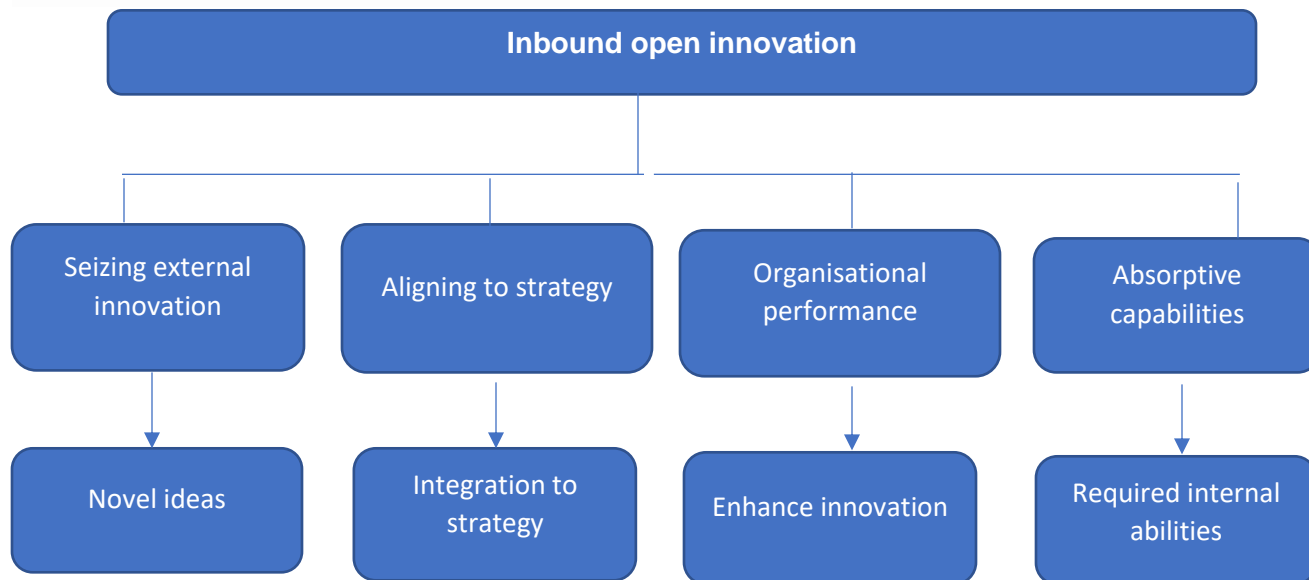
Fig: 4: Conceptual framework

Source: Researchers' compilation

2.7. Conclusion

This Chapter provided an outline about open innovation, describing inbound and outbound innovation and how they differ. The literature review also discusses how open innovation connects to dynamic capability because both concepts integrate internal and external competencies to gain knowledge to adapt to the changing environment. Thus, the dynamic capability is the theoretical anchor of the literature. Several theories are highlighted, elaborating on how organisations use open innovation, the level of openness required, internal aspects that should be considered, and the mechanism applied.

The following chapters present the research question that seeks to understand how companies implement open innovation to adapt to the environment, to test the literature review in the context of businesses in South Africa. Propositions are needed to be able to answer the research question. Firstly, the propositions are as follows: managers choose to implement open innovation to seize knowledge absent to them to address innovation needs and enhance internal capabilities. Secondly, Organisations that have solid seizing capabilities can absorb external innovation knowledge and capture value. Thirdly, the proposition is that the open innovation method is implemented to enhance internal innovation for better performance. The last proposition is that

open innovation practice should align with organisational strategy to accumulate and integrate externally acquired innovation. After discussing the research question, the methodology suitable for this exploration will be discussed, emphasising the research philosophy, aims, unit of analysis, sampling methods and data analysis methods that are suitable for the study.

3.1. Introduction

Companies operate in an environment that imposes the need to enhance company innovation, and businesses realise that R&D collaboration does not only have to be limited within the boundaries of the organisation, and this brings forth suggestions by Teece et al. (2016) that businesses should have capabilities that meet those environmental changes using dynamic capabilities to support innovation and adaptivity. Literature has indicated that innovation does not have to be confined to the boundaries of an organisation. Open innovation has emerged as the solution to gain external knowledge to enhance internal capabilities.

Bogers et al. (2019), supported by Teece (2020), suggest that open innovation and dynamic capability can be intertwined as both concepts are about integrating internal and external competencies to gain knowledge to address the changing environment. The open innovation method has become an attractive approach where companies obtain intelligence and knowledge (Ghezzi et al., 2018), and it provides an opportunity to access skills that businesses do not have internally (Bal et al., 2017), hence academic interest has been gaining momentum.

3.2. Research question and propositions

The research problem in this study is to investigate the use of open innovation by organisational managers to enhance their internal capabilities by seizing external innovation to adapt to the changing environment. Bogers et al. (2019) call for an understanding that open innovation is more than just taking internal tasks to external suppliers to solve problems; it is about leveraging and enhancing internal capabilities. Bogers et al. (2019), therefore, presents a research opportunity to explore the open innovation approach, through the dynamic capability framework, to contribute to what Bogers et al. (2019) has proposed for future research.

3.2.1. Research question

This research develops from an opportunity presented by Bogers et al. (2019) suggest that future research should not view open innovation as just outsourcing R&D externally but as an

opportunity to leverage and enhance internal capabilities. Given the explanations of open innovation, it would be interesting to discover how managers use the approach to pursue external knowledge to enhance innovation. Thus, the study's research question is, how companies implement open innovation to adapt to the environment?

Below are the Propositions developed regarding the research question.

3.2.2. Propositions

Thompson et al. (2020) study suggest that some companies acknowledge that their internal capabilities are not as good as those of market leaders; hence organisation source innovation from outside the organisation. According to Teece (2020), due to the fast-changing technological environment and global competition, organisations find themselves expanding their internal innovation efforts by tapping into external ideas and resources to enhance R&D. Popa et al. (2017) also state that companies need for collaboration networks with external partners are driven by the need to access and benefit from new technologies, skills, and expertise.

De Mattos et al. (2018) stated that organisations require the creation of a mechanism that supports open innovation, highlighting that senior management plays a vital role in organisational change, cohesion, and strategic alignment of the company's functions to achieve successful open innovation. Teece (2020) indicated that strong seizing capability is needed to ensure that open innovation successfully captures value. When seizing the external knowledge, companies should use internal practices such as delegation, vertical and lateral communication (Bogers et al., 2019).

Sengupta and Sena (2020), in their literature detailed that open innovation assists organisations to improve on their performance by accessing knowledge outside their boundaries, to gain breakthrough innovations which have a probability of resulting in business growth. Robertson et al. (2021) also raised a point in the literature that the key to performance is innovation and that innovation capability assists companies to differentiate themselves from competitors, whereby businesses with innovative capabilities outperform competitors and provide high survival attributes.

Enkel et al. (2020), supported by De Mattos et al. (2018) that organisations require the creation of a mechanism that supports open innovation, highlighting that senior management plays an essential role in organisational change, cohesion, and strategic alignment of company's functions to achieve successful open innovation.

Therefore, the researcher proposes that:

Proposition one: Managers implement open innovation to seize knowledge absent in their organisations to address innovation needs and enhance internal capabilities.

Proposition two: Organisations that have solid seizing abilities can absorb external innovation knowledge and capture value.

Proposition three: Open innovation method is implemented to enhance internal innovation for better performance.

Proposition four: open innovation practice should align with organisational strategy to accumulate and integrate externally acquired innovation.

3.3. Conclusion

This section of the report details the research question developed for this study, which focuses on exploring how companies implement open innovation to adapt to the environment, also elaborating the propositions that will assist in answering the mentioned research inquiry.

4.1. Introduction

This chapter focuses on the research methodology and design that were applied to address the research question and propositions stipulated in the previous chapter. The chapter highlights the qualitative research approach adopted to explore how companies use open innovation to adapt to the environment. The data collection method, sampling and analysis approaches used during the research corresponded to the type of design selected to answer the propositions and the research question.

4.2. Research Philosophy

A constructionist assumption approach was applied during the study whereby interpretive reasoning was adopted to understand the world the way others experienced it and made meaning from their experiences (Bell, Bryman & Harley, 2019) and (Wagner, Kawulich & Garner, 2012). Interpretivist reasoning is underpinned by the constructionist theory, which suggests that reality is made up of human action and meaning-making (Bell et al., 2019). Following an interpretive approach, the researcher expects the interviewees to discuss their opinion based on their knowledge and experience about the open inbound innovation.

4.3. Research design

Based on the research question that pursued to understand how companies implement open innovation to adapt to the environment, the aim was to explore the open innovation phenomenon according to the philosophical assumption based on the Interpretivist approach.

The study's choice of methodology was a qualitative research approach to gain more insight and augment the theory about open innovation being used to adapt to the environment. The study was qualitative research because the researcher was set to interpret people's experiences (Terre Blanche, Durrheim & Painter, 2006) based on the research problem. The qualitative approach was suitable for this study because this method enabled the researcher to make sense of people's experiences by interacting and listening to the interpretation of their experiences and opinions

(Terre Blanche et al., 2006). The researcher, in this case, was concerned with the words that the interviewees used (Bell et al., 2019). Data were collected from individuals who experienced open innovation and were asked general questions about the practice. The analysis involved transcriptions of individuals' statements, and themes were developed from those statements to describe the experiences of individuals. Inductive and deductive approaches were followed in this regard, where experiential information provided by the unit of analysis was used to arrive at the research conclusion and current literature (Bell et al.,2019).

A cross-sectional design study was conducted because Bell et al. (2019) stated that a cross-sectional design involves collecting information from different cases at a single point in time. The researcher collected data from different individuals at a single point due to the time constraint to complete the study. In their study, Bell et al. (2019) supported those qualitative studies implemented according to the cross-sectional approach whereby semi-structured interviews are used to collect data from people, and that was the instrument the researcher used, which is also discussed later in the data collection section of this chapter.

4.3.1. Qualitative research

In qualitative research, what was necessary for the researcher was to make sense of the experiences of a social phenomenon that occur in the real world (Terre Blanche et al.,2006). The qualitative research process involved developing a general research question (Bell et al.,2019), which in this regard question was to understand how managers experience open innovation to adapt to the environment. Therefore, the focus was on individual managers who implemented open innovation to enhance their innovation capabilities.

This research method was applied in response to the call about seeing open innovation as an outsourcing practice and exploring the method as a means to enhance internal capabilities to improve innovation and adapt to the external environment. The research involved a deductive approach (Bell et al.,2019), whereby it started with a literature review to understand open innovation and develop the research question and propositions. In their study, Bell et al. (2019) stated that a qualitative research approach could be used to test theories that are stipulated in advance, which is what this study followed by conducting a literature review first. The goal of

qualitative research was to understand the social behaviour of managers in the context of the environment they operate (Bell et al.,2019).

4.3.2. Population

Terre Blanche et al. (2006) described the population as a large group with the same characteristics, from where a sample was supposed to be drawn. The targeted population for this study was Managers in South African companies who implement open innovation in their business or organisations. The researcher was interested in engaging with managers in the private sector to explore the research question.

4.3.3. Unit of analysis

There are different types of units of analysis, such as groups, organisations, social artefacts, and individuals (Terre Blanche et al., 2006). In this study, the population mentioned above was managers working in the private sector, from prominent organisations and Small Medium and Micro Enterprises. However, the unit of analysis the researcher sought to engage with were supervisors at the Senior Management level who were decision-makers in their organisations or companies. The researcher was interested in the unit of analysis, senior managers, because of their strategic roles.

4.3.4. Sample criteria

Purposive sampling was relevant for this study because it was linked to answering the research questions (Bell et al., 2019), and the unit of analysis was selected based on their decision-making capacity. The population sample was selected because of its relevance to the research question (Bell et al., 2019).

Terre Blanche et al. (2006) stated that research that does not require statistical accuracy were those of interpretive assumption and could follow a non-random sampling. A non-probable snowball sampling method was adopted. The reason for a snowball sampling was that the researcher searched for individuals already known to the researcher and then requested those

who participated in recommending other managers. The researcher requested consented interviewees to recommend more people who were willing to participate. Due to the limited time to conduct the study, a non-probability sample was necessary, as Wagner et al. (2012) suggest a convenient approach given that it was a cross-sectional study and cost-effective.

The sample size predetermined for the study was fifteen interviewees. However, the researcher reached data saturation at twelve interviewees. Fusch and Ness (2015) explained that data saturation is when the ability to obtain new information has been attained. Terre Blanche et al. (2006) stated that saturation is when the researcher believes they have acquired satisfactory data and have a sense of what was going on, which was how the researcher decided had reached saturation because the participants gave common answers to questions. Figure 5 highlights data saturation observed during the coding process. Interviewee one had the highest coding, and saturation was reached around interviewee number seven.
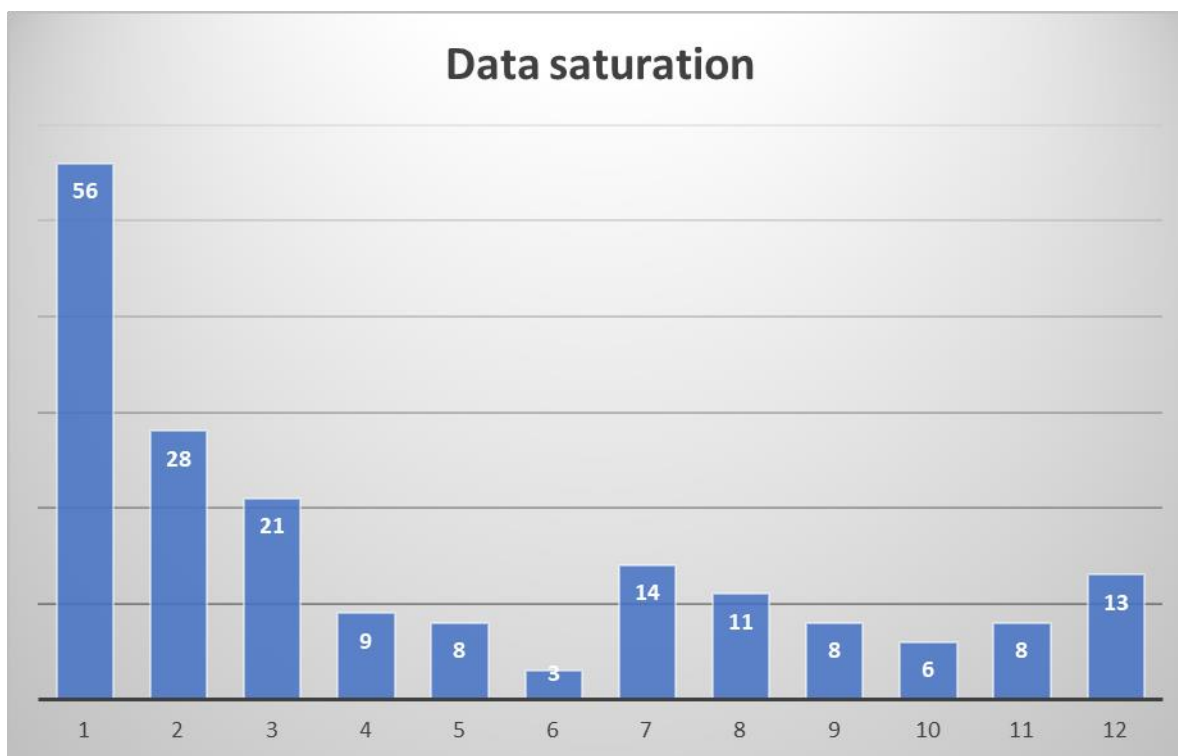
Fig 5: Researcher's data saturation display
Source: Researchers' compilation

4.3.5. Research instrument

Interviews were implemented to obtain data during the study. The researcher used the interview schedule or guide (see appendix A) as the instrument to collect data. A semi-structured interview guide with open-ended questions was used to allow flexibility when interviewing interviewees (Bell et al., 2019). Choosing the semi-structured interview approach was appropriate for the study because it enabled the researcher to explore the manager's experiences and opinions about open innovation more profoundly. The instrument was developed to answer the research question, how do companies implement open innovation to adapt to the environment, that focused on the four propositions:

1. Proposition one: Managers choose to implement open innovation to seize knowledge absent to them to address innovation needs and enhance internal capabilities.
2. Proposition two: Organisations that have solid seizing capabilities can absorb external innovation knowledge and capture value.
3. Proposition three: Open innovation method is implemented to enhance internal innovation for better performance.
4. Proposition four: open innovation practice should align with organisational strategy to accumulate and integrate externally acquired innovation.

During the interviews, the researcher had to clarify some of the questions; however, the researcher was mindful not to present leading or close-ended questions so that the interviewees could give a detailed answer.

4.3.6. Data gathering

Before beginning the interviews, the researcher conducted a pilot study with one individual to determine if the questions were understandable and tested the online platform because the interviews were not face-to-face. The researcher intended to perform five pilot tests, but one pilot study was sufficient. A pilot study was with an individual that understood open innovation, but they were not included as part of the study. Volunteering interviewees signed consent forms

(Appendix B) before every interview. The researcher implemented semi-structured interviews, where an interview guide was used to collect data, as mentioned by Terre Blanche et al. (2006) that in a qualitative study, the investigator can gather data by interviews, which is one of the methods favoured by researchers working within the scope of an interpretive assumption. Yin (2015) also stipulated that interviewing method focused on the expression of beliefs and viewpoints of the interviewee and allowed flexibility (Bell et al., 2019). Meaning the researcher could ask more questions not included in the guide. The semi-structured interview guide contained a list of questions related to the topic and explored motivation and strategic choices around using open innovation.

Invitations were distributed to researcher's network to participate in the study, and those that met the criteria according to the unit of analysis requirements and showed interest were selected to participate. Online interviews were conducted due to the current COVID19 restrictions, and it was also convenient for the interviewees and researcher to gather the data in that manner. The online platform that the researcher used was Zoom, which had a recording functionality that could save the interviews done for transcription purposes. Only audio recordings were considered to ensure anonymity of the respondents. The planned session for each interview was 60 minutes; however, each interview duration differed depending on how much information each interviewee provided.

The interviews took place in real-time, and questions were answered immediately, and both the interviewee and interviewer were situated at suitable locations where the recordings were not disturbed by outside noise. The researcher did not take notes during the interview to avoid disruption, except for section A (Appendix A), information that addressed the managerial level and the number of years each interviewee has been in their positions. The interviews started with the description and purpose of the research topic and then progressed to the open-ended questions that addressed the main research question and propositions. The researcher sent all the interview voice recordings for transcription service, who also signed a Non-Disclosure-Agreement agreement (appendix D) for confidentiality. Different folders were created for each interviewee to store the recordings and transcriptions for the analysis process.

4.3.7. Data analysis

A Thematic analysis approach was implemented whereby the researcher scrutinised the information, organised it into categories based on the respondent's answers for interpretation

(Terre Blanche et al., 2006). Open coding was suitable for the data analysis, which Bell et al. (2019) explained involved breaking down, examining, comparing, and categorising data. Themes refer to categories the researcher used and identified from the data and then linked them to theory, and was mindful of repetitions, similarities, and differences as advised by Bell et al. (2019). In this way, Wagner et al. (2012) stipulated that a coding scheme created patterns in the data.

The analysis process was in phases that started with re-reading the transcriptions to ensure the information was captured correctly and for the researcher to immerse into the data. The researcher listened to the audio recording while reading each transcription. The transcriptions were read one by one and then coded on Atlas. ti software. The analysis phases followed on Atlas. ti is illustrated in figure 6 below. 183 codes (appendix E) were inductively developed as well as 14 first categories. Then using a theoretical lens, which is the deductive approach, from the categories, the themes were formulated and then followed by the theoretical constructs.
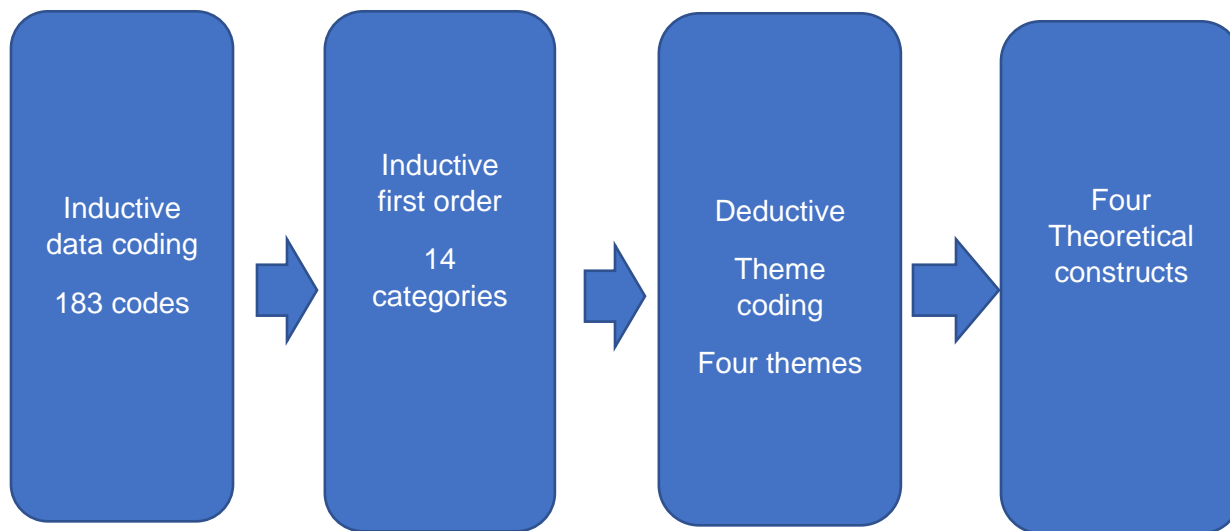
Fig 6: Data analysis phases
Source: Researchers' compilation

4.3.8. Ethical Considerations

As stated in the ethical application, the research focused on individuals and not organisations. The interviewees contributed in their capacity and interest, and information was stored without identifiers for anonymity. Only audio recordings were considered to ensure respondents anonymity. In the findings, interviewees were identified by their numbers allocated by the researcher. Information was stored on a computer with a password protected and can be accessible for ten years. Google-drive was used for backup for the duration required by the University of Pretoria or Gordon Institute of Business Science (GIBS). The researcher was mindful of the GIBS requirement to store data for ten years. The storage methods will have free access for GIBS.

The researcher also had signed consent forms (Appendix B) signed by all the interviewees to allow the researcher to record the interviews and to use the information. Before each interview, the researcher explained the ethical aspects that corresponded with the consent forms. The transcription service provider also signed an NDA (appendix D) for confidentiality.

4.3.9. Data Quality

Bell et al. (2019) highlighted essential aspects to address reliability and validity for qualitative research: credibility, transferability, dependability, and confirmability. The findings in qualitative research may not be transferrable because the focus was on people's subjective experiences. The purpose of the study was to obtain rich data to assist others in judging if it could be transferable to their context.

Regarding dependability, the researcher kept a record of all data during the research process and made it accessible, which involves recorded interview audios and transcripts and analysed data. The values or beliefs of the researcher did not intrude on the investigation to ensure confirmability. Bell et al. (2019) also mentioned relevance as a criterion for quality research determining whether a topic contributes to the literature field. Open innovation literature has been growing, and this study contributed to the existing studies on open innovation and dynamic capability.

4.3.10. Limitations

Literature about open innovation within the dynamic capability framework was limited; therefore, it was challenging to find many respondents. Some potential interviewees were reluctant to participate; however, the researcher ensured anonymity and explained that it was for academic purposes. Generalisability might be a challenge with semi-structured interviews as the researcher dealt with unique individual opinions and experiences.

CHAPTER 5: FINDINGS

5.1. Introduction

This chapter presents the findings or results from the data collection process to address the research question and propositions mentioned in chapter three. Twelve semi-structured interviews were conducted, using an instrument that contained eleven questions, developed according to propositions in chapter three of the report. The outline of the findings is arranged through themes developed after categorising data codes formulated from the transcripts.

5.2. Interviews and the setting

The study's Interviewees were private sector Senior Managers responsible for decision making in their respective organisations, which include large corporates and SMMEs. The Managers' participation was out of their capacity and not linked to any of their organisations. Their responses were based on their experience and knowledge in their previous and current roles concerning open innovation. Due to the current COVID19 restrictions, the interviews were conducted through the Zoom online platform, which was sensible for safety purposes. The interviews were audio-recorded using the zoom recording capability and were then transcribed.

5.3. Data analysis process
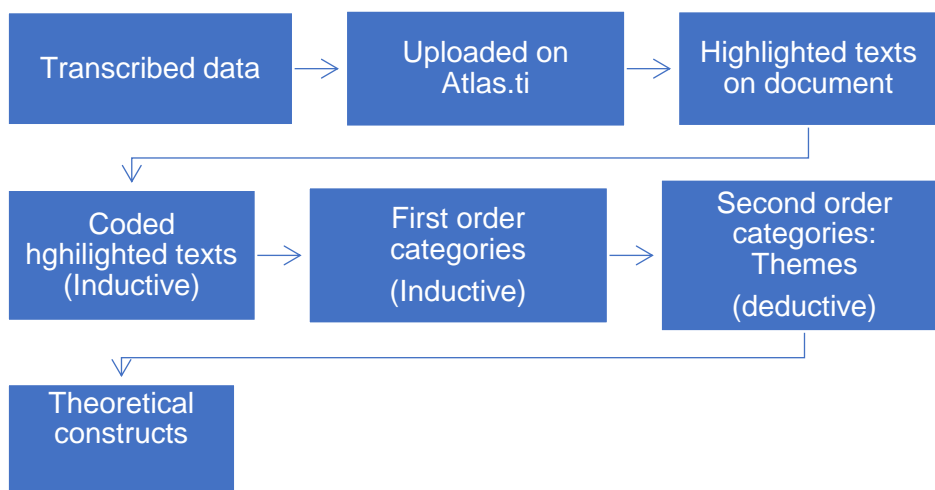
Fig: 7 Thematic data analysis process

Source: Researchers' compilation

Figure 7 demonstrates the data analysis process implemented for this research. The researcher read the transcribed documents twice to immerse herself into the data for validation and familiarisation. The researcher uploaded the transcriptions on Atlas. ti ready for coding. The documents were analysed individually, one after another. Texts within transcriptions were highlighted to develop codes of the information that interviewees had provided. About 183 codes were developed (Appendix E). Initially, there were 233; however, some codes were merged because they spoke to the same meaning. After coding each document, first-order coding was implemented where the researcher developed categories by grouping highlighted codes.

This first part of the coding followed the inductive approach, following Terre Blanche et al. (2006) guidance by looking at the data material forming categories based on interviewees responses. Second-order coding was done to analyse the relationship between the codes grouped in different sets to develop some themes. A total of 14 codes were developed. A theoretical lens was used to form the second-order grouping of the themes. A deductive approach was applied in this step because a theoretical lens was employed to formulate the themes.

Table two below depicts the number of interviewees, their positions, and the field in which they work. The interviewees were identified as managers and according to their allocated numbers throughout this chapter. Interviewees 1 to 4 and interviewee 9 were in the consultancy service, Information Technology and Engineering industry. Interviewees 5 and 6 were in the financial sector, Interviewees 7 and 12 were in Media and Advertising, and interviewees 8 and 11 were from the Supply Chain industry.

The interview schedule consisted of two sections: Section A was to understand the management level of the interviewee in terms of decision making and the number of years they have been in their positions, and Section B was the research questions.

Table 2: Interviewees of the data collection process

Number	Position	Field	Industry
Interviewee 1	Executive Manager	Consultancy	Information Technology
Interviewee 2	Director	Consultancy	Information Technology

Interviewee 3	Managing Consultant	Consultancy	Information Technology
Interviewee 4	Director	Consultancy	Engineering
Interviewee 9	Head of Engineering	Consultancy	Engineering
Interviewee 5	Senior Insight Manager	Finance	Banking
Interviewee 6	Strategist	Finance	Banking
Interviewee 10	Financial Director	Finance	Construction
Interviewee 7	Senior Manager	Media	Media & advertising
Interviewee 12	Account Director	Advertising	Media & advertising
Interviewee 8	Supply Chain Manager	Supply Chain	Retail
Interviewee 11	Senior Manager	Supply Chain	Retail

Source: Researchers' compilation

5.4. Findings: Presentation of the data collection findings

Different themes are discussed based on the data collected during the interviews. The themes were developed after Atlas. ti coding analysis, where first-order categories were formulated and grouped into themes, and then into theoretical constructs. Figure 8 is an illustration of a broad overview of the categories, themes, and theoretical constructs. The first order categories were formulated from the 183 codes on Atlas. ti, second-order categories were themes developed from first order categories and lastly, followed the theoretical constructs.

**Gordon Institute
of Business Science**
University of Pretoria

RQ: **How companies implement open innovation to adapt to the environment**

First-order Categories:

Seeking external knowledge

Outside-in collaboration

Implement internal-external R&D

Second-order Category: Themes
Need for novel ideas

Theoretical constructs

Seizing external knowledge

First-order Categories:

Communicate internally

Delegated innovation team

Right culture

Internal abilities

Internal resources

Second-order Category: Themes
Required internal abilities

Theoretical constructs
Absorptive capabilities

First-order Categories:

Innovation for competitiveness

Performance quality

Traditional organisations

Understanding customer needs

Second-order Category: Themes
Enhance innovation

Theoretical constructs
Organisational performance

Fig: 8 Researcher broad overview of the data analysis categories and themes

Source: Researchers' compilation

5.4.1. Theoretical construct: Seizing external Knowledge

This theoretical construct and themes address proposition one in chapter three that said managers implement open innovation to seize knowledge absent in their organisations to address innovation needs and enhance internal capabilities.

The first questions of the interview schedule required the interviewees to give their opinion about outside-in innovation. The focus was on implementing open innovation regarding outside-in collaboration by organisations, highlighting the benefits of using open innovation and exploring opinions about extending R&D by adopting outside-in collaboration to solve business problems or develop new products. The purpose of the questions was to obtain opinions about open innovation and gain insight into the implementation.

The themes were formulated to address the following categories, seeking external knowledge, Internal and external collaboration and implementing internal and external R&D.

Figure 9 illustrates the theoretical themes and constructs of the first proposition that managers implement open innovation to seize knowledge absent in their organisations to address innovation needs and enhance internal capabilities.
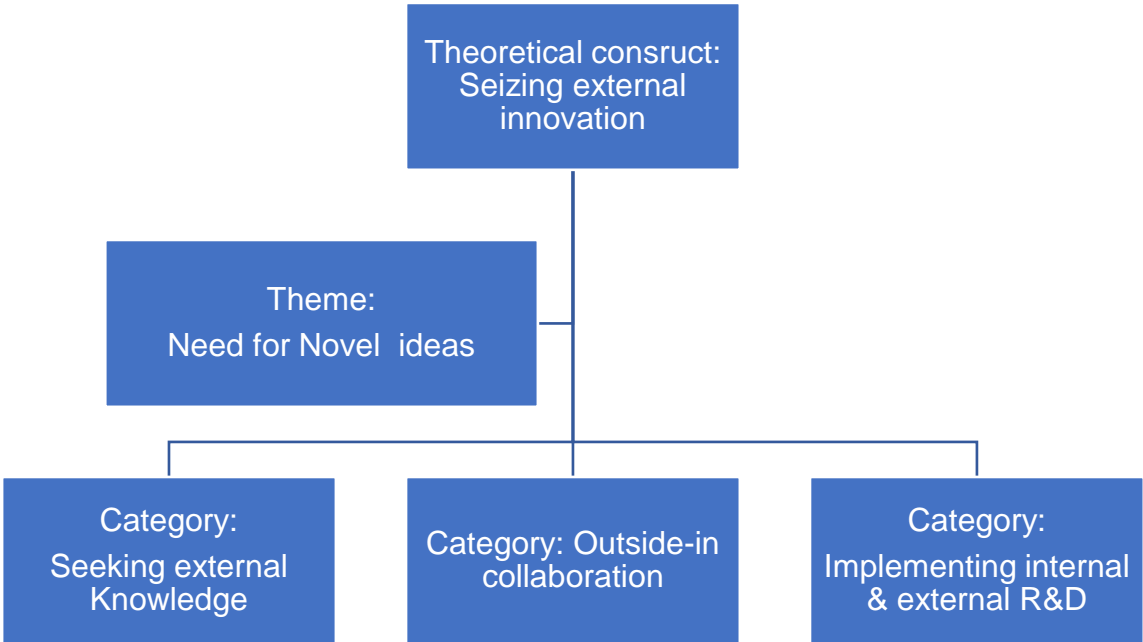
Fig: 9 Illustration of the theme one and first-order categories

Source: Researchers' compilation

Table: 3 Theme analysis

Themes	Code groups	Supply Chain	Media & Advertising	Consultancy	Financial
Need for novel ideas	Implement internal external R&D	27	13	39	22
	Outside-in collaboration	34	50	84	65
	Seeking external knowledge	84	44	83	76

Table three highlights the number of codes that were analysed from the interviewee's transcripts. Many codes came out of seeking external knowledge as per supply chain, consultancy, and finance. Media and advertising codes were mostly in outside-in collaboration. There is also not such a massive gap in the codes addressing the implementation of internal and external research and development. The three code groups are interrelated as all of them speak to implementing

open innovation. Below is the discussion about the interviewee's opinions about the above categories

5.4.1.1. Category: Implement internal and external research and development

Several organisations have internal research and development; however, interviewees regarded outside-in innovation as an approach to extend R&D and not just depend on internal knowledge. According to interviewees, it makes sense to get help with research and development by partnering both internal and external resources to achieve optimal innovation because it brings more knowledge into the organisation. The more information there is for R&D, it is believed it could bring success to projects. Extending research and development can help managers of organisations to move away from one-track mind, therefore partnering with external researchers, companies or customers, might be a way to avoid challenges that other companies have experienced. Interviewee 6 shared thoughts about extending R&D and asserted that

> "It definitely makes sense to get external people to help even with research and development. However, I would say partner them with people who are internal right, but external people would bring more knowledge. The more knowledge you have at the beginning, it sort of makes it obvious that the project is going to be a success."

Extending R&D involves inventiveness because managers get exposed to different experiences and opinions, therefore interviewee 11 stated that it is necessary for

> "thinking out of the box, once you go outside you can get different experiences and opinions, things you haven't thought about."

Organisations that work in siloes miss out on new information, especially about the business environment. Collaborating on aspects of R&D provides an organisation with the opportunity to share information with external partners and obtain feedback around challenges. One Manager mentioned that they sometimes could not perform their research internally; therefore, it makes sense to partner with external parties to bring their expertise and knowledge to benefit the company. Extending R&D was explained to be a great move to reduce cost and save time. An organisation can use a partner or supplier that has the means to perform research that a needing organisation cannot implement. In this regard, interviewee 8 alluded that

> "I think the supplier, therefore, takes on that ownership of actually doing a quick trial and fail with minimum investment, because they have got the assets, they have the people, and as such, I think it is quicker to actually demonstrate the capability of the potential of what I am looking for without incurring a lot of costs"

It was emphasised that working in a silo robs companies, industries and communities of knowledge that can be used for decision making, and interviewee 3 shared their opinion about engaging in R&D with external partners and said

> "You know to have that silo inside organisations I think sometimes robs I guess a little bit of like the rest of the industry or the community from understanding what is going on and having some really good data points that people can use to make good decisions."

It was mentioned that if an organisation does not have the knowledge and the expertise or the staffing to perform R&D, why not engage externally. Interviewee 7 revealed that

> "So we don't have that expertise internally or the capacity, our headcounts as it stands right now….," "So I think sometimes you just need to know where to cut your losses and appreciate that someone externally has the time"

Academic institutions were regarded as potential partners that companies can benefit from on matters relating to R&D because they have multiskilled people who can bring positive contributions via open innovation. Universities were regarded to have good resources such as knowledge that could be used to collaborate in fields such as new technology. Therefore open innovation can bring together academia and industries to address research needs. Interviewee 9 proclaimed that

> "I look at it from the point of the academia." "They have resources such as labs, resources such as capabilities to research PhD, Master's students, all of those people are looking for topics to work on and these could be from the point of innovation of new technology or upgrade of existing technology or building onto some pain point or improvement activities that probably comes from the industry itself."

5.4.1.2. Category: Outside-in Collaboration

The need for new ideas drives internal and external collaboration. According to the Managers, open innovation, mainly from the outside-in collaboration, can bring companies closer to their customers and thus innovate according to what customers need. Therefore, it is about seizing ideas, information, and knowledge by seeking outside company boundaries to develop novel products and services. At times companies find themselves in a position when they do not have all the information, and the knowledge they require lies beyond the boundaries. The managers regarded customer's perspective as what counts and vital, as Interviewee 4 stated that

"it's the voice of the customer".

In addition, it was emphasised based on interviewee 7 experience as an external collaborator that it would be rare for any organisation to claim that all innovation derives from internal sources to find solutions; Interviewee 7 said that

"So, I think it would be a very strange corporate decision to say that all innovation, all good thought can come only from internal sources. So having been in the external side of things, I enjoyed the ability to collaborate, be taken through whatever the pain points were of the organisation and then find ways towards a solution."

Open innovation was regarded as essential when it comes to acquiring skills that might be lacking internally. This information highlights the need for novel ideas to produce products and services that can be commercialised back to the market. Other interviewees mentioned that not engaging in outside-in collaboration would not make sense because it assists with some pain points usually experienced in a company. Those pain points are addressed by the ideation collaboration process from outside-in collaboration. It was stated that ideation came from open innovation, which was regarded as one of the ways to understand the market. Interviewee 1 advocated that

"So open innovation is good, you get ideas that are deeper if I can put it that way, in terms of the ideas that you get, because you are going outside of the organisation from an external perspective, to understand exactly what is happening and be able to innovate from there."

5.4.1.3. Category: Seeking external knowledge

The value of outside-in innovation is that organisations seek knowledge and skills that do not exist internally or are just lacking. The overall sentiment around open innovation by the interviewees seemed to be more on the positive side. Managers believed that not all information was found in the departments of an organisation. The phenomena appeared to be seen as an activity whereby a company would go outside its boundaries to get ideas and convert the ideas according to the information in the market. By interacting with the environment, a company or organisation can innovate based on the outside perspective. Seeking external knowledge also provided companies with different perspectives gained from external innovators, information that a seeking organisation might not know. Interviewee 1 stated that

> "So open innovation is good, you get ideas that are more deeper if I can put it that way, in terms of the ideas that you get, because you are going outside of the organisation from an external perspective, to understand exactly what is happening and be able to innovate from there."

In support, customers were regarded as external innovation partners because they need the product and service and that improves the chances of the product or service being used. Outside-in collaboration was implemented to gain customer perspective to keep up with the market and produce for a need. Interviewee 2 highlighted that

> " Look we implement that in our organisation, so I think that it is the way to go, for two reasons: 1) customers normally you innovate with because they have got a need, so whatever you innovate you know there is ready to buy and ready to use what you are innovating."

Outside-in collaboration was explained to involve getting skills that might be lacking internally and that open innovation is crucial for gaining whatever competencies are necessary. In this regard, interviewee 5 said that

> "For me, especially in my role, I feel it is an essential right, because over time you find that in an organisation like this, the skills sets that you have often become obsolete over time."

<u>Theme conclusion</u>

The opinions of the interviewees is that open- innovation, refering to outside-in innovation is essential, the way to go and that it is a long term investment initiatives organisations should implement. Interviwees highlighted that knowledge does not always lie within the departments and that tapping on the outside knowledge, whether its customers or other businesses, brings ideation to the innovation processes. Outside-in innovation is an opportunity to acquire skills that may not exist internally and gain knowledge and expertise by extending R&D. This knowledge can be acquired from partners such as suppliers, academia and customers. Engaging in internal and external collaboration for R&D was viewed as beneficial for gaining external knowledge for innovation and reducing cost and time. Therefore, to be able to adapt to the market environment and produce goods and services according to what the external environment needs, organisations should consider the use of internal and external knowledge for innovation and also leverage their internal skills by external sourcing expertise without high costs and quicker time to achieving innovation needs.

5.4.2. Theoretical construct: Absorptive capabilities

This section of findings addresses proposition two that specified that organisations with solid seizing abilities could absorb external innovation knowledge and capture value.

The second theoretical construct and theme were developed by asking the Managers what capabilities they thought were necessary for companies to have to capture the knowledge acquired through outside-in collaboration. An essential element that was being investigated regarding capabilities was to find out how organisations can spread the knowledge so that every unit within a company knows about information acquired through open innovation. In the whole process of acquiring and spreading outside-in knowledge, it was expected that employees adapt, absorb, and accept the changes. Therefore, the researcher investigated this issue to find out how management can cope in this regard. Thus, the second proposition stated that organisations with solid seizing abilities could absorb external innovation knowledge and capture value. Figure 10 illustrates the theoretical construct and themes
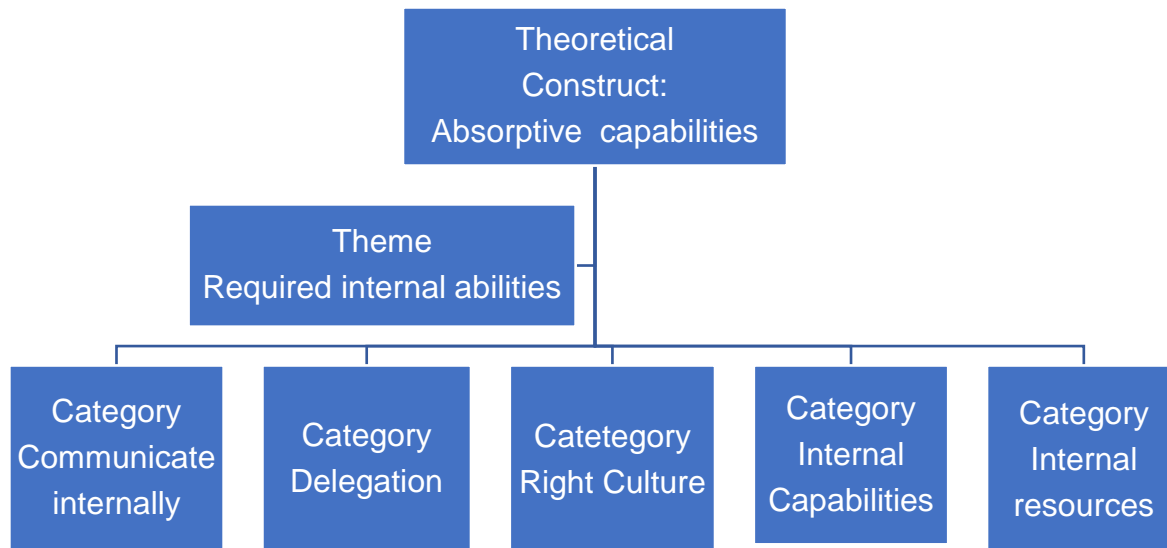
Fig 10: Illustration of theme two and first-order categories

Source: Researchers' compilation

Table: 4: Theme analysis

Themes	Code groups	Supply Chain	Media & Advertising	Consultancy	Financial
Required internal capabilities	Communicate internally	42	48	56	49
	Delegated innovation	0	6	18	6
	The right culture	44	34	52	44
	internal abilities	35	29	56	27
	Internal Resources	5	0	9	3

The table highlights the data of the coding groups related to internal capabilities required to implement open innovation. The coding about the right culture is not different amongst the groups, and most coding also came from communication internally and internal abilities. Delegation seemed not to be mentioned under supply chain, which other groups mentioned for internal management of open innovation. Opinions about internal abilities also came out more than in internal resources. Therefore, they might be addressing the same aspects.

5.4.2.1. Category: Communicate internally

Firstly, Internal communication was one of the abilities mentioned to be vital for transferring or sharing the information acquired through open innovation to ensure that objectives and tasks are aligned and for internal staff to be up to date with new developments and how the organisation progressed. It was mentioned that communication was many times not implemented enough to manage the flows of information in an organisation, where Interviewee 7 stated that

> "I think we overlook … I think we kind of downplay the aspect of liaising like you are the bridge to some degree, you initially share the vision of what we want to do and where we want to go, you get whatever response from the external party, you still need to communicate it to your internal people"

Several interviewees noted communication management as a necessity internally to achieve sound outside-in collaboration. Communication was regarded as the centre of it all by the managers, and it was suggested that in open innovation, there were many different moving parts; consequently, continuous communication was suggested as a necessary factor, where interviewee 12 said that

> "So, you need to be able to collaborate and collaboration comes with communication, making sure that there is a bit of synergy;"

Internal awareness initiatives were mentioned as important communication initiatives involving everyone, especially inter-departmental liaisons. Implementing open innovation requires communication of the intention or objectives so that everyone can be on board about the direction of an organisation. As mentioned, that communication created synergy, and it was also highlighted that it brings all the different units of an organisation together. Seminars and workshops were some of the activities mentioned to communicate the vision behind open innovation implementation. Interviewee 7 again mentioned that

> "You initially share the vision of what we want to do and where we want to go, you get whatever response from the external party, you still need to communicate it to your internal people, be it EXCO, be it the Board, there has to be a good communicator placed in these positions."

To add to the above, interviewee 2 also said that

> "So, what we do is we have seminars or workshops or podcasts or whatever you want to call it where you present these things on an ongoing basis to everyone."

The importance of internal awareness about the open innovation projects was also emphasised by interviewee 9, who highlighted that

> "You also need to make sure there is awareness around these kinds of projects internally in terms of the different departments, departmental heads or managers, or even all employees.

5.4.2.2. Category: Delegated innovation

Another aspect that came through from the data regarding the ability to adapt and absorb knowledge and manage open innovation was the matter of delegation. Some Managers mentioned the importance of leadership and the roles that executives should play to benefit from open innovation. The Interviewees highlighted the importance of assigning responsibilities and creating committees or teams that could champion open innovation. Having committees or teams delegated to the organisational implementation of open innovation they suggested allowed for ideas or creativity to be monitored and seeing projects through.

Having teams or leaders who manage the outside-in collaboration ensures that the practice is done and that organisation can stay abreast about the internal and external aspects of innovation. Interviewees also mentioned that delegation also provided accountability where there could be a person or a team to approve and support the processes of open innovation. Respondents also mentioned that the internal committees could also monitor any development or project occurring outside the organisation that could be of benefit. Interviewee 9 said that

> "So, you could set up your own innovation, innovation committee internally, where you would have different resources that would sit and review the progress of different projects that are happening outside the organisation but for the organisation."

It was emphasised that accountability was necessary when managers worked with external innovators; however, it should be delegated to internal managers for proper implementation. In this regard interviewee, 7 stated that

> "So, there is a certain amount of project management, while it is never kind of thoroughly underscored it is almost expected that yes, you are collaborating with someone externally, there is whatever joint process that is happening, but you, internal person, you are accountable."

Under delegation, outstanding leadership also came through as a crucial aspect when organisations implement open innovation, where managers should support inclusivity regarding internal and external collaboration. Inclusivity was explained as being open-minded and accepting the knowledge that the external innovators offer to the organisation. It was highlighted that leadership was also an essential factor when it comes to delegation where interviewee 8 mentioned that

> "I think it just goes back to the leadership to say yes, we have those people but what does it mean, etc? So, I would say great leadership, have a culture of learning as well in the organisation,"

5.4.2.3. Category: Right culture

The interviewees individually mentioned the culture as an essential element determining the level of open innovation within an organisation and how far it could be implemented. The correct mindset was mentioned to be vital when engaging in collaboration with suppliers and customers. Therefore, organisations need to have a culture of openness and flexibility to external ideas to practice complete open innovation approaches. An open-door policy could encourage innovation collaboration where companies allow staff members to bring forth ideas. It was noted that it was important for executives to promote a culture of open innovation by allowing people to be free to bring forward their innovative ideas, identify the drivers of employee innovation engagement and promote entrepreneurial climate. Interviewee 1 stated that

> "So, management needs to allow the people to say 'yes, you are allowed people to implement this, you are allowed to bring forward your innovation".

> "Because for you to create an innovation culture within the business you need to have the right innovation culture. So, you must identify what are the drivers that influences innovative behaviour or mindset in your employees. You need to have what I would call

myself an entrepreneurial climate, a climate that allows employees all the time to be able to have that desire to innovate as part of their DNA."

Daily operational themes that promote the culture of innovation could encourage employees to have the mindset of innovation; interviewee 7 said that

"At M at least we have something called the M way, and every employee is meant to live it in some sort of way daily, and I think there is value in so theme of the pillars that they highlight about the kind of mindset that we should be in, particularly when dealing with our customers and our suppliers."

A culture of learning from external players was an important aspect that some interviewees mentioned about open innovation. Having people in an organisation who supported learning from external innovators was seen as necessary and required great leadership internally to encourage learning as well as inclusion. Interviewee 6, in this regard, stated that

"So, I would say great leadership, have a culture of learning as well in the organisation, inclusion is important, don't treat them as outsiders, so at the top level I think those are the things that are just coming into my mind."

As well as Interviewee 8 stated that

"Or maybe a set of people that actually support the learning of that capability in a sense".

5.4.2.4. Category: Internal abilities

Managers regarded Open innovation as a disruptive phenomenon internally because it changes the mindset of depending too much on internal perspective when it comes to innovation, and that could lead to potential failure or closure of an organisation because open innovation changes the norms of how are done internally, interviewee 3 suggested that

"I think a lot of organisations to their demise, will allow too much on the internal views."

Internal abilities are fundamental for an organisation to be able to seize knowledge. The managers said that it depended on the internal set-up of an organisation, the abilities that can be done, the

resources, and the way managers allowed inflows of information to produce products and services better; interviewee 1 mentioned that

"You need to be able to have internally, you need to be set up correctly for you to be able to take advantage of open innovation in general."

What interviewee 1 mentioned was necessary because it can be difficult, if not impossible, to implement open innovation without the proper internal makeup.

The necessary drivers are required for managers to be able to grasp the sensed information from the environment. The interviewees have emphasised antecedents such as communication, delegation, culture as essential elements to grasp external information. Organisations needed to have an ability of the correct climate to be able to engage in outside-in collaboration, and Interviewee 1 said

"You need to have what I would call myself an entrepreneurial climate, a climate that allows employees all the time to be able to have that desire to innovate."

Another internal capability that came through from interviewees was using technology to manage internal and external knowledge stored in a portal where everyone internally could have access to it. This way, the interviewees suggested that it could assist with problem-solving, where employees could find solutions and learn how they were previously handled. The Managers in the study were from business environments where technology is part of their daily tasks. Therefore, they elaborated on having a portal to manage information that can be used as and when required by internal staff. The interviewees saw portals to leverage the internal capability of information management for solutions to problems. This way, information can be accessed and spread to different departments, and it is a manner where ideas can be stored and shared among employees. Some interviewees mentioned the use of intranet dashboards as a portal to communicate information and ideas or display creativity that their companies might be busy with; interviewee 1, suggested

"Business this day is built on an innovation platform so it is like a portal that they create where employees can go in and enter their ideas."

Interviewee 11 mentioned:

> "Companies we have ITSM platforms that they use to log calls, to track incidents. So, I will give you an example of service now, what we are currently using in the company and used in another company as well: you log a call, they resolve the call, update knowledge articles and the next time somebody logs a call it is easy to see what the problem was so that tool can be used for this collaboration as well, also for the research and development."

The dashboard ability, which is a form of an internal communication system powered by technology for sharing of information, interviewee 5 mentioned that:

> "So, we do a lot of dashboards for the business, so in communicating the fact that a new dashboard is up, can be used, what we will do there is do a lot more communication on our intranet "

Interviewees 11 and 8 both spoke about internal technological systems like interviewee 5 that platforms should manage open innovation information to be able to flow and be shared among units of a company, interviewee 11 said:

> "I would go with the KMDB, so like a knowledge Management Database System."

In addition to using people to communicate, organisations can be agile and use technology for the flow of information; interviewee 8 mentioned that

> "The capability also has to be in such a way that it can be managed in an agile way, maybe a set of tools you are using in terms of technology".

5.4.2.5. Category: Internal resources

Time was an essential element to allow employees to engage in innovation when it comes to internal resources. If an organisation would like to implement internal and external collaboration, employees need to be afforded the time from their daily taskings for an opportunity to be creative or innovative. interviewee 1 highlighted this issue and said that

> "before you start talking about going ahead to innovate. One of them is obviously time".

<u>Theme conclusion</u>

Seizing capability requires an organisation to have the necessary capacities to be able to capture and absorb knowledge. Some aspects discussed within this section's scope that play a role in seizing knowledge are communication, proper delegation and responsibilities, internal abilities, and resources such as technological systems to manage information flows. Thus, the integration of technological and non-technological aspects could enhance absorptive capability. Time should also be afforded to employees to engage in internal and external collaboration, which means allowing people to engage in an innovative task separate from their daily duties. Lastly, the right culture that supports open innovation can establish the correct mindset because such an atmosphere encourages the acceptance and absorption of open innovation knowledge.

5.4.3. Theoretical construct: Organisational performance

The themes in this segment, showing in figure 11, link to proposition three, which stipulated that open innovation was implemented to enhance internal innovation for better performance.

The theoretical construct and themes were developed from questions that addressed the impact of outside-in innovation on the quality of company products or services, interviewees opinion about open innovation being a technique that contributes to competitive advantage and how they would compare companies that perform open innovation and those that do not. Traditional companies theme can be discussed in organisational performance construct. Their insight in this regard provided an understanding of whether open innovation has competitive advantage benefits and overall enhancement of organisational performance.
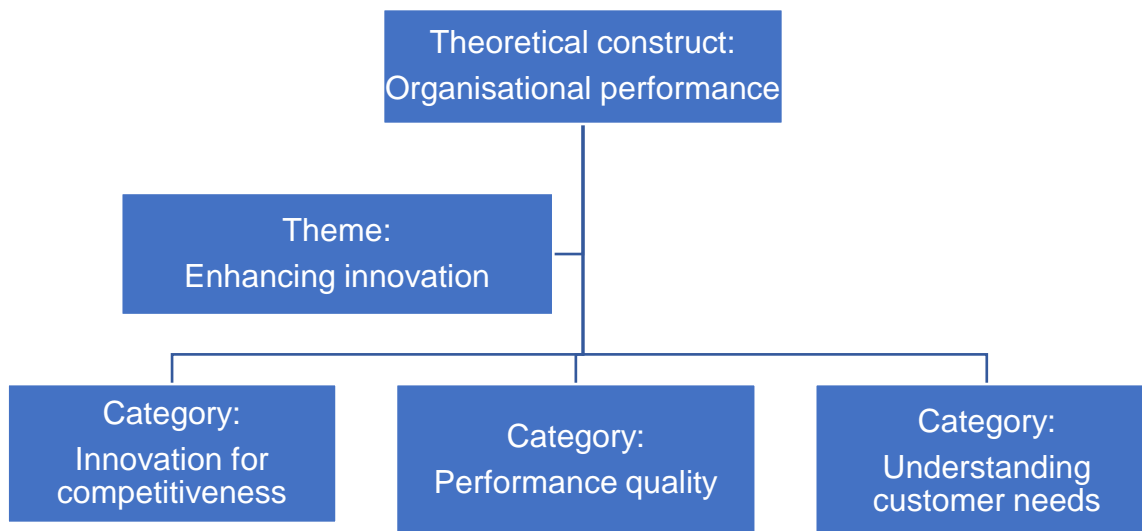
Fig 11: Illustration of theme three and first-order categories

Source: Researchers' compilation

Table: 5 Theme analysis

Themes	Code groups	Supply Chain	Media & Advertising	Consultancy	Financial
Enhance innovation	Open innovation for competitiveness	14	3	22	22
	Performance quality	0	0	4	1
	Understanding customer needs	0	0	6	0

When it comes to enhancing innovation, most coding came out of exploring open innovation for competitiveness. The consultancy group also spoke more about meeting customer needs.

5.4.3.1. Category: Open innovation for competitiveness

There were mixed responses from the interviewees on the matter of competitiveness which are discussed. Some agreed that open innovation could contribute to competitive advantage. Others suggested that it was conditional and did not view it as the specific contributor to competitive advantage. There was an opinion that open innovation does not necessarily contribute to

competitive advantage, but it is the internal and external dialogue and the trust that should exist between internal and external collaborators; interviewee 7 stated that

"I think it is not necessarily external that it can enhance the competitive advantage, it is the fact that if there is that running dialogue right throughout, and it is an honest dialogue, the result will be a product or service or insight that is clear, that it has recommendations that are clear."

Another interviewee stated that it is about a collective of reasonable efforts from the start of perhaps a project between external and internal collaborators, where interviewee 8 agreed with interviewee 7 and said that

"It is more about a collective of efforts than saying open innovation provides proper alignment of strategy."

"So, I think looking at it only at the end and saying is it giving you a competitive advantage with either better aligning your strategy, better aligning your products that you are creating and so on, would be wrong. I think that is the result, is the output of a whole bunch of good effort from the get-go."

The Managers who had an opinion about open innovation providing competitive advantage elaborated that when an organisation has a community of innovation and can get new ideas, staying ahead of the market was a benefit. When a company does internal and external research, it is an opportunity to understand trends in the market and obtain information that puts an organisation ahead. Interviewee 1 elaborated that

"So we are talking basically in terms of you build sort of like a community where you can actually get new ideas,"… "you get to a point where you can actually stay ahead of the competition,"…They will do their research and development, get to understand what the trends are like out there in the market, give you all that information which means when you actually create your idea you actually more or less get the benefit of the first mover and advantage,"

Some Managers highlighted that open innovation contributed to competitive advantage because a company would be producing according to customers' needs or perspectives. According to the Interviewees' opinion, when an organisation produced according to customers perspective, word-

of-mouth would spread among the customers and that in itself was a competitive advantage because customers would have a sense of connection to the products; interviewee 4 asserted that

> "So, if you can get your customers attached to your product, you are guaranteed business. So, in terms of your competitive advantage, you move"

Looking at other Managers, perhaps from the financial field, their sentiment about competitiveness can enhance internal capabilities. The practice brought information that an organisation does not have internally, such as ideas and new ways of operational implementation. The other benefit was cost-saving and less time to take more improved products or services to the market. Interviewee 5 explained that:

> "Open innovation definitely enhances your competitive advantage". "The reason why is because you are enhancing your internal capabilities, you are bringing forth things that were not there in the company, you are bringing forth new ideas and concepts and new ways of doing things. You even save costs in the long run; you can bring products into the market quite quickly."

During the interviews, there were comparisons between traditional organisations and those that implement open innovation, referred to as modern or visionary organisations. When discussing traditional companies, the interviewees stated that they were regarded slower in innovation because they did not implement open innovation, got left behind, or came second to market leaders. Interviewee 11 said this about traditional companies:

> "They are not going to know what is the next big thing. The one that is working in siloes and only works with everything internally is in my opinion one that is going to be left behind."

Doing business in siloes, an approach which traditional organisations do, robbed good data needed for decision making; interviewee 3 stated that:

> "You know to have that silo inside organisations I think sometimes robs I guess a little bit of like the rest of the industry or the community from understanding what is going on and having some really good data points that people can use to make good decisions."

Implementing internal and external collaboration, whether it be R&D, enables a company to be a pioneer in their industry because a company would be developing its goods or services based on the information from the market; in this regard, interviewee 1 stated

"Research and development, get to understand what the trends are like out there in the market, give you all that information which means when you actually create your idea you actually more or less get the benefit of the first mover and advantage, because you become a pioneer, you stay ahead of the competition because you know exactly how the market is behaving."

Due to the notion that organisations are supposed to produce for a need in the market, which was how open innovation was described, traditional companies or those that do not implement open innovation cannot innovate according to the customer's needs or perspective. Traditional companies get left behind because they do not produce based on the market requirements; interviewee 2 mentioned that

"Because what they produce is not what is required in the market,"

Also, companies that do not implement open innovation do not have a competitive edge and are sometimes followers when there are changes in the market. Interviewee 8 said that:

"You would find that they are not helping themselves to gain competitive edge, they might be followers and allow others to actually lead first,"

5.4.3.2. Category: Performance quality

The questions addressing this category focused on determining whether open innovation impacts the quality of products and services because of the internal and external collaboration activities. The Managers' opinions on whether open innovation impacts the quality of products or services were reflected under the consultancy and financial fields. Interviewee 6 stated that open innovation assisted organisations to achieve direct and indirect innovation outputs, involving different perspectives of external innovators who brought fresh ideas that were different for day-to-day proceedings or operations. Others believed that quality could be seen in the product design

perspective that came from outside collaborators' fresh ideas because they think differently. open innovation does impact the quality of the products or services because interviewee 10 stated that

"It enhances everything, your quality of delivery and the time that you are taking now."

However, the quality that open innovation brings depends on what the external party is good at and that some suppliers claim to know what they are doing but only to find they cannot deliver. Therefore, it is essential to filter and be selective about who is brought in for collaboration. Thus interviewee 3 said that

" You know I have seen management consultants who think they know it all and they can actually be more damaging than anything else. so, I think there is something to be said about being selective about that outside-in filters that need to be brought into that."

5.4.3.3 Category: Understanding customer needs

Open innovation can be implemented in many forms. As the Managers have mentioned, one of them was interacting with customers to get their perspectives and ideas, making them part of product and service innovation so that the output is accepted. They need to understand customer needs to enhance performance was highlighted more within the consultancy group. It was emphasised that what the Manager who have learned and experienced in open innovation and collaborating with customers was that they were the centre of the innovation process, of matching value proposition to customer needs, where interviewee 3 said that:

"What I learnt when I was in San Francisco which is that the innovation always starts, the kind of core of it, is really understanding your consumer." And once you understand the consumer clearly then you can go and see if your value proposition then matches what the consumer's needs are."

 It is crucial to understand and be agile to innovate from the needs and wants of customers to keep up with the market because the needs change quickly; interviewee 1 elaborated that

 "From an innovation perspective, you need to be able to actually understand those wants and needs as they are actually changing and be able to innovate as quickly as you can".

It also mentioned that it is advisable to view customer complaints as opportunities for creativity, in other words looking at complaints as an opportunity to improve products or services; interviewee 4 mentioned that

> **"**When you work that to say - look, whatever complaints we receive ... instead of looking at them as complaints, let's treat them as ideas on how we can improve"

Several Managers mentioned the example of Nokia and Kodak as companies that could not keep up with the changes in the environment. They lost their competitiveness because they did not embrace open innovation in interacting with customers or partnering with external businesses to improve their product or service offering. Not implementing open innovation robs companies of growth. Thus Interviewee 11 explained that

> "Kodak, the big camera company years ago, they worked in siloes, they did everything themselves, but did they not think of the digital world that was coming, did they not think of what is their next steps? Where are they now?"

Theme conclusion

This section discussed elements that seemed to be believed to enhance innovation, thereby improving organisational performance. There were some different opinions about open innovation contributing to competitive advantage. However, most believe it was a significant contributor to competitiveness. Quality also depended on whom an organisation brought for collaboration because not everyone was as great as they claimed to be. It was also discovered that understanding customer needs was the core of implementing open innovation to boost innovation performance. Lastly, opinions were given about traditional companies that do not implement open innovation and that most of them got left behind when it comes to innovation.

5.4.4. Theoretical construct: Alignment to strategy

Lastly, the findings of this theoretical construct and themes in figure 12, linked to proposition four that stipulated open innovation practice should align with organisational strategy to enable the accumulation and integration of externally acquired innovation.

The respondents to the interviews were asked to give their opinion on how managers can integrate outside-in innovation into the overall company strategy and explored how managers should choose appropriate methods of open innovation since there were several methods organisations could utilise.
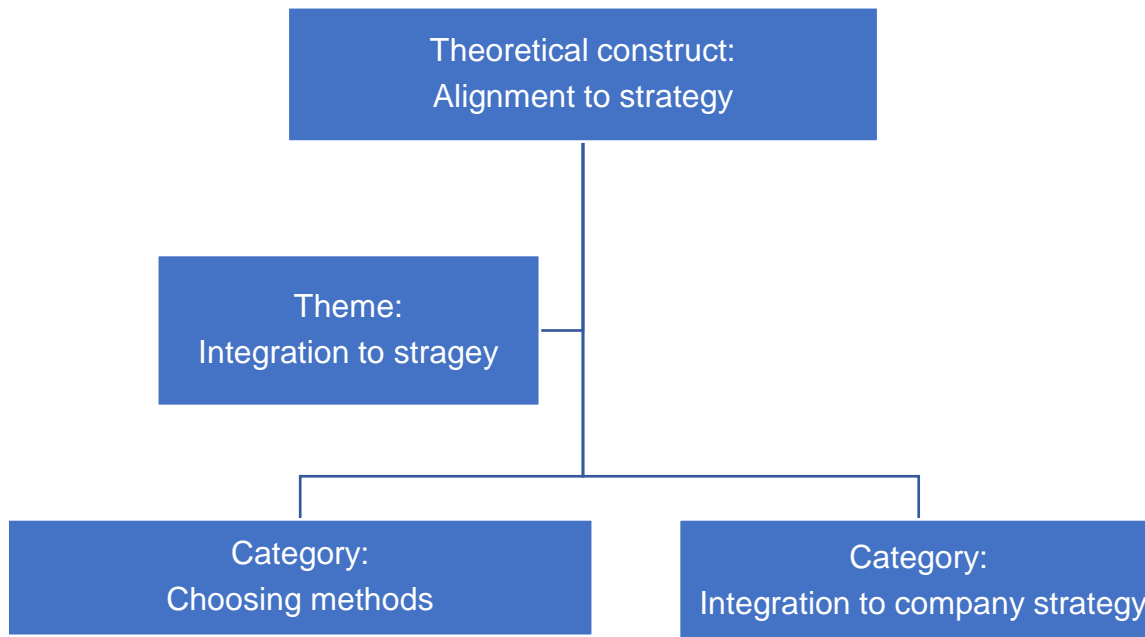
Fig: 12: Illustration of theme four and the first-order categories

Source: Researchers' compilation

Table 6: Theme analysis

Themes	Code groups	Supply Chain	Media & Advertising	Consultancy	Financial
Integration to strategy	Choosing methods	20	18	34	27
	Integration to the company strategy	9	12	29	9

Table 6 demonstrates group codings of topics around strategy. The figures counted for codes highlighted the need to choose the appropriate method of open innovation and align it to the overall company strategy.

5.4.4.1. Integration to the company strategy

Information that was discovered from the Managers was that adopting open innovation was a strategic insight that sits at the top level of the organisation, where they can lead by example and engage with external partners or customers; interviewee 3 mentioned that

> "So I think if you can take the whole sort of senior team through some sort of immersion event whether it is … well pre-COVID you know, travelling somewhere, but where they are actually all getting hands-on doing something that is very much a 'we went on this exercise, this is how we did it. You have to put them in that scenario of having to go and speak to ten customers about a certain thing,"

The interviewees stated that it was important for managers to understand innovation and why they want to implement open innovation. There needs to be a reason to implement open innovation and be inspired by what the objective was, and the managers should question. Interviewees 4 stated that

> "what do we want from Open Innovation?".

Interviewee 1 asserted that
> "If you want to do it in such a way that yes you just formalise it, you can include innovation itself as a performance objective and then you define what it is that is expected for each and every employee."

In this manner that interviewee 1 mentioned, it was believed to enable managers to address the expected outcome that managers wanted out of open innovation and understood how it worked. Several managers also mentioned the need to develop key Performance Indicators (KPI) around the strategy that will ensure integration and implementation of open innovation. In this manner, efforts of open innovation could be monitored and measured. It was believed that that the KPI should speak to the overall strategy and be aligned to the objective of what was expected to be achieved; interviewee 1 highlighted that

> "so as innovation you can actually have a KPI specifically for innovation and then you describe what you are actually going to be focusing on."

> "It has to speak to the overall business strategy because you can't have a situation where the business is saying they want to grow and part of that is for us to be able to do digital technology to engage with our clients out there, and then me as a business unit we go and create an idea that has got to do with car manufacturing."

Collaborating with businesses strategically aligned to the seeking organisation was regarded as necessary for the company's strategic road map and the envisioned growth so that everyone understood the expected results. Interviewee 8 suggested that:

> "the ones that we feel are strategically aligned to our road map and our growth, to make sure that they equally have buy-in and understand what we are trying to do."

Linking open innovation to strategic pillars of an organisation was also vital so that it was included on a whole strategic journey of an organisation because it would address focal areas; again, interviewee 8, in this regard, asserted that

> "if the open innovation really is part of our strategic pillar in terms of the supply chain strategy, then we will definitely adopt it because it will be either solving one of our strategic pillars in terms of our key focus areas."

> "So if we don't have that as part of our strategy then we might be missing out on the bigger picture, so we make sure we incorporate it to ensure that there is buy-in internally but also that we do not lose sight of what we are trying to do jointly with our partners to make it more meaningful with them as well."

5.4.4.2. Choosing methods

The second aspect explored in this theme was choosing the method that was suitable for the company strategy when engaging in open innovation collaboration. The managers often mentioned that it depended on what the situation was, which was the context and what an organisation wanted to achieve. The same methods do not apply in all situations or contexts. It was necessary to understand what the mandate is to know which method to choose. Some companies might use all the methods, but it came down to what the need was. Therefore it was

important for managers to know which approach was suitable in different open innovation initiatives. interviewee 8 emphasised that

> "so it is critical that you firstly establish what you are solving for and make a decision on who are the key strategic partners you want to involve for that specific innovation."

The other important thing was that companies should collaborate with businesses that understood the seeking company business as well as the industry in which they operated. Interviewee 1 further mentioned

> "Obviously if you are going to do your open innovation and going to be collaborating as well with external partners, you must have the people that understand your industry,"

Other respondents had the same sentiments, such as interviewee 3, who mentioned that many companies get it wrong because they do not clearly understand the requirements of the seeking company and what changes are happening in the environment regarding the trends and changes of behaviours. Considering these issues can assist a company to choose not only the suitable method by the correct supplier with whom to partner, interviewee 3 asserted that

> "If it is about understanding what is going on out there in terms of consumer change or behaviour or trends, there are very specific companies who specialise in that, they can give you like amazing insight into deep customer ethnographic, coming up with the trends and saying 'this is what is happening and this is what it means to you in the next year, five years, ten years."

Reputation was also highlighted as an aspect that cannot be overlooked. Partnering with reputable companies in terms of knowledge and skills and reputational behaviour were some of the things the Managers explained should be taken into account when making a choice, whether it was a platform, companies or learning institution. The interviewees stated that companies should have a collaboration ecosystem of partnership with suppliers that link to the company's vision, mission and values. Interviewee 6 mentioned that

> "so we look at different things, but reputation for big companies is a big one, then core competency I would say is the second one. Then we sort of try to bring other young people through the Gig Economy, just checking what they do, what is their interest."

Interviewee 9 also elaborated that companies should have an ecosystem of innovation partners that enable the seeking organisation to link with its vision and mission; interviewee 9 elaborated that

> "so you want to choose an ecosystem partnership that will allow you to or is linked to your vision and mission and values."

Theme conclusion

The themes explored how should managers in their companies integrate open innovation into the overall strategy. There were several internal and external collaborations methods to use, however as per the Managers explanations; it depended on the situation and its merits. Some managers mentioned that a leader should equate a method to the context. The Managers also mentioned that to achieve open innovation effectively, Key Performance Indicators (KPIs) could assist managers to integrate open innovation into the overall strategy, which would also aid to measure if objectives are met.

5.5. Conclusion

This chapter outlined the findings of the information collected from the research respondents. The section first highlighted the analysis method, the formulation of themes and the theoretical constructs. An induction and deductive approaches were followed, where the researcher first focused on data of information from the interviewees and then created themes using a theoretical lens. The researcher described the data according to the interviewees' perspectives and used quotes as evidence to support descriptions. Each theme had been described and supported by evidence of quotations.

CHAPTER 6: DISCUSSIONS

6.1. Introduction

The purpose of the discussion chapter is to bring the findings and the literature together. It involves the literature analysis implemented in chapter two and comparing it to the findings of chapter five. The structure of this chapter mirrors chapter five to maintain synergy; thus, the discussion of the theoretical constructs and their themes will follow the same order. Each section presents a high-level explanation of the findings and the explanation of the literature. Similarities and differences between findings and literature in each section will be displayed to conclude what this research has contributed to the theory of open innovation. Below is as an updated conceptual framework of the research in figure 13.
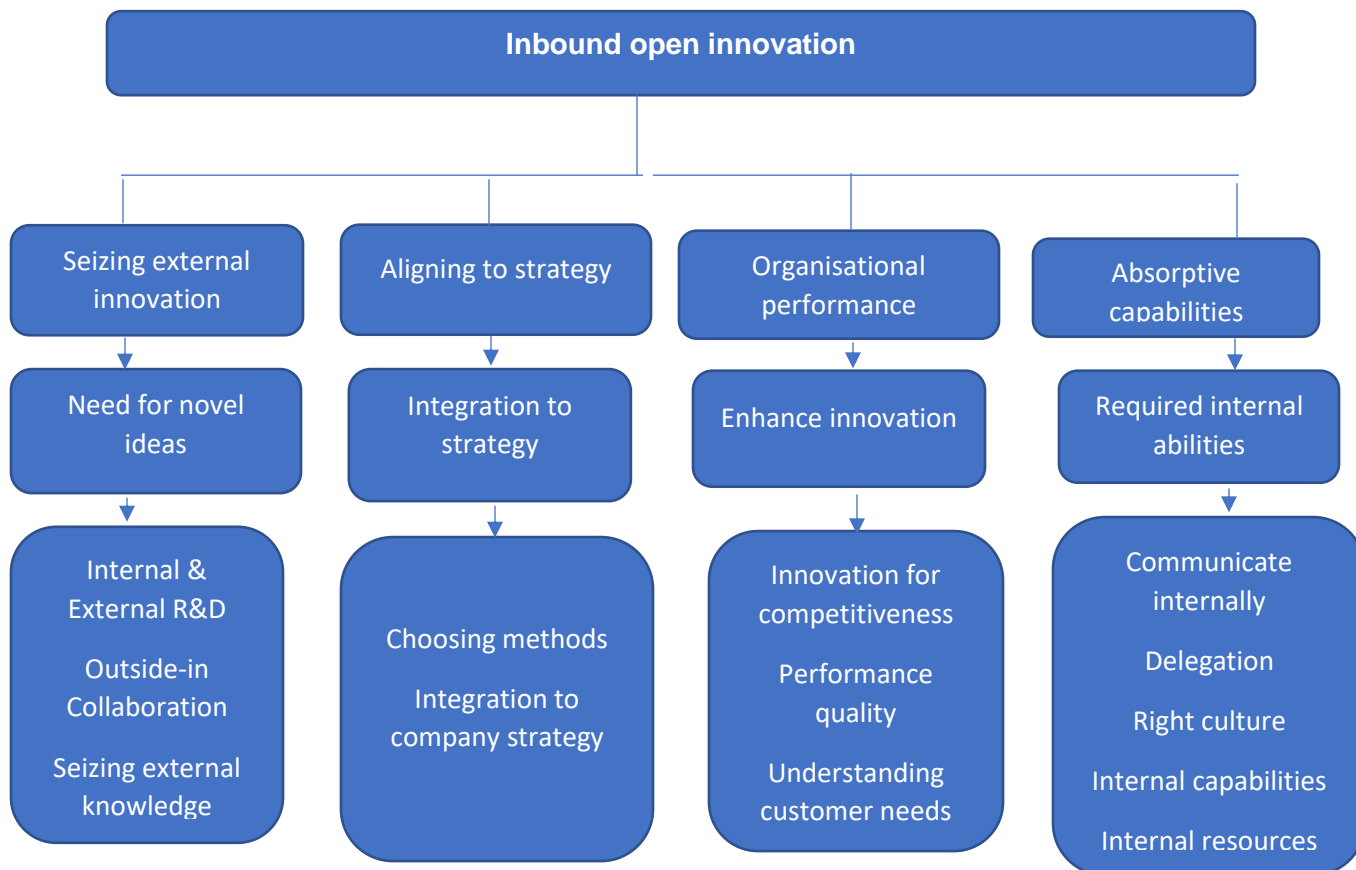
Fig:13 Researcher conceptual framework (Source: Researchers' compilation)

6.2. Discussion of the findings and the theoretical themes

6.2.1. Seizing external Knowledge

Seizing external knowledge is the theoretical construct formulated by categorising codes within the need for novel ideas, which addresses why organisations extend their R&D, engage in outside-in collaboration, and seek external knowledge. The first proposition highlighted in chapter three can connect to the theoretical construct and theme. It stated that managers implement open innovation to seize knowledge absent in their organisations to address innovation needs and enhance internal capabilities.

6.2.1.1. Category: Implement internal and external research and development

Extending internal R&D in the findings was discovered to be the method organisations implement to utilise their internal research capability and partner with external parties to gain more knowledge that would benefit organisational innovation. Findings highlighted that it could be a bit difficult when organisations only depend on their research and development. If organisations want to enhance their internal innovation, organisations cannot just depend on their internal knowledge if they want novelty in products and services. Partnering with external institutions for research and development can assist companies to achieve optimal innovation practices by generating more knowledge. Engaging in internal and external R&D moves a business away from a one-track mind. It enables learning about challenges in the business environment that organisations can avoid by implementing external collaboration.

Findings also highlighted that extending R&D assists companies to address the lack of expertise or capacity issues. Therefore, there was an appreciation for external research because it provided a pool of ideas that are not available internally. Collaborating with organisations that extend their research and development to avoid working in siloes encouraged companies to think out of the box, reduce costs and time for research innovation. Some companies do not have the time, knowledge, or expertise to implement their research. Consequently, they engage with external suppliers to achieve efficient research and development needs.

Academia was one of the external parties that organisations can utilise to obtain original ideas that can boost innovation because of the multi-skills in academia and the resources that many companies do not possess. Meaning collaboration between academia and industries can assist in fulfilling company researchers needs. Extending internal research and development helps companies acquire skills that might be lacking internally to improve innovation for existing products or new product development.

In the current literature, Lauritzen and Karafyllia (2019) suggested open innovation as a method of moving from closed operational models of relying on internal R&D to an open model where external collaboration employs inflows and outflows of knowledge. Teece (2020), in the study of open innovation, had stated that the fast-changing technological environment and global competition had driven organisations to expand their internal innovation efforts by seeking external ideas and resources to enhance research and development. Organisations engage in alliances for collaborations with strategic partners to gain complementary knowledge and capabilities because a company cannot solely rely on its resources (Bitencourt et al., 2020).

Popa et al. (2017) asserted that the company's interest in collaboration networks with external partners was driven by the need to access and benefit from new technologies, skills, and expertise that might be lacking internally. Enkel et al. (2020) also suggested that organisations anticipate changes in the environment, leading them to transform and adapt strategic renewal, which can be influenced by opening the research and development boundaries to acquire capabilities.

Bogers et al. (2019) highlighted that the driver of open innovation was the decrease of internal R&D. There is no independent internal research and development, hence the need for external collaboration (Bogers et al., 2019). Sengupta and Sena (2020) also posit that open innovation enabled organisations to improve their performance by accessing knowledge outside their boundaries to gain breakthrough innovations, resulting in R&D cost reduction and business growth.

6.2.1.2. Category: Outside-in Collaboration

According to the research findings, outside-in collaboration emanates from the need for ideation and to leverage company innovation capability. It is rare to find a company that can claim to hold all the knowledge it needs for innovation, and at times companies find themselves in a situation

where their skills get outdated over time. Therefore, companies engage in external collaboration to get through the pain points and find solutions to problems. As per the findings, inbound collaboration is necessary to get companies closer to external partners that have the knowledge that organisations seek; thus, engaging in outside-in collaboration assisted companies to seize ideas, information, and knowledge to develop novel products and services. Companies do not always have all the information needed for innovation, and that knowledge could be found beyond the boundaries.

The need for new ideas seemed to be the driver of internal and external collaboration. According to research, outside-in collaboration allows companies to get closer to their customers so that innovation follows their changing needs. Outside-in collaboration also involves customer engagement to develop products and provide services according to customers' perspectives, which means companies can innovate according to the market requirements.

Looking at literature relating to outside-in collaboration, Popa et al. (2017) highlighted outside-in collaboration benefits that present opportunities for companies to gain new ideas and grow problem-solving capabilities. Thompson et al. (2020) suggested that some companies acknowledge that their internal capabilities are not as good as those of market leaders; hence organisations implement outside-in collaboration. An important factor is also mentioned by Bogers et al. (2019) argued that open innovation was not just about taking internal tasks to external suppliers to solve problems; it was about leveraging and enhancing internal capabilities. Thompson et al. (2020) supported the idea that organisations should use external innovation to expand portfolios.

Chen & Liu. (2019) in their study suggest outside-in collaboration is an activity that involves an internal investigation focusing on where the organisation is lacking and going outside the boundaries to close those weakness gaps. Through acquiring and internalising external knowledge, an organisation can enrich its knowledge and strong innovation capabilities (Chen & Liu, 2019).

6.2.1.3. Category: Seeking external knowledge

Opinions from the research findings of the open inbound innovation were that the method was essential for companies to find new ideas from customers or partner with organisations to include the external perspective in their innovation processes. When an organisation incorporates external knowledge into internal innovation, it can adapt to the changes in the business environment and be enabled to address the market needs. Seeking external knowledge also involved obtaining skills that were lacking internally; therefore, a skill gap can be addressed and gain ideas and solutions for operational problems that might be difficult to solve by employees.

Findings showed that open innovation is a method to increase performance and enhance competitive advantage. Seeking external knowledge enhance internal capabilities by bringing forth new ideas and doing things in a new way. The world is constantly changing, and seeking external knowledge helped companies manoeuvre the changes and diversify resources. Open innovation is a disruptive innovative method of bringing outside knowledge into an organisation.

Seeking external knowledge exposes organisations to experts for matters in which organisations want to improve, and this assists in creating new products or services, which leads to profitability. Going outside organisational boundaries was viewed as an excellent activity to source ideas because companies can gain external perspectives, understand what is happening, and innovate accordingly. Sometimes the skills set within an organisation can become obsolete, which requires seeking external knowledge.

In literature, Popa et al. (2017) explained that inbound innovation is implemented to gain new ideas and grow problem-solving capabilities. It also exposes businesses to external knowledge to drive the innovation requirements and generate cutting-edge ideas that lead to radical innovation (Chen & Liu.,2019). Bagherzadeh et al. (2020) also suggest that engaging with external partners provides easy access to external ideas, skills, and knowledge; therefore, open innovation can improve quality, quantity, ideas, and skills which complements internal resources and capabilities.

Bogers et al. (2019) stipulated that open innovation is a method to enable firms to use external ideas and is an addition to internal capabilities to enhance innovations, which means companies do not only rely on their ideas but invite external sources to contribute. Gong (2017) gave their opinion that it is not enough to respond to the turbulent environment with just internal capabilities;

therefore, organisations use the open innovation method to contact knowledge absent to them to solve business problems usually implemented in-house.

Bagherzadeh et al. (2021) also stipulated that no firm has all the knowledge to solve problems. Popa et al. (2017) extend by suggesting that the market is unstable and requires companies to constantly search for novel knowledge and technologies to satisfy customer changing demands and preferences.

6.2.1.4. Comparison between findings and literature

Like Teece (2020), the research finding showed that extending internal R&D was not only about depending on their internal research capability; however, to partner the internal R&D with external parties to gain more knowledge that would benefit organisational innovation, as Teece (2020) stated, organisations are driven to expand their internal innovation efforts by seeking external resources to enhance research and development.

Another similarity can be linked to the theory of Bogers et al. (2019), where findings also highlighted that extending R&D assists companies to address the lack of expertise or capacity issues. The findings showed an appreciation for external research because it provided a pool of ideas that might not be available internally. At times, companies do not have the time, knowledge, or expertise to implement their research. Then, it seems companies engage with external suppliers to achieve efficient research and development needs. Bogers et al. (2019) emphasised this by stating that the driver of open innovation was the decrease of internal R&D and further elaborated that there is no independent internal research and development; hence, external collaboration is necessary.

Similar to Sengupta and Sena (2020), the findings showed that organisations that extend their research and development avoid working in siloes, encourage companies to think out of the box, reduce costs, and time for research innovation. In this regard, Sengupta and Sena (2020) suggested that open innovation assisted organisations to gain breakthroughs in innovations with reduced costs of research and development.

In the research findings, similar to Popa et al. (2017), it was discovered that companies need for outside-in collaboration comes from the need for ideation and leverage company innovation

capability. In this regard, Popa et al. (2017) highlighted that outside-in collaboration was an opportunity by which companies can gain new ideas and grow problem-solving capabilities. Bogers et al. (2019) shared the same thought, which argued that open innovation was not just about taking internal tasks to external suppliers to solve problems; it was about leveraging and enhancing internal capabilities. Bagherzadeh et al. (2020) also stated that collaborating with external partners gave companies easy access to external ideas, skills, and knowledge to improve quality, quantity, diverse ideas, knowledge, and skills that complement internal resources capabilities.

6.2.1.5. Conclusion

Therefore, this research's findings corroborate and extend the current literature that open innovation is an approach to enhance internal research and development due to the lack or limited organisational knowledge, skills, and funds as stipulated in the studies of Bogers et al. (2019), Popa et al. (2017) and Teece (2020). Findings again confirm literature that open innovation is an approach to engaging outside-in collaboration to seek external knowledge to gain novel ideas and produce according to the market needs. Thompson et al. (2020) highlighted that companies acknowledge that their internal capabilities are not as good as market leaders; hence organisations source innovation from outside. Meaning that for organisations to thrive in the dynamic business environment, they cannot operate in siloes; they need to seize knowledge outside organisational boundaries; knowledge absent in their organisations to address innovation needs to leverage and enhance internal capabilities.

6.2.2. Seizing capabilities

Seizing capability construct refers to the internal abilities required to absorb the knowledge acquired through open innovation. It is one thing for an organisation to sense the changes in the environment, recognise opportunities, and engage in collaboration, but absorbing the knowledge is an important aspect to consider. This section discusses different absorptive action methods that play a role in integrating the knowledge acquired through inbound innovation. The proposition linked to these themes stipulated that organisation with solid seizing abilities can absorb external innovation knowledge and capture value.

6.2.2.1. Category: Communicate internally

Communication was regarded as one of the fundamental practices to transfer and share knowledge inside an organisation. It was highlighted in the findings that communication was a practice that should play a role in sharing knowledge acquired through outside-in innovation to ensure synergy among units and keeping employees up to date about the new developments inside an organisation and understanding the vision behind the implementation of open innovation. Some of the actionable activities mentioned included internal awareness initiatives about open innovation projects, seminars and workshops, Executive boards, and town halls.

Communication management was noted to be necessary to communicate new developments driven by open innovation. The communication action activities can raise awareness from the start of projects to the commercialisation to monitor success stories. Different parts of open innovation projects involve different units in an organisation; therefore, it is vital to encourage internal stakeholder communication. It is crucial to have continuous team engagements through forums of discussions.

Bagherzadeh et al. (2021), in the assessed literature, suggested that managing collaboration with external partners can be challenging to get employees to understand the absorbed knowledge. The authors suggested that knowledge sharing should be for different open innovation projects (Bagherzadeh et al., 2021). Two essential internal practices include knowledge incentives, whereby an employee is awarded for acquiring and sharing new knowledge, and internal communication between and amongst project team members (Bagherzadeh et al., 2021). As stated by Bagherzadeh et al. (2020), these internal practices can bring together the relationship between open innovation and innovation performance.

Bogers et al. (2019) also saw the importance of communication by stating that companies should use internal practices such as delegation, vertical and lateral communication when it comes to absorbing external knowledge. De Zubielqui et al. (2019) suggested the modern Human Resource Management (HRM) that involves using robust vertical and lateral communication, having incentives for the acquisition and sharing of knowledge by an employee and implementing delegated decision rights to leverage external customer knowledge. Modern Human Resource Management enables organisations to leverage customer knowledge.

6.2.2.2. Category: Delegated innovation

Delegating the open innovation function was also highlighted from the findings as a practice to manage outside-in innovation practices where responsibilities are assigned to champion open innovation activities or accountability given to the relevant person or team for the approval and support of open innovation processes. A delegated team or committee could be appointed to support and approve open innovation projects and monitor progress.

Leadership was the critical element highlighted from the findings to ensure inclusivity between internal and external collaborations. According to the findings, inclusivity refers to the internal staff being open-minded and accepting of the external innovators' knowledge. When delegated teams and leaders manage the outside-in collaboration, it ensures open innovation practices' performance; thus, the organisation can stay abreast of internal and external innovation aspects.

Focusing on literature, Bogers et al. (2019) mentioned delegation as one of the internal practices necessary to unite open innovation and innovation performance. In literature in Naqshbandi and Tabche (2018), the findings advocated for proper leadership when managing open inbound innovation.

Naqshbandi and Tabche (2018) theorise that empowering style leadership in an organisation promotes open innovation and encourages employees to engage in activities of outside-in innovation. Singh et al. (2019) discussed shared leadership as one aspect that drives knowledge sharing in open innovation. Also, in the study of Singh et al. (2021), it was suggested that the influence and support of leadership direction and knowledge sharing play a vital role in open innovation.

6.2.2.3. Category: Right culture

The right internal mindset influenced by organisational culture can drive the success of open innovation. In the findings, the culture of openness and flexibility to external ideas is necessary to implement and achieve outside-in objectives. Internally the culture that affords employees the freedom and time to be creative and learn is necessary to drive successful open innovation.

Findings suggested that it was necessary also to view open innovation as an opportunity and not a threat.

The entrepreneurial climate within an organisation was a viewed as a good encouragement for employees to engage in innovation. Rewarding efforts of acquiring new knowledge came out as another motivator to accept open innovation. Therefore, it is vital to ensure that a culture of innovation influences the behaviour to help the business grow. A culture of learning from external innovators is crucial, and managers should support it as this can display outstanding leadership from management to promote external innovation inclusion into organisational innovation ventures.

De Marco et al. (2020) and Popa et al. (2017) in literature highlighted that organisational culture, employee mindset and characteristics play an essential role when it comes to the adoption of open innovation because employee's resistance can hinder the adoption of open innovation, (Popa et al., 2017). Companies with a robust innovation climate motivate a culture of thinking and taking risks, taking advantage of external knowledge (Popa et al., 2017). Teece et al. (2016) also mentioned that entrepreneurial management skills are necessary within an organisation to combine and recombine technologies to adjust to the environment.

In supporting the culture of learning, Day & Schoemaker (2016) suggested that when it comes to seizing of information, organisations need to have a mindset that is willing to experiment, promote a trial- and error learning environment and look beyond their boundaries for insights from other companies and partners.

Enkel et al. (2020) also highlighted the importance of culture. They asserted that business strategies and the level of an organisation's openness should connect to the corporate culture because it enables the company's inflow and outflow of knowledge (Enkel et al., 2020). Having a robust internal innovation climate motivate a culture of thinking and taking risks, taking advantage of the knowledge offered by the external environment (Popa et al., 2017).

In their literature, Naqshbandi and Tabche (2018) mention the importance of proper leadership when it comes to open innovation. Naqshbandi and Tabche (2018) posit that empowering style leadership is a practice that promotes a culture of open inbound innovation where employees are encouraged to engage in activities of creation and acquisition of knowledge from the external markets. Naqshbandi & Tabche (2018) further theorise that a company's learning culture

contributes to organisational intention to source ideas and explore knowledge. Therefore, organisations that support a learning culture in open innovation can facilitate outside-in innovation.

De Zubielqui et al. (2019) theory can also address the matter of culture. They suggested the modern Human Resource Management (HRM) that promotes incentives for the acquisition and sharing of knowledge by an employee, encouraging a positive employee's mindset about open innovation (De Zubielqui et al., 2019).

6.2.2.4. Category: Internal abilities

Communication, delegation, and the right culture are internal abilities required to absorb open innovation. An organisation needs to be appropriately set up according to findings to absorb outside-in innovation knowledge. The use of technology was mentioned as an essential element and the use of people to absorb knowledge. Findings suggest that technological platforms can assist with storing information that others can use to solve problems based on how others have previously arrived at their solutions.

Therefore, information technology platforms serve as information sharing capabilities to transfer and share knowledge. What came through as examples of information management and sharing through technology were the intranet dashboards, used as a portal to communicate information, ideas, and display creativity that their companies might be implementing. Another information technology system highlighted in the finding was called the (Information Technology Service Management) ITSM platforms, known for logging and tracking incidents. Employees can use those that are resolved and updated for referral for future collaboration and research and development.

Knowledge Management Database System came through in findings as another information technology method that can manage the internal and perhaps outflow of open innovation information. The use of technology was seen as an agile approach to managing open innovation and managing sharing of information by employees' abilities.

Teece et al. (2016) emphasised that technology has become an authentic influencer of the business environment and suggested that dynamic organisations identify and assess

technological opportunities and mobilise resources to meet the opportunities to capture the value. In addition, Warner and Wager (2019) stated that organisations should use information technology infrastructure to build capabilities that organise external partners and co-create user experience.

In the literature, Mubarak and Petraite (2020) emphasised the importance of the influence of technology on open innovation, where the authors suggest the presents of technologies to traditional methods in an organisation for digital trust collaboration amongst internal and external stakeholders for effective open innovation performance. Mubarak and Petraite (2020) suggested a blockchain digital data storage system as an information technology system used by authorised stakeholders to share and access similar information and data.

Santoro et al. (2018) also brought ICT capability as a necessity to foster knowledge flow. These technologies are the knowledge Management systems to improve the creation, storage and transfer of knowledge using information technology infrastructure and collaborative technologies to foster discussion forums. Santoro et al. (2018) posit that the Information Technology Knowledge Management System is necessary for internal employees' absorptive capacity to leverage their knowledge capability.

6.2.2.5. Category: Internal resources

Relevant technology showed to be important in the findings to manage information acquired from open innovation projects, which includes tools or materials and people and time to implement open innovation successfully.

Mubarak and Petraite (2020) have highlighted that technology is an essential resource, and Teece et al. (2016) suggest that dynamic organisations should identify, assess technological opportunities, and mobilise resources to meet the opportunities to capture the value and continue to renew.

6.2.2.6. Comparison between findings and literature

The findings of seizing abilities concerning communication delegation and the right culture are related to those found in the literature. Similar to Bagherzadeh et al. (2021) and Bogers et al. (2019), it was emphasised in the findings that there should be knowledge sharing for different open innovation projects. Lateral and vertical communication amongst units was a vital aspect of sharing information because different parts of open innovation projects involve different units. Therefore, internal stakeholder communication is crucial.

A new management approach that de Zubielqui et al. (2019) mentioned when it comes to controlling open innovation practices, which supports findings of communication in open innovation practice, is the modern Human Resource Management (HRM) that involves the use of robust vertical and lateral communication.

When it comes to the issue of delegation, compared to Bogers et al. (2019), delegating open innovation functions was highlighted as one of the necessary practices to manage outside-in innovation practices. Delegating responsibilities refers to assigning duties to capable officials to champion open innovation activities to ensure accountability for the approval and support of open innovation processes. Bogers et al. (2019), in this regard, mentioned that delegation is one of the internal practices necessary to unite open innovation and innovation performance. Findings and literature mention similar aspects regarding delegation and leadership. Findings showed that proper leadership is required to ensure inclusivity between internal and external collaborations. On the other hand, Naqshbandi and Tabche (2018) posit that empowering style leadership in an organisation promotes open innovation and encourages employees to engage in activities of outside-in innovation.

The need for the right culture was highlighted both in the literature and the findings. The similarities noted in the study showed that findings stipulate that the entrepreneurial climate within an organisation was a good encouragement for employees to engage in innovation. Teece et al. (2016) also theorised the same where they mentioned that entrepreneurial management skills are necessary within an organisation to combine and recombine technologies to adjust to the environment. Findings referred to this as entrepreneurial climate. Regarding an entrepreneurial climate, the finding is similar to Teece et al. (2016), who mentioned that entrepreneurial

management skills are necessary to combine and recombine technologies to adjust to the environment.

The culture of the right mindset about open innovation involves promoting openness and flexibility to external ideas. De Marco et al. (2020) and Popa et al. (2017) have similar thoughts in literature. They highlighted that organisational culture, employee mindset, and characteristics play an essential role in adopting open innovation. A culture of learning in findings is also similar to Day & Schoemaker (2016) where they posit that organisations need to have a mindset that is willing to experiment, promote a trial- and error learning environment, which was what the findings revealed.

Outstanding leadership was vital in the findings similar to Naqshbandi and Tabche (2018), that management can promote external innovation inclusion into organisational innovation ventures. Naqshbandi and Tabche (2018) theorise that empowering leadership promotes a culture of open inbound innovation. Empowering leadership is about empowering others to practice open innovation. The findings showed similar thinking where it was stipulated that internally the culture that affords employees the freedom and time to be creative and learn is necessary to drive successful open innovation.

Like Teece et al. (2016) and Warner and Wager (2019), technology came out as an essential feature, where literature and the findings agree it should be one of the capabilities to enable the seizing of information. Teece et al. (2016), Warner and Wager (2019) and the findings showed that the use of technology was as an essential element and the use of people to absorb knowledge. Teece et al. (2016) emphasised that technology is an authentic influencer of the environment and that dynamic organisations should identify and mobilise technological resources to meet the opportunities and capture value.

At the same time, Warner and Wager (2019) mentioned that organisations should use information technology infrastructure to build capabilities that organise external partners and co-creating user experience. On this point, findings similar to Mubarak and Petraite (2020) and Santoro et al. (2018) suggest information technology platforms that manage to share and transfer open innovation knowledge. The findings highlighted ITSM platforms or the knowledge Management Database System to manage the inflows of open innovation information. Mubarak and Petraite (2020) suggested a blockchain digital data storage authorised for stakeholders to share and access similar information and data. Both findings and literature highlight information technology

management systems. Findings revealed ITSM and literature suggested blockchain storage system.

6.2.2.7. Conclusion

Thus, in this section, the research extends the theory about the necessary absorption capabilities when implementing open innovation, combining technological and non-technological assets, communication, delegation and having the right culture to achieve a successful open innovation practice. Meaning, strong seizing capabilities involving technological and non-technological aspects are a prerequisite to seizing knowledge through outside-in open innovation. Teece (2020) emphasised that solid seizing is needed to ensure that open innovation is successful in capturing value. Therefore, the findings and literature of authors such as Bagherzadeh et al. (2021) highlighted the importance of internal communication. De Zubielqui et al. (2019) further provided the theory of modern Human Resources Management as absorption capability practice, as well as information technologies necessary to capture knowledge highlighted by Mubarak and Petraite (2020), Santoro et al. (2018) and in the findings.

6.2.3. Organisational performance

The theoretical construct and themes were developed to understand whether open innovation contributes to competitive advantage. The proposition linked to the themes stated that the open innovation method was implemented to enhance internal innovation for better performance, referring to competitiveness and providing quality goods and services. The themes addressed competitiveness, the quality that open innovation contributes to products or services, and understanding customer needs to enhance competitiveness.

6.2.3.1. Open innovation for competitiveness

In the findings, open innovation was viewed as a contributor to competitive advantage because it provides organisations access to a network of the innovation ecosystem to obtain new ideas,

which created a benefit of staying ahead of the market. When a company combines internal and external research, it also better understands trends in the market, and it was emphasised that open innovation puts an organisation ahead.

Bringing external knowledge to an organisation was considered a competitive advantage because it enhanced internal innovation by imparting knowledge that did not exist internally, saving costs and commercialising quicker to the market. One of the reasons open innovation was viewed as a contributor to competitiveness was the benefit of producing according to customers' needs or perspectives due to organisation and customer interactions which promotes a sense of connection from the customer's side to the products.

However, not all interviewees shared the same sentiments as others believed open innovation does not necessarily guarantee competitive advantage. However, it came down to a collective of external and internal honest collaboration from partners with the same objective in mind.

Findings also showed traditional organisations' predicament if they continue to operate on closed models and not embrace inbound innovation. Traditional companies could experience slower innovation by getting left behind or coming as second to market leaders and also miss the ability to innovate according to market requirements. It was found that the interviewees believed some companies lost their competitiveness because they did not embrace open innovation in terms of interacting with customers. Examples of those companies were Kodak and Nokia.

The literature points out that acquiring external knowledge through open innovation helps companies, especially multinationals, maintain competitive advantage and be market leaders by acquiring external knowledge (Naqshbandi & Jasimuddin, 2018). Robertson et al. (2021) asserted that innovation performance is a capability that assists companies to differentiate themselves from competitors, whereby businesses with innovative capabilities outperform competitors and provide high survival attributes. Moreover, open innovation provides a competitive advantage because companies can explore outside knowledge and exploit internal resources to be competitive (Popa et al., 2017).

When it comes to traditional organisations with closed business models Enkel et al. (2020) suggest that due to the changing business environment, managers need to transform from the traditional logic of knowledge management and manage the ecosystem of collaborations with partners to co-innovate new solutions.

Open innovation presents a company with a chance to leverage their innovation which contributes to company competitiveness Helal (2017). Thompson et al. (2020) also claimed that organisations seek to boost their competitiveness by searching beyond their boundaries for knowledge that can disrupt business with novelties and in the pursuit of quality performance (Bogers et al.,2019); (Byrum & Bingham, 2016). It was found that the question was not whether to adopt an open strategy but how to leverage this type of innovation to contribute to company competitiveness Helal (2017).

Literature also highlighted studies that believe open innovation does not directly enhance innovation performance but is about the company's knowledge sharing activities (Bagherzadeh et al., 2020). What was important was the internal practices, where knowledge sharing and innovation strategies are the dynamic capabilities that enhance innovation performance (Bagherzadeh et al., 2020).

6.2.3.2. Category: Performance quality

According to the findings, open innovation brings novel ideas to an organisation and ideas different from daily operational processes, improving the quality of products and services. Findings emphasised that from a product design perspective, open innovation was an approach in which organisations can use fresh ideas and what internal sources can provide. Open innovation was believed to enhance the quality of delivery and the time frame of the innovation process. However, the quality of open innovation depends on what the external partners are good at because not everyone brings quality knowledge.

The study by Sengupta and Sena (2020) stated that open innovation improves organisational performance by accessing knowledge outside their boundaries. It was about gaining quality information, which is a breakthrough to innovations that can result in business growth (Sengupta & Sena, 2020). Both studies of Bogers et al. (2019) and Byrum and Bingham (2016) suggest that open innovation has brought an opportunity for positive novelties to companies in pursuit of quality performance.

In addition to improving diverse ideas, knowledge, and skills, Bagherzadeh et al. (2020) are also of the opinion that open innovation, is that it improves quality that complements internal resources

and capabilities. On customer interaction through open innovation, Geilinger et al. (2020) stated that involving customers in product development results in commercial benefits such as the quicker release of a product to the market, increased product quality and higher customer value.

6.2.3.3. Category: Understanding customer needs

Customers are regarded as groups that can be accessed through open innovation to understand the market condition. Understanding customer needs involves the need to develop products that can readily be accepted in the market. It was mentioned in the findings that when customers are engaged through open innovation, they develop a sense of connection to the product because they contributed to the innovation process. The interviewees highlighted understanding customer needs because producing according to their needs enhanced performance. Customer's demands are constantly changing, and organisations need to be agile and quick enough to innovate concerning those changing demands.

In their study, De Zubielqui et al. (2019) supports that customer are other role players in the market that organisations engage with to receive knowledge about their products and services. De Zubielqui et al. (2019) refer to this as market-based knowledge, which they present for knowledge to companies, especially when it comes to new product development. Nguyen and Harrison (2019) also mention that using customer knowledge can assist organisations to reduce uncertainty by acquiring and improving or transforming internal knowledge.

Geilinger et al. (2020) stated that involving customers in collaboration can result in the quicker release of products to the market and higher customer value. Through customer collaboration, companies gain unknown valuable ideas and needs (Geilinger et al., 2020). Geilinger et al. (2020) refer to this type of collaboration as customer co-development, which organisations can implement to reduce the internal cost of innovation labour and improve product performance. Singh et al. (2019) also suggested that firm innovation involves collecting relevant market information and knowledge, which an organisation can leverage to develop new products or services to satisfy customer needs and maintain relevance in the market.

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6.2.3.4. Comparison between findings and literature

The research findings suggest that open innovation contributes to competitive advantage because organisations can access new ideas, which creates a benefit of staying ahead of the market. When a company combines internal and external research, it better understands trends in the market, which puts an organisation ahead. The finding is similar to Naqshbandi and Jasimuddin (2018) theory that open innovation helps companies, especially multinationals, maintain competitive advantage and be market leaders by acquiring external knowledge.

Connections were also noted between findings and literature. Bagherzadeh et al. (2020) argued that open innovation does not directly enhance innovation performance. It was about the internal practices such as knowledge sharing and innovation strategies that are believed to enhance innovation performance (Bagherzadeh et al., 2020). Similar thoughts came out of the finding that open innovation does not necessarily guarantee competitive advantage. What is important is the collective efforts between external and internal honest collaboration from partners with the same objective in mind, which involves sound internal practices, referring to Bagherzadeh et al. (2020) knowledge sharing and innovative strategies.

Even though there is support for open innovation as an approach that stimulates competitiveness both in the findings and literature, there were also similarities in sentiments about open innovation not being entirely the main contributor to organisational competitive advantage. Similar to Bagherzadeh et al. (2020), the findings mentioned that collective efforts between external and internal honest collaboration from partners with the same objective in mind contributed to the success of open innovation and not necessarily a competitive advantage. In this regard, Bagherzadeh et al. (2020) stated that internal practices, where knowledge sharing, and innovation strategies are the dynamic capabilities that enhance innovation performance.

Findings suggested that the old traditional management methods would cause companies to lose their competitiveness because of not embracing open innovation, giving examples such as Kodak and Nokia. In support of this, Enkel et al. (2020) stated that managers need to change from traditional management of knowledge and adopt a new working system where complementary partners are co-innovating for solutions to address business problems.

In the findings, open innovation seemed to impact the quality of products or services due to access to novel ideas different from daily operational processes, which is similar to Sengupta and Sena (2020) argument that open innovation was about gaining quality of information necessary for a breakthrough to innovations.

Alike to de Zubielqui et al. (2019), in the findings, customers are viewed as groups to interact with through open innovation to understand the market condition, of which de Zubielqui et al. (2019) stated that organisations collaborate with customers because of their market-based knowledge.

6.2.3.5. Conclusion

Consequently, this research expands literature that open innovation contributes to competitive advantage, as Naqshbandi and Jasimuddin (2018) viewed. Bringing external knowledge to an organisation enhance innovation through imparting knowledge that did not exist internally, saving costs and commercialising quicker to the market (Naqshbandi & Jasimuddin, 2018). However, there are also possibilities that open innovation can fail if proper internal practices are not employed, meaning it can either bring a competitive advantage or be an unsuccessful endeavour, as stated by Bagherzadeh et al. (2020). Findings in this regard suggested that meaningful collective efforts of internal and external parties determine positive innovation performance. Therefore, proper internal abilities, such as knowledge sharing efforts and meaningful external collaborations among role players, are necessary to succeed. The findings in this regard extend literature that open innovation contributes to competitiveness and those internal practices are essential to achieving innovation performance.

6.2.4. Alignment to strategy

Engaging in open innovation requires strategic insight into why and how an organisation seeks to implement open innovation. The discussion around alignment and integration to strategy addresses the proposition that open innovation practice should align with organisational strategy to accumulate and integrate externally acquired innovation. It makes managerial sense to connect open innovation functions to the overall organisation strategy, including choosing the suitable methods that complement strategic objectives.

6.2.4.1. Integration to company strategy

Findings demonstrated that it was vital for managers to understand open innovation and understand the objective of tapping into external innovation. One way of ensuring open innovation connects to the strategic objective pillars was to establish KPIs that link all tasks to reaching strategic objectives. The KPIs ensured the integration of open innovation to the organisational strategy regarding what needs to be implemented and evaluate accomplishments. Integration of open innovation to the overall organisational strategy ensures that all role players, including employees and external partners, are jointly interactive so that the set vision of the organisation is not misinterpreted. Open innovation should strategically align to a company's road map and growth to make sure that internal and external players equally have buy-in and understand what needs to be done and make sure it benefits the organisation competitive wise.

In the literature, De Mattos et al. (2018) stated that companies should have mechanisms that support open innovation and alignment of functions to strategy to achieve successful open innovation. It is in the business benefit to have an innovation strategy with the planning process, budget cycle, review procedures to synchronise external knowledge, which will assist with the absorption, assimilation of external knowledge to boost innovation performance (Bagherzadeh et al.,2020).

6.2.4.2. Choosing methods

The findings demonstrated that it is vital for organisations to choose open innovation methods suitable for an organisational strategy and select the right partners with the same values as the seeking company. It was explained in the findings that situations determine how, and which collaboration activities will be suitable for a project. No blanket method can be used for all open innovation initiatives. Projects are different, and each project has its suitable internal and external collaboration activities; therefore, it is necessary to understand the mandate. Choosing the proper method involves determining tried and tested methods and establishing if the nominated open innovation activities can reach the desired objectives.

Companies should collaborate with businesses that understand the seeking company and the industry in which they operate. It is vital to collaborate with suitable suppliers or users depending on the open innovation collaboration needs. Partnering with reputable companies with the proper

knowledge, skills, and values is one aspect that should be considered to get the utmost benefit from open innovation. It is also vital to choose the right platform which organisations can trust to gain meaningful information. Managers should have an ecosystem of partners that link to organisational vision, mission, and values. They need to know when to use open innovation and analyse the cost and benefits.

Bagherzadeh et al. (2021) informed that innovation projects are not the same because they have different features, strategic importance, complexity, the type of skills or knowledge required for each project and the level of uncertainty. Some projects are necessary to consult users and customers, and there are open innovation collaborations that are skills-based (Bagherzadeh et al., 2021). It is required to understand project attributes to have successful open innovation management. Therefore, companies can apply directional and cognitive solutions (Bagherzadeh et al., 2021). The directional solution involves testing a solution after implementation to check if it meets the needs of a project (Bagherzadeh et al., 2021). The cognitive solution focuses on managers assessing the results of a solution before implementation (Bagherzadeh et al., 2021).

6.2.4.3. Comparison between findings and literature

Similar to De Mattos et al. (2018), findings emphasised that open innovation activities should connect to company strategy. De Mattos et al. (2018) stated that mechanisms should support open innovation and alignment of functions to strategy to achieve successful open innovation. In this regard, findings further suggested KPIs to be used as a mechanism to ensure integration to company strategy.

When it comes to choosing open innovation tactics, finding show similarities to Bagherzadeh et al. (2021) theory that innovation projects are not the same because they have different features, strategic importance, the level of complexity. Meaning it depends on the situation the organisation is facing. Bagherzadeh et al. (2021) suggested choosing according to the directional and cognitive approach mentioned in the findings but not similar terms.

6.2.4.4. Conclusion

Therefore, this research expands literature by authors such as De Mattos et al. (2018) of the importance of aligning and integrating open innovation methods in the organisational strategy,

which was also emphasised by Bagherzadeh et al. (2021). It involves seizing and integrating the knowledge or information to all the units through strategic alignment efforts. Finding suggested using KPIs to integrate open innovation activities into the overall strategy. The research also corroborates literature about the necessity to use the correct open innovation methods specific to the project and mandate because each task has its knowledge requirements and complexities. An appropriate collaboration method is required for companies to collaborate with users, customers, or consultancy firms.

CHAPTER 7: CONCLUSION

7.1. Introduction

This chapter presents the research study's conclusion based on the discussions, highlighting the principal theoretical conclusion, research contribution, limitations, recommendations to managers, and suggestions for future research.

7.2. Principal theoretical conclusions

This section highlights conclusions based on the theoretical constructs included in the theoretical framework tackling the propositions made in this study.

7.2.1. Seizing external innovation

The study explored the proposition that managers choose to implement open innovation to seize knowledge absent to them to address innovation needs and enhance internal capabilities. Often, organisations have their R&D unit or section that focus on innovation to improve services and products. It seems that working in siloes and depending on own internal knowledge is not good enough to adapt to the dynamic business environment. Companies cannot just depend on their R&D and expect to innovate goods and services that will flourish in the market.

Extending R&D through collaborating with external partners can be beneficial for businesses to generate more knowledge, address lack of expertise or capacity and gain ideas that are not available internally. The finding can link to Teece (2020) theory and agree with the latter point. Teece (2020) stated that the fast-changing environment and global competition had driven organisations to expand their internal innovation efforts by seeking external ideas and resources to enhance research and development.

Bogers et al. (2019) also highlighted an important factor that the driver of open innovation was the decrease of internal R&D, which leads organisations to seek external knowledge. There is no internal research and development that is self-sustaining (Bogers et al., 2019). Therefore, it would

seem that organisations implement open innovation to seize external knowledge to enhance their internal R&D capabilities to adapt to the external dynamic business environment.

Companies implement open innovation to engage in outside-in collaborations with external parties for ideation to leverage innovation capability. Outside-in collaboration assists with seizing ideas, information and gaining knowledge to develop novel products or improve them. Customers are some of the external stakeholders' companies collaborate with to produce products and services based on the market needs.

Companies would not always have the relevant knowledge about market requirements to develop new technology or even have complete knowledge about customer needs. Therefore, they source innovation beyond their organisational boundaries by engaging with customers (Thompson et al., 2020). Gong (2017) also gave a view that companies cannot just with the internal capabilities respond to the turbulent environment. They need to use the open innovation method to contact knowledge absent to them to solve business problems that are usually implemented in-house (Gong, 2017).

Seizing external knowledge gives access to external innovation, which is incorporated in the internal innovation to adapt to the changes in the business environment and address the market needs. Open innovation is an approach that addresses the skill gap can be and gaining ideas and solutions for operational problems that might be difficult to solve internally. Implementing open innovation by engaging with external partners provide access to external ideas, skills, and knowledge, to improve quality, quantity, ideas, and skills which complement internal resources and capabilities (Bagherzadeh et al., 2020).

7.2.2. Seizing capabilities

The other proposition sought to understand the internal abilities necessary to capture and use the knowledge, skills or ideas obtained through open innovation. It is one thing to sense the change in the environment, and another to have what is required to absorb the knowledge and transform internally. The proposition posed was that organisations with solid seizing capabilities can absorb external innovation knowledge and capture value.

Based on the findings, the right culture, communication, delegation, technologies, and exemplary leadership are the critical internal aspects.

The right culture refers to an organisational culture of openness and flexibility to management and employee mindset external ideas. An entrepreneurial climate internally can assist companies to allow employees to be innovative and influence innovation behaviour. An entrepreneurial climate in an organisation that can shift a mindset of old traditional methods to dynamic and flexible management (Teece et al., 2016) and a learning culture can promote the use of open innovation (Naqshbandi &Tabche, 2018).

Communication seemed to be one of the actionable practices for sharing and transferring knowledge within an organisation. Managers need to share their vision for open innovation and use different internal communication practices to communicate vision, objectives and the knowledge acquired through open innovation. It can be challenging to manage collaboration with external partners and to get employees to understand the absorbed knowledge; therefore, internal communication between and amongst project teams is vital to succeeding in the adaption and absorption of knowledge (Bagherzadeh et al., 2021).

Bogers et al. (2019) also mentioned that vertical and lateral communication practices could enable the absorption of external knowledge. De Zubielqui et al. (2019) suggested modern Human Resource Management that can empower organisations to leverage customer knowledge in their internal practices by using vertical and lateral communication and delegated decision making.

Delegating open innovation involves assigning responsibilities and having champions of open innovation activities, which is that those delegated staff members can support initiatives and monitor projects. Responsibilities can be assigned to a team or committee consisting of managers from different units and leadership over open innovation practices. Naqshbandi and Tabche (2018) advocate empowering style leadership that encourages managers to support employees' engagement in outside-in innovation activities. Singh et al. (2019) suggested shared leadership to drive knowledge sharing.

Other critical internal abilities focused on technology where their use of technology supports the absorption of knowledge. Technological knowledge Management System platforms can benefit a company to transfer knowledge internally. It does not end there; platforms or ITSM, and blockchain allow internal and external collaborating parties to share information in solving business problems, requiring digital trust between stakeholders (Mubarak & Petraite. 2020). Santoro et al. (2018) understand that ICT capability can foster knowledge flow.

7.2.3. Organisational performance

Addressing the proposition that the open innovation method is implemented to enhance internal innovation for better performance, organisations engage in inbound innovation for access to an innovation ecosystem to obtain new ideas and stay ahead of the market to enhance competitive advantage. Inbound innovation was considered a contributor to competitive advantage because it enhanced internal innovation by bringing in the knowledge that did not exist internally, saving costs and commercialising quicker to the market.

Open innovation seems to provide a competitive advantage because companies can explore outside knowledge and exploit internal resources (Popa et al., 2017). Internal and external collaboration affords a company chance to leverage innovation that contributes to company competitiveness (Helal, 2017). Organisations boost their competitiveness by searching beyond their boundaries for knowledge that can disrupt business with novelties to pursue quality performance (Thompson et al., 2020).

However, in the quest for competitiveness, what also counts is collaboration amongst partners, referring to trust, honesty, and collective effort and understanding the requirements of the seeking company to achieve a successful innovative performance. (Bagherzadeh et al.,2020) stated that open innovation does not directly enhance innovation performance and that what counts as the internal practices of knowledge sharing activities.

In answering this proposition, open innovation brings novel ideas to an organisation, different from daily operational processes. It is understood that open innovation can improve the quality of products and services, especially when it comes to product design and delivery methods and the

time frame. Sengupta and Sena (2020) stated that open innovation could bring the quality of information that is breakthrough to innovations that can result in business growth. In addition to improving diverse ideas, knowledge, and skills, open innovation improves quality that complements internal resources and capabilities (Bagherzadeh et al., 2020).

Understanding customer needs is one of the ways organisations to utilise open innovation to develop products that can be accepted in the market. Considering customer needs is vital because producing according to their need's, products can be accepted in the market, and there can be a sense of customer connection to the product, which in the long run enhances performance. Customer's knowledge is market-based, which presents companies with information for New Product Development (de Zubielqui et al., 2019). Using customer knowledge can assist organisations to reduce uncertainty (Nguyen & Harrison, 2019). Therefore, companies can innovate according to a need. Involving customers in collaboration can result in quicker product release to the market and increased product quality (Geilinger et al., 2020).

7.2.4. Aligning to strategy

The proposition stated about strategy was that open innovation practice should align with organisational strategy to enable the accumulation and integration of externally acquired innovation. Open innovation is a necessity in the current dynamic external environment, especially when it comes to technology. Thus, an organisation needs to understand and have a clear objective for implementing open innovation to integrate relevant and suitable technologies. Companies should have mechanisms that support open innovation and alignment of functions to strategy to achieve a successful open innovation (De Mattos et al., 2018). Therefore, one way to integrate open innovation efforts into the overall organisational strategy is to establish KPIs that link all tasks to strategic organisational objectives. Having established KPIs can ensure proper integration and direct what needs to be implemented and evaluate accomplishments according to the KPIs.

Choosing the open innovation method is also vital when implementing inbound innovation. Innovation needs have different attributes such as context and uncertainties, which requires carefully considered approaches to acquire needed information, skills, or knowledge. No blanket method can be used for all open innovation initiatives, and it is crucial to understand the mandate.

Open innovation projects are not the same; they have different features, strategic importance, level of complexity, the type of skills or knowledge required for each project and the level of uncertainty (Bagherzadeh et al., 2021). Choosing the correct method involves determining tried and tested methods to determine if an objective can be reached. Companies can apply directional and cognitive solutions by Bagherzadeh et al. (2021), of which directional involves testing a solution after implementation to check if they met the needs of a project and cognitive solutions is about managers assessing the results of a solution before implementation.

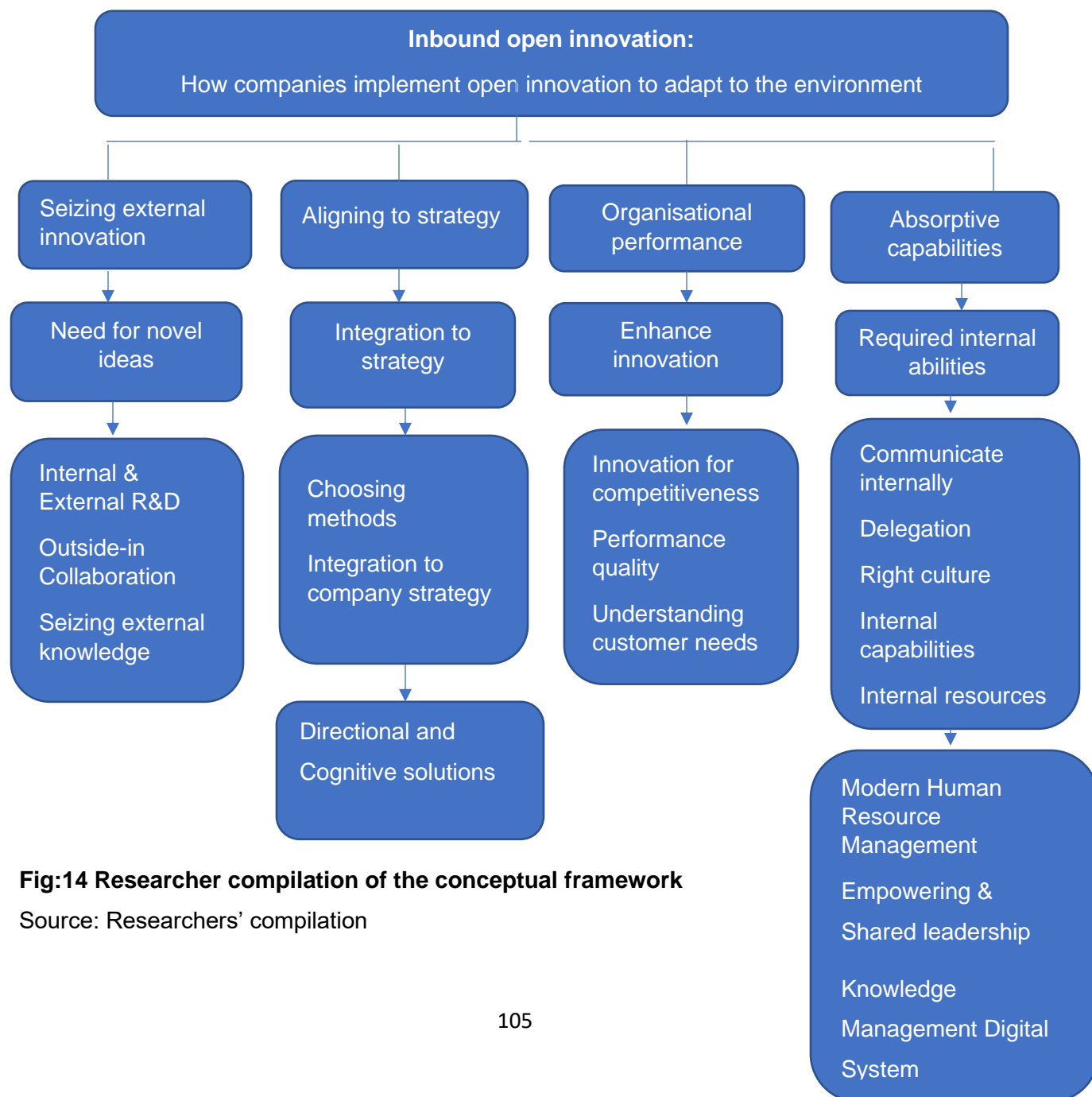Below is the theoretical framework in figure 12, displaying the research outcomes of the study.

Fig:14 Researcher compilation of the conceptual framework
Source: Researchers' compilation

7.2.5. Addressing the overall research question

Bogers et al. (2019) called for an understanding that open innovation is more than just taking internal tasks to external suppliers to solve problems, but it is about leveraging and enhancing internal capabilities. Therefore, the main research question was to explore how companies implement open innovation to adapt to the environment, focusing on inbound innovation. To gain insight into how organisations implement open innovation to adapt, performing inbound innovation enables companies to extend their internal R&D, pursue internal and external collaboration with external partners such as customers, other companies, and academia.

Internal absorptive conditions such as lateral and vertical communication, the right cultural mindset, delegation, leadership, and information technologies can promote the flow of knowledge and seize innovation information within organisations and amongst collaborators. De Zubielqui et al. (2019) modern Human Resource Management is a capability that can leverage external knowledge in internal organisational practices by using robust vertical and lateral communication and delegated decision making.

Outside-in collaboration assists managers to obtain information that improves the quality and delivery of products and services, which positively impacts organisational performance. Establishing KPIs can ensure alignment and integration to organisational strategy to ensure that objectives of open innovation are meaningful. Choosing the correct method is essential. Through directional choosing solutions, managers can check if the method meets the needs of a project. Choosing based on the cognitive solution can help managers assess if the collaboration method can yield the desired results (Bagherzadeh et al., 2021).

7.3. Research contribution

The research contribution addresses Bogers et al. (2019), suggesting that future research should not view open innovation as outsourcing R&D to somebody else. However, instead, focus on attributes related to leveraging and enhancing internal capabilities, and not just view it as taking internal tasks to external suppliers to solve problems. Lee and Yoo (2019) suggest that using open innovation can be explained in the context of dynamic capability. So, the study extends to the literature about open innovation and its connection to the dynamic capability theory. Both

theories focus on integrating internal and external competencies to enhance capabilities and adapt to the external environment. Open innovation was explained to enhances new product development and alliance management, which are features of dynamic capability (Chesbrough et al., 2018).

The research focused on seizing external innovation, and the study highlighted the importance of absorptive capabilities such as communication, delegation, the right culture, and Information technology, which are internal practices that enhance innovation performance. De Zubielqui et al. (2019) suggested the modern Human Resource Management (HRM) to accomplish open innovation practices.

7.4. Recommendation for management

Managers should never forget that the business environment is dynamic and changes very quickly; therefore, organisations need to be part of the global community through inbound innovation to understand the trends. As mentioned, knowledge does not only lie within the borders of a company, but there is a vast of information outside a company boundary waiting to be exploited at a low cost, and that can be achieved through open innovation.

Traditional managerial methods no longer sufficiently serve organisations when it comes to innovation. Inbound innovation methods, supported by appropriate internal practices, can assist managers to seize the knowledge acquired through open innovation. It is essential to understand open innovation and the objective behind the outside-in collaboration. There needs to be careful consideration when choosing collaboration partners and methods to ensure that innovation activities align with the overall organisational strategy so that it does not waste resources and efforts.

7.5. Limitations

Limitations about the research have been highlighted in chapter four. The study only focused on the Senior Managers of the private sector and did not seek opinions of lower-level employees or opinions from managers within the public sector. The finding cannot be as the researcher dealt with unique individual opinions and experiences. The findings cannot be generalised because the researcher explored individuals own opinions and experiences.

7.6. Suggestion for future research

Future studies could explore inbound innovation by focusing on experiences of Middle Managers and lower-level employees to obtain their insights about open innovation and extend theories about the phenomenon internal management. Another investigation could be around the necessary knowledge management capabilities of information acquired through open innovation.

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Appendix A: Semi-structured Interview Schedule

Instructions

The purpose of the research study is a fulfilment of the Master of Philosophy in Corporate Strategy at the University of Pretoria's Gordon Institute of Business of Science. This research is about the **use of open innovation to enhance internal capabilities by seizing external innovation**.

The interview schedule consists of 2 sections. One is about information about your career and the second section talks about the research questions. All information gathered will be kept confidential, no names will be mentioned, and the interview will take about 60 minutes of your time, hoping you have time available to respond to the question. Participation is voluntary, and an individual can withdraw at any time. The research project report will be the property of the University of Pretoria.

Section A

Job Title:

Management level:

Interviewee:

The number of years in position:

Section B

Proposition One: Managers choose to implement open innovation to seize knowledge absent to them to address innovation needs and enhance internal capabilities.

Q1

What is your opinion about outside-in innovation?

Q2

How do you think are the benefits of using outside-in innovation as a capability?

Q3

What is your opinion about extending internal R&D by adopting outside-in collaboration?

Proposition two: Organisations that have solid seizing capabilities can absorb external innovation knowledge and capture value.

Q4

What type of Internal abilities do you think are necessary for an organisation to be able to seize Knowledge acquired through outside-in innovation?

Q5

What kind of practices do you think are necessary to spread the knowledge acquired outside-in throughout the organisation?

Q6

How can companies effectively use their employees to accept and adjust new knowledge acquired through outside-in innovation?

Proposition Three: Open innovation method is implemented to enhance internal innovation for better performance.

Q7

In your experience what impact do you think outside-in innovation has on the quality of products or services?

Q8

What is your opinion about the influence of outside-in innovation on the company's competitive advantage?

Q9

How do you compare companies that use inbound innovation and those that do not?

Proposition four: open innovation practice should align with organisational strategy to accumulate and integrate externally acquired innovation.

Q10

How do you suggest managers should integrate the use of open innovation into the company overall strategy?

Q11

There are different types of inbound innovation tactics or tools. What would be the best way to choose an open innovation tactics suitable for a company?

Thank you for participating in the study.

INFORMED CONSENT FOR AN INTERVIEW

I am researching the use of **open innovation to enhance capabilities by seizing external innovation**. Our interview is expected to last **60 minutes** and will help us understand, **how do companies implement open innovation to adapt to the environment**. Your participation is voluntary, and you can withdraw at any time without penalty. By signing this letter, you are indicating that you have given permission for:

• The interview to be recorded;

 • The recording to be transcribed by a third-party transcriber, who will be subject to a standard non-disclosure agreement;

 • Verbatim quotations from the interview may be used in the report, provided they are not identified with your name or that of your organisation;

• The data to be used as part of a report that will be publicly available once the examination process has been completed; and

• All data to be reported and stored without identifiers.

If you have any concerns, please contact my supervisor or me. Our details are provided below.

Researcher: Research Supervisor:

Email: Email:

Phone: Phone:

Signature of interviewee: _____ Date: _____

Signature of researcher: _____ Date: _____

CERTIFICATION OF ADDITIONAL SUPPORT

(Additional support retained or not - **to be completed by all students)**

 Please note that failure to comply and report on this honestly will result in disciplinary action

I hereby certify that (please indicate which statement applies):

• **I RECEIVED** additional/outside assistance (i.e., transcriptional services) on my research report

……………………………………………………………………………………….

 If any additional services were retained– please indicate below which:

 □ **Transcriber**

 Please provide the name(s) and contact details of all retained:

NAME: …………………………………………………………………………...

EMAIL ADDRESS: …………………………………………………………………

CONTACT NUMBER: …………………………………………………………………

 TYPE OF SERVICE: …………………………………………………………….

CONFIDENTIALLY AND NON-DISCLOSURE AGREEMENT

It is a condition of engagement that students will assist in preserving all confidential information, ideas, and plans; any confidential information or any information in respect of any data gathered, captured, or analysed in respect of the research work they undertake in fulfilment of GIBS masters or doctoral degree programmes, in this case the research project titled **using open innovation to enhance capabilities by seizing external innovation,** conducted by **Mamokgethi Mokgwetsi**. The parties under this agreement agree to the following:

1. To apply their best efforts to keep any information confidential which has been acquired or may acquire pursuant to the research work. For the purposes of this clause, confidential information excludes information which:

1.1 is publicly available or becomes publicly available through no act or default of any Party;

1.2 was in the possession of a Party prior to its disclosure otherwise than as a result of a breach by any party of any obligation of confidentiality to which it is subject.

1.3 is disclosed to the student by a person which did not acquire the information under an obligation of confidentiality; and

1.4 is independently acquired by a student and as a result of work carried out by a person to whom no disclosure of such information has been made.

2. No party shall use or disclose confidential information except with the prior written consent of GIBS or in accordance with an order of a court of competent jurisdiction or in order to comply with any law or governmental regulations by which any Party concerned is bound or as may be lawfully requested in writing by any governmental authority.

3. The party undertakes to permanently delete any electronic copies of confidential information received and destroy any confidential printed documentation or similar material in their possession promptly once they are no longer required, usually on completion of the service contracted by the student.

4. On completion of the contracted service on behalf of the student, the party is to confirm to the student that they are not in possession of any confidential information.

Signed at _____on this _____day of_____20___.

On behalf of:

_____

Name: _____ Signature: _____

duly authorised and warranting such authority

Witness: _____

	Name
1	Ability to adapt to external change
2	Academic collaboration
3	additional views to internal ones
4	Address the customer need gaps
5	Advantage of speed to deliver
6	Agility in technology
7	Agility leads to competitiveness
8	Align KPIs with overall strategy
9	Allocate an official to manage open innovation
10	Allocate internal resources for OP
11	Allowing free ideas contribution
12	Analysing ideas
13	Being more profitable
14	Change activity efforts
15	Choose by culture, org and people
16	Choose those who understand the industry
17	Choosing reputable suppliers
18	Choosing according to org values
19	Closing product gaps
20	collaborate with knowledgeable parties
21	Collaborate with supplier enhance tech
22	Collaborating with customers
23	Collaboration for ideas
24	Collaboration increases performance
25	Combine internal and external innovation
26	Combining inside & external knowledge
27	Combining internal and external resources
28	Coming second without open innovation
29	communicating continuously
30	company and client innovation
31	company recognised by customers
32	Competitiveness to retain clients
33	Conditional competitiveness
34	consequence of not innovating
35	Correct internal setup
36	Cost of siloes
37	Customer product endorsement
38	Decide what info to share
39	Defining responsibilities
40	delegated space needed to innovate

41	Depends on context and problem
42	Develop KPI for open innovation
43	Difficult to do R&D internally
44	Disrupt business norms
45	Diversify resources for abilities
46	Easier to use external resources
47	Embracing open innovation
48	Employee development plans
49	Employee resistance
50	Engage key decision makers
51	Enhance company capabilities
52	Ensure the right contracts
53	entrepreneurial culture
54	Establish an internal innovation panel
55	Establish information management System
56	Establish innovation as an objective
57	Excellent to partner with customers
58	Expand R&D abilities
59	External collaboration for research
60	External efficiency and abilities
61	External partners understanding of industry
62	External research one of the aspects
63	Flexibility and open to collaboration
64	Formulating a road map
65	Forums to communicate ideas
66	Gaining sector expert experience
67	generate information from units
68	Get external perspective for innovation
69	Getting extra knowledge
70	Have an internal responsible Committee
71	Have responsible person for innovation
72	Having a community to get ideas
73	Having an innovation portal
74	Having external to help
75	Having synergy among different units
76	Having the right culture
77	Helpful to use external researchers
78	ideation benefit
79	Identify influences of innovation
80	Identify partners
81	immerse in understanding OP
82	implement knowledge sharing sessions
83	Implementation should align to strategy

84	Improves product delivery and time
85	influence excitement and enthusiasm for innovation
86	Information Technology task
87	Innovate with a plan
88	innovation not always in departments
89	Integrate value chain
90	internal units engagement
91	Internal abilities for OP
92	internal and external task implementation
93	Internal champions for motivation
94	Internal competitions to generate ideas
95	Internal coordination
96	Internal innovation only can be slow
97	Internal liaisons
98	Internal requirements
99	Introduce measuring efforts
100	Involves R&D on trends
101	Involves technology
102	Involving people in innovation
103	Knowing the right approach
104	Lack of growth for non-OI Org
105	learn and unlearn
106	Learning new things
107	Leverage of innovation information
108	Long term initiative
109	Manage internal change
110	Management strategic planning
111	Managing OP eco-system
112	managing people
113	Mindset is important
114	monitoring changing customer needs
115	Monitoring good trends
116	Monitoring of ideas
117	Motivating employees to accept open innovation
118	Mutual technology benefit
119	Necessity to extend R&D
120	Need for external knowledge
121	Need for resources to innovate
122	Need if independent expertise
123	No design iterations
124	No long term viability
125	Non-OP companies are slower in innovation
126	Not a quick fix activity

127	Not dynamic
128	Not embracing open innovation
129	Not producing for a need
130	Obtain new knowledge
131	OP affects profits
132	OP improves quality
133	OP should be problem focused
134	OP to keep up in the market
135	OP Valuable endeavour
136	OP vital for tech and fast environment
137	Open innovation a long term invest
138	Open innovation is the way to go
139	Opening R&D
140	Organisational planning around OP
141	Packaging ideas correctly
142	Paring employees
143	Partner to get the needed skill
144	Partnering to get resources
145	partnering with appropriate supplier
146	Possess technical skills
147	quality depends on type of partner
148	Quality in design and implementation
149	Quicker time for new revenue
150	Quicker time to the market
151	R&D to translate into ideas
152	R&D to understand market
153	Recognition and incentives
154	reduces costs
155	Researchers know what to look for
156	Reward innovation initiatives
157	reward of external expertise
158	Right resources required for quality
159	Right skills to monitor trends
160	Selection process of ideas
161	Sense tends faster than in siloes
162	Sets a company apart in competition
163	Sharing of risks in investments
164	Staying ahead in competition
165	Suppliers buy-in of strategy
166	Teamwork culture is important
167	Time is important
168	Top level strategy insight
169	Top management support

170	Traditional companies stay behind
171	Transferring of information to unit
172	treating complaints as ideas
173	Understand customer needs
174	understand gaps for change
175	understand the benefit of OP for business
176	understanding of industry
177	understanding the problem
178	Use external partner due to lack of skill
179	using external companies' specialty
180	Using external firms to get ideas
181	Using of internal and external ideas
182	Using storytelling of successes
183	Widening company views

**Gordon Institute
of Business Science**
University of Pretoria

Appendix F: Ethical Clearance Approval

**Gordon Institute
of Business Science**
University of Pretoria

**Ethical Clearance
Approved**

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Ethical Clearance Form

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS
Research Admin team.