

Conditions affecting Innovation: A systematic review of innovation and a case study of a South African company.

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DECLARATION

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ABSTRACT

Conventional wisdom holds that innovation depends on management providing an enabling context rather than on management prescription and control. Accordingly, much of the literature on innovation management aims to identify various configurations of enabling conditions that are favourable for innovation to occur. However, this literature is subject to two forms of proliferation. Firstly, the list of enabling conditions grows longer and longer, impacting its usefulness. Secondly, various kinds of innovation (product/process, radical/incremental innovation) are distinguished and each demands a custom configuration of enabling conditions.

The thesis attempts to resist this proliferation in attempting to distill a superset of conditions from the literature. To this end, a systematic literature review is done on various identified enabling conditions and factors in both incremental and radical innovation case studies. Thereafter eight super-conditions are created from the various conditions and factors in the innovation literature. These eight conditions are then subjected to a validation against top journals and it is shown that six of these conditions are relevant for radical innovation.

Since there is a danger that the derived at super-factors can become too abstract to be useful, the second part of the thesis seeks to apply the final six super-factors to a well-known published innovation business case study of Discovery Health --- an organisation where different kinds of innovation took place (product and process as well as radical and incremental innovations). It was found that in the case study of Discovery Health three of the super-conditions could be identified, namely: leadership, strategy, and value system. For the remaining three super-conditions no clear support could be found in this particular case study.

It is concluded that at least three conditions address an enabling context for innovation, both from literature and in an identifiable way in a concrete case of an innovating organisation.

OPSOMMING

Konvensionele wysheid hou dat innovasie afhang van die bied van 'n ondersteunende konteks, eerder as van bestuursvoorskrif en -beheer. Gevolglik mik baie van die literatuur oor innovasiebestuur daarop om verskillende konfigurasies van gunstige kondisies vir innovasie te identifiseer. Hierdie literatuur is egter onderworpe aan twee vorme van proliferasie. Eerstens, groei die lys van ondersteunende kondisies langer en langer, wat natuurlik die nut van so 'n lys laat daal. Tweedens word verskillende soorte innovasie (produk en proses, radikale en inkrementele innovasie) onderskei en elkeen vereis 'n aangepaste konfigurasie van gunstige kondisies.

Die tesis poog om 'n teenwig te bied teen hierdie proliferasie deur 'n superset van abstrakte kondisies uit die literatuur te distilleer. Vir hierdie doel word 'n sistematiese literatuuroorsig gedoen oor verskeie geïdentifiseerde kondisies en faktore in beide inkrementele en radikale innovasie gevallestudies. Daarna word agt super-kondisies geskep uit die verskillende kondisies en faktore in die innovasieliteratuur. Hierdie agt kondisies is dan onderhewig aan 'n validering teen artikels uit topjoernale en daar word aangetoon dat ses van hierdie kondisies relevant blyk te wees vir radikale innovasie.

Aangesien daar 'n gevaar bestaan dat die afgeleide super-kondisies te abstrak kan word om nuttig te wees, beoog die tweede deel van die tesis om die finale ses super-kondisies toe te pas op 'n bekende gepubliseerde innovasie-gevallestudie van Discovery Health -- 'n organisasie waar verskillende soorte innovasie plaasgevind het (produk en proses, asook radikale en inkrementele innovasie). Daar is bevind dat drie van die super-kondisies in die gevallestudie van Discovery geïdentifiseer kan word, naamlik: leierskap, strategie en waardesisteem. Vir die oorblywende drie super-toestande kan geen duidelike ondersteuning in hierdie spesifieke gevallestudie gevind word nie.

Daar word tot die gevolgtrekking gekom dat ten minste drie kondisies 'n ondersteunende konteks vir innovasie aanspreek, beide vanuit die literatuur en op 'n identifiseerbare manier in 'n konkrete geval van 'n innoverende organisasie.

DEDICATION

This study is dedicated to my wife, Portia, my son, Livhuwani, and my daughter, Murunwa for their love and support.

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I would like to express my sincere gratitude and appreciation to my supervisor, Christiaan Maasdorp, for sharing his extensive subject matter expertise.

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GLOSSARY OF TERMS

4 As: Anderson and Billou (2007), observe that organisations that have achieved success in the BoP are normally those who have developed an approach that supplied the Four A's:

- **Acceptability:** the product or service must have exceptional utility, and must be adapted to the unique needs of the BoP market and their distributors.
- **Availability:** the degree to which a product or service can be obtained and accessed by the BoP.
- **Awareness:** the extent to which the BoP is aware of a specific product, service, or brand name.
- **Affordability:** the extent to which the BoP can bear the expense of a product or service.

Bottom of the Pyramid (BoP): Prahalad (2006), has defined individuals living below \$1,500 per year, which is considered the minimum amount necessary to sustain a decent life, as the Bottom of the Pyramid (BoP) population.

Information Technology (IT): Any form of a computer-based information system, including mainframe, as well as microcomputer systems (Orlikowski & Gash, 1992:2).

JV The joint venture structure allows the parties to tailor creative solutions to meet the specific business goals and needs of the joint venture partners and the joint venture itself. Among the critical provisions of a joint venture are those governing when and how the partners can unwind or exit the structure (Fisher

Ross, 2012:1).

- IAO** *“In the innovation-adopting organisation (IAO), it is to manage the assimilation of the innovation extensively into the organisation in order to produce the desired organisational change”* (Damanpour & Wischnevsky (2006:6-7).
- IGO** *“In the innovation-generating organisation (IGO), the critical innovation issue is to manage the innovation project in a timely and efficient fashion in order to create a new product, service or technology”* (Damanpour & Wischnevsky; 2006:6).
- MISQ** The MIS Quarterly is a peer reviewed scholarly journal published by the Management Information Systems Research Center, Carlson School of Management, University of Minnesota
- MNE** *“Three types of corporate groups are analyzed: (i) uninational corporations, (ii) domestic-owned multinational enterprises (MNE) and (iii) foreign-owned MNEs”* (Anderssoon & Loof, 2009:7).
- MSA** The Medical Savings Account (MSA) is an amount that gets set aside for you at the beginning of the year or when you join Discovery Health Medical Scheme. You pay back this amount monthly as part of your medical scheme contribution. Members on the Executive, Comprehensive, Priority and Saver plans get a Medical Savings Account. We pay for day-to-day medical expenses like GP visits, radiology and pathology from the Medical Savings Account, as long as you have money available. Any money remaining in the Medical Savings Account at

the end of the year will carry over to the next year.

PACAP

“The first two dimensions (acquisition and assimilation) are in effect what Zahra and George (2002), label potential absorptive capacity (PACAP) and the other two dimensions (transformation and exploitation) constitute realized absorptive capacity (RACAP). Whereas PACAP involves personal internal processes such as reflection, intuition and interpretation, RACAP reflects the efficiency of leveraging externally absorbed knowledge” (Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012:4).

R & D

“The first stage of a product life cycle, in which science and technology are applied to the development of new products. The term is also used more generally to describe any systematic activity within an organisation aimed at gaining it a competitive edge in the future” (Statt,1999:143).

RACAP

“The first two dimensions (acquisition and assimilation) are in effect what Zahra and George (2002), label potential absorptive capacity (PACAP) and the other two dimensions (transformation and exploitation) constitute realized absorptive capacity (RACAP). Whereas PACAP involves personal internal processes such as reflection, intuition and interpretation, RACAP reflects the efficiency of leveraging externally absorbed knowledge” (Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012:4).

RBV

The resource-based view (RBV) offers critical and fundamental insights into why firms with valuable,

rare, inimitable, and well organized resources may enjoy superior performance (Barney, 1995).

Wernerfelt (1984:12), argued that resources should be seen as "anything which could be thought of as a strength or weakness of a given firm."

SBU Corporations may be composed of multiple strategic business units (SBUs), each of which is responsible for its own profitability (Noori, 2014).

TFP The total factor productivity, taken in logarithm, as :

$$\theta = \ln q - (1 - S_L) \ln k,$$

where q is the value added per man-hour, S_L the share of labour cost in value added and k is the effective physical capital per man hour (Duguet, 2000).

TMT "*TMT is the group of top executives with overall responsibility for the organisation*"(Finkelstein, Hambrick, and Cannella, 2009).

CHAPTER 1. SCOPE OF THE RESEARCH

1.1 INTRODUCTION

In the early 2000s, noted Drejer (2002:1), a market dynamic in the economy where organisation's competitiveness was no longer driven by tangible and technological assets, but intellectual capital was emerging. This phenomenon was interesting to both managers and researchers of management alike, as intellectual capital became an alternative way of viewing the assets and value creation of the firm. Derjer (2002:1)'s further observation indicated that new organisations that base their activities, products/ services and value on knowledge of employees and external parties were emerging; the advancement in new technologies strengthened this view further. Technology, therefore became a corporate strategic imperative (Derjer, 2002:1 citing Clarke, 1991; Bhalla, 1987; Betz, 1989; Jones & Smith,1997; Drejer, 1996).

Andersson and Lööf (2009:5), asserts that:

"The neo-Schumpeterian and the RBV perspectives emphasize internal characteristics, such as R&D, physical capital, human capital and financial structure. A key assertion in the RBV literature is that a firm's competitive advantage depends on internal heterogeneous resources and capabilities (Penrose, 1959; Barney, 1991). According to this perspective, firms' innovation activities are primarily explained by their internal characteristics. The neo-Schumpeterian literature builds on similar premises, although the role of sector characteristics is typically more explicit, as manifested, for instance, by concepts such as technological regimes (Malerba & Orsenigo, 1993)".

Innovation and management requirements, is amongst one of the managerial imperatives of which the outcomes are beneficial to firms' success (Černe, Jaklič & Škerlavaj; 2013:1, citing Hamel, 2006; Walker, Damanpour & Devece, 2011; Černe, Jaklič & Škerlavaj, 2013). According to Marvel (2012:2), empirical research suggests that there is evidence that positively supports an entrepreneur's gaining knowledge

when they embark on development of new products, or drive cost efficiencies down, improving financial returns and the development of new initiatives.

1.2 BACKGROUND

According to OECD (2010), innovation in developing economies is a means of wealth and job creation and of economic growth. OECD (2010), conceded, however, that even though knowledge is at the centre of innovation, technological innovation, a formal product of research and development (R&D) exists in emerging economies versus non-technological innovation which is found in developing worlds. These economies also use existing knowledge to create value in the marketplace, an activity missing on their official statistics.

Knowledge is the key input to innovation, affirmed Gault (2010:13-27). Innovation is seen as provision of new good or service to the market or the finding of new ways to produce products, to organise production or to develop a market. These characteristics, as Francis and Bessant (2005:2), pointed out, are an obvious target for an innovation capability.

Damanpour and Wischnevsky (2006:2), found that in the current global context, companies are confronted by competition on all fronts, coupled with advances in technology and scarce resources and suggests that innovation offers efficiency and ultimate survival. Innovation is according Damanpour and Wischnevsky (2006:2), the driver of economic growth which allows firms to maintain a competitive edge that is sustainable.

According to Paulson, O'Connor and Robeson (2007:17), large firms that successfully commercialize radical innovations do better financially. According Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:1), a quicker response to environmental challenges is influenced by firm's ability to innovate, in comparison to firms that do not innovate at all.

1.3 KEY RESEARCH OBJECTIVES

Primary research objectives would describe the personal objectives of the researcher by undertaking the research. Key research objectives could be categorised as either 'theoretical contributions' of the study or 'practical contributions'

of the study. The identified primary research objectives of this research study are articulated in the questions listed under the research process.

1.4 THE RESEARCH PROCESS

1.4.1 The Questions

- 1) What factors/conditions are conducive to Radical and/or Incremental Innovation?
 - a. If for a given answer, there are factors conducive for Radical Innovation (R.I.).
 - b. If for a given answer, there are factors conducive for Incremental Innovation (I.I.).
 - c. And if for a given answer, there are factors conducive for both R.I. and I.I.
- 2) Are there trade-offs or contradictions between answers that relate to I.I. or R.I. factors?
- 3) Which of these factors are structural and which are contextual?
- 4) How can trade-offs between structural factors at (2) be minimised or managed?

The primary objective of this research study is to mitigate the research questions through the implementation of a feasible and viable problem-solving mechanism.

1.4.2 Research Methodology

The mechanism employed by the researcher includes a literature review and a case study. The literature review constitutes a systematic review and meta-analysis of radical innovation and incremental innovation across a multitude of factors, which is detailed in the next chapter.

The researcher employed a qualitative study underpinned by the desire to unpack varying innovations that organisations use. The researcher links innovation with successes of organisations as many authors write to this view. This social enquiry is an interpretive approach to make sense of elements that drive success for organisations. Other stakeholder in the business world should see this study as generating interest in the area of management with a unique focus on innovation.

This researcher accepts Pizam and Mansfeld (2009)'s characterisation of interpretivism on the goal of research that sees the research seeking understanding

of a weak prediction stance. As per Pizam and Mansfeld (2009), the researcher will unpack the thoughts of business leaders, their behaviour, traits and actions, the way they confront their specific challenges and resolve them. This researcher's relativist ontology view drove for a study of the business world and its successes which is not limited to financial measures but other factors that either lag or lead it. Innovation and its various types, drivers and influencers is therefore contrasted into organisations that drive success out of many of its characteristic including leadership, context, strategy and many other factors.

1.4.3 Search Strategy

The researcher formulated a search strategy for the literature review. This strategy allowed for a selection of articles from extant research as well as top journals. Top journals, are ranked as such by combination of factors which include citations, prestige and influence. The detailing of this plan can be found in the next chapters.

1.4.4 Validity, reliability and applicability

The researcher assessed the included studies on the basis of validity, reliability and applicability (VRA) criteria, in which validity relates to methodological rigour with the intention to minimise the risk of bias, reliability refers to the extent to which the findings of the study can be re-produced by other researchers, and applicability refers to the extent to which the findings are applicable to innovation.

The study comprises of 280 conditions from 42 studies, 39 conditions derived out of case studies observations, 108 conditions derived from empirical studies and 132 conditions derived from literature review. To round-off, top journals made out of 16 studies were included in order to test the latest thinking against the gathered factors.

1.4.5 Data abstraction and selection of Discovery as a case study

The researcher uses a basic factoring method to select factors that supports radical and incremental innovation. An Excel® spreadsheet is used to capture factors and based on the author's view, factors are the classified accordingly. Discovery is selected as a case study based on the fact that there is well documented case study and researcher's perception that the company is innovative.

1.5 THEORETICAL BACKGROUND

In order to properly deal with the merits of this thesis, the researcher will provide a theoretical background on innovation, this without taking much from the literature review which unpacks factors around incremental and radical innovation.

1.5.1 Innovation

According to Brynteson (2010:16), innovation can be created by an individual, an organisational team or a team comprised of people from different organisations. Innovation may be defined as a creation or invention made useable (Amabile, 1996).

Ravichandran (1999:1), argued that innovation is largely responsible for a remarkable rise of the economy, with current observations displaying an organisation facing challenges of limited resources, a rise in conflicting client requirements and a client base which is more informed by diverse needs, for such organisations to survive they must innovate.

“A new idea could be a new product, service or method of production (technical innovation) or a new market, organisational structure or administrative system (administrative or organisational innovation). The generation of innovation results in an outcome—a product, service, or technology that is at least new to an organisational population. A second organisation adopts this innovation by acquiring it from or by imitating the organisation that has produced it” (Damanpour & Wischnevsky, 2006:3-4).

The researcher accepts Marvel (2012:4),’s research which innovation is framed as either incremental or radical innovation.

Henderson and Clark (1990:9), asserts:

“Incremental innovation introduces relatively minor changes to the existing product, exploits the potential of the established design, and often reinforces the dominance of established firms and radical innovation in contrast is based on a different set of engineering and scientific principles and often opens up whole new markets and potential applications.”

Andersson and Lööf (2009:19), accepted that innovation literature runs across three strands, the first being the neo-Schumpeterian era which hinges on the resource

based view of the firm (RBV), which suggests the importance of firm characteristics such as firm size, physical capital, human capital, R&D, internal and external financial sources and industry classification. The second strand focuses on technological diffusion across borders through trade and foreign direct investments, while the third and last strand is the literature on agglomeration economies suggesting the importance of proximity, clustering and face-to-face contacts for localized knowledge spill-overs.

A product view provides yet another insight into innovation with the two definitions below where the first states:

“Radical product innovation is the development of products that have a different set of features and performance attributes that create a set of benefits different from that of existing products from the customer’s perspective.” (Hoonsopon & Ruenrom, 2012:3)

And the second states:

“Incremental product innovation defined as the development of products that have minor changes in attributes, and the benefits from these changes are minimal from the customer’s perspective.” (Hoonsopon & Ruenrom, 2012:156)

Holahan, Sullivan & Markham (2013:4), defined project innovativeness using the uncertainty matrix posited by Ansoff (1965, 1988), and Moriarty and Kosnik (1990), (see Figure 1.1), clearly showing a uncertainty matrix characterizing innovativeness in terms of a 2×2 matrix. In this context, innovativeness increases as projects move from low market and technological uncertainty to high market and technological uncertainty. The researcher supports this view of looking at innovation and the study presented follows this line of treating innovation instead of process innovation or product innovation. The merits of this choice are discussed in the next chapter.

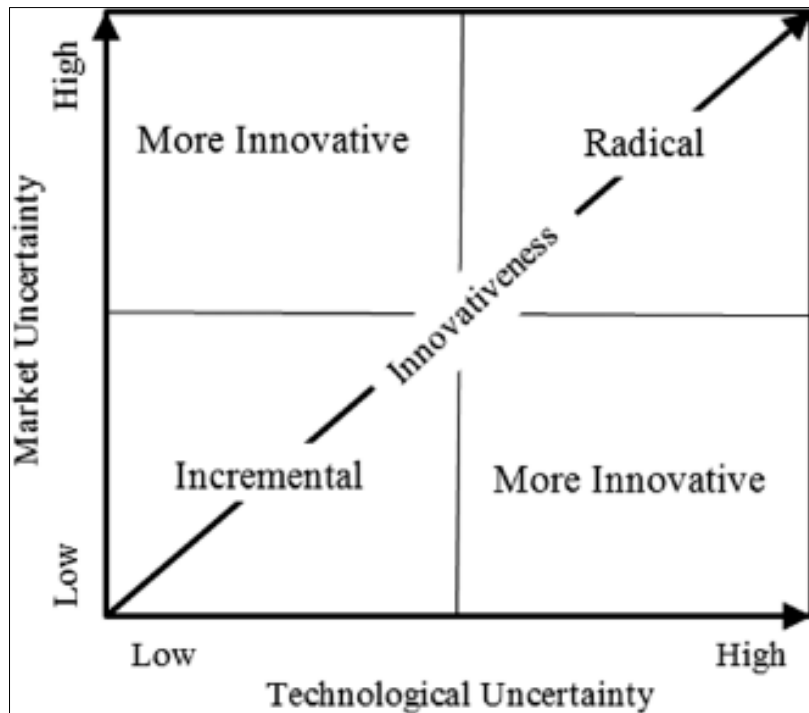


Figure 1.1: Uncertainty Matrix (Source: Patel, Fernhaber, McDougall-Covin & van der Have,2014:4)

Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:2), asserts that:

“Companies should create an internal context where the newly generated knowledge can be evaluated and combined with existing knowledge in order to develop new products, services or processes. To sustain innovativeness in a dynamic environment, the company must have the ability to renew its knowledge base, as pointed out by Jantunen (2005). Therefore, the new valuable knowledge for the firm can help to sustain organisational innovativeness in subsequent years.”

Damanpour and Gopalakrishnan (1998:6), concedes to extant literature, which conforms to a framework of doctrines based on the types or differences where innovation is applied, including the degree to which such innovation is seen as radical or even from process point of view, where each stage is explored. Although extant literature shows clear distinctions on types or stages of innovation, there is lack of clarity in identifying the context within which those innovations occur. This researcher supports the distinction on innovation by type and intends to shed light on the context where innovation occurs within this study.

1.5.1.1 Incremental Innovation

According to Chatterji and Fabrizio (2013:5), the incremental innovation process exploits and reinforces the accumulated knowledge within the firm and fits within the firm's established organisational routines. Menguc, Auh, Yannopoulos (2013:4), asserts:

"Firms with incremental product innovation capability have the competency to deliver product innovations that depart minimally from existing routines, operations, and knowledge. These products are seen by customers as ones that enhance the consumption experience without significantly disrupting or deviating from customers' prior knowledge or requiring new learning."

1.5.1.2 Radical Innovation

According to Reid, Roberts and Moore (2014:1), radical innovations often involve a technology that is embryonic, or one that is new to the firm, and this can involve a great deal of financial risk (Green, Barclay, and Ryans, 1995), capital investment, and market uncertainty (Leifer *et al.*, 2000).

According to Troilo, De Luca, Atuahene-Gima (2013:1), a rearrangement of the firm's capabilities is a pre-requisite for radical innovation. Menguc, Auh, Yannopoulos (2013:4), in contrast, asserts that:

"...firms that possess radical product innovation capability are able to deliver products that are new to the world in that they involve breakthrough technologies and customer benefits, drastically altering the way products are used and experienced (Chandy and Tellis, 1998, 2000). Radical product innovation capability produces discontinuous products that necessitate unlearning and more cognitive effort on the part of customers. This requires the customer to fully understand and utilize the new product, as such products can alter how products are used and may require customers to learn new skills and knowledge in order to appreciate the new usage experience."

Ott (2010:26), and many other researchers observed the characteristics of radical innovation, all within context of fluid organisational structures (Branscomb & Auerwald, 2001; Edmondson & Mogelof, 2006; Gyskiewicz, 1999; Mumford, Connelly & Gaddis, 2003). These include tasks with high ambiguity and complexity, requiring substantial creative effort by teams of highly creative and often highly trained individuals, high investments with long time frames for financial returns, and higher-than-average risk of project failure due to dynamic markets and dynamic technologies. The researcher, however, agrees to Ott (2010:26)'s assertion that significant political risks are often run by senior-level organisational supporters, including any formally assigned project leaders. The literature review in this study will therefore explore leadership and its role on innovation.

1.6 CHAPTER OUTLINE

The requirement for a chapter and content analysis is to indicate to the evaluating reader that the document will culminate in a viable dissertation or thesis. For the researcher, the chapter and content analysis provides a vital roadmap as to how to structure the content of each chapter into a logical sequence of events. The dissertation is organized into the following chapters.

CHAPTER 1 - THE SCOPE OF THE RESEARCH: In this chapter, the researcher has provided a general introduction and overview of the study, including a roadmap of how the thesis is structured.

CHAPTER 2 - ENABLING CONDITIONS FOR INNOVATION: In this chapter the researcher describes the methodology, reviews the literature relevant to the key research constructs in this study, viz. conditions impacting upon radical and incremental innovation. The researcher presents a view from top journals to interrogate the collection of factors discussed.

CHAPTER 3 - INNOVATION CASE STUDY AND DISCUSSION ON FINDINGS: This chapter examines the Discovery case study (Porter, Kramer and Sesia, 2017), and provides analysis on findings based on the literature and case study.

CHAPTER 4 – PROBLEM MITIGATION, RECOMMENDATIONS AND CONCLUSION: In this chapter the researcher presents the problem mitigation,

conclusions, limitations, implications, and suggestions for further research. The dissertation roadmap is graphically depicted in Figure 1.2, which places individual chapters in the context of the overall dissertation structure and outline.

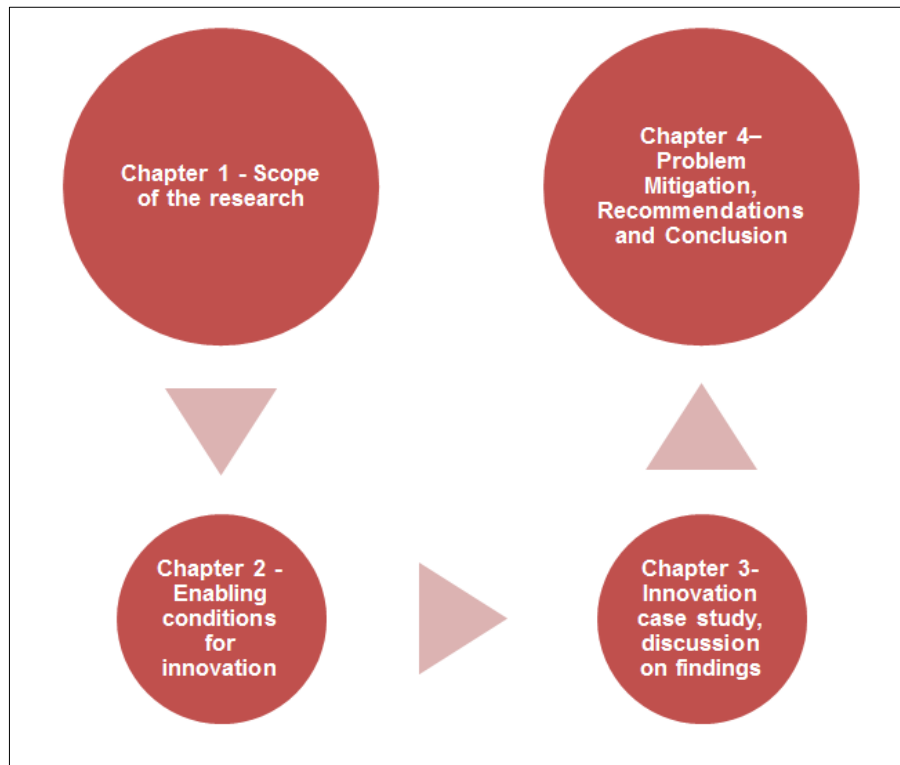


Figure 1.2: The dissertation roadmap

1.7 IMPORTANCE OF THE STUDY

This research contributes to the literature body with investigation of conditions that outline steps to enable innovation, for maximum benefit at any stage of a given product or process lifecycle.

The following aspects are, according to the researcher, what will make this research significant:

- Enhance knowledge on entrepreneurship, which is empirically linked to both incremental and radical innovation.
- Draw from existing innovation theory and build a framework of differentiating levels of innovation using conditions collated from a multitude of scholars.
- Contribute to the body of literature on innovation, entrepreneurship and management.

- Enhancing the agenda for Social and Economic development, which, according to OECD, is played by Science, Technology and Innovation (STI).
- A framework allowing organisations to identify the lowest point of entry by identifying the level of radicalness of a given product, project or process.
- Further strengthen the case of innovation as a driver of organisation success which eventually leads to overall economic success of the country.

1.8 SUMMARY

In this chapter the researcher has presented the appropriate introduction and has also defined the aim of this study. This has been achieved by an introduction providing appropriate background, and then by outlining the research process, the research problem, and the research questions. The study then explains the methodology to be used, limitations, delimitations, research objectives, the terminology used, the order of chapters, and, lastly, by research objectives.

In the next chapter the researcher presents a review of the literature relating to factors enabling incremental and radical innovation. The researcher intends to demonstrate awareness of the current state of knowledge of a particular subject, its limitation, and how the research will fit into a wider context through the use of a systematic review and meta-analysis.

CHAPTER 2. ENABLING CONDITIONS FOR INNOVATION

2.1 INTRODUCTION

The literature review presented in this chapter explores enablers and drivers of innovation. The researcher delved into the correlates and parallels of incremental and radical innovation. Extant literature has gone into detail on the different types of innovation such as technological, managerial, product and process innovation. This study explores the levels of radicalness of the innovation across any type of innovation. The researcher accepts Duguet (2000:10) 's interpretation of incremental and radical innovations, derived from a survey in France, in which it characterises incremental innovations as:

- the significant improvement on an existing product,
- the introduction of a product that is new for the firm but that is not new for the market,
- the significant improvement on an existing production process.

And radical innovations as:

- the introduction of a product that is new both for the firm and for the market, or
- the implementation of a process breakthrough.

The researcher responded to a call to attention to the importance of radicalness of a given innovation (Marvel 2012:1).

A look into the definition of innovation from various scholars also allowed the researcher to set the scene for this research study. Below is a few that the researcher came across.

Marvel (2012:2), noted that for a given product or service innovation it is possible place them into two measures of radical breakthroughs versus incremental improvements, it is however not always the case, given that some new products fall in neither area.

Blindenbach-Driessen and Ende (2014:2), provide the following process view of innovation:

- “*Exploration*” refers to developing new products and services;
- “*exploitation*” refers to improving existing operational processes in the firm;
- and “*ambidexterity*” refers to the simultaneous combination of exploration and exploitation.

According to Ott (2010:26), radical innovation in the context of product innovation is that which is classified as new to the industry or new to the world, which will enter new markets and/or utilize new technology in that same product and contextual setting.

In order to explore the topic thoroughly, the author derives a search strategy involving the following components:

- A systematic review of literature on innovation,
- A compilation factors that drive innovation; be it incremental, radical or both,
- Conditions for which each factor is prominent, and
- Testing support for all the factors and condition from top journals.

In chapter 4, the researcher brings forth this literature review into a systematic review by;

- A case study of a successful organisation in the local setting to test the factors unpacked,
- The case study is written by experts in the field of management.

Although Damanpour and Wischnevsky (2006:2), observed that forty years of research had yielded less than desirable theoretical frameworks in innovation for management practitioners, the researcher accepted the challenge to further explore innovation as a research area.

2.1.1 Search Strategy

For this systematic review and meta-analysis, the researcher identified publications from networked searches through a variety of sources. These comprise of online journal publications, including Elsevier, Wiley, SSRN, JSTOR, ScienceDirect, Emerald, Springer, ProQuest, and industry publications. The overall research coding

strategy is depicted in Figure 2.1, below. The first part study involves conducting a literature search. The search terms consisted of:

"radical innovation" OR "incremental innovation" AND "enabling conditions" OR "success factors".

The researcher adjusted the year ranges — opting for newer articles. Newer articles for the initial study included articles from 1997 or later.

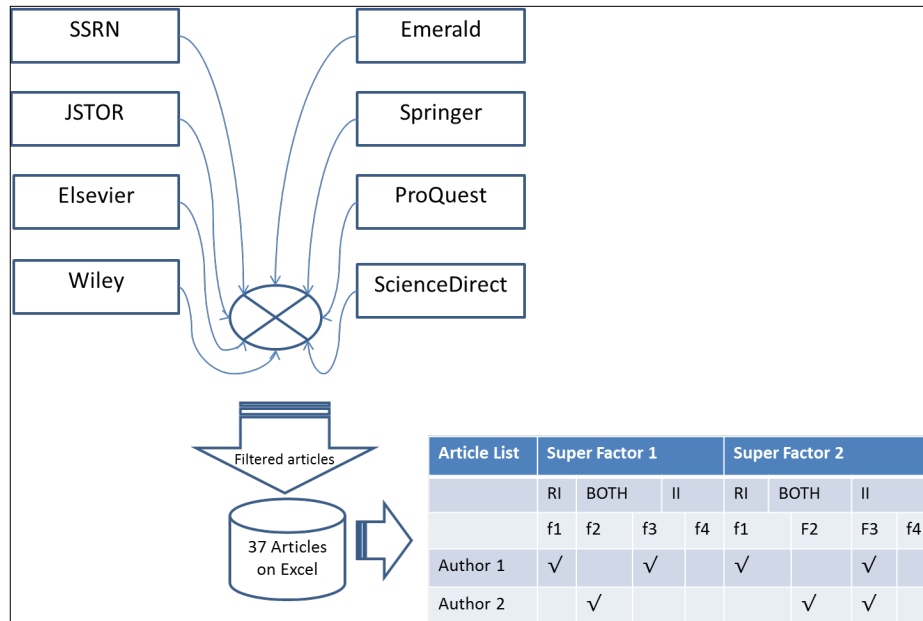


Figure 2.1: Research data coding process

2.1.2 Inclusion and Exclusion

Once a list of results from different sources were collated, the researcher discarded articles older than 1997, as the method prescribed, and offered an explanation of the methods used to determine whether to include or exclude sources.

The researcher established a set of inclusion criteria to guide the review. Setting criteria prior to searching the literature helped narrow the focus and facilitated an unbiased review of the current state of the literature

The researcher used the following inclusion criteria for the review:

- Quantitative studies and qualitative studies on innovations, including case studies.
- Time-relevance, from 1997 to present
- Literature with explicit focus on radical innovation or incremental innovation

- Published or unpublished studies
- Innovation case studies with a preference to South Africa, followed by the rest of Africa, Europe, Asia and the United States.

The following are the types of studies that excluded:

- Non-rigorous quantitative studies, such as pre-post and observational studies
- Qualitative studies, such as journalistic accounts and general inquiries
- Anonymous studies
- Theoretical analyses of other forms of innovation process
- Non-English language papers.

2.1.3 Reading the articles

The researcher read all the included literature with a view to build a list of articles that will frame the conditions that the literature review will explore. The conditions were required to influence either incremental, radical or both innovation phenomena.

2.1.4 Data abstraction

- Identification of conditions

The researcher identified conditions using a two-step method. Firstly, while reading the articles, the researcher captured all factors into an extensive list in MS[®] Excel[®]. Secondly, using personal work experience and published characteristics of organisational settings and characteristics, e.g. Leadership, Environment, etc., the conditions are then grouped into the logical groups under which, each of the conditions is found or had occurred.

Each of these conditions, forming logical groupings that conform to organisational settings or characteristics, was then pulled directly off the literature on the basis that they had occurred when incremental/radical or both innovations were observed or studied.

- Grouping of conditions

Once the conditions were captured onto MS[®] Excel[®], the researcher observed that it was possible to group these conditions into super-groups, on the basis that the author of the article has indicated that this phenomenon affects such a condition or

super-group of conditions. The study also relied on the “*resource-based view (RBV)* Barney (1991, 1995)”, combined with “*organisational support theory (OST)* (Eisenberger, Armeli, Rexwinkel, Lynch & Rhoades, 2001; Eisenberger, Huntington, Hutchison & Sowa, 1986)”. In many instances, descriptions of conditions differed from one author to another, e.g. ‘*Strong Champions*’, ‘*Strong leadership*’, ‘*Innovation champions*’, ‘*Top executive leadership*’, ‘*Top management’s support*’, ‘*Top management or investors involvement*’, the researcher observed the underlying characteristic from various organisational theories to classify this conditions under the ‘*Leadership*’ super-group.

During the literature review the researcher observed the source of various conditions. Notably, the researcher included a mix of empirical, literature and case studies. The researcher followed a recipe of mixing articles from the different study method with none of the study, contributing more than 50% to the each of the studied conditions by itself.

2.1.5 Data sourcing

To round-off, the researcher outlined how data was extracted and finally coded the information for the meta-analysis.

Once the literature review has been conducted, a clear set of conditions will be used to test against a few case studies, one of which is based on Discovery Health Ltd, which the researcher will offer a detailed analysis. The case study is sourced from HBR which is respected source for business case studies.

The researcher will also test the case study against conditions found on top journals. The search terms used to perform a search of articles from top journal libraries are identical to those used to build the first part of the literature review. The differentiating criterion is that the journals are classified as top, these are:

- Innovation and Technology Management
 - Academy of Management Journal (top)
 - Academy of Management Review (top)
 - Administrative Science Quarterly (top)
 - Journal of Management (top)
 - Journal of Management Studies (top)

- Management Science (top)
- Strategic Management Journal (top)
- Organisation Studies
 - Organisation Science (top)
 - Organisation Studies (top)

The search for on the top journals focused only on the studies published since 2013 or later. The ranking of the journals, as top journals, was validated using SJR (Scimago Journal & Country Rank) with search year of 2015, with subject area confined to “*Business, Management and Accounting*” and a subject category of “*Innovation*”, see depiction snapshot in the figure below.

| Rank | Title | SJR | H index | Total Docs. (2013-2015) | Total Refs | Total Cites (3years) | Ref. / Doc. |
|------|--|--------|---------|-------------------------|------------|----------------------|-------------|
| 1 | Academy of Management Journal | 11.022 | 252 | 79 | 7732 | 2057 | 97.87 |
| 2 | Journal of Financial Economics | 10.836 | 194 | 127 | 5806 | 2312 | 45.72 |
| 3 | Academy of Management Review | 8.951 | 216 | 38 | 3631 | 1016 | 95.55 |
| 4 | Organization Science | 7.141 | 186 | 106 | 8683 | 1573 | 81.92 |
| 5 | Strategic Management Journal | 6.443 | 219 | 124 | 9024 | 1677 | 72.77 |
| 6 | Journal of Management | 6.25 | 164 | 79 | 7219 | 1698 | 91.38 |
| 7 | Organizational Research Methods | 5.964 | 80 | 31 | 2579 | 503 | 83.19 |
| 8 | Journal of Management Studies | 4.871 | 136 | 46 | 3561 | 1159 | 77.41 |
| 9 | Journal of Operations Management | 4.616 | 149 | 53 | 4267 | 798 | 80.51 |
| 10 | Manufacturing and Service Operations Manag | 4.368 | 63 | 44 | 1648 | 359 | 37.45 |
| 11 | Journal of International Business Studies | 4.303 | 148 | 56 | 5208 | 840 | 93 |
| 12 | Management Science | 4.293 | 198 | 172 | 8087 | 1887 | 47.02 |
| 13 | Organization Studies | 3.576 | 111 | 88 | 6772 | 971 | 76.95 |
| 14 | Academy of Management Perspectives | 3.557 | 100 | 38 | 2600 | 468 | 68.42 |
| 15 | Research Policy | 3.505 | 178 | 145 | 10491 | 2494 | 72.35 |

Figure 2.2: Journal Rankings (Source: Scimago Journal & Country Rank,2017:Online)

2.2 INNOVATION AS A RESEARCH AREA

Damanpour and Wischnevsky (2006:2), states the following about innovation research:

“To address the problem of inconsistent results, innovation researchers have developed contingency theories of innovation types. They have distinguished between product and process innovations (Utterback and Abernathy, 1975; Tornatzky and Fleischer, 1990; Damanpour and Gopalakrishnan, 2001), technical and administrative innovations (Bantel and Jackson, 1989; Daft, 1978; Kimberly and Evanisko, 1981; Subramanian and Nilakanta, 1996), and radical and incremental

innovations (Dewar and Dutton, 1986; Ettlie, Bridges & O'Keefe, 1984; Germain, 1996)."

Ravichandran (1999:2), argued that studies into why organisations innovate or how they are built for it provide insights into this stimulating area for research. This research must look into how organisations configure themselves, processes or internal functions to ensure that different forms innovation are effectively controlled and measured by those in charge. The other area worth exploring is the impact of innovation on organisation's ability to stay ahead of competition.

According to Hoonsoon and Ruenrom (2012:20), asserts:

"...both radical and incremental product innovation improve firms' performance as firms enhance their competitive advantage by differentiating new products from their competitors".

Stringer (2000:2), noted that large organisations do not seem to learn fast enough in order to take full advantage of potentially profitable breakthrough innovations and exposures brought forth by entrepreneurs. Learning deficiencies and genetic conservatism underlie the impotence of such large organisations from innovation. According to Duguet (2000:19), firms that have a formal research organisation, and which readily use intellectual property rights, seem to produce relevant technical knowledge that is spread through their products to the less innovative firms.

Duguet (2000:12), modelled innovation in two parts, first is its inputs which included both internal and external sources of knowledge, both formal and informal. To complete the first portion of the model, Duguet (2000:12), then added 'Schumpeterian' variables, namely size, as measured by total sales, domestic market share as computed off the breakdown of domestic sales and the Herfindal equivalent number of activities from the lines of business. The second part model is outlined using total factor productivity growth as derived from innovation; the organisation has implemented (Duguet, 2000:12). The researcher accepts Duguet (2000:12)'s model, in part because it distinguished radical innovations from incremental innovations, but contends that it falls short in addressing additional conditions affecting innovation which are subject of this study.

Damanpour and Gopalakrishnan (1998:2), asserts:

“Process and outcome researchers, in that certain approaches and perspectives are applicable under certain contextual conditions. Tornatzky and Fleischer (1990), recognized the environment as one of the important contextual factors that influences innovation”.

According to Damanpour & Wischnevsky (2006:2), organisational innovation is driven by environmental change.

Shane (2008:2001), supported by Blindenbach-Driessen and Ende (2014:2) on process view of innovation asserting that:

“MacDonald used a large number of similar outlets which were created for delivering a product or service. Similarly, Pixar Animated Studios' sequential approach of a two-stage product development model exploration phase, involving experimentation, lead to the discovery of a successful business model and its replication strategies. This became evident by the profits achieved by these large corporations and others that employed the same strategies. This business model innovation and its replication, as observed by Winter and Szulanski (2001), showed that an exploratory process precedes replication”.

Ott (2010:38), argued that radical innovation research should be focused on what is produced, *i.e.* the actual product and exclude all process and administrative innovations, this in counter argument to Green *et al.* (1995) who argued for a focus of this research on internal perspective of newness. Both agreed that the research should include:

- a multidimensional definition of radical innovation,
- define the dimension of interest,
- look at variables on a continuum, and
- look at both technology and market familiarity.

In order to bring forth discussions on product innovations based on the relative potential returns, risks and the relative amount of learning and creativity involved, Ott

(2010:38), citing Garcia and Calantone (2002), suggests product innovations be measured from both external (macro-level) and internal (micro-level) organisational perspectives. Both a market and a technological perspective should be used, this after noting that all macro-level changes simultaneously drive micro-level changes at the firm level, with micro-level changes unaffected by macro-level changes.

Empirical studies on innovation, noted Damanpour and Wischnevsky (2006:2), yielded the three typologies; product & process, technical & administrative and radical & incremental, with the analysis of these types showing opposing views from previous studies based on structural and process aspects of these types added together.

Damanpour and Wischnevsky (2006:2), states that:

“The ten predictor variables were size, specialization, functional differentiation, professionalism, formalization, centralization, vertical differentiation, managerial attitude toward change, technical knowledge resources, and external communication, with the exception of the effect of specialization on administrative innovations versus its effect on technical innovations.”

This study focuses on one topology in order to strengthen the systematic review.

Brynteson (2010:17), contends that radical innovation should be defined as an innovation that is life changing or society changing, posing these key questions:

- *Does it have the power to dramatically reset customer expectations and behaviours?*
- *Does it have the power to change the basis for competitive advantage?*
- *Does it have the power to change industry dynamics?* (Skarzynski and Gibson, 2008)

Innovation can repeat its past successes, of which history is littered with. This ranges from the defeats of Germany and Japan to the moon launch, from the transcontinental railroad to the Panama Canal, proving over and over again that it can be used to solve big problems (Brynteson, 2010:153).

Drejer (2002:1), citing D'Aveni (1994), describes hyper-competition as a competitive situation where the key competitive success factor is the ability to constantly develop new products, processes or services, providing the customer with increased functionality and performance. Firms must continuously develop themselves in new directions.

According to Marvel (2012:2), there is empirical evidence which show that entrepreneurship is at a macro level linked with innovation; this however does not explain the process with which entrepreneurs tap into radical forms of innovation.

"Recent literature from virtually all parts of the world emphasises the important contribution which SMEs can make to an economy's strong overall performance. It has been recognised that some of the world's best performing economies, notably outward-oriented East Asian countries, are very heavily based on small enterprises" (Berry, 2000:11).

According to Marvel (2012:2), research shows that smaller organisations innovate by more a factor of two and a half at an employee level compared with their larger counterparts.

Marvel (2012:4), asserts that:

"...barriers to entry are lowered and new firms enter previously impenetrable markets by exploiting the new technology. In cases where radical innovations have occurred, the innovations favour new entrants at the expense of entrenched firms because new entrants take advantage of fundamentally different knowledge and expertise."

According to Stringer (2000:2), though the world demands more innovative organisations and the largest U.S. companies strive to be innovative, most are poorly equipped to implement a growth strategy based on radical innovation. This is because most large companies are genetically programmed to preserve status quo, and do not possess the right organisation, culture, leadership practices, or personnel to collect and successfully commercialise radical new ideas.

Drejer (2002:6), citing Roberts (1981), argues that innovation is not just about invention, such that ideas need to be put into practice and inventions commercialised. Innovation is closely linked to organisational change, regardless of the size of the change it affects the organisation with the needs for new knowledge, new markets, new employees and so on (Drejer, 2002:4).

Researchers have correctly created boundaries which this study will navigate in order to bring forth elements that make innovation a worthwhile topic for research in society and academic setting. These observed conditions are to be fully expanded after the benefits of innovation are illuminated below.

2.2.1 Benefits of innovation

Duguet (2000:19), found, while researching Total Factor Production (TFP), that incremental innovations play an essential role in the diffusion of new equipment goods. This contributes to improving productive performance and a greater profitability of radical innovations, of which patents and licenses are key determinants which themselves are main contributors to TFP growth.

Business executives should be concerned with fostering innovation to maintain growth, efficiency or survival, warns Damanpour and Wischnevsky (2006:2). Given that firms operate under conditions characterised by limited resources, rapid change in technology and international rivalry, similarly to the academic research community, contribution to the body of knowledge on innovation should also be sustained.

Ravichandran (1999:1), argued that innovation is largely responsible for a remarkable rise of the economy, with current observations displaying an organisation facing challenges of limited resources, a rise in conflicting client requirements and a client base which is more informed by diverse needs, for such organisations to survive they must innovate. The success of innovation is largely dependent on the role manager's play to ensure the derived growth is sustained but more importantly controlling the alignment of the organisation with its boundaries including in environment (Ravichandran, 1999:1).

Commercial success culminates from innovation when invention is combined with exploitation, as confirmed by Damanpour, and Wischnevsky (2006:4), citing Roberts

(1988) and supported by Roberts (1988:13), characterising invention process as creation of a new idea and getting it to work.

Arnold, (Er) Fang & Palmatier (2010:13), acknowledged that even though there are a reasonable number of examples in the popular press regarding successes in such regards (i.e., “ambidextrous” organisations (O’Reilly and Tushman, 2004 and Jana, 2007), simultaneous radical and incremental innovation is very difficult. As a result, most firms must choose a primary focus (He and Wong, 2004). It is with this view in mind that this study did not venture into this innovation phenomenon.

According to Ott (2010:33), critical context in a global economy, precipitated by innovation which is further characterised by rapid obsolescence of products and services as a result of technological advances across multiple fields, is the new reality. Many researchers subsequently attributed increasing globalization and its accompanying competition into driving organisations to create competitive advantage through innovation (Ott, 2010:33 citing Giddens, 2003).

Shane (2008:153) accepts Montoya-Weiss and Calantone (1994); Cooper (1999) and Henard and Szymanski (2001), consistent findings from benchmarking studies on the factors related to successful innovation, stipulating the activity of understanding customer needs as fundamental, although challenging. Conversely, Shane (2008:153) citing Urban and Hauser (1993); Leonard-Barton (1995); Burchill and Shen (1995); Otto and Wood (2001); Shillito (2001); Sanders (2002); Squires and Byrne (2002); Crawford and Di Benedetto (2003); Ulrich and Eppinger (2004), concedes that just as many, if not more, examples in which firms used various traditional (e.g., customer surveys, focus groups) and non-traditional (e.g., ethnography, contextual inquiry, empathic design) research approaches to gain insight into their customers’ needs, and to develop highly successful new products.

According to Damanpour and Wischnevsky (2006:2), practice management is improved by increased knowledge of innovation. Innovation introduces change to organisations in the form of new ventures or improvement of current ones (Damanpour & Wischnevsky, 2006:2).

Researchers have now shown that innovation is an exciting area of research for both organisations and society in general, with special emphasis to those concerned with

progress and economic growth. This section has successfully set the scene for a multitude of areas that this study will explore in order to correctly explore innovation and its dimensions of radicalness. The factors that are meant for exploration have both been raised by different researchers over the years as well as on in this study.

2.3 DISTINCTION BETWEEN INCREMENTAL AND RADICAL INNOVATION

According to Sorescu (2002:24), citing Cohen and Levinthal (1990),

“...a greater knowledge base must match higher absorptive capacity, which means that the firm is more able to recognize the value of new information, assimilate it, and apply it to commercial ends”.

This will result in the creation of innovations that are more radical given that extensive resources have been made available to scientists who are on top of their profession and driven to create future technology from their laboratories where they are also likely to spend days on end due to the endowment of resources (Sorescu, 2002:24).

Sorescu (2002:28), explains that dominant firms are likely more radically innovative because of better resources in terms of research and financial resources, as well as a greater knowledge base. Such organisational and financial resources, along with their implicit expertise, may put dominant firms in a better position to handle the risks of radical innovations than are non-dominant firms (Sorescu, 2002:28).

According to Inauen and Scheker-Wicki (2012:214), citing Garcia and Calantone (2002); Un (2010); Jimenez-Jimenez and Sanz-Valle (2011), the terms radical and incremental indicate different degrees of novelty. In this regard, the general term “*innovativeness*” is used to characterize the degree of novelty of products or services and the degree to which the organisational culture promotes and supports innovation (Inauen and Scheker-Wicki, 2012:214).

2.3.1 Innovation Theory

Ironically, Damanpour (1991:397) also equated adoption with innovation, and defined innovation as,

“...the adoption of an idea or behaviour, whether a system, policy, program, device, process, product or service, that is new to the adopting organisation”.

Duguet (2000:3) distinguished two types of innovations as incremental innovations, which imply a small modification in the production function, and radical innovations, which imply a change of product or process.

According to Damanpour and Gopalakrishnan (1998:5), “*imitative*”, “*acquisitive*” and “*incubative*” are three major sources of innovation. Firstly, imitation implies utilising what other organisations have already gone to market with, such that this becomes a source of innovation. The imitating firm looks into its competitors or other areas of its business for ideas to produce offerings. Secondly, innovation can also be brought into the organisation from contractual agreements of various forms or ownership of an innovating company bought precisely for its innovation capabilities. And lastly, innovation can be incubated if the firm uses its own capabilities or capabilities formed with other companies via an agreed and mutual beneficial legal arrangement.

Marvel (2012:4), asserts:

“Competence enhancing innovations as improvements that build on existing know-how within a particular product class, such innovations substitute for older technologies. This is despite the fact that the knowledge and skills required to create competence-enhancing innovations are similar to those used to produce the previous generation, whereas competence-destroying innovations are fundamentally different and typically brought about by new firms that grow more rapidly than other firms. In the same token, a competence destroying product discontinuity either creates a new product class or substitutes for an existing product, such as diesel versus steam locomotives.”

In line with the contingency theory, Ott (2010:36), hypothesized that innovation is classified in multiple ways in the literature, including (a) by level of novelty — disruptive (Christensen, 1997; Christensen & Raynor, 2003), exploration and exploitation organisational learning (March, 1991), radical, really new incremental advances (Garcia & Calantone, 2002); (b) by outcome — product, process, or

administrative (Green *et al.* , 1995); (c) by the nature of the change attempted — continuous (Nelson & Winter, 1982), complex-adaptive (Bourgeois & Eisenhardt, 1988), evolutionary-revolutionary (Tushman & O'Reilly, 1996); or (d) by stage of development — research and discovery, application development, or incremental product improvements.

Ott (2010:42), citing Brown and Eisenhardt (1997) as well as Chiva-Gomez (2003), suggests that radical innovation can be framed as complex adaptive systems, open and composed of what Dooley (1996), refers to as an orderly interaction in accord of multi-agents. As a result, this phenomenon emerges, rather than being planned for.

"These systems are more organic, fluid, and less predictable than more traditional systems, with more ability to make creative leaps with less emphasis on step-wise progression of incremental innovation" Ott (2010:42).

Ott (2010:42), warned that due to the faster pace combined with the emphasis on adaptation, strict reliance on command and control coordination mechanisms will prove restrictive for radical innovation. Radical organisations have to rely on Uhl-Bien, Marion and McKelvey (2007)'s organisational resonance, or the responsiveness of interdependent agents described as rapid adjustment to changes in the network of agent activities. This is only effective if agents interact freely with each other and their greater environment. Ott (2010:42), agrees with Marion (1999, 2008) that multiple agents working together are more capable of creation compared to isolated individuals, as long as there is freedom to create the necessary amount of structure rather than having a structure imposed on them. Complexity theory would appear to fit the environment and structural requirements of organisations engaged in radical innovation or creation that effects macro-level change concludes (Ott, 2010:42).

2.3.2 Radicalness as a dimension of Innovation

Sorescu (2002:19), adopted Chandy and Tellis (1998)'s classification of innovations along the technology and market dimensions, which puts radical innovation as a product that is high on both the technology and market dimensions. It involves a substantially different technology, while at the same time offering a substantial

increase in customer benefits, this being in the context of where market breakthrough provides substantially higher benefits than existing products, even though its core technology is not substantially new. On the other hand, a technological breakthrough uses a substantially different technology than existing products, without substantially increasing the benefits to consumers.

Damanpour and Wischnevsky (2006:12), states:

“...within the context of IAOs, as opposed to IGOs, radical and incremental innovations are not differentiated on the basis of involvement in the creation of new technologies or products versus participation in improvement of existing products or services. Rather, radical innovations in IAOs precipitate a major strategic and/or organisational change, and incremental innovations induce minor change, including fine-tuning of the existing practices. The clear distinction that emerges between radical and incremental innovations in IAOs is extent to which the innovation causes fundamental changes in the internal activities of the organisation, and results in a clear departure from existing practices”.

According to Inauen and Scheker-Wicki (2012:214), citing Schumpeter (1934, 1939); Schmookler (1966); Avlonitis, Kouremenos and Tzokas (1994); Cohen and Klepper (1996); Fagerberg (2006), product innovations are defined as the invention and commercialization of entirely new products or services. Process innovations represent significant improvements in the production process that occur through the adoption of new technologies and innovations (Roberts, 1988, 2007; Organisation for Economic Co-operation and Development/Eurostat, 2005), accepting that product and process innovations can be both “radical” and “*incremental*” (Inauen and Scheker-Wicki; 2012:214). To provide further clarity and examples, Inauen and Scheker-Wicki (2012:214), citing Green, Gavin and Aiman-Smith (1995) and Linton (2009), contrast incremental innovations as reliant upon existing firm competences associated with minor improvements to existing products or services (e.g. new car product lines or functional foods). Radical innovations, however, seen as breakthrough innovations, yield fundamental technological changes and result in revolutionary products and services (e.g. the steam engine, the telegraph or the Internet).

From the empirical analysis of data collected from 225 SBUs across the financial services and retail industries, Arnold, (Er) Fang and Palmatier (2010:11), found that a negative relationship existed between diverse customer knowledge and incremental innovation, such that increasing a focus on customer acquisition suppresses incremental innovation performance. Furthermore, increasing a focus on customer retention enhances incremental innovation performance through three mechanisms (enhanced depth of customer knowledge, suppressed diversity of knowledge, and increased resource exploitation decisions), but undermines radical innovation performance through reduced diversity of customer knowledge and decisions that prioritize resource exploitation.

According to Ott (2010:14), citing Branscomb and Auerswald (2001); Edmondson and Mogelof (2006); Gryskiewicz (1999); Mumford *et al.*, 2002), the radical innovation context is characterised by ambiguity, complexity, higher than average risk of project failure, the management of highly creative and often highly trained individuals, and the unconventional team structure. According to Ott (2010:14), radical product innovations involve introducing a product new to the industry, which is either applied in new markets or utilizes new technology, or both. These creative efforts result in a future that is less predictable, in which success is elusive, and significant long-term investments are the norm. On the other hand, incremental product innovations imply generally smaller and more linear improvements into existing products, involving less investment, requiring shorter development time, utilizing more familiar and proven knowledge bases, and entailing lower risk to the firm.

While researching innovation as learning, Ott (2010:40), citing Hemlin *et al.* (2004) and Hodgson & White (2003), found implications to learning tasks in the context of innovation for both the individual and the organisation. This was simply due to the fact that radical innovation (as this study has shown) is a very different environment from incremental innovation and represents a maximum level of novelty, challenge, and learning. According to Ott (2010:40), citing Tushman and O'Reilly (1996), fewer organisations successfully attempted accomplish what March (1991) categorized as two very different types of organisational learning, exploration and exploitation of knowledge, both within the same organisational unit. This is because they require such different learning and systems. Implication for management are thus to manage

exploration (radical innovation) and exploitation (incremental innovation) in ambidextrous organisations, where differing structures and organisational norms are allowed for subsidiary organisations based on the type of innovation each pursues (Ott, 2010:40 citing Gatignon *et al.* , 2002; Tushman & O'Reilly, 1996).

Ott (2010:42), citing Brown and Eisenhardt (1997); Chiva-Gomez (2003), suggests that radical innovation can be framed as complex adaptive systems, open and composed of what Dooley (1996) refers to as an orderly interaction in accord of multi-agents. Consequently, this phenomenon emerges, rather than being planned for. These systems are, according to Ott (2010:42), more organic, fluid, and less predictable than more traditional systems, with more ability to make creative leaps and with less emphasis on step-wise progression of incremental innovation.

The researcher accepts Anderson and Tushman (1991:27),’s view which states:

“Define product innovation, only in terms of radical innovation, as technological discontinuities that advance by an order of magnitude the technological state-of-the art which characterizes an industry.”

Anderson and Tushman (1991:27), suggest that "*product discontinuities*" are quantum leaps from current offerings such that elements such as pricing or specification are much better compared to products they are replacing. Damanpour and Wischnevsky (2006:12), asserts:

“Radical innovations can create discontinuity in the product class and can be competence-destroying, because the knowledge and skills required to exploit them is drastically different from those used for the existing product or processes. Incremental innovations are not competence-destroying because they rely on existing knowledge and allow existing product or process technologies to remain competitive”.

According to Damanpour and Gopalakrishnan (1998:8), empirical research often collapsed several examples of radicalness of innovation into terms. Among radical and incremental innovations, a few terms, noted by the researcher, included the terms ‘*variation*’ and ‘*reorientation*’ (Damanpour & Gopalakrishnan,1998:8 citing Normann, 1971). ‘*Variation*’ relates to minor improvements to a current offering while

“reorientation” is a quantum leap from current offering. Additionally, Damanpour and Gopalakrishnan (1998:8), accepted extant literature and stated:

“Distinguishing between ‘routine’ and ‘non-routine’ innovations, depends upon whether the innovation produces minor or major changes in products, services, or production process in the organisation”.

According to Ott (2010:26), characteristics of the radical innovation context found in literature include tasks with high ambiguity and complexity. These require substantial creative effort by teams of highly creative and often highly trained individuals, high investments with long time frames for financial returns, and higher-than-average risk of project failure due to dynamic markets and dynamic technologies, all within fluid organisational structures (Ott, 2010:26).

Damanpour and Wischnevsky (2006:11), states:

“...radical innovations are associated with organisations that have experimental cultures, entrepreneurial climate, loose, decentralized structure, flexible work processes, heterogeneous human resource profiles, and strong technical competencies.”

According to Damanpour and Gopalakrishnan (1998:8), innovations are radical if they yield new ways of working within organisations which are a quantum leap from the previous work method, and innovations which are incremental only display minor improvements to the current way of work.

The research will now focus on conditions that drive innovation across organisations, determining which is more prominent for incremental, radical, or both forms of innovation.

2.4 COLLECTION OF FACTORS

A systematic review was done on articles with findings regarding enabling conditions (or factors) influencing innovation. Articles might list many conditions but only those relevant to innovation were included. The listed conditions are categorised in the following table according to logical groupings that correspond to the basic

characteristics of organizational support or the resource-based view of the organization.

Once all conditions were documented and the logical groups applied, categories were added to classify them further as applicable to incremental, radical or both kinds of innovation. Another filtering mechanism applied was checking whether each condition affects the structural or contextual elements of the organization.

Articles were selected on the basis that the conditions must support innovation according to the definition described in the introduction. Conditions that were mentioned in the context of other phenomena were excluded. Of course many articles listed some conditions in a single paragraph and in order to correctly categorise such conditions one had to refer to the literature directly referenced to ensure that structural and contextual aspects of the documented conditions are correctly captured.

Linking of condition to logical grouping was achieved using the OST and RBV theoretical frameworks and a combination of the definition of innovation (incremental, radical or both). Articles were categorised on the basis of their abstract, research methodology, findings, and their methods. This made it possible to document whether the findings were based on literature, empirical evidence or descriptive case studies. The compiled table was used to show which context were applicable, this category was added to support the adopted view of innovation, which considered but was not guided by other forms of innovations including product, process, technology or service.

The table shows that innovation is supported by various listed conditions and to what form of innovation it is considered applicable by the research done in the field. The table also shows that radical innovation is configured from a different recipe than incremental innovation and that incremental innovation was rarely the focus of enabling conditions type studies. Of course, many authors bundled conditions of innovation without making the distinction and in those cases it was counted as for both.

The table below runs over several pages showing all the conditions and the logical groupings that will form the super-conditions that will be checked against innovation

articles from top journals and then applied to the Discovery case study in the next chapter, to determine whether all of these super-conditions are in evidence in a particularly innovative organisation or not. This will enable us to determine whether such a grouping of the multitude of conditions in the innovation literature leads to too much abstraction or whether it is still useful enough to be used for an analysis of real world organisations.

Table 1: List of conditions identified and grouped.

| Grouping | Condition | Authors | Type of Innovation | Category | Evidence |
|------------------|---|---|--------------------|------------------------------------|------------|
| Operating Model | Absorptive capacity | Gabriel Cepeda-Carrion, Juan G. Cegarra-Navarro and Daniel Jimenez-Jimenez | Both | Contextual, Structural and Process | Empirical |
| Operating Model | Usage and creation of I(C)T and its capabilities | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Structural | Empirical |
| Enabling Context | Organisational size | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Structural | Empirical |
| Strategy | Knowledge Exchange | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Contextual | Empirical |
| Value System | Motivation | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Structural | Empirical |
| Relationship | Collaboration | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Contextual | Empirical |
| Operating Model | Information sharing | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Contextual | Empirical |
| Enabling Context | Environment | Matej Černe, Marko Jaklič and Miha Škerlavaj | Both | Structural | Empirical |
| Operating Model | Accumulated competence | Pavitt, K. | Both | Contextual | Literature |
| Enabling Context | Structural changes in the economy | Pavitt, K. | Both | Contextual | Literature |
| Enabling Context | characteristics of the firms and the sector they operate in are | Kleinknecht and Mohnen 2002, Cohen 1995, Crépon <i>et al.</i> 1998, Pavitt 1984 | Both | Structural, Contextual | |
| Strategy | financial resources, | Martin Andersson* and Hans Lööf** | Both | Structural | Empirical |
| Strategy | physical capital, | Martin Andersson* and Hans Lööf** | Both | Structural | Empirical |
| Operating Model | human capital, | Martin Andersson* and Hans Lööf** | Both | Structural | Empirical |
| Enabling Context | size, | Martin Andersson* and Hans Lööf** | Both | Structural | Empirical |
| Strategy | corporate ownership and | Martin Andersson* and Hans Lööf** | Both | Structural | Empirical |
| Relationship | Sector affiliation. | Martin Andersson* and Hans Lööf** | Both | Contextual | Empirical |
| Enabling Context | International trade characteristics | Martin Andersson* and Hans Lööf** | Both | Contextual | Empirical |
| Enabling Context | "Regional Millieu" | Martin Andersson* and | Both | Contextual | Empirical |

| | | | | | |
|----------------------------------|--|---|-------------|------------------------|------------|
| | | Hans Lööf** | | | |
| Support Function/Operating Model | Technological Choices | Pavitt, K. | Both | Contextual | Literature |
| Strategy | Systems of intellectual property rights | Duguet, 2000 | Radical | Contextual | Empirical |
| Support Function/Operating Model | Technological opportunities | Duguet, 2000 | Incremental | Contextual | Empirical |
| Relationship | External sources of knowledge | Duguet, 2000 | Radical | Structural | Empirical |
| Strategy | Wide range of fields where cutting edge technical expertise commanded | Mendonca, S. 2005 | Incremental | Contextual | Empirical |
| Enabling Context | Competition | Alina Sorescu, 2002 | Both | Contextual | Empirical |
| Strategy | Availability of resources (research, financial resources, and a greater knowledge base.) | Alina Sorescu, 2002 | Radical | Contextual | Empirical |
| Leadership | Strong Champions | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Structural | Empirical |
| Operating Model | Positive Growth of the Overall Innovation Portfolio | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Operating Model | Interrelationship amongst innovation projects | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Strategy | Business strategy | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Strategy | Business constraints | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Operating Model | Business model | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Operating Model | Capacity for innovation | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Enabling Context | Competition | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Operating Model | Competencies | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Contextual | Empirical |
| Operating Model | Transfer of learning | Paulson A.S., O'Connor G.C., Robeson D. | Radical | Structural | Empirical |
| Enabling Context | Current operating environment | Paulson A.S., O'Connor G.C., Robeson D. | Both | Contextual | Empirical |
| Relationship | Global Availability of knowledge | Inauen, M. and Scheker-Wicki, A. | Both | Contextual | Empirical |
| Operating Model | Technology Fusion | Inauen, M. and Scheker-Wicki, A. | Both | Structural, Contextual | Empirical |
| Enabling Context | Firm boundaries | Inauen, M. and Scheker-Wicki, A. | Both | Contextual | Empirical |
| Relationship | Regular interaction with customers, lead users, suppliers, university and competitors | Inauen, M. and Scheker-Wicki, A. | Both | Contextual | Empirical |
| Relationship | Risk sharing collaboration | Inauen, M. and Scheker-Wicki, A. | Radical | Contextual | Empirical |
| Relationship | Co-creation and knowledge transfer agreements | Inauen, M. and Scheker-Wicki, A. | Radical | Contextual | Empirical |
| Strategy | Choice of Open Innovation Strategy | Inauen, M. and Scheker-Wicki, A. | Radical | Contextual | Empirical |
| Relationship | Internal and external collaboration | Inauen, M. and Scheker-Wicki, A. | Radical | Contextual | Empirical |
| Operating Model | Emergence of e-business model | Stringer, R | Radical | Structural, Contextual | Literature |
| Enabling Context | Not preserving the status quo | Stringer, R | Radical | Structural, Contextual | Literature |
| Enabling Context | Industry/Market position | Stringer, R | Radical | Contextual | Literature |
| Operating Model | Structure | Stringer, R | Both | Structural | Literature |

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|------------------|---|---|-------------|------------------------|------------|
| Enabling Context | Culture | Stringer, R | Both | Contextual | Literature |
| Operating Model | Working Environments | Stringer, R | Radical | Structural | Literature |
| Operating Model | Adequate learning | Stringer, R | Radical | Structural | Literature |
| Enabling Context | Anti-Genetic Conservatism | Stringer, R | Radical | Contextual | Literature |
| Operating Model | Decentralised R & D | Stringer, R | Radical | Structural | Literature |
| Enabling Context | Lifecycle stage of the organisation | Hui, Qing-xi | Both | Structural, Contextual | Case Study |
| Enabling Context | Access to new markets | Hui, Qing-xi | Both | Contextual | Case Study |
| Operating Model | Participation in R & D | Hui, Qing-xi | Both | Contextual | Case Study |
| Strategy | Structural characteristic of firms | Hui, Qing-xi | Both | Structural | Case Study |
| Leadership | Managerial Innovation on Technology Intensive Firms | Hui, Qing-xi | Radical | Structural, Contextual | Case Study |
| Enabling Context | Economic system | Hui, Qing-xi | Both | Contextual | Case Study |
| Value System | Definite goals and value characteristics for innovation | Hui, Qing-xi | Radical | Structural, Contextual | Case Study |
| Operating Model | Standardize routine management | Hui, Qing-xi | Incremental | Structural | Case Study |
| Leadership | Managerial institution | Hui, Qing-xi | Incremental | Structural | Case Study |
| Relationship | Relationships among its stakeholders, managers, and workers. | Hui, Qing-xi | Incremental | Structural | Case Study |
| Strategy | New strategic direction | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Strategy | Ability to exploit external knowledge | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Strategy | Internal context for newly generated knowledge | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Enabling Context | Organisational values, | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Enabling Context | Norms and/or behaviours | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Operating Model | Ability to renew its knowledge base | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Structural, Contextual | Empirical |
| Operating Model | IS capability | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Enabling Context | Organisational relearning | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Enabling Context | Unlearning context | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Contextual | Empirical |
| Operating Model | Realised absorptive capacity | Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez | Both | Structural, Contextual | Empirical |
| Strategy | Acquiring knowledge from a variety of sources | Marvel | Both | Contextual | Empirical |
| Enabling Context | experimentation, | Marvel | Both | Contextual | Empirical |
| Operating Model | reading industry publications | Marvel | Both | Contextual | Empirical |
| Relationship | interacting with universities and private research institutions | Marvel | Both | Contextual | Empirical |

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|------------------|--|-------------------|---------|------------|------------|
| Enabling Context | social network | Marvel | Both | Contextual | Empirical |
| Strategy | Knowledge acquisition (of Technology, Markets...) | Marvel | Both | Contextual | Empirical |
| Operating Model | Aspects of learning | Marvel | Radical | Contextual | Empirical |
| Enabling Context | Entrepreneurship | Marvel | Radical | Contextual | Empirical |
| Strategy | Tacit and explicit knowledge are important in the process of innovation creation | Marvel | Both | Contextual | Empirical |
| Leadership | Strong leadership | Dismukes (Wolff) | Radical | Structural | Literature |
| Operating Model | Innovation management methodology | Dismukes (Wolff) | Radical | Contextual | Literature |
| Operating Model | Information and telecommunication tools | Dismukes (Wolff) | Radical | Contextual | Literature |
| Operating Model | Selective use of information and software tools | Dismukes (Wolff) | Radical | Contextual | Literature |
| | Pattern Recognition | Dismukes (Wolff) | Radical | Contextual | Literature |
| Operating Model | Rising power and efficiency of information and communication technologies | Beucker & Fitcher | Radical | Contextual | Case Study |
| Enabling Context | Liberalization of global trading | Beucker & Fitcher | Radical | Contextual | Case Study |
| Enabling Context | Increasing international competition | Beucker & Fitcher | Radical | Contextual | Case Study |
| Relationship | Incorporation of external ideas and R&D capacities(cooperation and efficient networking) | Beucker & Fitcher | Radical | Contextual | Case Study |
| Leadership | Innovation champions/transformational leaders/Promotors | Beucker & Fitcher | Both | Structural | Case Study |
| Leadership | Complexity leadership | Ott | Radical | Contextual | Case Study |
| Leadership | tolerance for ambiguity | Ott | Radical | Contextual | Case Study |
| Operating Model | high levels of relevant technical expertise | Ott | Radical | Contextual | Case Study |
| Leadership | higher than average but not excessive risk profile | Ott | Radical | Contextual | Case Study |
| Enabling Context | creativity, including the ability to engage in creative problem solving alone or with others | Ott | Radical | Contextual | Case Study |
| Leadership | group leadership | Ott | Radical | Structural | Case Study |
| Operating Model | evaluation of creative ideas and work, | Ott | Radical | Structural | Case Study |
| Operating Model | coevolution of ideas and groups of people around the task, | Ott | Radical | Structural | Case Study |
| Operating Model | enabling positive group dynamics, | Ott | Radical | Structural | Case Study |
| Operating Model | selection and recruitment of talented individuals, | Ott | Radical | Structural | Case Study |
| Strategy | creation of organisational knowledge systems and interactions, | Ott | Radical | Structural | Case Study |
| Value System | the communication of ideas, | Ott | Radical | Structural | Case Study |
| Value System | and the promotion of ideas | Ott | Radical | Structural | Case Study |
| Leadership | Shared leadership responsibilities. | Ott | Radical | Structural | Case Study |
| Operating Model | Creative knowledge environments | Ott | Radical | Contextual | Case Study |
| Value System | Organisational learning | Ott | Radical | Contextual | Case |

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|----------------------------------|---|--------------------------|-------------|------------------------|------------|
| | | | | | Study |
| Enabling Context | “Requisite complexity” to match their environmental complexity(Boisot) | Ott | Radical | Contextual | Case Study |
| Value System | Organisational learning dynamics for both individual and group creativity | Ott | Radical | Structural | Case Study |
| Leadership | Innovation champions | Ettlie,Bridges & O'Keefe | Radical | Structural | Empirical |
| Operating Model | Technology - Organisation Congruence | Ettlie,Bridges & O'Keefe | Radical | Structural | Empirical |
| Operating Model | Technology Policy | Ettlie,Bridges & O'Keefe | Radical | Structural | Empirical |
| Operating Model | Concentration of Technical Specialists | Ettlie,Bridges & O'Keefe | Radical | Structural | Empirical |
| Strategy | Market Dominated Growth Strategy | Ettlie,Bridges & O'Keefe | Incremental | Contextual | Empirical |
| Operating Model | Diversification | Ettlie,Bridges & O'Keefe | Incremental | Structural | Empirical |
| Strategy | Complexity (Structure) | Ettlie,Bridges & O'Keefe | Incremental | Structural | Empirical |
| Operating Model | Formalisation (Structure) | Ettlie,Bridges & O'Keefe | Incremental | Structural | Empirical |
| Operating Model | Centralisation (Structure) | Ettlie,Bridges & O'Keefe | Incremental | Structural | Empirical |
| Enabling Context | Organisation Size | Ettlie,Bridges & O'Keefe | Incremental | Structural | Empirical |
| Support Function/Operating Model | Tracking system | Herrmann | Incremental | Contextual | Literature |
| Strategy | Organisation capabilities | Hoosopon & Ruenrom | Both | Structural | Empirical |
| Enabling Context | Organisational cultures | Hoosopon & Ruenrom | Both | Contextual | Empirical |
| Value System | Vision | Hoosopon & Ruenrom | Radical | Contextual | Empirical |
| Operating Model | Centralisation | Hoosopon & Ruenrom | Incremental | Structural | Empirical |
| Operating Model | Formalisation | Hoosopon & Ruenrom | Incremental | Structural | Empirical |
| Strategy | Customer engagement orientation | Arnold, Fang & Palmatier | Both | Contextual, Structural | Empirical |
| Operating Model | structure, | Arnold, Fang & Palmatier | Both | Structural | Empirical |
| Leadership | leadership, | Arnold, Fang & Palmatier | Both | Structural | Empirical |
| Enabling Context | culture, | Arnold, Fang & Palmatier | Both | Contextual | Empirical |
| Strategy | strategy, | Arnold, Fang & Palmatier | Both | Contextual | Empirical |
| Leadership | control | Arnold, Fang & Palmatier | Both | Structural | Empirical |
| Operating Model | Knowledge development | Arnold, Fang & Palmatier | Both | Contextual | Empirical |
| Operating Model | Resource configuration decisions | Arnold, Fang & Palmatier | Both | Contextual | Empirical |
| Operating Model | Knowledge development and configuration decisions | Arnold, Fang & Palmatier | Both | Contextual | Empirical |
| Enabling Context | Accident plus reflection and observation | Brynteson | Both | Contextual | Literature |
| Operating Model | Confluence of people, ideas, and objects from different boxes | Brynteson | Both | Contextual | Literature |
| Enabling Context | Networks | Brynteson | Radical | Contextual | Literature |
| Value System | Paradigm Shift | Brynteson | Both | Contextual | Literature |
| Value System | Questioning assumptions | Brynteson | Both | Contextual | Literature |
| Value System | Embrace change | Brynteson | Both | Contextual | Literature |
| Enabling Context | Tolerance for ambiguity. | Brynteson | Both | Contextual | Literature |
| Enabling Context | Persistence. | Brynteson | Both | Contextual | Literature |
| Enabling Context | Creative thinking | Brynteson | Both | Contextual | Literature |

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|------------------|---|-------------------------|-------------|------------------------|------------|
| Strategy | System thinking | Brynteson | Both | Contextual | Literature |
| Strategy | Problems or Problem Symptoms | Brynteson | Incremental | Contextual | Literature |
| Enabling Context | Emotional Intelligence | Brynteson | Both | Contextual | Literature |
| Value System | Self-Understanding. | Brynteson | Both | Contextual | Literature |
| Strategy | Trigger Points | Brynteson | Both | Contextual | Literature |
| Strategy | Assumed Constraint. | Brynteson | Both | Contextual | Literature |
| Enabling Context | Resilience | Brynteson | Both | Contextual | Literature |
| Enabling Context | Self-Motivation | Brynteson | Both | Contextual | Literature |
| Strategy | Critical Thinking | Brynteson | Both | Contextual | Literature |
| Enabling Context | Culture | Brynteson | Both | Structural | Literature |
| Leadership | Leadership | Brynteson | Both | Structural | Literature |
| Value System | Communication | Brynteson | Both | Structural | Literature |
| Operating Model | Reward System | Brynteson | Both | Structural | Literature |
| Value System | Vision | Brynteson | Both | Contextual | Literature |
| Enabling Context | Attention | Brynteson | Both | Contextual | Literature |
| Enabling Context | Pathways to the Consumer | Brynteson | Both | Contextual | Literature |
| Enabling Context | Creative Collaboration | Brynteson | Both | Contextual, Structural | Literature |
| Operating Model | Action Learning Groups | Brynteson | Both | Structural | Literature |
| Operating Model | Diversity | Brynteson | Both | Structural | Literature |
| Value System | Creative Abrasion | Brynteson | Both | Contextual | Literature |
| Operating Model | Communities of Practice | Brynteson | Both | Structural | Literature |
| Strategy | White space | Brynteson | Both | Contextual | Literature |
| Strategy | Organisations that mainly generating innovation | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Strategy | Organisation that mainly adopt innovation | Damanpour & Wischnevsky | Incremental | Contextual | Literature |
| Operating Model | Technological knowledge | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Strategy | Market capabilities | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Strategy | Managerial capabilities | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Strategy | Organisational capabilities | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Enabling Context | Organisational context (size and age), | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Strategy | Innovation characteristics (radicalness and source) | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Strategy | Measuring innovation | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Enabling Context | Experimental cultures | Damanpour & Wischnevsky | Radical | Contextual | Literature |
| Enabling Context | Entrepreneurial climate | Damanpour & Wischnevsky | Radical | Contextual | Literature |
| Operating Model | Loose, decentralized structure | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Flexible work processes | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Heterogeneous human resource profiles, and | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Strong technical competencies | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Enabling Context | Efficiency culture, | Damanpour & Wischnevsky | Incremental | Contextual, Structural | Literature |
| Operating Model | A centralized structure | Damanpour & | Incremental | Structural | Literature |

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|------------------|---|--|-------------|------------------------|------------|
| | | Wischnevsky | | | |
| Operating Model | Engineered work processes | Damanpour & Wischnevsky | Incremental | Structural | Literature |
| Operating Model | Formalized roles | Damanpour & Wischnevsky | Incremental | Structural | Literature |
| Operating Model | Coordinating mechanisms | Damanpour & Wischnevsky | Incremental | Structural | Literature |
| Enabling Context | New problems | Damanpour & Wischnevsky (Nonaka, 1990) | Both | Contextual | Literature |
| Strategy | Exploration | Damanpour & Wischnevsky(March, 1991) | Both | Contextual | Literature |
| Strategy | Exploitation, | Damanpour & Wischnevsky (March, 1991) | Both | Contextual | Literature |
| Operating Model | Managing innovation in a project manner | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Manage the assimilation of the innovation extensively | Damanpour & Wischnevsky | Incremental | Contextual, Structural | Literature |
| Enabling Context | Size | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Strategy | Solid knowledgebase | Sorensen and Stuart, 2000:85) | Both | Contextual, Structural | Literature |
| Strategy | Larger knowledgebase | Sorensen and Stuart, 2000:85 | Both | Contextual, Structural | Literature |
| Operating Model | Different organisational architecture | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Strategy | Strategic intent | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Leadership | Top executive leadership | Damanpour & Wischnevsky | Both | Structural | Literature |
| Strategy | Internal market for innovation | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Operating Model | Empower innovative units | Damanpour & Wischnevsky | Both | Structural | Literature |
| Enabling Context | Foster culture | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Operating Model | Structure | Damanpour & Wischnevsky | Both | Structural | Literature |
| Operating Model | Management practices | Damanpour & Wischnevsky | Both | Structural | Literature |
| Operating Model | Coordination | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Relationship | Cooperation | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Operating Model | Information sharing, and | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Relationship | Collegial relationships | Damanpour & Wischnevsky | Both | Contextual | Literature |
| Operating Model | Structural configurations of teams and units | Damanpour & Wischnevsky | Both | Structural | Literature |
| Enabling Context | Culture that encourage experimentation | Damanpour & Wischnevsky | Radical | Contextual | Literature |
| Enabling Context | A climate supporting entrepreneurship, | Damanpour & Wischnevsky | Radical | Contextual | Literature |
| Operating Model | flexible, non-centralized structure, | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Processes supporting flexibility of work, | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Divergent HR specifications | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | Strong technical competencies. | Damanpour & Wischnevsky | Radical | Structural | Literature |

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|----------------------------|---|---|-------------|------------------------|------------|
| Enabling Context | "Efficiency culture" | Damanpour & Wischnevsky | Incremental | Contextual | Literature |
| Operating Model | "Centralized structure" | Damanpour & Wischnevsky | Incremental | Structural | Literature |
| Operating Model | "Engineered work processes" | Damanpour & Wischnevsky | Incremental | Contextual, Structural | Literature |
| Operating Model | "Formalized roles and coordinating mechanisms." | Damanpour & Wischnevsky | Incremental | Structural | Literature |
| Operating Model | "Mechanistic structures" | Damanpour & Wischnevsky | Radical | Structural | Literature |
| Operating Model | "Organic structures" | Damanpour & Wischnevsky | Incremental | Structural | Literature |
| Strategy | Strategic entrepreneurship | Damanpour & Wischnevsky | Both | Structural | Literature |
| Operating Model | Organisational Complexity | Damanpour & Gopalakrishnan | Radical | Structural | Empirical |
| Operating Model | Bureaucratic Control | Damanpour & Gopalakrishnan | Incremental | Structural | Empirical |
| Enabling Context | Managerial attitude toward change, | Damanpour & Gopalakrishnan | Radical | Contextual | Empirical |
| Operating Model | Concentration of technical specialists | Damanpour & Gopalakrishnan | Radical | Structural | Empirical |
| Strategy | Depth of the organisation's knowledge resources | Damanpour & Gopalakrishnan | Radical | Contextual | Empirical |
| Enabling Context | Environmental change | Damanpour & Gopalakrishnan | Both | Contextual | Empirical |
| Operating Model | Key managers and technologists | Ravichandran(1999) | Both | Structural | Empirical |
| Operating Model | Groups can collectively achieve better results | Ravichandran(1999) | Both | Structural | Empirical |
| Strategy | Technology strategies | Ravichandran(1999) | Both | Contextual | Empirical |
| Leadership | Top management's support | Ravichandran(1999) | Both | Structural | Empirical |
| Operating Model/Leadership | Realization of the underlying ability | Ravichandran(1999) | Both | Contextual | Empirical |
| Enabling Context | Relatively high uncertainty | Ravichandran(1999) | Both | Structural | Empirical |
| Enabling Context | Culture | Ravichandran(1999) | Both | Contextual | Empirical |
| Operating Model | Integration | Ravichandran(1999) | Both | Structural | Empirical |
| Enabling Context | Absorption | Ravichandran(1999) | Both | Structural | Empirical |
| Enabling Context | Motivation | Ravichandran(1999) | Both | Contextual | Empirical |
| Enabling Context | Learning | Ravichandran(1999) | Both | Structural | Empirical |
| Operating Model | Emergence of a dominant design | Rajshree Agarwal and Mary Tripsas(Shane 2008) | Both | Contextual | Literature |
| Operating Model | Good structures | Dougherty (Shane 2008) | Both | Structural | Literature |
| Enabling Context | Everyday social actions | Dougherty (Shane 2008) | Both | Structural | Literature |
| Enabling Context | Integrity | Dougherty (Shane 2008) | Both | Structural | Literature |
| Strategy | Emergence | Dougherty (Shane 2008) | Both | Structural | Literature |
| Enabling Context | Empowerment | Dougherty (Shane 2008) | Both | Structural | Literature |
| Value System | Common direction | Dougherty (Shane 2008) | Both | Structural | Literature |
| Enabling Context | Simplifying complexity | Dougherty (Shane 2008) | Both | Structural | Literature |
| Operating Model | Extensive, hands-on involvement of managers | Dougherty (Shane 2008) | Both | Structural | Literature |
| Enabling Context | Reflective practice | Dougherty (Shane 2008) | Both | Structural | Literature |
| Enabling Context | Ongoing sensemaking | Dougherty (Shane 2008) | Both | Structural | Literature |

| | | | | | |
|------------------|--|--|---------|------------------------|------------|
| | | 2008) | | | |
| Enabling Context | Social action | Dougherty (Shane 2008) | Both | Structural | Literature |
| Operating Model | Integrated model of balance of exploration and exploitation projects | ERIC L. CHEN AND RIITTA KATILA (Shane 2008) | Both | Contextual | Literature |
| Value System | Value System | Schien(1996) | Both | Contextual | Literature |
| Enabling Context | Normative Beliefs | Schien(1996) | Both | Contextual | Literature |
| Enabling Context | Preparedness for adoption | Prasad and Nori(2008) | Radical | Contextual | Case Study |
| Strategy | User community in given marketplace | von Hippel(2001) | Both | Contextual | Literature |
| Value System | Organizing vision | Swanson & Ramiller (1997) | Both | Contextual | Literature |
| Value System | Adoption and diffusion | Swanson & Ramiller (1997) | Both | Contextual | Literature |
| Strategy | Business problematic | Swanson & Ramiller (1997) | Both | Contextual | Literature |
| Enabling Context | Normative pressure leading to "institutionalization" | Swanson & Ramiller (1997) | Both | Contextual | Literature |
| Enabling Context | Threshold of dissatisfaction or opportunity | Van de Ven,Angle & Poole(2000) | Both | Contextual | Empirical |
| Leadership | Top management or investors involvement | Van de Ven,Angle & Poole(2000) | Both | Contextual | Empirical |
| Value System | Vision | Smith(2007) | Radical | Contextual, Structural | Case Study |
| Enabling Context | Credibility | Smith(2007) | Radical | Contextual, Structural | Case Study |
| Enabling Context | Protection | Smith(2007) | Radical | Contextual, Structural | Case Study |
| Strategy | Access to resources | Smith(2007) | Radical | Contextual, Structural | Case Study |
| Leadership | Godfather figure/Benefactor/Patron | Smith(2007) | Radical | Structural | Case Study |
| Operating Model | "Easy breakup" firms | Noteboom(2000) | Radical | Contextual | Literature |
| Value System | Commitment of labour | Noteboom(2000) | Radical | Structural | Literature |
| Enabling Context | Teamwork | Noteboom(2000) | Radical | Structural | Literature |
| Enabling Context | Social capital | Greve & Salaf(2001) | Radical | Contextual | Empirical |
| Enabling Context | Social network | Greve & Salaf(2001) | Radical | Contextual | Empirical |
| Strategy | Knowledge | Greve & Salaf(2001) | Radical | Contextual | Empirical |
| Strategy | Cognition | Greve & Salaf(2001) | Radical | Contextual | Empirical |
| Value System | Communication | Greve & Salaf(2001) | Radical | Contextual | Empirical |
| Strategy | Focused Competence | Drejer, A. (2002) | Both | Structural | Literature |
| Strategy | Product competence | Drejer, A. (2002) | Both | Structural | Literature |
| Strategy | Market competence | Drejer, A. (2002) | Both | Structural | Literature |
| Strategy | Production Competence | Drejer, A. (2002) | Both | Structural | Literature |
| Strategy | Administrative competence | Drejer, A. (2002) | Both | Structural | Literature |
| Enabling Context | Top Management Perception | Drejer, A. (2002) | Both | Contextual | Literature |

2.4.1 Enabling Context

According to Newell, Robertson, Scarbrough and Swan (2009:233), organisational culture, time, diversity, autonomy, shared identity, shared perspective, trust, social

networking, organisational culture, structures, collaborative forms of work, reward & recognition system, boundary spanning and boundary objects are amongst crucial enablers of knowledge work, all of which is of strategic importance to firms that compete on the basis of innovation.

According to Damanpour and Wischnevsky (2006:14), innovation originates when the organisation embrace innovation, this can be expanded if the organisation exploits its internal capabilities and collaborations, on the hand if an organisation buys another firm, then innovation is brought forth through ownership via integration with the innovating entity.

It was in as late as the mid-1980, that Ettlie, Bridges and O'Keefe (1984:1-11) tested a model of organisational innovation process off a strategy-structure causal sequence differentiating radical versus incremental innovation from the food processing industry. The theory established that unique strategy and structure vs. traditional supported radical versus incremental innovation especially process adoption, size limits radical change initiation. Technology policy and unique structural arrangements appear to be necessary precursors to pre-innovation conditions (i.e., champion and technology-organisation congruence) that support radical process adoption. Size does not seem to affect centralised or informal structures which support radical process adoption for a given structure to a given innovation situation (Ettlie, Bridges & O'Keefe, 1984:13).

Stringer (2000:2), asserts:

"...corporate size is inversely correlated to the growth. This assertion was backed in those times by the fact that over 93% of 25 000 new consumer packaged goods launched in 1998 were 'not significantly innovative' according to Marketing Intelligence Service's Innovation Ratings, most of which produced by large companies. In contrast, the Small Business Administration's historic estimates sourced from Corptech Database, owned by Corporate Technology Information Services, Inc., show that small firms have produced 2.4 times as many innovations per employees".

Černe, Jaklič and Škerlavaj (2013:10)'s empirical research speaks of:

"...support for the moderation of organizational size on the relationship between knowledge exchange and management innovation in Spain, South Korea, and in the pooled sample, but not in Slovenia."

This complements a finding which points to an adverse relationship displayed by source of knowledge inside the organisation against its size, when viewed in relation to managers pursuant of innovation according to a study of Community Innovation Survey data by Mol and Birkinshaw (2009). Organisational size impacts negatively on the flow of communication which in turn hinders how such organisations will facilitate the sharing of knowledge internally, argues Černe, Jaklič and Škerlavaj (2013:10). A similar analogy is applicable for social relations where employee count negatively affects this construct by multiplying the relationship that a given employee will likely be a part of. It is worth noting that in Černe, Jaklič and Škerlavaj (2013)'s data:

"...the vast majority of participating firms in South Korea and Spain had below 250 employees and the ones larger than 500 employees were significantly larger and predominantly multinational. The sample distribution in Slovenia is specific, much more equal across groups and with a lot less smaller companies, with the largest firms having only slightly above 500 employees".

Černe, Jaklič and Škerlavaj (2013:19), argue that differences observed related to each locale and its perception of the size of a company in that setting.

Andersson and Lööf (2009:20), observed that there are new insights into the roles of innovative micro firms. These include successful results of their innovation activities closely associated with links to both domestic multinational firms and customers in the G7-region (Andersson and Lööf, 2009:20). According to Andersson and Lööf (2009:19), substantially larger fraction of patent applicants is associated with a Swedish domestic-owned multinational enterprises (MNE) compared to non-patenting firms, and patenting firms tend to be more high technology-intensive than other firms. According to Andersson and Lööf (2009:19), data studied consisted of

around 160 000 observations of manufacturing firms in Sweden over the period 2000-2006. In the same period, only 0.3 % of the micro firms applied for one or more patents during the period, the corresponding fraction for “large” (more than 25 employees) is 6 %. Innovative firms (both small and larger) have larger profit margins and better access to bank loans (Andersson and Lööf, 2009:19).

Damanpour and Gopalakrishnan (1998:2), acknowledged observations from “*process and outcome researchers*” who noted that there is a need to adjust how one tackles innovation to match conditions presented by a given structural or “*contextual*” setting. The environment, as Tornatzky and Fleischer (1990), suggest, impacts greatly the way firms can tackle innovations, with changes affecting negatively or positively this outcome. Damanpour and Gopalakrishnan (1998:2), asserts:

“...research indicates that there two distinct conditions of the environment—stable and unstable—and has associated two organisational structures—mechanistic and organic—with these conditions. Under these conditions, organisations functioning in a stable environment have mechanistic structures and are presumed to be non-innovative, while those in an unstable environment have organic structures and are presumed to be innovative”.

This researcher accepts what Damanpour and Gopalakrishnan (1998:2) observed that the model is too simplistic, to deal which ways organisation initiate and manage different innovations.

Damanpour and Gopalakrishnan (1998:4), argues that in general terms, it becomes difficult to look at organisational effectiveness or performance without jointly considering its environment. Influences on organisational performance by the environment are facilitated by decisions on whether to include or exclude organisational offerings or impact thereof, brought on by external changes or proactive responses to these changes. These actions need not be taken lightly by managers (Damanpour & Gopalakrishnan, 1998:4).

“This provides a direct bearing on the strong impact the environment exerts on an organisation’s ability to adapt and innovate, in such sense, the implication is that innovation adoption is a means of changing the organisation to facilitate the adaptation to changing environments in order to sustain or increase organisational effectiveness” (Damanpour & Gopalakrishnan, 1998:4).

Innovation, as Sorescu (2002:24), suggests that are radical in nature emanate from very well stocked and sophisticated research labs, in which numerous top scientists spend their days putting together the technology of the future. According to Sorescu (2002:24), citing (Brown 1998), these environments housing radical innovations are present in dominant firms, given the abundance of resources and including the critical mass for research. These often times have entire research divisions intended for pioneering research.

According to Paulson, O’Connor and Robeson (2007:3), breakthrough innovation environment is so fluid, any tool utilised must accommodate periodic updates which can equally be determined by learning and discovery efforts. Additional flexibility is required because the breakthrough innovation environment is highly dynamic.

As indicated earlier in this study, Ott (2010:42), suggested that radical innovation can be seen as a complex adaptive system, composed of multiple agents interacting in accord such that order emerges rather than being totally planned (Dooley, 1996). Ott (2010:42), researched that *“requisite complexity”* (McKelvey & Boisot, 2003) is needed to match the environmental complexity. It needs to be a social system that can only be effective if agents interact freely with each other and their greater environment, are mutually dependent on each other, and if some tension in the environment requires them to create solutions (Uhl-Bien, Marion & McKelvey, 2007).

Damanpour and Gopalakrishnan (1998:3), asserts that:

“...organisational effectiveness is high for firms where environmental change fits the structure and innovation adoption characteristics portrayed

in framework which includes environmental change, organisational structure and innovation adoption.”

This researcher accepts the notion of financial success that follows from innovation, and rejects Sorescu (2002:15)'s questioning of the extent that innovations contribute to the financial value of their parent firm. The researcher understands that ownerships structures of firms determines the amount of financial success the owners enjoy, be it dividends, capital growth or market share, all of which are outside of this study scope. Although, Sorescu (2002:15), noted that earlier researchers such as Schumpeter (1934); Scherer (1977); Mansfield, Rapoport, Schnee, Wagner and Beardsley (1977) questioned whether firms could extract true economic rents from innovations, with similar empirical studies at the time having found that firms cannot typically recover these returns in competition. The researcher argues that modern research, including this study, has associated innovation with organisational success.

Stringer (2000:3), argues in support of Christensen (1997), that economic and strategic barriers prevent large companies from being the first to introduce radical innovations to the market. This is because industry leaders are poorly equipped to cope with radical or disruptive innovation, as they are positioned, by way of investment, to sustain existing products or services. Recognising a fundamental shift is not enough for the industry leader vested in status quo to just move resources around and thus incremental improvements becomes the only option.

Slater, Mohr and Sengupta (2013:5), accepted the Quinn and Rohrbaugh (1983)'s competing values framework (see Figure 2.2) and stated:

"The competing values framework is an established model for representing culture. In this framework it is clear that those managers must make choices that reflect two kinds of tensions that exist in organisations—internal versus external orientation, as well as the need for control versus the need for flexibility. Adhocracy type reflects flexibility and willingness to take risks, and an external orientation that produces entrepreneurial and creative behaviours. The market type is distinguished by control and an external orientation that produces highly competitive

behaviours, including aggressive product development and market expansion programs, intense brand building, or even price competition. The clan type is exemplified by flexibility and an internal orientation that produces relationship-building behaviours, such as focus on segments of value conscious customers, provision of superior customer service, and use of a strongly supported internal sales force. The last type is hierarchy, characterized by control and an internal orientation that produces behaviours focused on predictability and smooth operations (Quinn and Rohrbaugh, 1983) “.

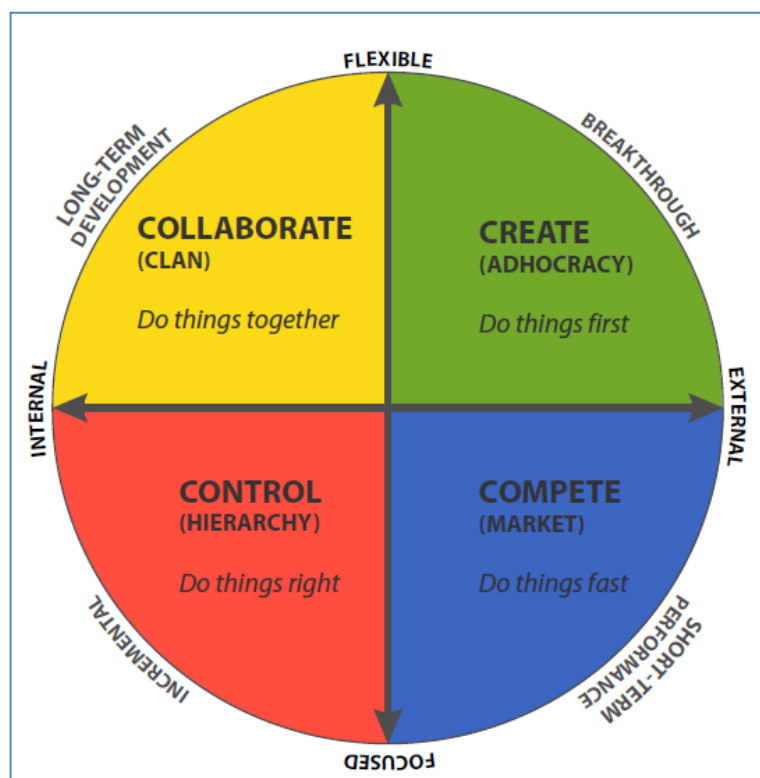


Figure 2.3: Adapted from Quinn and Rohrbaugh (1983)’s Competing values framework (**Source:** Cameron, 2009:**Online**)

According to Schein (1996:25), the climate and practices that organisations develop around their handling of people, or to the espoused values and credo of an organisation, is its culture.

One of the reasons Stringer (2000:3), identified as a cause of large corporations struggling to cope with radical innovation was size and shape, represented by culture and structure. This was in conjunction to bureaucratic structures that discourage radical innovation being introduced to market and a brand management organisation

that only encourage incremental innovation. Maintaining the status quo is therefore the culture of this large organisation maintained by what Stringer (2000:3), calls hierarchy and social systems that hide behind past organisational successes.

According to Brynteson (2010:65), an innovative culture requires that employees challenge assumptions and question the status quo, unhindered by a fear based culture that does not allow those practices. Brynteson (2010:63), credits innovative cultures characterised by asking questions, testing assumptions ruthlessly and challenge of industry orthodoxies with cost savings, efficiencies, and innovations.

Hoonsopon and Ruenrom (2012:20), noted that “*cultural distances*” shows positive influence on innovations that are incremental in nature, without showing any dent to those radical in nature.

The results are supported by Hofstede (1983) International Institute for Management Development (IMD) (2008), noting that Thailand display “*high power distance (centralization)*” combined with “*uncertainty avoidance (formalization)*” supplemented by how this country is ranked moderately for “*scientific and technological infrastructure*” at 37th and 43rd. This brings forth the conclusion that culture for organisation in this country is aligned with innovations that offer minor changes as opposed to those that bring forth major breakthrough as observed in countries that are highly rated.

Damanpour & Wischnevsky (2006:10), states that:

“...established organisations can create an internal market for innovation, empower innovative units, and foster culture, structure, and management practices that are similar to those of the entrepreneurial organisation.”

According Damanpour and Wischnevsky (2006:11), organisations that embrace radical innovations are characterised by:

“...experimental cultures, entrepreneurial climate, loose, decentralized structure, flexible work processes, heterogeneous human resource profiles, and strong technical competencies.”

Brynteson (2010:27), agreed with Hargadon (2003)'s suggestion that innovations and new technologies come from a confluence of people, ideas, and objects from different boxes.

“This book puts forth a counterintuitive proposition: that these entrepreneurs and inventors are no smarter, no more courageous, tenacious, or rebellious than the rest of us—they are simply better connected,” Hargadon (2003:11)

It's about networks, asserts Brynteson (2010:27), suggesting that breakthrough innovations cause new networks to happen, which, in essence are, whole groups of people, ideas and objects forming new relationships overnight.

2.4.2 Leadership

Damanpour and Wischnevsky (2006:9), noted that organisations and individual alike are driven by aspiration for profit, amongst other things while chasing business ventures. If these ventures include creation of new assets, this is where innovation plays a critical role for an organisation of any size.

Ott (2010:28), citing Mumford *et al.* (2002), noted that specific leadership qualities associated with leadership in creative contexts may be applicable to radical innovation, this could be more prominent for group leadership interactions as opposed to simply individual characteristics. Included in the study, is the evaluation of creative ideas and work as well as co-evolution of ideas and groups of people around the task enables positive group dynamics, selection and recruitment of talented individuals, as well as creation of organisational knowledge systems and interactions, the communication of ideas, and the promotion of ideas (Ott, 2010:28). According to Ott (2010:28), research shows that leaders in radical innovation efforts must attend very specifically to organisational learning dynamics for both individual and group creativity, this is in order to maintain high levels of strategic awareness of both their internal organisational environment and the external environment. Transformational leadership theory did not in this case offer support such that context-specific study will be needed to determine what good leaders do in the radical product innovation environment (Ott, 2010:43).

The researcher accepts Ott (2010:52)'s view of radical innovation as characterised by novelty and usefulness to achieve a goal. Amabile (1996)'s view of radical innovation is that it requires creativity:

“A product or response will be judged as creative to the extent that (a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and (b) the task is heuristic rather than algorithmic” (Amabile, 1996:35).

Ott (2010:52), suggested that because radical innovation is usually undertaken by teams, individual leaders of radical innovation must have the ability to work with creative individuals and groups. Ott (2010:27-28), researched that leadership is concerned with allowing for adaptation to the environment and creating a context that enables learning in a complex adaptive environment. This is supported by literature (Ott, 2010:27 citing Boal & Hoojiberg, 2000; Hodgson & White, 2003; Jaques & Cason, 1994; Mumford *et al.*, 2002), suggesting that leadership for radical innovation requires cognitive complexity and flexibility, strategic thinking, high levels of relevant technical expertise, a tolerance for ambiguity, a higher than average but not excessive risk profile, and creativity, including the ability to engage in creative problem solving alone or with others.

Brynteson (2010:78), found that in order to promote an innovative culture, leadership must, as Kouzes and Posner (2002), posits, “*challenge the process,*” which is often one of the first steps in innovation. Leaders must look at the status quo with new eyes, initiating the destruction of the “*ways things are*” in favour of the way things could be. According to Brynteson (2010:78), citing Heifetz (2009), a leader’s job is to make followers uncomfortable rather than comfortable. The leader must challenge, push, and prod employees to do things that they would not otherwise do, and actively discourage complacency as a way of being. This belief system can lead to innovation much more than a complacent leader who does not demand as much from his/her followers. The researcher partially accepts this view because innovation is a complex process that requires both leadership and control. Ott (2010:29), in the support of the researcher, argues that formal leadership of radical product innovation often involves teams of individuals whose capabilities include shared context and effort through interaction who also share leadership responsibilities.

Fitcher (2005:3), researched that individual (inter)acting in an innovation network or an innovation process is the entrepreneur. This key person is central role in innovation processes. According to Fitcher (2005:3), the individual has a significantly higher influence on the creation and diffusion of innovation than other individuals in the same process. Other concepts, according to Fitcher (2005:3) citing Witte (1973); Hauschildt and Gemuenden (1999); Hauschildt and Schewe (1999); von Hippel (1988); von Hippel (2005); Rogers (2003), include the roles of promoters, the gatekeepers and champion models, the lead user concept and key player, and lastly, opinion leaders and change agents.

Marvel (2012:5), asserts that:

“Entrepreneurs are at the centre of major inventions introduced by new firms and found support for the notion these entrepreneurs create the bulk of breakthrough innovations. Among the most radical innovations within the last two centuries, the majority have emerged from individual entrepreneurs.”

According to Hoonsopon and Ruenrom (2012:7), “*top management support*” is how the upper echelons of a given organisation provide the required support that brings forth the capability for organisations to generate new offerings. The researcher agrees with Hoonsopon and Ruenrom (2012:7), asserting:

“...without top management support, resources and capital required to develop new products may not be forthcoming. This is why products that are supported by and receive commitment from top management are likely to be successful, given that it is top management, after all, in the corporate setting who oversees the allocation of resources with an implication that allocation will be logically followed by support and participation”.

Ott (2010:45), placed important emphasis on the executive group’s shared cognitive schema in helping prepare for alternative futures, rather than the significance of the leadership of a single individual. This is because organisations engaged in radical innovation require rapid group adjustments and need constant market interactions or

input, and dyadic interactions may be less critical than group and network interactions.

According to Brynteson (2010:38-44), innovators have traits that push their innovation abilities. These consist of:

- *Curiosity* - Innovators and creators are curious about their world. They look below the surface of life. They do not ignore gaps in their own knowledge, but explore these gaps and attempt to fill them.
- *Risk taking* - Innovators are appropriate risk takers. “*Appropriate risk takers*” because, contrary to myths, innovators often roll the dice and occasionally win.
- *Assumption challenging* - Innovators routinely question assumptions that others take for granted.
- *Change agent* - Innovators are, by nature, change agents. Innovations change lives, change workplaces, change power relationships, and change perspectives on the universe. Therefore, innovators embrace change and, by their work, push others to do the same.
- *Tolerance for ambiguity* - Innovators can live in the unanswered question better than most of us. They tolerate the ambiguity of the unknown. Answers might not be readily available, and that is fine with them.
- *Passion and joy* - Most innovators are joyful about of life. This emerges out of their passion for their work.
- *Persistence* - Many successful innovators are serial failures. They go out of business, create inventions that do not work, and sell to the wrong markets.

2.4.3 Strategy

Drejer (2002:1), citing Miles and Snow (1978), outlines strategy as idea of strategic choice, such that organisational structure is partially influenced by a given environmental conditions, leaving top management to play the primary link between the organisations and its environment. Drejer (2002:1), citing Miles and Snow (1978), and Stacy (1999), identified strategic adaption of organisations along a model solving for three independent problems; the entrepreneurial problem, engineering problem and administrative problem. This model, according Drejer (2002:1), is meant to describe and diagnose existing organisational behaviours and to prescribe alternative directions for change when necessary as per the following ideas:

- Organisation can act to create (or choose) their environment
- Management's strategic choices shape the organisation's structure and processes
- With implication of a strategy constrained by chosen structure and process

Pavitt (1991:3), argues that small innovating firms are typically specialised in their technological strategies, concentrating on product innovation as specific producer's goods. The key strategic strength is in the ability to match technology with specific customer requirements, with key strategic task being to finding and maintaining product niches and benefiting systemically from user experience. Pavitt (1991:1), argues that large firms are a major source of technology and innovations. Strategic decisions made by these firms have a major impact on sector patterns of technological activities and competitive performance of whole countries. The researcher has shown that this is no longer the case as smaller companies are also sources of innovation.

According Ravichandran (1999:1), innovation is a strategic imperative. Current observations are displaying organisations facing challenges of limited resources, a rise in conflicting client requirements and a client base which is more informed by diverse needs, for such organisations to survive they must innovate.

Shane (2008:216), suggested that involvement in innovation provides senior managers with an in-depth appreciation of how the technology works and how their organisation works. This is in order for them to better understand strategic possibilities.

Hui, Qing-xi (2006:3), argues that it is during the growth stage where the technology-intensive firms carried out transformations from scientific research results to realistic productivity, achieved through laborious efforts explored during the start-up stage. In this stage, the enterprise has developed its core competence that the large-scale production needs, with the guideline of "*marketing orientation*" and strategic objective of expanding its market shares, if one overlays the need to maintain the competence of the technological innovation, the firm should implement strategic innovation on the main business operations. From a strategic point of view, innovation should have definite goals and value orientations to strengthen its competitive advantages of high-tech products. This allows the organisation to rely

mainly on introducing, improving and gradually advancing technological innovation, and also with some radical characteristics.

According to Arnold, (Er) Fang and Palmatier (2010:11-13), in the areas of financial services and retail industries, the best management strategy is simply to emphasize acquisition if the desired goal is radical innovation. This is due to the fact that a high level of both acquisition and retention orientations hampers both forms of innovation. A manager should put resources toward the achievement of a desired innovation outcome (i.e., radical or incremental), while minimizing focus upon the competing alternative.

According to Paulson, O'Connor and Robeson (2007:5), a sound portfolio evaluation requires assessment of the individual innovation projects relative to business strategy, business constraints, business model, capacity for innovation, competition, and competencies—both those available and those to be learned. Furthermore, macro-factors may impute opportunities or impediments, which can heavily influence innovation activities.

Arnold, (Er) Fang and Palmatier (2010:5), citing Zahra and George (2002), suggest that deep knowledge about customers' adoption of an innovation represents the primary prerequisite of a successful innovation, both radical and incremental innovations. This requires that the firm obtain in-depth customer knowledge to match the innovations to customer needs and preferences. Arnold, (Er) Fang and Palmatier (2010:5), warn that diversity of customer knowledge, however, likely has opposite effects on radical and incremental innovation, as radical innovation originates from diverse or even conflicting customer information. Similarly, if there is lack of diverse customer information, radical innovation will suffer, due to the fact that a business cannot identify problems, develop alternative hypotheses, or contradict any conventional expectations (Arnold, (Er) Fang and Palmatier, 2010:5 citing Palmatier 2008; Torrance,1988). If the strategic focus is incremental innovation, argues Arnold, (Er) Fang and Palmatier (2010:5), citing Demsetz (1988), homogenous customer knowledge provides specific direction about the product and/or service improvements, and minimizes any confusion or complexity in the innovation process. This makes it easier to establish formal, structured coordination mechanisms.

2.4.4 Operating Model

Marvel (2012:5), asserts that:

“Radical innovation, by its very nature, is characterized by high degrees of uncertainty, and aspects of learning may alleviate this uncertainty while also allowing one to explore new possibilities and enable the process of innovation creation. This is supported by extant literature, including knowledge framework to setting forth a model of knowledge acquisition asymmetries and innovation radicalness.”

Brynteson (2010:86), hypothesized that action learning is a refinement of Senge's concept that focuses on complex challenges, this involves peer coaching and team learning, in which teams learn together by experimenting and making mistakes, and thus learn faster as they work together over a longer period of time. Action learning teams can overcome innovation challenges together faster than individuals, and in the context of innovation, action learning groups can provide support systems for those involved in innovation (Brynteson, 2010:86).

Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:1), argued that the ability of organisations to absorb and retain knowledge is related to quality with which knowledge is used to create new offerings. Consequently, this is how organisations innovate, the concept suggests that a potential absorptive capacity refers to the capacity for firms to acquire and assimilate knowledge, in essence, the concept of realised absorptive capacity involves the transformation and exploitation of capabilities of the organisation. Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:2), propose that an unlearning context (see Figure 2.3 below) and a I(C)T platform that will ensure the correct balance is maintained between levels of “*absorptive capacity*” that is either potential or realised.

“...the core of the unlearning context is the attempt to reorient organisational values, norms and/or behaviours by changing the cognitive structures, mental models, dominant logics and core assumptions which guide behaviour in order to attain a competitive advantage” (Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez, 2012:2).

In addition, Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:6), the right I(C)T platform increase the ability for organisations to share any knowledge the organisation has just assimilated from innovation, this can be captured by staff members involved in those activities allowing for retrieval in the future, in certain instances updating what has been captured or learned before.

This results in:

“...the IS capability acting as a mediator in the relationship between PACAP and RACAP, since it enables new knowledge to be combined with past knowledge and used in the innovation process” (Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez, 2012:6).

Damanpour and Wischnevsky (2006:11), associated radical innovations with centralized, informal structured organisation, and complex, decentralized structures were more prominent in organisation that embrace incremental innovations. This view differs slightly from Ott (2010:42)'s complexity theory view on radical innovation, which suggests that multiple agents working together are more capable of creation, compared to isolated individuals. This applies as long as there is freedom to create the necessary amount of structure rather than having a structure imposed on them.

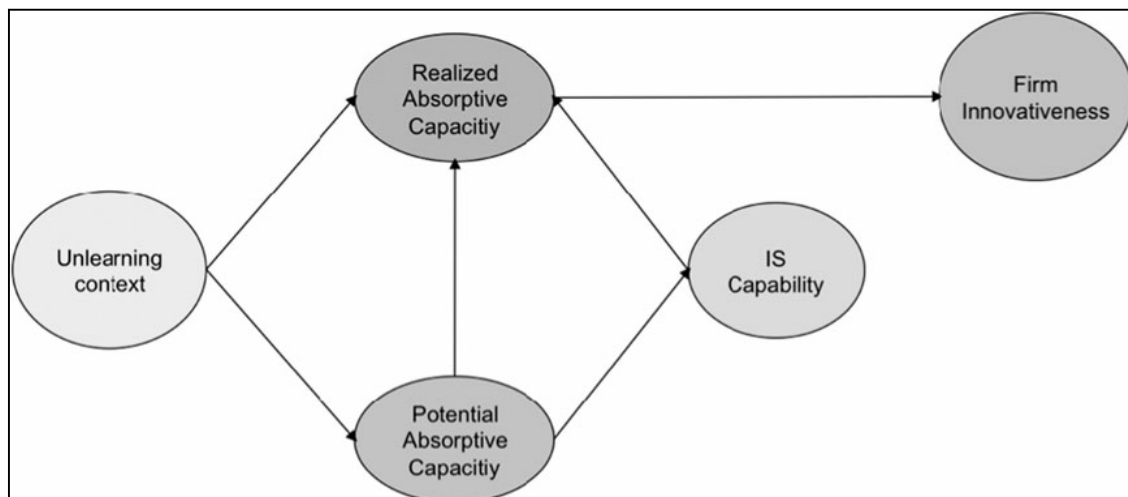


Figure 2.4: The unlearning context (Source: Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012:6)

According to Ettlie, Bridges and O'Keefe (1984:12-13), incremental innovation processes that lead to new product introduction appear to be dependent on more

traditional structural arrangements and market oriented strategies. Such organisations that are more complex, more decentralised, and larger up to a point have tended to introduce more new products. This is typical for the food industry. On the other hand, centralization and informal structures tend to support radical process adoption, which suggests that regardless of size, organisations match their structure for the innovating situation. Consequently, a market dominated growth strategy tends to reinforce the structural arrangements for incremental innovation - complexity, decentralisation and formalisation.

Stringer (2000:3), notes that large scale, while often a powerful source of competitive advantage, leads to bureaucratic structures that discourage bringing breakthrough or radical innovations to the market. Shane (2008:206), argues that good structures are good for innovation, and managers must use structure to break organisation-wide activities up into do-able parts, stabilize the organisation, and motivate employees. Additionally, non-innovative organisations need to transform how they deal with these necessary structuring activities in order to become innovative. In the context of projects, resources working on innovation project teams can take charge of tasks, if only within boundaries that help them understand objectives, get resources, and link performance to the enterprise (Shane, 2008:206).

The researcher rejects Hui, Qing-xi (2006:3)'s managerial innovation perspective, which argues that the enterprise should standardize its routine management and improve the managerial institution. This includes the establishment of a communication channel and selection of organisational structure in order to rationally dispose and utilize various kinds of resource, such as talent, technology and capital. This view, according to the researcher, will support incremental innovation.

Brynteson (2010:143), found that a community of practices can help an organisation be more innovative. This is made out of innovation circles, groups, contests, projects, seminars, and displays are visible within the ranks of the organisation, with people talking about their initiatives and projects. The topic of innovation is on the top of the mind in these organisations. Similarly, groups can share best and worst practices concerning innovation, resulting in innovations moving forward at a faster pace given this kind of collaboration.

According to Damanpour and Wischnevsky (2006:287) asserts that:

“...managing the connectivity will be crucial, especially when users dominate the innovation process. That is, when the innovation-generating unit develops new products or technologies, specifically for the innovation-adopting unit, key to achieving the success, for the organisation that innovates both in IGUs and IAUs, will be the IIU’s managerial ability to create strategy, structure, culture, leadership, and lateral processes (communication, interaction, cooperation, coordination) necessary for innovation in each of the two sub-units and lead to coordinate their contrasting requirements of generating and adopting innovations.”

Černe, Jaklič and Škerlavaj (2013:10), observed that leaders, as makers of decisions that affected the rest of the firm are connected to their staff by IT, which also allow for an efficient way of the organisation to share knowledge. It is the same IT platform that can be credited with creation of new ways of working or employee relations that encourage innovation.

Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:15), asserts:

“IS capability should allow companies to incorporate knowledge into their systems through a codification process, to complete or substitute this knowledge with past experiences and to make it available to any member of the company. It is the use of this capability that governs how the useful new knowledge is applied for developing innovations. Managers therefore need to actively manage the knowledge gap between the technology they need and the technology they actually have.”

Although Černe, Jaklič and Škerlavaj (2013:1-4), stressed on the importance of employees sharing knowledge amongst each other, this is only possible with employees who poses such motivation. Such exchange is beneficial to the organisation’s innovation initiatives and any other elements it depends on that might not be obvious. This means that a useful IT platform is the one that facilitates communication and sharing of knowledge among the employees in aid of managers handling innovations the organisation is participating in.

2.4.5 Relationship

Hui, Qing-xi (2006:3) suggests that if the view is institutional innovation, a successful enterprise must be able to adjust and optimize the relationships among its stakeholders, managers, and workers. Since every party's interests and rights are recognized and protected completely, their roles and functions are developed fully.

Cepeda-Carrion, Cegarra-Navarro and Jimenez-Jimenez (2012:14), citing Sethi, Smith and Park (2001), asserts:

“social cohesion among product development teams decreases the innovativeness of new products”.

This is because, if there an imbalance between “PACAP” and “RACAP”, it undermines the benefit of sharing of knowledge and “*joint sense-making*” upon which the ability to innovate is dependant, in a similar way the number of new offerings likely to be produced will be impacted negatively.

According to Brynteson (2010:143), creative collaboration is the best path toward innovation, arguing that everyone is smarter, more creative, and more resourceful than any individual person. The implication for everyone is to evolve from individualistic culture into more of a collective culture, where unity in the work-context is more creative and more effective.

Duguet (2000:4), observed that there are firms that combine formal innovation sources and external sources of knowledge, passing through the intellectual property rights system, that implement mostly radical innovations.

Beucker and Fitcher (2012:2), hypothesised that industries such as information technology, pharmaceuticals and biotechnology noted a fundamental change in the way innovative ideas and inventions are generated, and how they are successfully marketed. Beucker and Fitcher (2012:2), citing Chesbrough (2003), observed that behind the change was a radical paradigmatic shift in the way technological information is processed and utilized. In support, Černe, Jaklič and Škerlavaj (2013:1), asserts:

“...higher innovation capabilities, closely linked to new value creation, is a social construct, dependent on collaboration and information sharing, as well as on combining diverse knowledge to come up with novel ideas that ultimately get implemented. The benefit to organisations is the ability to expand, disseminate, and exploit organisational knowledge internally, as well as to share, transfer, and receive knowledge.”

Beucker and Fitcher (2012:2), noted that from the formerly dominant paradigm of “closed innovation” to that of “open innovation”, the new perspective was based on a modified informational landscape and implies the opening of the innovation process to incorporate external ideas and R&D capacities, this concept also required labour division and networking beyond organisational boundaries. The concept of open innovation highlights the importance to connect outside-in and inside-out processes by working within alliances of complementary companies, noted Beucker and Fitcher (2012:2).

Inauen and Scheker-Wicki (2012:12), asserts that:

“...due to technological acceleration and the global availability of knowledge and employees, there are important reasons for pursuing open innovation strategy. In the first instance, open innovation enables companies to reduce fix costs for R&D and allows them to establish new sources of research funding, secondly, the risks resulting from R&D projects, technologies or products can be shared with partners or competitors, similarly, co-creation. Knowledge transfer agreements with partners, competitors or research institutions represent other forms of open innovation collaboration.”

2.4.6 Value System

Schien (1996:366), found that goals that include organisations striving to be more innovating must be reconciled with a culture and value system that drives behaviours to such goals. Otherwise, no real positive incentive for innovating would be sustained since it would be risky because any false steps would immediately be punished.

According to Smith (2007:8-10), vision implies having the foresight to see the potential of a new product, service or process, in terms of as yet untapped markets and unknown consumers. Consequently, this support took the form of vision, credibility, protection and access to resources, also made possible because of the individuals concerned who are not merely senior executives, but thought leaders within their respective industries. These individuals provide support without the need for direct involvement in the project, noted Smith (2007:10).

Brytenson (2010:76), is of the opinion that leadership facilitates the creation and execution of shared vision, correctly questioning and arguing that if innovation is vital part of that vision, then the rest organisation will not honour it as such. This argument is supported by the researcher in this study.

Hoosopon and Ruenrom (2012:7), researched that vision influences the strategic planning of firms asserting:

“...such as determining what type of new product firms produce. Vision support must match an organisation’s resources and market needs and help ensure objectives and strategy within the development team as such. Vision provides clarity, enabling staff and the development team ‘s competence in developing new products and to reduce the need for redesign and re-specification, moreover, vision stability is also important because firms that change their vision frequently will create confusion, ambiguity, and conflict within the development team. Consequently, product innovation will benefit from a clear, supportive, and stable vision.”

The researcher argues that incremental innovation is the only one possible in this context, given the complexity and ambiguity of radical innovation already established in this study.

The researcher rejects Hoosopon and Ruenrom (2012:19)’s argument of how innovation is affected by vision and its influence when new products offerings are developed. However, if this impact is framed as the need for vision stability, then researcher accepts that: *“...centralization and formalization are the factors that impact the development of incremental product innovation”*, as argued by the authors although the research could not link this structural constructs to vision.

Swanson and Ramiller (1997:3) citing Weick (1995), argued for organizing vision that represents the product of the efforts of the members of that community to make sense of the innovation as an organisational opportunity. This inter-organisational community, comprised of a heterogeneous network of parties with a variety of material interests in an IS innovation, collectively creates and employs an organizing vision of the innovation that is central to decisions and actions affecting its development and diffusion (Swanson and Ramiller, 1997:3).

Ott (2010:28), citing (Mumford *et al.*, 2002), argues that for a given creative context, specific leadership roles and capabilities may also apply to radical innovation. This may reflect more for group leadership interactions as opposed to simply individual characteristics, included is the evaluation of creative ideas and work, coevolution of ideas and groups of people around the task, enabling positive group dynamics, selection and recruitment of talented individuals, creation of organisational knowledge systems and interactions, the communication of ideas, and the promotion of ideas (Ott, 2010:28).

Brynteson (2010:76), noted that employees are constantly on the lookout for clues from leadership on direction, arguing that the more leaders communicate the priority of innovation, the more innovation will become embedded into that culture. With communication coming via press releases, internal newsletters, speeches, and informal comments, the author warns that occasional lip service denigrates innovation to "*flavour of the month*" status. Brynteson (2010:84), found that innovation requires massive communication and collaboration between departments, such collaboration needs high emotional intelligence from all involved. This is because timelines get compressed, departments rub against each other, and tempers can flare when organisations are trying new things. There needs to be high level of self-awareness and self-control from both managers and employees if they are to weather the fierce winds of outside and inside forces, additionally because the system is under pressure (Brynteson, 2010:84).

According Greve and Salaf (2001:8), professional networks built in one field not only obstruct cross disciplinary communications, but also create a bias against radical innovations, whose novelty challenges accepted thought and thus the social

structure and may easily produce a liability. Consequently, radical innovations often occur on the fringe of a social system of core actors within an industry.

According to Ott (2010:16), crucial dynamics for radical product innovation include organisational learning and social creativity. Many innovation researchers, including this study, place significant emphasis on the importance of sociological factors in managing creative knowledge environments, such as organisational culture and climate, strategic organisational learning. According to Ott (2010:40 – 41)'s view of radical innovation as learning, constructs of innovation are not equal in terms of the learning tasks for the individual and the organisation. Consequently, market-driven innovation automatically includes learning, since staying in the market implies learning. In this context, radical innovation differs from incremental innovation as it represents a maximum level of novelty, challenge, and learning (Ott, 2010:41).

According to Brynteson (2010:41), innovators are natural change agents who embrace change and, by their work, push others to do the same, given that innovations change lives, change workplaces, change power relationships, and change perspectives on the universe.

Ott (2010:42), views radical innovation as a complex adaptive system that can be restricted in its adaption by command and control. Change in a complex adaptive system is characterised as nonlinear, such that the system cannot revert to an earlier state simply because the agents have already adjusted to a new state (Ott, 2010:42). Organisations must adopt Uhl-Bien *et al.* (2007)'s concept of organisational resonance, defined as the responsiveness of the interdependent agents to the rapid adjustment precipitated by changes in the network of agent's activities. The best form of adaption is seen as what Marion and Uhl-Bien (2001), observed wherein, as agents interact and adjust to each other's worldviews, they also create temporary, more stable and more interactive sub-units.

Stringer (2000:7), pointed out that large organisations should make breakthrough innovation a strategic and cultural priority by setting stretch goals that could only be done by doing things differently. This is including, amongst other things, a sense of urgency from lack of big ideas and radical innovations that stimulates increased entrepreneurial activity.

Brynteson (2010:26), supports Hargadon (2003)'s proposition that with innovation and new technologies comes an assemblage of different boxes of people, ideas and objects. It is networks, such that breakthrough innovations give rise to new networks. As Hargadon (2003) concludes

"...invention finds its distinctive feature in the constructive assimilation of pre-existing elements into new syntheses, new patterns, or new configurations of behaviour".

A field or domain can, through existing systems and processes, obstruct new possibilities, noted Brynteson (2010:30). This is supported by what Barker (2001) suggests about being stuck in one paradigm, implying that those outside the paradigm see the world differently. This is because the same rules aren't applicable, yielding a different view that invites an openness to possibilities in new innovations (Brynteson, 2010:30).

2.4.7 Support Function

There is limited literature on the role of support function and innovation. Pavitt (1991:8) on the study of key characteristics of large innovation firms concluded that differentiated and firm-specific competences that dictate the direction and range of technological opportunities are at these firms's disposal to exploit for innovation.

Herrmann (1999:8), noted that there are factors that inhibit incremental innovation, but argued that the strict compliance to a standardized tracking system (of design issues) throughout the organisation undoubtedly provides a means to improve the innovation within the firm. The result is an achievement of quality and leadership goals set down by the firm which can be gained through the efforts of the entire organisation.

2.5 A VIEW FROM TOP JOURNALS

Stock, Totzauer and Zacharias (2013:11), 's empirical evidence suggests that managers should provide the necessary financial support to their employees because they facilitate cooperation across the organisation. This support is critical for innovation to succeed. Although organisation could be faced with resource constraints it is important to note that employees play an important mediating role in

the R&D space by providing a mechanism for the knowledge from one area to be shared with another area. The correct leadership approach is one that is coupled with a policy that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties and ambiguities; these dynamics can only be navigated by employees who have the right management support.

The study identified relationships, which Patel *et al.* (2013:17) categorised as a geographic partner selection, as important for any form of design, creativity or development as this speeds entry into international markets especially if produce are technology in nature. In addition, the relationship offers lessons for managers and lawmakers, noted Patel *et al.* (2013:17). This is a tactical advantage, in which the combining of the process where innovation is developed and products are taken to international market offer a mutual beneficial situation for managers who make such business decisions to learn from these settings.

The researcher accepts Patel *et al.* (2013:17)'s assertion which states:

“...public policymakers seeking to design R&D support programs that target firm growth through innovation can derive major benefits from internationalization.”

The researcher will not consider the contextual innovation management approach that van der Duin, Ott and Aarts (2014:4-13), studied and postulated in the analysis of the Philips S&B 's Stage and Gate Innovation Process. This is due to lack of relevance with the Discovery case study (Porter, Kramer and Sesia, 2017). The researcher accepts that the bulk of products on the Philips S&B are incremental innovations, as opposed to radical innovations. The focus of this study is not on the delivery process of innovation, although van der Duin, Ott and Aarts (2014:4-13) were able to argue to the researcher acceptance, that wherever possible, activities can be omitted or ordered differently to increase efficiency of the stage-gate process. This acts as a blueprint for all innovation processes at Philips S&B. In the identified table of conditions (see Appendix), the researcher puts processes within the ambit of organisational support constructs.

Menguc, Auh and Yannopoulos (2013:12) found empirical evidence that asserts that:

“...customer and supplier involvement in the design process has a positive impact on new product performance. This is consistent with the RBV framework, as customers and suppliers help firms by providing useful input (i.e., knowledge as resources) that helps firms improve their design.”

Menguc, Auh and Yannopoulos (2013:13) support Veryzer and de Mozota (2005) by adding to the literature a view which links development of new products and its subsequent performance. Input into the development processes that has been derived or intends to be derived from participation by the firm's client-base or suppliers require the right combination in order to yield a desirable outcome for the firm in support of an innovation drive the firm intends to derive maximum benefit (Menguc, Auh and Yannopoulos, 2013:13).

Piening and Salge (2014:3), citing Helfat and Peteraf (2003), define capability as the organisation's ability to rollout functionality, relying on organisational resources, to achieve strategic objectives of the firm.

Piening and Salge (2014:3) conceptualized dynamic capabilities as:

“...higher-order capabilities that do not involve the production of goods or the provision of services”.

These authors, accepted Teece *et al.* (1997)'s definition which characterised dynamic capabilities;

“...as a firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments”.

According to Piening and Salge (2014:3), literature evidence

“...suggests that process innovations beget product innovations and vice versa. That is, the two types of innovations are mutually supportive, and their simultaneous introduction has positive performance effects”.

According to Matsumo, Zhu and Rice (2014:2), entrepreneurial proclivity is the organisation's predisposition to accept entrepreneurial processes, practices, and

decision-making, characterized by its preference for innovativeness, risk-taking, and proactiveness. Innovativeness refers to the organisation's;

"...tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes" (Lumpkin & Dess, 1996:142).

The last two elements of entrepreneurial proclivity are risk taking and proactiveness. Risk taking pertains to a firm's willingness to tolerate or accept the unknowns or the unknowable's when it makes strategic or tactical moves. Proactiveness refers to the firm's propensity to anticipate and act on future needs by seeking new opportunities that may or may not be related to the present line of operations. This introduces new products and services ahead of competition, and even eliminates operations related to the products and services that have an uncertain future (Matsumo, Zhu and Rice, 2014:2).

According to Reid, Roberts and Moore (2014:2), offering a vision of the new technology helps provide direction and focus for individuals in the initial phase of "*new product development (NPD)*" initiative. As such, technology vision becomes a key to successfully determining the appropriate path of NPD during the fuzzy front end (FFE) for firms that are engaged in developing radical, high-tech products. Reid, Roberts and Moore (2015:2), suggested that visionaries, with their ability envisaged a new kind of future, extending the boundaries of what is possible, sharing their vision, and building a sense of purpose around it. This resulted in innovations that have enriched and transformed peoples' lives and have revolutionized the marketplace. According to Reid, Roberts and Moore (2014:4), transformational leaders develop a view of the future, inspire and motivate their followers, while visionary leaders raise performance expectations and improve innovation within the organisational context.

Troilo, De Luca and Atuahene-Gima (2013:6-7), observed how depending on a choice of strategies, companies were able to create room for deployment of available resources termed "*discretionary slack*". These companies are classified according to the way approach innovation combined with how they use information available in their operating environment to discharge a particular innovation strategy. Firstly,

there is "*prospectors*" which utilise vast information obtained from a deep understanding of the various aspects of its base to consistently aim for the top spot with its offerings. "*Defenders*" are companies that have decided not to pursue any new initiatives but focus on building and improving their current offerings as a way to gain further advantage. "*Analyzers*" employ a strategy which combines elements from other strategies into one defined by its own new characteristics, where the firm's intentions are not to be left behind by competitors by ensuring there is participation in areas seeing rapid development and areas of the market with dominant designs. The last category is made up of companies termed "*reactors*", given that these firms are driven by changes made by their competitors and their response does not always show a level of consistency, understanding or appreciation of the environment. The drive in these firms is to solve immediate problems without any future proofing. The implication for "*analyzers*" is that any available resource is thinly spread in order to cater for a strategy with too many objectives, likely resulting in best-performing areas subsidising less-lustre areas to ensure all areas of competition are addressed.

"Distal search - firm's search for information outside its current market and technological domains."(Troilo, De Luca and Atuahene-Gima, 2013:3)

The researcher accepts Troilo, De Luca and Atuahene-Gima (2013:13) 's observation that "*distal search*", will be utilised by "*analyzer*" to fund all their competing strategic objectives. The case study also supports this description of how Discovery went into the new markets using South Africa as its platform, but due to limited resources at the international stage there was a need to create a two-pronged strategy while driving the competition hard at home.

Troilo, De Luca, and Atuahene-Gima (2013:2-15), found that a resource constraints scenario is not conducive for firms to acquire new knowledge which need as input to radical innovation.

"...firms use discretionary slack to acquire broader and more diverse information in new domains, which in turn allows them to develop radical new products and services, which in turn allows them to develop radical

new products and service." (Troilo, De Luca, and Atuahene-Gima, 2013:15)

The Discovery case study (Porter, Kramer and Sesia, 2017) indicates that Discovery exited the U.S. insurance market in 2008 after losing about \$100 million. Atuahene-Gima, (2014:2-16), warn organisations to match their strategic objective with availability of resources, especially given that it is relatively expensive to acquire knowledge from new areas with a view of utilising it to create new offering to uplift the organisation's competitive edge.

Allred and Swan (2014:4), found the basis of competition in organisations employing innovation as a strategy, shifting towards lowered price and increased quality, this in comparison with a diminishing competitive base and products lines (see Table 2).

Table 2: Innovation Dynamics (**Source:** Allred and Swan, 2014:5)

| | |
|--------------|--|
| Product | From variety, to dominant design, to incremental innovation on standardized products |
| Process | Manufacturing progresses from heavy reliance on skilled labour and general purpose equipment—flexible and inefficient with major changes easily accommodated to efficient, capital intensive, and rigid; cost of change high with specialized equipment tended by low-skilled labour |
| Organisation | From entrepreneurial <i>organic</i> firm to hierarchical <i>mechanistic</i> firm with defined tasks and procedures and few rewards for radical innovation From informal and entrepreneurial to structure, rules, and goals |
| Market | From fragmented and unstable with diverse products and rapid feedback to commodity-like with largely undifferentiated products |
| Competition | From many small firms with unique products to an oligopoly of firms with similar products |

Allred and Swan (2014:1), citing Buchanan (2014), found that some German manufactures employed innovation as a defence strategy. This is achieved by manufacturing of own materials, tools and moulds, and ensuring that innovation permeates intensively on all processes; with this feat, competitors struggle to copy the means of production due to failure to copy the processes and input the actual production (Allred & Swan, 2014:1 citing Buchanan, 2014).

This research intends to sustain the benefits of innovation built on Allred and Swan (2014:2-3), citing Teece (1986), on the "*contingent conceptual framework*" comprising of the appropriable regime, presence of a dominant design paradigm combined with possession of complementary assets. The researcher accepts Allred and Swan (2014:2)'s research that as the market matures organisations tend to differentiate themselves on processes deployed. This forces latecomers to focus on a strategy to improve process technology. To achieve this, latecomers question any innovation-related environment and organisation specific elements influencing the interrelations of their subsidiaries overseas to find areas for improvement. A sourcing strategy supports innovation, according to Allred and Swan (2014:3), multinationals leverage the organisational "*learning and innovation competencies of their subsidiaries to create positional advantages and technological capabilities*". Further refinement to this strategy includes conditions such as faster speed-to-market, which is driven by technical and lower costs.

Allred and Swan (2014:3), found that a weak appropriable regime creates a situation where the external environment;

"...provides only limited or perhaps even no protection for investments in a new technology".

This is worsened by the fact that financial success off technology comes from copying others given the availability of cheap, written knowledge which allow for imitation; usually characterised by externally sourced or available from open market, when it comes to manufacturing processes (Allred and Swan, 2014:3). This can remain secretive, but only to the point when product hits the market, after which most of the inner workings are laid bare. The likely remedy is as Allred and Swan (2014:3), asserts:

"...obtained by developing the necessary process technology internally, or sourcing it from another subsidiary within the parent corporation, or, if necessary, through appropriately structuring an alliance".

Allred and Swan (2014:5), researched that dominant design, a watershed event for an industry,

"...emerges and the post-paradigm stage begins when a company or an alliance of companies offer a 'winning' technology largely adopted by consumers".

Accordingly, the dominant design is a way where everyone starts to produce models of a given product to the market, where such product command a bigger market share. Companies in this scenario can no longer offer products that are differentiated but only incrementally different from mainstream models (Wade, 1996). Allred and Swan (2014:5) accepts Xu, Wu, and Cavusgil (2013)'s view that reasons for innovation by subsidiaries need not be largely driven by lack of resources, skills or internal capabilities in the advent of a dominant design.

Allred and Swan (2014:5), utilise Williamson's discriminant alignment hypothesis to suggest that subsidiaries must structure themselves in order to manage their engagements in a manner that ensure transactions are isolated for the maximum benefit of the entity. Empirically, Allred and Swan (2014:15), found that:

"...internal process sourcing strategy, contingent upon the innovation context, has a stronger influence on subsidiary performance".

This is as due to the exerting of the appropriate governance on technology and its sourcing which provides an advantage in the market as the dominant design starts to appear. According to Allred and Swan (2014:16), there is a window of opportunity to

"...improve cost, quality, value, and speed-to-market considerations when taking a new product to market, as well as when it may be beneficial to develop or source process technology that supports elements of what will become the dominant design before the dominant design has emerged".

Another finding shows that variant sources of acquiring process technology relate to the maintaining, in a given innovation area, of top market position, requiring the organisation to increase its capability to sustain this performance and acquired position.

In stressing the importance of management, Slater, Mohr and Sengupta (2013:5), asserts:

"...senior management are central to providing a clear and stable vision, with specific goals clearly articulated to stay on course. This is with the added ability required to use different metrics to assess success for radical innovation than for conventional innovation, over and above being able to articulate strategic intent to provide a focus or rallying point for the organisation and its employees."

Innovation is seen as creator of value from knowledge, while management, on the other hand, have to do the right things in order to create enablers for innovation to succeed.

The theory of Piening and Salge (2014:6), dynamic capabilities is about:

"...both the use and usefulness of dynamic capabilities increase in turbulent environments marred by intense competition, rapid technological progress, and frequent changes in customer preferences than in stable environments".

It is worth noting that dynamics presented by the environment offer as positive influence to the success of the organisation from innovations, based on its processes. This is due to increased causal ambiguity limiting competitors from imitating firms's capabilities, sustaining processes that support innovation in the firm (Piening and Salge, 2014:6).

Slater, Mohr and Sengupta (2013:5), posit that visionary leadership is a critical component of a radical product innovation capability, albeit with more complicated interplay with the other components of this capability, including organisational culture, organisational characteristics, and the radical product innovation process itself. In practice, a firm's senior leaders also significantly influence organisational culture and, in turn, are influenced by the organisation's culture (depicted in the figure below). This is more so in that the organisational culture that supports radical product innovation, established in part by senior leadership and embodied in the recruitment, development, and motivation of employees, requires a different mentality (values and beliefs) on the part of senior leadership than for incremental innovation.

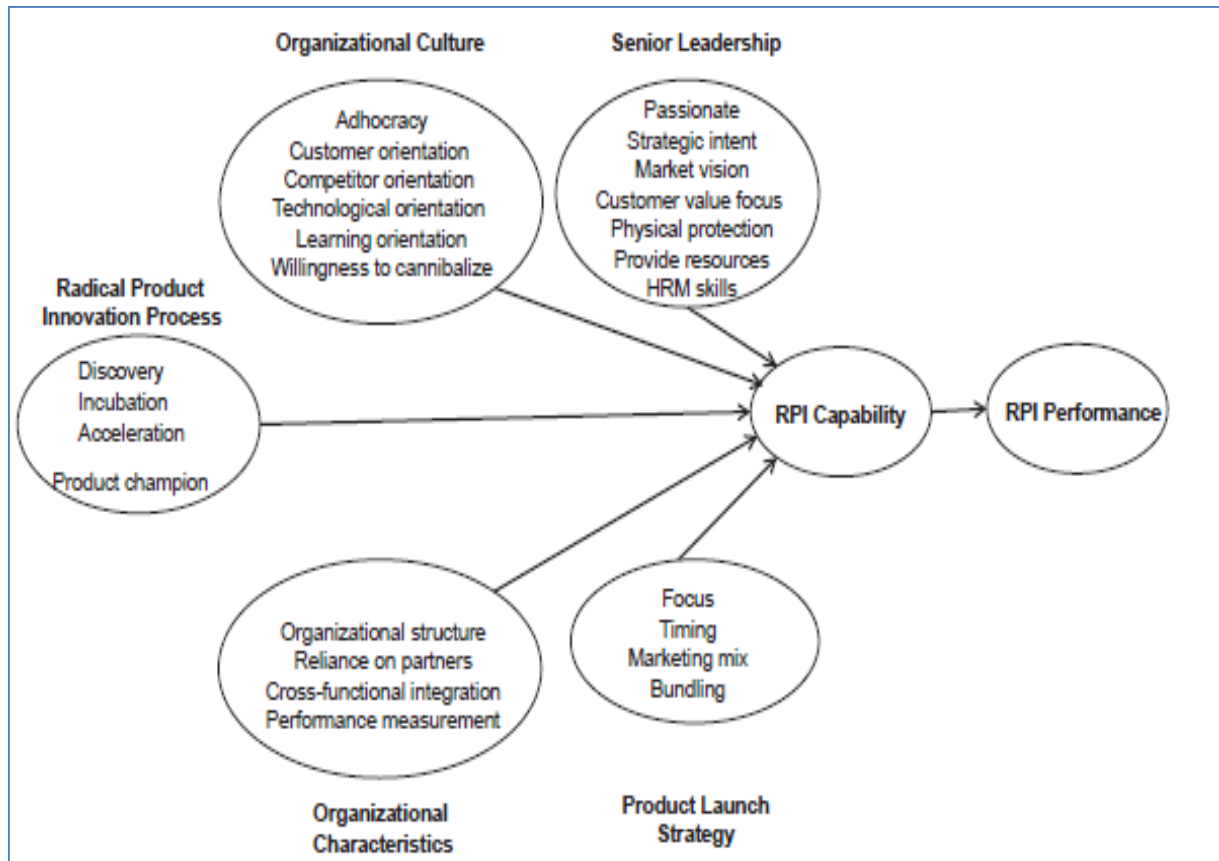


Figure 2.5: Adaptation of Radical Product Innovation Capability (**Source:** Slater, Mohr & Sengupta, 2014:3)

The researcher agrees with Slater, Mohr and Sengupta (2013:5)'s observations that:

“the leader communicates important organisational values both symbolically and substantively (in storytelling, behaviours, and decisions). This links, at a culture level, with both how leaders lead and how new leaders are brought into the organisation”.

When evaluating the impact of culture, Slater, Mohr and Sengupta (2013:6), states:

“Adhocracy culture is characterized by the values of entrepreneurship, innovation, adaptability, propensity for risk, as well as an external orientation. This culture type is the best foundation for a radical product innovation capability”.

This researcher accepts Slater, Mohr and Sengupta (2013:6)'s explanation stating that:

“the different components of the adhocracy culture, as including customer orientation, competitor orientation, technological orientation, learning orientation, and willingness to cannibalize that are conducive to an effective radical product innovation capability”.

However, this researcher believes willingness to cannibalize is more a strategic imperative to drive growth and is not necessarily an initiative of radical innovation per sé. According to Slater, Mohr and Sengupta (2013:7)'s review, anticipatory customer intelligence generation provides insights on customers' latent and future needs, allowing organisations to proactively pursue market opportunities that competitors might still be blind to. This is further strengthened by the view on innovation which states that:

“...exceptional innovators regard technology as a primary input to strategy formulation, ensuring this is regularly revised to incorporate advantage of evolving technologies and plans for market disruptions caused by technological change, and focus technology on customer priorities. Learning orientation as a pillar of organisation culture benefits organisations by yielding knowledge, commitment to learning, open-mindedness. Shared principles, ideals, and beliefs about the market are key components” (Slater, Mohr & Sengupta, 2013:7).

Klingebiel and Rammert (2013:20-21), found empirical evidence supporting a positive relationship between innovation performance and the allocation of resources across a broader range of innovation projects. This is better characterised as a mechanism of spreading bets on innovation. This better understanding and appreciation for having to commit resources before the performance implications of these commitments is followed by greater resource allocation breadth in order to improve the odds of success.

According to Van Beers and Zand (2014:1), who conducted empirical and literary studies on whether R&D collaborations leads to better innovation performance of innovating firms, numerous studies show that in most cases of cooperation facilitates innovation, the cooperation in question relates to R&D alliances on innovation performance. These alliances are also dependant on diversity of partners who, in

turn, offer complementary information and synergetic effects resulting from organisational learning.

Van Beers and Zand (2014:2), citing Nooteboom (1999), found that learning cooperation skills is expected to lead to more familiarity and trust between partners. The result is reduced coordination and transaction costs which facilitates positive effect on both incremental and radical innovation performance of the firm. A governance structure, as Allred and Swan (2014:5), recommended, is a viable option in the context of technology sourcing, guided by Williamson's discriminant alignment hypothesis. As per Van Beers and Zand (2014:2)'s example, suppliers can provide technological knowledge on the production processes of the firm, while customers and universities are sources of market related and basic knowledge, respectively.

According to Van Beers and Zand (2014:3)'s empirical study, functional diversity of partners positively affects the average innovating firm's radical innovation performance. This suggests that using information from different external partner groups increases the variety of knowledge intake and enhances the production and sales of novel products. This as opposed to geographical diversity of partners which impacts incremental innovation performance of the firm.

Van Beers and Zand (2014:17, 19), concluded that collaboration on innovation activities with external partners increases the performance of these activities, mainly on radical than incremental innovations. This is due to the broad and complex range of resources required for developing and commercializing radical innovations. This view was also supported by Ott (2010:14), characterising the radical innovation context as constituted of ambiguity, complexity, higher than average risk of project failure. The effect, Van Beers and Zand (2014:17) further concluded, is also stronger for manufacturing than for services firms, which are traditionally more R&D oriented.

Empirically, Van Beers and Zand (2014:19), found that diversity of partners over different conclusions with functional diversity significantly increasing the sales of radically new products while geographical diversity being influential to the sales of incremental products per employee. Absorptive capacity and learning mechanisms were found to have a significant impact on innovation performance of the firm. This was bolstered by organisations investing in internal R&D activities and training

employees, as these add to the absorptive capacity of the firm. Furthermore, it increases its ability to understand and assimilate knowledge from (diverse) external sources and flows (Van Beers & Zand, 2014:19).

Eesley, Hsu and Roberts (2013:2-3), observed how teams composed of founder members are composed and how this configuration impact how the organisation performs in two scenarios, namely business environment and strategy, and more specifically, and in the of this study, innovation strategy.

“...a competitive environment is characterized by weak appropriability. In such instances, the entrepreneur is reluctant to bargain with and disclose innovation details to potential partners” (Eesley, Hsu & Roberts, 2013:2-3)

The environment also proves a relatively low cost of assembling the requisite complementary assets, which lowers the barrier to entry. If a cooperative strategy is required for downstream value chain realisation, with regard to innovation strategy, data suggests:

“...founding teams that are diverse are likely to achieve high performance in a competitive commercialization environment. This as opposed to technically focused founding teams, which are aligned with a cooperative commercialization environment when pursuant of an innovation strategy” (Eesley, Hsu and Roberts, 2013:3).

The researcher will take a narrow focus on Eesley, Hsu and Roberts (2013:4)'s study and exclude findings on founding team composition, around business environment, since environmental factors are considered for their impact on innovation from this study's perspective.

Chatterji and Fabrizio (2013:2), conceded that their study of user influenced innovation holds some contentious debate over the benefits and risks of relationships between medical device firms and the physicians that use their products. A cornerstone of their study, despite the little evidence on the value of these collaborations which the study pursued the researcher decide not to include their findings on the study. Another reason for the exclusion from the study is that in the chosen case study of Discovery, the relationship between the organisation and

its user/customers is that of service provider and customer as opposed to manufacturer and user. The researcher, however, accepts Chatterji and Fabrizio (2013:5)'s view that organisations are less likely to possess the knowledge required to generate radical innovations, as opposed to incremental innovations, and thus user knowledge will likely be more beneficial in the former case.

According to Blindenbach-Driessen and van den Ende (2014:14-16), in the study of the locus of innovation, they found that there is a positive effect of a separate innovation unit on exploration, exploitation, and ambidexterity. These separation goes further to add effects on the creation of ground-breaking new activities (exploration), but also has positive trade-offs for the improvement of existing processes (exploitation). From a manager's perspective, there is opportunity to stimulate both types of activities while reducing the competition for resources. Further empirical evidence suggests that in service firms and manufacturing firms, separating innovation activities from the rest of the organisation has clear advantages in terms of resources for and focus on innovation, and thus results in more innovations. Meanwhile in service sectors, separation of innovation activities is an appropriate way to enhance ambidexterity, however, in service firms, the positive effects of a separate R&D department on exploratory performance are not as great as in manufacturing firms. The researcher accepts the view that this difference is likely due to the higher complexities of the transfer process from developers of innovations to the front office.

Of course, Piening and Salge (2014:9)'s main argument which drives the theoretical framework states that:

"...product innovations are expected to trigger demand for new production, service delivery, and supply chain processes, thus increasing firms' process innovation propensity, yet not necessarily their process innovation effectiveness".

This study, however, is focusing on innovation, radical or incremental. In which point, the researcher notes and accepts as validation of innovation enabling conditions, empirical studies on German companies, observed by Piening and Salge (2014:2), which asserts:

“...whether—and under what conditions—innovation-related activities such as internal and external research and development (R&D), patent licensing, prototyping, as well as employee training are associated with tangible benefits both in terms of process innovation success and financial performance”.

Top journal views can be summarized in a table as on the following page:

Table 3: Conditions in top journals

| Authors | Structure | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|------------|-----------------|--------------|--------------|----------|------------------|------------|-----------------|----------------------------|------------------------|----------|----------------------------------|--------------|------------------|------------|-----------------|--------------|----------|----------------------------------|--|
| | Radical Innovation | | | | | Both | | | | | Incremental Innovation | | | | | | | | | | |
| | Enabling Context | Leadership | Operating Model | Relationship | Value System | Strategy | Enabling Context | Leadership | Operating Model | Operating Model/Leadership | Relationship | Strategy | Support Function/Operating Model | Value System | Enabling Context | Leadership | Operating Model | Relationship | Strategy | Support Function/Operating Model | |
| Susan E. Reid, Deborah Roberts and Karl Moore | ✓ | | | | ✓ | | | | | | | | | | | | | | | | |
| Erk P Piening; Torsten Oliver Salge | | | | | | | | | | | | | | | | | | | | | |
| Blindenbach-Driessen & Ende | | | | | | | | | | | | | | | | | | | | | |
| Chatterji and Fabrizio | | | | | | | | | | | | | | | | | | | | | |
| Cees van Beers and Fardad Zand | | | | | | | | | | | | | | | | | | | | | |
| Ronald Klingebiel and Christian Rammer | | | | | | | | | | | | | | | | | | | | | |
| Stanley F. Slater, Jakk J. Mohr, and Sanjit Sengupta | | | | | | | | | | | | | | | | | | | | | |
| Patricia J. Holahan, Zhen Z. Sullivan, and Stephen K. Markham | | | | | | | | | | | | | | | | | | | | | |
| Brent B. Allred and K. Scott Swan | | | | | | | | | | | | | | | | | | | | | |
| Gabriele Troilo, Luigi M. De Luca, and Kwaku Atuahene-Gima | | | | | | | | | | | | | | | | | | | | | |
| Ken Matsuno, Zhen Zhu, and Mark P. Rice | | | | | | | | | | | | | | | | | | | | | |
| Charles E. Eesley, David H. Hsu and Edward B. Roberts | | | | | | | | | | | | | | | | | | | | | |
| Bulent Menguc, Seigyoung Auh, and Peter Yannopoulos | | | | | | | | | | | | | | | | | | | | | |
| Patrick A. van der Duin, J. Roland Ort, and Wieger T. M. Aarts | | | | | | | | | | | | | | | | | | | | | |
| Pankaj C. Patel, Stephanie A. Fernhaber, Patricia P. McDougall-Covin and Robert P. van der Have | | | | | | | | | | | | | | | | | | | | | |
| Ruth Maria Stock, Florian Totzauer, and Nicolas A. Zacharias | | | | | | | | | | | | | | | | | | | | | |

2.6 CONCLUSION

This chapter presented a literature review on conditions affecting innovation, be it radical or incremental. The literature was able to present a justification for management of business and academia on excitement offered by researching innovation. The research had to confine the study to fit in one chapter even though there is multitude of topics to research in this topic. Consequently, the researcher was able to find that innovation is beneficial to organisation, businesses and society at large, largely from an economic and financial success point of view.

A collection of conditions that affect innovation were aggregated from various literatures and presented a recipe which provides clear and unambiguous view on what needs to be managed, controlled or changed to achieve innovation from incremental to radical. Top journals studied supported the presented views including supplementing other conditions that previous literature did not highlight.

The next chapter seeks to apply these grouped super-conditions that were supported in top journals to a specific innovative organisation case study to gauge how useful the abstracted super-conditions are for understanding innovative organisations.

CHAPTER 3. INNOVATION CASE STUDY, DISCUSSION ON FINDINGS

3.1 INTRODUCTION

This chapter provides a detailed analysis of a case study of Discovery Ltd. The researcher will also do a summary analysis of other South African innovative companies, including Capitec Ltd. and Nandos Ltd. The researcher aims to establish and present factors that made innovation successful at the analysed organisations. The second step of the analysis is to validate the factors uncovered in the Discovery case study (Porter, Kramer and Sesia, 2017), of Discovery Ltd. against the factors from the literature review in the previous chapter as well as factors gathered from top journals, presenting latest works in areas of innovation and management.

Discovery Ltd. is a JSE-listed South African company with a global reach and comprises of ten business units providing health insurance, car insurance, life insurance and financial services to just over 5 million people in South Africa, The United Kingdom, Asia and the USA. Discovery Ltd. has transformed itself from being a healthcare company to an all-encompassing financial services corporation, offering world-class services to meet the complex needs of its clients since its inception in the two decades ago.

According to its website, Discovery Ltd is a shared value insurance company, whose purpose and ambitions are achieved through a pioneering business model that incentivises people to be healthier, and enhance and protects their lives. It goes on to argue that shared value insurance model delivers better health and value for clients, superior actuarial dynamics for the insurer, and a healthier society. According the company, its unique approach has underpinned global success, with substantial new business growth and an impressive increase in normalised operating profit and headline earnings. Part of Discovery Ltd.'s DNA is its core values, listed below:

- Great people
- Liberating the best in people
- Intellectual leadership
- Drive, tenacity and urgency
- Innovation and optimism

- Business astuteness and prudence
- Dazzle clients
- Integrity, honesty and fairness

Every new recruit of the organisation is taken through this value system by a senior representative of the organisation, if it's not Adrian Gore himself. This induction process ensures that all staffers are guided by what has underpinned the success of the organisation over the years.

3.2 DISCOVERY LTD.'S SUCCESS IS A WORTHY STUDY

According to its 2016 Annual Report, Discovery Ltd, achieved normalised profit of R6 407 million, up 11% from its 2015 profits. This performance, of double the inflation rate in South Africa is a noteworthy achievement. Adrian Gore, Medical Savings Account (MSA) and Vitality are all synonymous with this feat of financial success. Since its inception in 1992, Discovery Ltd., has disrupted the health insurance industry in a feat that hasn't been repeated by any other company in South Africa, in a while, more especially in the insurance and related financial sector services.

According to Newell *et al.* (2009:232), radical innovation is promoted by effective sharing and integration of knowledge by amongst other this a shared identity, shared perspective and trust. This case study presents options to the researcher to look at the success of the business, its innovation, its value systems, its environment and its leadership to determine which factors enabled innovation. Lucy Gilson, of the Health Policy and Systems Division at the University of Cape Town, asked in a Mail & Guardian article, dated 26 September 2014, how vital pockets of creativity within the health system can be nurtured, as well as innovations in care, management, of key building blocks including governance, information, financing, service delivery, human resources, medicines and technologies and more, can be spread across the country. Similar views are echoed by Medscheme's Dr Farayi Chinyanga, who in a BHF article, sees disruptive and sustaining innovations being in the spotlight with the advent of NHI, arguing for a combination of sustaining innovation and disruptive innovation both of which are required to transform the industry, with one of the

innovation opportunity being to re-examine and commit to a new reimbursement model that incentivises value.

The researcher chose this case study to establish Discovery's role in the challenges faced by the sector and how innovation has played a role in the success of the organisation, in what is seen as a challenging with regulatory and policy challenges that are constantly bombarding the operating environment.

3.3 DESCRIPTION OF THE DISCOVERY LTD CASE STUDY

Before going into how Discovery was formed, the case study paints a picture which outlines South Africa's historical past and challenges the country experience in terms of health care and related social challenges, brought by burden of disease. The demographics of South Africa and how they access and consume health care and related service is also outlined by the case. The case contrasts the characteristics of private versus public health care in terms of service and numbers and how South Africa compares with others countries in its category.

The case outlines how Adrian Gore was instrumental in the formation of the company, and its purpose and the vision that still drive the organisation to this day. The details of the operating model, strategy and how this brought success to the organisation is made clear in the Discovery case study (Porter, Kramer and Sesia, 2017). Once Discovery was in operation, the case study provides a clear picture of the environment and the regulatory challenges the organisation had to deal with to stay competitive. The case outlines what differentiated the innovative products that Discovery continued to enhance despite the challenges of its environment. This includes the details of how Vitality program was packaged, enhanced and rolled-out by Adrian and his team to be one of its successful exports. Throughout the case study, financial highlights and successes are detailed including causes impacting the aforementioned successes. Discovery's brand triumphs are also outlined in the Discovery case study (Porter, Kramer and Sesia, 2017) in terms of its origin, success, reach and thinking done by management team in support.

The timeline of the case study provides insight, which includes different challenges the organisation needed to respond to, detailing those challenges, manoeuvres, resilience and Adrian 's business acumen, thought-process and decisions that eventually steered the organisation into further successes. The timeline is also used to show when each of the products is introduced by the organisation and further analysis, especially performance is discussed. Assets that Discovery used to enhance its success business model are discussed and empirical evidence discussed to shed further analysis on the case study.

The case study shows a timeline in which Discovery participated in adjacent markets and provided a view on that success. Strategy deployed on these markets is discussed in the case including synergies forged with relevant organisations on different sectors to achieve the desired outcome. Additional analysis includes how Discovery integrated its flagship products into these areas; mechanism deployed is clearly outlined including how and when performance and success was attained.

Also, presented with a timeline, the penultimate view, provided by the case is Discovery's strategy, roll-out, execution and challenges in the global arena. The case describes the two-pronged strategy the organisation used, refined and rolled-out in the midst of challenges and opportunities the international markets presented to the organisation. Challenges and opportunities are also presented as successful financial outcomes or losses with a view which underpins the leadership reasons for the outcome.

It is worth noting the authors for the case study, who the researcher appropriately references as another compelling reason for the inclusion on this research, because of their vast academic experience, specifically Professor Porter on management research. Below is the extract from the case study on the authors;

"HBS Professor Michael E. Porter, Senior Fellow Mark R. Kramer (Harvard Kennedy School of Government), and Case Researcher Aldo Sesia (Case

Research & Writing Group) prepared this case. It was reviewed and approved before publication by a company designate. Funding for the development of this case was provided by Harvard Business School and

not by the company. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management" (Porter, Kramer & Sesia, 2017).

Lastly, the Discovery case study (Porter, Kramer & Sesia, 2017) goes into Adrian Gore's aspirations to give back and the thinking behind the initiatives driven by this leader, as well as his vision and drive to do good without losing the touch products offered by Discovery. The timeline of this initiative reflects the leadership displayed by Adrian and with evidence suggesting his ultimate leadership style. Discovery has future plans which the case study documents contrasting that with a timeline of challenges, opportunities and strategic cross roads. The challenging environment is outlined in terms of numbers, at a macro and micro level, as well as how this impacts their strategy. Opportunities are articulated as strategic objective and reflect the leadership style that Discovery has carried throughout the case study.

3.4 ANALYSIS OF THE CASE

According to Gumusluoglu and İlsev (2009:5), citing Burns (1978) and Bass and Avolio (1995), transformational leadership is characterised by charismatic role modelling, individualized consideration, inspirational motivation, and intellectual stimulation. Charismatic role modelling, individualized consideration, inspirational motivation, and intellectual stimulation, such that with charisma, the leader inspires admiration, respect, and loyalty, and emphasizes the importance of having a collective sense of mission. Individualized consideration comes into play when the leader builds a one-to-one relationship with followers, and understands and considers their differing needs, skills, and aspirations. Inspirational motivation is presented by the leader in a form of articulation of an exciting vision of the future, showing the affected followers how to achieve the goals, and expresses the belief of wanting followers to succeed. Lastly, intellectual stimulation is when the leader broadens and elevates the interests of his or her employees and stimulates followers to think about old problems in new ways. In the Discovery case study (Porter, Kramer and Sesia, 2017), Adrian Gore's transformational leadership comes forth not only in the early days of Discovery but throughout the timeline of the organisation. In

their documentation of the case study Porter, Kramer and Sesia (2017:3) noted that Adrian Gore was driven by opportunities for innovation in the healthcare industry. Even though he had no product in mind, his drive was a vision to create health insurance products that appeal to everyone, including the young and healthy. Gore questioned the status quo and drew parallels between health care models and buying of groceries. According to Gumusluoglu and İlsev (2009:5-6), citing Elkins and Keller (2003), transformational leadership behaviours closely match the determinants of innovation and creativity at the workplace, some of which are vision, support for innovation, autonomy, encouragement, recognition, and challenge. Stock, Totzauer and Zacharias (2013:11),’s empirical evidence suggests that managers should provide the necessary financial support to their employees because they facilitate cooperation across the organisation. This support is critical for innovation to succeed. Although organisation could be faced with resource constraints it is important to note that employees play an important mediating role in the R&D space by providing a mechanism for the knowledge from one area to be shared with another area. The correct leadership approach is one that is coupled with a policy that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties and ambiguities; these dynamics can only be navigated by employees who have the right management support. In the Discovery case study (Porter, Kramer and Sesia, 2017), Gore and Swartzberg decided that the innovation they were looking for was the new medical savings account (MSA) plans, a nascent idea at the time. Although the case study did not go into the details of product development and R&D that Discovery embarked upon to produce their successful healthcare plans, the financial success suggests that they implemented the right management practices to nourish their innovation teams.

Patel, Fernharber, Mcdougall-Covin and van der Have (2014:1), citing Schwens, Eiche, and Kabst (2011), asserts:

“...faster entry into foreign markets is linked to higher venture performance”.

As with the Discovery case study (Porter, Kramer and Sesia, 2017), Patel *et al.* (2013:1) asserts:

“...in order to manage the increased urgency to internationalize innovations alongside with the potentially debilitating effects of liabilities of newness, smallness, and foreignness, ventures increasingly rely on network collaboration. The role that such networks play is of extreme value. This includes opening conduits to much-needed knowledge, such assistance increases new product development speed and lowers internationalization risks”.

In the Discovery case study, Porter, Kramer and Sesia (2017), challenge that Discovery enlisted for entering new markets organically are the significant capital, time, and risk, versus acquisitions involved considerable capital and complexity. From a strategic point of view, Discovery had a two-pronged approach. One was to target some markets where the company would be the primary insurer (Primary Markets), and another was in which Discovery would partner with a leading insurer (Partner Markets) (Porter, Kramer & Sesia, 2017:7).

Patel *et al.* (2013:4), emphasise the importance of collaboration in the vicinity of the firms provides a breeding ground for innovation, which becomes the springboard to international markets. These markets will initiate sales or it has to be driven through this collaborative platform. This should however not exclude the local network as it serves an important role. Companies that offer this kind of support to their customer have a global presence of their own and allow for opportunity to access its international markets via this collaboration. A view from Discovery case study (Porter, Kramer and Sesia, 2017), shows that Destiny targeted employers with 500 or fewer employees in the state of Illinois, including a joint-venture with Tufts and Discovery exited the U.S. insurance market in 2008 after losing about \$100 million. Patel *et al.* (2013:4, 16-17) argues for a collaborative balance which maintains different forms of knowledge in the network against what makes financial sense, and claims that it will have faster internationalization speed. This parallel is also drawn in the Discovery case study (Porter, Kramer and Sesia, 2017), by the research, with regard to Discovery's move to UK and Asian markets. Its configuration of the networks of collaboration in UK as 50/50 created the correct balance, and claims that it will have faster internationalization speed. This parallel is also drawn in the Discovery case study (Porter, Kramer and Sesia, 2017), by the research, with regard

to Discovery's move to UK and Asian markets. Its configuration of the networks of collaboration in UK as 50/50 created the correct balance. This is supported by Swartzberg stating:

"We look for good partners—those that have the licenses, the brands, the distribution channels and the capital, and we form joint ventures. We use our behavioural science ideas to develop various insurance products and share the additional value that is created."

The model Discovery took to China and other regions shows that the organisation had already forged the right combination for local and foreign networks to allow the product to be rolled out in the market. This is clear from Swartzberg's statement which says:

"We have learned to combine ideas to find products and incentives that work in a particular market."

In 2015, Discovery partnered with Apple to provide free Apple watches to all Vitality members, deploying an approach to collaborate with a flagship firm. The case study suggested a daily behaviour tracking with an upside of 98% of physical activity for Vitality members, which translates into reducing the probability of hospital admission by 7%, or mortality rates dropping 9% according to the behavioural economics business model of Vitality. Furthermore, 17 million life years of data on mortality and morbidity was analysed, including correlations with healthy behaviours and economic incentives.

Menguc, Auh and Yannopoulos (2013:12), found empirical evidence that supports:

"...that customer and supplier involvement in the design process has a positive impact on new product performance. This is consistent with the RBV framework, as customers and suppliers help firms by providing useful input (i.e., knowledge as resources), helping firms improve their design".

Discovery's Swartzberg states in the Discovery case study (Porter, Kramer and Sesia, 2017) that data is king for the healthcare industry. The 17 million life years of data on mortality and morbidity that the organisation collected as input from

customer allows in running analysis models, including correlations with healthy behaviours and economic incentives. This data, as the case study goes, allowed the Vitality approach and health products to be deployed in new markets fairly rapidly. The feat bucks the empirical evidence from Menguc, Auh and Yannopoulos (2013:12), which

“...show that while supplier involvement in design interacts positively with radical innovation capability, the interaction between customer involvement in design and radical innovation capability is negative”.

According to the Discovery case study (Porter, Kramer and Sesia, 2017), the involvement of Discovery's suppliers, partners and customers supported Vitality. Theoretically, the Vitality Program in its infancy was not a radical innovation, since the idea had been tried before. As the case study suggested, Gore saw this as an opportunity to move to a model rewarding wellness. According to the case study, he knew others had tried and failed at encouraging their members to adopt healthy lifestyles, but concluded the problem had been that the incentives were not sufficient. It was the incentives tied to the behavioural economics which differentiated the product and made the revised program a radical innovation. The partner network another key component of innovation was what made Vitality program more appealing. Menguc, Auh and Yannopoulos (2013:13) support Veryzer and de Mozota (2005), by adding to the literature, a view which says;

“...product design and new product performance by going beyond the extant literature that simply argues that design influences new product performance. An organisation with a need to derive input from customer and supplier input in the design-building process should understand the importance of pairing such input with the firms' innovation capability in order to maximize their joint effect on new product performance”.

The Discovery case study (Porter, Kramer and Sesia, 2017) offers a different view to Menguc, Auh and Yannopoulos (2013:13)'s suggestion which says

“...firms with incremental and radical innovation capabilities involve suppliers in the design process, and managers of firms with radical

innovation capability should be cautious when they involve customers in design reviews and limit customer involvement”.

This involves considering input from new customers and major consumers who may offer assistance with specification to drive new designs based on their feedback as they are in the best position to offer such advice. The case study shows that the behavioural economic model, which is in essence continuously reliant on customers, partners and supplier’s involvement to give rise to the new products such via Discovery Life and Discovery Insure, both of which include incremental and radical innovations.

Empirical studies on German companies, observed by Piening and Salge (2014:2), reflects:

“...whether—and under what conditions—innovation-related activities such as internal and external research and development (R&D), patent licensing, prototyping, as well as employee training are associated with tangible benefits, both in terms of process innovation success and financial performance”.

There is good support for this reflection in the Discovery case study (Porter, Kramer and Sesia, 2017). Discovery’s Vitality program is expanded to the 10 largest life insurance markets globally via a partnership model. With each of these partnerships, Discovery licensed the Vitality program, and actuarial data that enabled variable premium life insurance based on Vitality engagement levels.

Piening and Salge (2014:3), citing Helfat and Peteraf (2003), define capability as the organisation's ability to rollout functionality, relying on organisational resources, to achieve strategic objectives of the firm. Piening and Salge (2014:3) conceptualized dynamic capabilities as:

“...higher-order capabilities that do not involve the production of goods or the provision of services”.

These authors, accepted Teece, Pisano and Shuen (1997)'s definition which characterised dynamic capabilities;

"...as a firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments".

According to Piening and Salge (2014:3), dynamic capabilities' theoretical framework brings forth the necessity of engagements used for integrating knowledge into the organisation and processes that are involved in the building of innovation capability which include; sensing customer needs, market developments, technological opportunities, conducting in-house research and experimentation, bringing knowledge from the outside and training employees. In the Discovery case study (Porter, Kramer and Sesia, 2017), Discovery has to respond to regulatory changes in South Africa, introduced in January 2000. Although the case study did not go into the details of how Discovery reconfigured its internal and external competences, the case study clearly shows that the organisation was able to come out with products that responded to the revised regulatory framework, and by implication would have had to reconfigure to operate in the similar environment

This challenge is clearly articulated in the Discovery case study (Porter, Kramer and Sesia, 2017) by Swartzberg:

"Moving toward an egalitarian system—with community rating and guaranteed access— was a challenge."

According to Piening and Salge (2014:3), literature evidence suggests that organisation that engage in innovations that are process-centric will likely generate and benefit from innovations that are product-centric and this situation is applicable if this configuration is reversed. To further strengthen Discovery's dynamic abilities in both process and product innovation, the case study show that Discovery's life insurance approach was for policies to be priced at the inception of the plan, but for premiums to increase or decrease over time based on the policy holder's Vitality engagement. Although, as the case study with complexity at an actuarial level, the model itself was intuitive and appealing to policyholders. The success come by the model attracting desirable policyholders, induced behavioural change, which resulted in lower lapse rates and translated into higher margins.

This study focuses on conditions that affect both, incremental and radical innovation. The researcher accepts that entrepreneurs have been associated with risk-taking, but fails to reconcile proactiveness with the same setting. As a risk-taker, according to the Discovery case study (Porter, Kramer and Sesia, 2017), it was Adrian Gore who approached Laurie Dippenaar to start a company without a track record. However, the researcher believes Laurie is equally a risk-taker and entrepreneur. The researcher cannot use entrepreneurial proclivity or customer equity, which is explored as a direct outcome of innovation process and a mediating factor to business performance, as suggested by Matsumo, Zhu and Rice (2014:14), more so because the implication that innovation managers have a rightful claim for credit in achieving customer equity through managing the Marketing-R&D integration. In addition to the conventional measures, such as new product success, proved difficult for the researcher to reconcile with other literature.

According to Reid, Roberts and Moore (2014:4), transformational leaders develop a view of the future, and inspire and motivate their followers. Visionary leaders raise performance expectations and improve innovation within the organisational context. In the Discovery case study (Porter, Kramer and Sesia, 2017), Gore's vision was to create a product that appeals to everyone, including the young and healthy, as well as tap into the consumerist spirit of the time and thus giving rise to a business concept around making people healthier. This vision allowed Gore to pitch his concept to investor, Laurie Dippenaar, as well as convince Barry Swartzberg to join him.

Troilo, De Luca and Atuahene-Gima (2013:4), argue that organisation are able to tap into their creativity domain if employees and their managers sense an opportunity where free resources offer the room. Such creativity might not be bound and include new areas the organisation might not have explored or deemed unsafe, allowing the organisation to embrace ambiguities from the new offerings or innovations of a radical nature.

According to the case study (Porter, Kramer and Sesia,2017), Discovery had been approached by leading insurers in many markets, who were interested in partnering in order to take advantage of Discovery's unique approach to competing. However, management had noted that entering new markets organically required significant

capital, time, and risk, while acquisitions involved considerable capital and complexity. The approach was to be the primary insurer (Primary Markets), and partner with a leading insurer (Partner Markets):

"discretionary slack - resources that are uncommitted to specific organisational activities, unabsorbed, and available for alternative uses"
(Troilo, De Luca and Atuahene-Gima, 2013:4)

Troilo, De Luca and Atuahene-Gima (2013:4), argue that radical innovation requires a balance of view of how "discretionary slack" is used because it is not confined to one area of business and allocation can vary or change based on the requirement of the organisation. This equates to what is described as the rollout of first products by Discovery in the USA, in Illinois, a state that favoured MSA plans from a regulatory perspective.

Slater, Mohr and Sengupta (2013:2), asserts:

"...radical product innovation requires a different skill set from an organisation versus incremental product innovation. This requirement is due to the fact that radical product innovators face an inherently more uncertain development process, more complex customer adoption process and, by implication, a more difficult marketing process. This also means that organisations wishing to embark on radical innovation drives must appreciate and understand the configuration of components that comprise the radical product innovation capability".

The researcher agrees with this view, and the literature review presented earlier provided the factors that can indeed shape up the capabilities required for radical innovations. Slater, Mohr and Sengupta (2013:2), posit that radical product innovation can only be achieved if organisations have developed a "*dynamic capability*", characterised as successfully developing and commercializing radical product innovations.

"This makes it both difficult to develop and difficult to imitate, and allows for managers to adapt, integrate, and deploy internal and external organisational skills, resources, and functional competencies in order to

achieve alignment with the changing business environment” (Slater, Mohr & Sengupta, 2013:2).

This “*dynamic capability*” is reflected in the Discovery Health case study. Porter, Kramer and Sesia (2017:3) observed that Gore and Swartzberg decided that the innovation they were looking for was the new medical savings account (MSA) plans. A nascent idea at the time, evidently, as per case studies young and healthy individuals migrated to the new consumer-driven plans and away from traditional employer-based schemes. As Slater, Mohr and Sengupta (2013:2) continued:

“...radical product innovation capability passes the tests of value, rarity, and inimitability of skills, resources, and/or competencies that are the foundation for competitive advantage”,

and this is strongly supported by the financial successes Discovery enjoyed throughout the years.

The researcher accepts Slater, Mohr and Sengupta (2013:4)'s research which asserts:

“Chief Executive Officer (CEO) attention is an important driver of innovation regardless of whether the focus of attention is specifically on innovation, on external events, or on the future.”

This view also resonates with the Discovery case study (Porter, Kramer and Sesia, 2017), and the role of Adrian Gore to drive innovation in the organisation. The case study puts him at the centre of what Discovery has become and what it continues to do in driving innovative capabilities.

The Discovery case study (Porter, Kramer and Sesia, 2017) strengthens the case of importance of market information which, according to Slater, Mohr and Sengupta (2013:4),

“...symbolise customer-oriented firms place that highest value on creating superior customer value by developing and using market-based information”.

The researcher is of the view that Frosch (1996)'s assertion of misguided fortunes on R&D, given the important of data for today's business couldn't have been more wrong. Notwithstanding that Discovery is but one case study, extant literature is available to convince practitioners and scholars on the impact of data on customer orientation. This study is thus adding to the literature to strengthen this case for radical innovation.

Eesley, Hsu and Roberts (2013:2-3), observed how teams composed of founder members are composed and how this configuration impact how the organisation performs in two scenarios, namely business environment and strategy, and more specifically, and in the of this study, innovation strategy.

“...a competitive environment is characterized by weak appropriability. In such instances, the entrepreneur is reluctant to bargain with and disclose innovation details to potential partners” (Eesley, Hsu and Roberts, 2013:2-3)

The environment also proves a relatively low cost of assembling the requisite complementary assets, which lowers the barrier to entry. If a cooperative strategy is required for downstream value chain realisation, with regard to innovation strategy, data suggests:

“...founding teams that are diverse are likely to achieve high performance in a competitive commercialization environment. This as opposed to technically focused founding teams, which are aligned with a cooperative commercialization environment when pursuant of an innovation strategy” (Eesley, Hsu and Roberts, 2013:3).

In Discovery's case study, Porter, Kramer and Sesia (2017:3) show that Gore persuaded Barry Swartzberg, a former Liberty Life colleague, to join the venture. This, according to Eesley, Hsu and Roberts (2013:2, 16), represents a technically focused founding team. Interestingly, in 1993, RMB acquired Momentum, a life insurer. Gore's start-up, which focused purely on health insurance, took the name Momentum Health, but its products were branded Discovery Health signing RMB as its first corporate client. The case study scenario paints a different view from Eesley, Hsu and Roberts (2013:2-3), in that Discovery's founders cooperated with RMB in

the formation and as well cooperative commercialization versus competitive commercialization

The Discovery case study (Porter, Kramer and Sesia, 2017), importantly its strategy and TMT, however, offer support to Eesley, Hsu and Roberts (2013:4)'s arguments which states:

“...firms pursuing an innovator strategy, which rely more on the single dimension of technical excellence for success. Ventures not pursuing an innovation strategy will rely on a broader set of resources and skills for success, this versus the scenario in which most firms outside of that select group pursuing an innovator strategy, having a more functionally diverse founding team enjoying performance advantage.”

Discovery's success suggests a sweet spot made out of both an innovator strategy and TMT's technical excellence, since Eesley, Hsu and Roberts (2013:6) suggest that

“...technically focused teams are also likely to share heuristics and mental models.”

This facilitates an environment where founding team members are not held back by slow decisions, and enjoy well-coordinated tasks and collegial work ethic. The case study also supports Eesley, Hsu and Roberts (2014:16)'s literature contribution which shows that:

“...the initial founding team must be aligned with the strategy and environment to produce long-term organisational performance, which may limit the effectiveness of sequential TMT professionalization over the venture life cycle”.

Swartzberg and Gore's stay and addition to its TMT and Discovery ensured that the organisation continues to perform and enjoy success.

3.5 OTHER SOUTH AFRICAN INNOVATIVE COMPANIES

The researcher conducted a brief case study on two other South African companies, Capitec and Nandos, both of which are considered to be innovative. Summary observations on their case studies are included below.

According to van Themaat, Schutte, Lutters and Kennon (2013:8), Capitec designed its products, processes, practices, and premises in a model that is satisfactory to the BoP. This allowed them to enjoy attention of large volume of customers. The case study demonstrated that Capitec's marketing, distribution, and product design is innovative, and often goes against conventional wisdom, supported by its 4A's approach of simplicity, personal service, accessibility, and affordability, which it customised for its target market. van Themaat *et al.* (2013:8), performed a detailed analysis of the Capitec model, as depicted in the figure below. The four actions framework is used to identify where Capitec made the most dramatic changes to its business model to differentiate itself from other banks, and this is reflected in the figure below.

| Eliminated | Reduced |
|--|--|
| <ul style="list-style-type: none"> Paper and cash at their branches. | <ul style="list-style-type: none"> Bank account options: simplified their offering. Security on location (which they could decrease because they did not keep cash on location). The complexity and time to open an account by using a paperless system. Number of cards: customers use a single card and PIN for all their transactions. The price of transaction fees. The branch sizes (building more branches that are smaller, to increase the bank's accessibility). |
| Increased | Created |
| <ul style="list-style-type: none"> The number of branches. Their use of technology. They use biometric identification. EMP chip technology allows users to use their cards offline, providing for those people in remote rural communities who have limited access. The technology increases simplicity and accessibility. Banking hours, to allow easier access for their customers. Personal contact between Capitec and the customer. The interest rate on savings accounts. The number of languages spoken at their branches, to try to serve all their customers in their language of choice. The recognition they give all customers, no matter where they are situated on the economic pyramid, by treating every customer with respect. | <ul style="list-style-type: none"> Biometric identification, by using fingerprint technology and photos to identify their customers. Mobile stations that allow Capitec to capture new customers off-site. New partnerships with retailers that allow customers to draw money at the tills. A toggle for Internet banking that increases security. Central control that increases simplicity and drives down costs. |

Figure 3.1: Capitec's four action framework (**Source:** van Themaat, Schutte, Lutters, D. & Kennon 2013:9)

The researcher observed that the Capitec framework supports some of the factors derived from the literature, amongst which there are relationships, enabling context, operating model and strategy.

According to Pallot (2006:1-5), Nandos needed its *patraos* to keep Nandos's values to create a family environment, including embedment of these values to create a fun and supportive work for staff and managing directors. Additional observations include the award winning "*buddy*" system of training, which assisted the organisation with achieving training for new employees, improving internal communication and management coaching to sustain people development, a key factor for their success.

3.6 DISCUSSION ON FINDINGS

It is a finding of this study that innovation requires enablers. This is supported by Newell *et al.* (2009:233) contending that organisational culture, time, diversity, autonomy, shared identity, shared perspective, trust, social networking, organisational culture, structures, collaborative forms of work, reward & recognition system, boundary spanning and boundary objects are amongst crucial enablers of knowledge work, all of which is of strategic importance to firms that compete on the basis of innovation. This view is in line with Ettlie, Bridges and O'Keefe (1984:13)'s theory of champion and technology-organisation congruence. This study notes and accepts as a finding that knowledge, important to innovation, can be acquired from experimentation, reading industry publications, interacting with universities and private research institutions as well as through one's social network.

Based on the meta-analysis and systematic literature review which includes top research journals, the follow findings have been observed and linked with the Discovery case study (Porter, Kramer and Sesia, 2017).

3.6.1 Enabling context

The study finds that an unstable environment is a causal condition for innovation. This view is supported by Damanpour and Gopalakrishnan (1998:2), who stopped short of identifying the types of innovation that occur under these conditions. This is, however, clarified by Sorescu (2002:24), who identified radical innovation in the ambit of dormant firms endowed with resources. The researcher finds that flexibility of the organisation, with the combination of a dynamic environment, provides the suitable context for radical for what Paulson, O'Connor and Robeson (2007:3) terms breakthrough innovation environment. The study finds that innovation, specifically radical innovation, is in the interaction of the organisation with the complexity and dynamism of the environment. This is such that according to McKelvey & Boisot (2003)'s "*requisite complexity*" is a conduit to this interaction, also characterised by what tension which requires what Uhl-Bien, Marion and McKelvey (2007), termed solutions. Research shows that leaders in radical innovation efforts must attend very specifically to organisational learning dynamics for both individual and group creativity. This is in order to maintain high levels of strategic awareness of both their

internal organisational environment and the external environment (Ott, 2010:27-28, 43)

The Discovery case study (Porter, Kramer and Sesia, 2017) supports the finding that economic and strategic barriers impede large companies from being first with a radical innovation (Christensen, 1997; Stringer, 2000:3). This is prevalent in the introduction for the products that included the MSA. The findings of this study, which is supported by the Discovery case study (Porter, Kramer and Sesia, 2017), is that maintaining a status quo in the organisation's is the organisation's culture, in agreement with Stringer (2000)'s view that it is firm's bureaucratic structures that discourage radical innovation being introduced to market. Adrian Gore led the charge at Discovery in driving a culture to challenge the status quo of the medical industry. This study finds a specific culture type, such that adhocracy in Discovery's case helps drive radical innovation. A market type culture in the researcher's view constitutes bureaucratic structures and encourage incremental innovation. This study cements Brynteson (2010:63)'s innovative cultures characteristics and contends radical innovation, instead characterised it. The researcher found support for HR practices, an enabling context condition which Stock, Totzauer and Zacharias (2013:11) recommends for managers to drive innovation-oriented leadership together with HR practices. This is because this support is critical for innovation to succeed. Although organisation could be faced with resource constraints it is important to note that employees play an important mediating role in the R&D space by providing a mechanism for the knowledge from one area to be shared with another area. The correct leadership approach is one that is coupled with a policy that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties and ambiguities; these dynamics can only be navigated by employees who have the right management support. The dynamism which the research has shown is associated with radical innovation.

This study also finds that enabling contexts and their conditions require other conditions to support innovation, as well as the condition that there are other observed innovation successes that did not have enabling context conditions, but were able to successfully engage in radical and incremental innovation.

3.6.2 Leadership

This study confirms and agrees with literature on the importance of leadership for radical innovation. It stresses that this requires traits such as cognitive complexity and flexibility, strategic thinking, high levels of relevant technical expertise, a tolerance for ambiguity, a higher than average but not excessive risk profile, and creativity. This includes the ability to engage in creative problem solving alone or with others. The Discovery case study (Porter, Kramer and Sesia, 2017) shows that Adrian Gore was an actuary working in product development at Liberty Life, who believed his creation of Discovery, could be a powerful market disruptor that could shift competition and was in constant consideration for new ways to differentiate Discovery from its competitors. It is a finding of this study, as supported by literature (Ott, 2010; Fitcher, 2005), that formal leadership is required for radical innovation. This is usually the entrepreneur, the key person central role to innovation processes and possesses significantly higher influence on the creation and diffusion of an innovation than other individuals. The Discovery case study (Porter, Kramer and Sesia, 2017) is centred on the role of Adrian Gore's CEO, who drove innovation and success of the company with innovation.

This study accepts as a finding the role of transformational leaders on innovation, which according to Reid, Roberts and Moore (2014:4), helps develop a view of the future, inspire and motivate their followers. These visionary leaders raise performance expectations and improve innovation within the organisational context. In support, the Discovery case study (Porter, Kramer and Sesia, 2017) shows that it was Adrian Gore's vision to create a product that appeals to everyone, including the young and healthy, as well as to tap into the consumerist spirit of the time. As a result, this would give rise to a business concept around making people healthier. This gave him the drive to pitch his concept to investor, Laurie Dippenaar, as well as convince Barry Swartzberg to join him. Additional information on Discovery (Discovery.co.za, 2017:**Online**) suggests a value system driven by Gore, also in support of his transformational leadership skills.

3.6.3 Strategy

This study finds that innovation is a strategic imperative, as purported by Ravichandran (1999:1), and supported by the Discovery case study (Porter, Kramer

and Sesia, 2017), in which Gore and Swartzberg decided that the innovation they were looking for was the new medical savings account (MSA) plans. This was a nascent idea at the time, which according to this study and literature can also be acquired via acquisition appropriately balanced between radical or incremental innovation including a sound portfolio evaluation. This study also find that strategy, via strategic decisions is a source of innovation and this emanates from firms of different sizes across the globe. This is according to Pavitt (1991), who wrongly, according to this researcher credited only larger firms have a major impact on sector patterns of technological activities and competitive performance of whole countries.

This study finds strategy at the forefront of ensuring innovation succeeds, allowing for studied conditions necessary for innovation to flourish by offering the required support. This study finds that innovation aids strategy by providing feedback mechanisms, which allows the firms to explore the other strategic possibilities available out there (Maidique & Hayes, 1984; Shane, 2008). The importance of this feedback is what this researcher observed, as per Hui, Qing-xi (2006)'s framework, in which an organisation can maintain its innovation capabilities by introducing, improving and gradually advancing technological innovation, and also with some radical characteristics. The Discovery case study (Porter, Kramer and Sesia, 2017) aids in finding by showing how the organisation used its data to improve its products, processes and services, in one example a HealthyFood Benefit®, rewarding healthy nutrition is introduced into the market.

This study has confirmed through literature that radical innovation occurs in environments characterised by ambiguity and dynamism. In the case of radical innovation, this would be diverse or even conflicting customer information (Arnold, (Er) Fang and Palmatier (2010). The finding here is that a strategic focus on radical innovation takes advantage of problems, alternative hypotheses, or contradicting conventional expectations. The Discovery case study (Porter, Kramer and Sesia, 2017) supports this finding by noting that Gore had observed constraints on health care services including escalating costs, but developed an alternative approach that appeals to everyone and taps into the consumerist spirit. This results in what could be a powerful market disruptor, enough to shift competition.

The Discover case study (Porter, Kramer and Sesia, 2017) also supports the view of Troilo, De Luca, and Atuahene-Gima (2013), in which organisations deploy available resources, i.e. "*slack resources*" so that they can tap and exploit knowledge for their benefit, "*distal search*". This is shown by how Discovery went into the new markets using South Africa as its platform, but due to limited resources at the international stage, there was a need to create a two-pronged strategy while driving the competition hard at home. This study confirms that a resource constraints scenario is not conducive for firms to acquire new knowledge which needed as input to radical innovation (Troilo, De Luca, and Atuahene-Gima, 2013:2-15). Troilo, De Luca and Atuahene-Gima (2013:4), argue that organisations are able to tap into their creativity domain if employees and their managers sense an opportunity where free resources offer such platform.

"...abundance of discretionary slack helps firms to unfreeze creative behaviours of their personnel, cope more effectively with uncertainties of such innovation, reduce internal conflict, and increase commitment to adopt new ideas." (Troilo, De Luca, and Atuahene-Gima, 2013:16)

From the Discovery case study (Porter, Kramer and Sesia, 2017), the researcher observed that Discovery exited the U.S. insurance market in 2008 after losing about \$100 million.

3.6.4 Operating model

The literature review conducted on this study confirms that structural configurations of a firm support radical or incremental innovation. The recommendation is for managers to provide the necessary financial support to their employees because they facilitate cooperation across the organisation. This support is critical for innovation to succeed. Although organisation could be faced with resource constraints it is important to note that employees play an important mediating role in the R&D space by providing a mechanism for the knowledge from one area to be shared with another area. The correct leadership approach is one that is coupled with a policy that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties

and ambiguities, these dynamics can only be navigated by employees who have the right management support (Stock, Totzauer & Zacharias, 2013:11).

The Discovery case study (Porter, Kramer and Sesia, 2017) suggests that the organisation adopts both IGO and IAO states depending on the area of focus, with its core products aligned to IGO characteristics and support functions such as IT and usage or data aligned to IAO characteristics.

This study found that new or smaller configurations of either the organisation or a unit of the organisation, which carries autonomy, succeeds in radical innovations (Christensen, 2003; Teisberg and Clark, 1990; Damanpour & Wischnevsky, 2006:9). The Discover case study (Porter, Kramer and Sesia, 2017) suggests that this view holds if the focus is at the formation of the organisation, subsequent to which other enabling conditions must have sustained Discovery's innovation, such as per this study leadership, enabling context and strategy. Additional finding suggests that large scale, while often a powerful source of competitive advantage, leads to bureaucratic structures that discourage bringing breakthrough or radical innovations. This implies innovation requires suitable structures in order to yield the right innovation, and managers must have to reconfigure firm into do-able parts. They should provide a stable environment that motivates employees (Stringer, 2000:3 ;Shane, 2008:206).

The researcher's view is that learning can be aimed at individuals, groups or organisations. In support, the study finds that aspects of learning may alleviate radical innovation uncertainties, while also allowing firms to explore new possibilities and enable the process of innovation creation (Marvel, 2012:5). Action learning teams can overcome innovation challenges together faster than individuals and in the context of innovation, action learning groups can provide support systems for those involved in innovation (Brynteson, 2010:86). The case study offers no reflection on this aspect, even though one of Discovery's value is "*liberating the best in people*", which the researcher suggests should include training in one shape or form of its people.

This study finds that absorptive capacity of knowledge by the firm is important for radical innovation. This is supported by the right I(C)T platform which increase the ability for organisations to share any knowledge the organisation has just assimilated

from innovation, this can be captured by staff members involved in those activities allowing for retrieval in the future, in certain instances updating what has been captured or learned before. This allows for continuously renewal of past experience with new acquired knowledge (Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012). The Discovery case study (Porter, Kramer and Sesia, 2017) shows that the firm gathered data for use to not only feed its actuarial models, but enhance and package theme for licensing, such that it allowed the Vitality approach and health products to be deployed in new markets fairly rapidly.

3.6.5 Relationship

This study accepts as a finding that radical innovation is likely not in pursuit when organisations embark on a relationship such as internationalization or “*foreign network collaboration for innovation, or ‘glocalization’*” (Chen and Tan, 2009). The Discovery case study (Porter, Kramer and Sesia, 2017) supports this finding in that the company’s expansion did not offer any radical innovation other than provide lessons on how the organisation can package its products offering. This study accepts that relationships only provide what Hui, Qing-xi (2006:3) termed ‘*institutional innovation*’, which is driven by relationships with stakeholders internal to the company. In a case where radical innovation is the intended goal, external sources of knowledge and intellectual property rights systems, as argued by Duguet (2000:4), offer the right combination with formal innovation sources.

This study confirms via both empirical studies, literature studies and case studies that knowledge required for innovation can exist elsewhere. The firms must utilise various networks of relationships to ingest the knowledge and be structurally conducive to absorb and retain this knowledge. The Discovery case study (Porter, Kramer and Sesia, 2017) highlights this finding on how it assimilated knowledge, allowing it to create success out of what seemed like failed starts when it drove the expansion to United States. In support of this finding, Černe, Jaklič and Škerlavaj (2013:1) suggested that higher innovation capabilities, allow organisations to create new capabilities that create value, such phenomenon involves employees, group and leaders. To achieve this, staff cooperation is facilitated by knowledge that is shared

allowing for new ideas to come forth and be adopted. The benefit to organisations is the ability for distribution, ingestion and sharing of knowledge by everyone.

An open innovation strategy or collaboration, though not supported by the Discovery case study (Porter, Kramer and Sesia, 2017), is noted as a viable condition for innovation. The researcher is in support of Inauen and Scheker-Wicki (2012:12)'s argument of technological acceleration and the global availability of knowledge and employees, enabling companies to reduce fix costs for R&D while establishing new sources of research funding, as well as the risks resulting from R&D projects, technologies or products can be shared with partners or competitors. Similarly, co-creation and knowledge transfer agreements with partners, competitors or research institutions.

Piening and Salge (2014:2), confirmed from empirical studies that innovation-related activities include:

"...internal and external research and development (R&D), patent licensing, prototyping, as well as employee training, and offer support for process innovation success and financial performance".

The researcher finds this view is supported by the Discovery case study (Porter, Kramer and Sesia, 2017), strengthening this study's finding of the importance of relationships in innovation, be it radical or incremental. The case study confirms this finding in that Discovery's Vitality program is expanded to 10 largest life insurance markets globally via a partnership model and with each of these partnerships, Discovery licensing its Vitality models.

3.6.6 Value System

This study finds that goals, organizing (shared) vision and leadership support are crucial for the organisation in realising a culture and value system that supports innovation. Goals that include the organisation striving to be more innovative must be reconciled with a culture and value system that drives behaviours to such goals. Otherwise, no real positive incentive for innovating would be sustained, since it would be risky due to any false steps immediately being punished. Furthermore, leadership facilitates the creation and execution of shared vision. This vision

influences the strategic planning of firms, including choice of offering the firm intends to develop for its market. The stability of a firm's vision removes confusion, conflict or uncertainties from teams responsible for development that can be brought on if firms keep changing visions. Clarity or stability of a vision is beneficial to organisation embarking on innovations that are product-centric. The researcher argues that incremental innovation is the only one possible in this context given the complexity and ambiguity of radical innovation (Schien, 1996:366; Ramiller, 1997:3; Brynteson, 2010:76; Hoonsopon & Ruenrom, 2012:7).

The Discovery case study (Porter, Kramer and Sesia, 2017) goes into Adrian Gore's aspirations to give back and the thinking behind the initiatives driven by this leader as well as his vision and drive to do good without losing the touch of the products offered by Discovery. This is what the researcher finds is a vision that drives innovation in companies.

This study finds support for communication, change management, creation of organisational knowledge systems, interactions, communication of ideas, and the promotion of ideas as critical for innovation. Literature suggests that employees are constantly on the lookout for clues from leadership on direction, arguing that the more leaders communicate the priority of innovation, the more innovation will become embedded into that culture. With communication coming via press releases, internal newsletters, speeches, and informal comments, on the other hand radical innovations often occur on the fringe of a social system of core actors within an industry, while innovators are natural change agents who embrace change. By their work, they push others to do the same, given that innovations change lives, change workplaces, change power relationships, and change perspectives on the universe, noting that innovation and new technologies comes an assemblage of different boxes of people, ideas and objects. It is networks, such that breakthrough innovations give rise to new networks (Mumford, Scott, Gaddis & Strange, 2002; Hargadon, 2003; Brynteson, 2010:26, 41, 76; Ott, 2010:28).

The case study offers no support for communication or change management. However, the researcher identified that part of Discovery's DNA is its value which are communicated to all staff members during the new employee on-boarding process.

The study associates creativity with radical innovation, which literature supports and argues that for a given creative context, specific leadership roles and capabilities may also apply to radical innovation. This is more for group leadership interactions as opposed to simply individual characteristics. These include the evaluation of creative ideas and work, coevolution of ideas and groups of people around the task, enabling positive group dynamics, selection and recruitment of talented individuals (Ott, 2010:16, 28, Mumford *et al.* , 2002).

3.6.7 Support Function

This study finds and supports that deep knowledge about customers' adoption of an innovation represents the primary prerequisite of a successful innovation. This is supported by the literature review and in the Discovery case study (Porter, Kramer and Sesia, 2017), Adrian Gore identified:

"...the young and healthy, and tap into the consumerist spirit of the time".

The case study also identified the use of technology, specifically data, as key in the innovation brought on by Discovery.

The study finds, through support from literature, that R&D is a critical initiative where organisation reliant on innovation for growth and major benefits can be derived from internationalization, alliances and research. Management is therefore tasked with ensuring that their R&D division is properly resourced to match their innovation goals, be it radical or incremental.

3.7 CONCLUSION

It was possible to establish with support from the literature review and top journals that various of the grouped super-conditions were identifiable in the case study. Discovery's leadership played a role in how innovation offered the firm financial success. The case study, as backed by the many authors, pointed to the culture and value systems which are crucial for organisations embarking on any form of innovation. Other factors such Gore's vision and the importance of his team were factors that were uncovered, hidden in the elements of the case study.

The researcher presented the findings of the literature review, top journal and Discovery case study. The findings show that there is support for factors that enable innovation, which is radical or incremental, with options for organisation to configure options to achieve a desired outcome based on the settings or environment.

CHAPTER 4. PROBLEM MITIGATION, RECOMMENDATIONS AND CONCLUSION

4.1. INTRODUCTION

This chapter presents problem mitigation, recommendations, and conclusions on systematic review, meta-analysis and case study on incremental -, radical innovation and factors that influence this phenomenon. The research study is done with the objective of mitigating the research problem through the outlined literature review and a case.

The main research problem asks:

“What factors/conditions are conducive to Radical and/or Incremental Innovation?”

Additional questions the researcher asks to supplement the objective of the study ask the following:

- Are there trade-offs or contradictions between answers that relate to I.I. or R.I. conditions?
- Which of these conditions are structural and which are contextual?
- How can trade-offs between structural conditions on the question above, be minimised or managed?

4.2. PROBLEM MITIGATION

In order to mitigate the research problem, the researcher used a systematic literature review, meta-analysis and a well-documented case study of a South African innovative company to collect factors on innovation and its enablers. The conditions were meant to show how they influence which type of innovation and under what circumstance.

4.2.1. Systematic literature review and meta-analysis

The systematic review created a framework of groups of conditions and causal effects that allowed the researcher to identify a suitable case study to explore. All the conditions have been listed with their authors in the Table 1, within the ambit of the literature review. The listed conditions allowed the researcher to identify grouping of conditions and causes that are associated with each of the grouping established, allowing for an in-depth study populating the framework established and as well as validation with the case study. The established framework of conditions made it easier for the researcher to explain key phenomenon in the Discovery case study, using latest thinking provided by top journals.

This study was able to show why it is still important, nowadays to study innovation. This is because there are companies that are more innovative than others. Such companies are following some kind of recipe and this study needed to highlight it, at least in the case of Discovery, in this instance. The advent of technology and its role on enabling modern businesses require an effective method of management, including application with innovation. People play an important role in today's business and effective management of HR practices that drive innovation is vital. The study also shows there is a need to unpack the multidimensional definition of radical innovation. Although the study acknowledged all topologies of innovation, a case for radical and incremental innovation was made on the basis of extant literature that formed the systematic review. This includes radical innovation's ability to repeat past successes, dramatically resetting of customer expectation, competitive advantage and power to change industry dynamics. The study was able to motivate for innovation research as it brings firms financial success, lower barriers of entry for smaller organisation, which is vital for economic growth.

In the build-up to a collection of conditions that enable innovation, the researcher showed that radicalness is a dimension of innovation which can be characterised by strategic change, organisation change, technological changes/advancements, competence-destroying, experimental cultures, enterprise climate, decentralised structure and flexible process to mention but a few.

This study was able to go beyond what Newell *et al.* (2009:233), identified as crucial enablers of knowledge work, all of which is of strategic importance to firms that

compete on the basis of innovation. These include organisational culture, time, diversity, autonomy, shared identity, shared perspective, trust, social networking, organisational culture, structures, collaborative forms of work, reward & recognition system, boundary spanning and boundary objects amongst other things. The systematic review combined with a meta-analysis unpacked additional groupings and conditions that enable innovation, including the condition (and their grouping) prominent for radical innovation and factors prominent for incremental innovation.

The literature supported the view that there has to be an enabling context that supports innovation. This context is applicable for both radical and incremental innovation. The literature shows that there are over 22 out of the 78 conditions which are applicable to radical innovation with entrepreneurship, creativity, experimental cultures, and preparedness for adoption, amongst some of the conditions which the study correctly identified in support of the enabling context, of which this makes recipes for ensuring radical innovation is achieved (Stringer, 2000; Damanpour & Wischnevsky, 2006; Prasad & Nori, 2008; Marvel, 2012). Organisational size and environment offer the highest lever that managers can pull to enable incremental or radical innovation (Damanpour & Gopalakrishnan, 1998; Ravichandran, 1999; Stringer, 2002; Damanpour & Wischnevsky, 2006; Andersson & Lööf, 2009; Brynteson, 2010; Arnold, (Er) Fang & Palmatier, 2010; Hoonsopon & Ruenrom, 2012; Černe, Jaklič and Škerlavaj, 2013). Efficiency culture and size are the only levers that support incremental innovation (Ettlie, Bridges & O'Keefe, 1984; Damanpour & Wischnevsky, 2006).

Innovation requires strong champions, strong leadership and top management support, with leaders who have a tolerance for ambiguity. These individuals are able to drive any form of innovation with the organisation, but must exhibit benefactor traits in order to push the innovation levels to a radical degree (Ravichandran, 1999, Van de Ven, Angle & Poole, 2000, Damanpour & Wischnevsky, 2006; Hui, Qing-xi, 2006; Paulson, O'Connor & Robeson, 2007; Smith, 2007; Brynteson, 2010, Ott, 2010, Arnold, (Er) Fang & Palmatier, 2010; Beucker & Fitcher, 2012).

Strategy is central to innovation, as this is the area where organisations decide how they are going to allocate resources, including the products or services they want to

present to the market. Knowledge, organisation capabilities and competence emerged as the biggest strategy conditions or levers that organisation can pull in order to support all forms of innovation (Drejer,2002; Damanpour & Wischnevsky, 2006; Andersson & Lööf, 2009; Marvel,2010;Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez,2012; Hoonsopon & Ruenrom,2012; Černe, Jaklič & Škerlavaj, 2013).

It is important to note that employees play an important mediating role in the R&D space by providing a mechanism for the knowledge from one area to be shared with another area. The correct leadership approach is one that is coupled with a policy that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties and ambiguities, these dynamics can only be navigated by employees who have the right management support. (Stock, Totzauer & Zacharias, 2013:11). New or smaller configurations of either the organisation or a unit of the organisation, which carries autonomy, succeeds in radical innovations (Christensen, 2003; Teisberg & Clark, 1990; Damanpour & Wischnevsky, 2006:9). Stringer (2001:3), noted that large organisation lead to bureaucratic structures that discourage bringing breakthrough or radical innovations. Shane (2008:206), suggests that good structures that are good for innovation, allow managers to break organisation-wide activities up into do-able parts, stabilizing the organisation, and motivating employees within non-innovative organisations to become innovative. Firms need to use IT to capture, document and share knowledge allowing for future access, which allows for continuously renewal of past experience with new acquired knowledge (Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012).

Goals that include organisations striving to be more innovative must be reconciled with a culture and value system that drives behaviours to such goals. Otherwise, no real positive incentive for innovation would be sustained, since it would be risky because any false steps would immediately be punished. Furthermore, leadership facilitates the creation and execution of shared vision. This vision influences the strategic planning of firms, including choice of offering the firm intends to develop for its market. The stability of a firm's vision removes confusion, conflict or uncertainties from teams responsible for development that can be brought on if firms keep

changing visions. Clarity or stability of a vision is beneficial to organisation embarking on innovations that are product-centric. The researcher argues that incremental innovation is the only one possible in this context, given the complexity and ambiguity of radical innovation (Schien, 1996:366; Ramiller,1997:3; Brytenson, 2010:76; Hoonsopon & Ruenrom, 2012:7)

The firms must utilise various networks of relationships to ingest the knowledge and be structurally conducive to absorb and retain this knowledge, ensuring that they utilise technology to achieve incremental innovation (Pavitt,1991; Herrmann, 1999; Duguet, 2000).

4.2.2. The Discovery case study

The systematic review and all the listed conditions allowed the researcher to identify innovation enablers otherwise hidden or not well articulated in the Discovery case study, as well as the ability to eliminate "*non-starters*" documented on the case, which had no bearing on framework and, consequently, the study.

The quality of the case study allowed this researcher to confirm some of the grouped conditions that had been identified in the systematic review. Discovery achieved success because it embarked on innovation. To sustain this success, its leadership team played a crucial role. To elevate their innovation into radical innovation, Discovery leadership had a vision that was supported by a value system and expertise. Relationships played a crucial role in the adoption of Vitality and this condition supported the radicalness of their innovation.

Discovery prides itself on its values, which this study identified as important for innovation and specifically radical innovation. The case study did not document the importance of Discovery's values, but they are available on the organisation's website to ensure that all stakeholders grasp the organisation's belief system.

This researcher also noted that there are other conditions that the literature noted are critical for radical innovation which were not found in the Discovery case study. One such is the grouping of conditions that makeup the operating model of the

organisation. The researcher believes that the absence of these conditions could be due to the limited view or focus of the documented case study. Another view is that there are multiple recipes of conditions that make it possible for organisations to achieve radical innovation. The latter view has been proposed by this researcher as an area for further study. The researcher thus posits that there are multiple recipes that organisation can adopt based on this study which can enable them to achieve radical innovation. The researcher posits that there could be conditions that are antecedents to other conditions in the process of the radical innovation journey such that a further study could be reveal to organisations which conditions are a must for radical innovation.

4.3. RECOMMENDATIONS

Looping back from the process of abstracting grouped super-conditions and the application to the Discovery case study, some recommendation from literature can be heeded by organisations seeking to be innovative.

It seems that flexibility of the organisation, with the combination of a dynamic environment provides the suitable context for radical, or what Paulson, O'Connor and Robeson (2007:3) terms breakthrough, innovation environment. Therefore, firms must embrace the dynamism of their environment in orders to tap into radical innovation contexts.

HR practices, an enabling context condition which Stock, Totzauer and Zacharias (2013:11) recommend for managers, drive the correct leadership approach that is coupled with policies that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties and ambiguities, these dynamics can only be navigated by employees who have the right management support. Thus, firms should align their HR practices in-line with their innovation goals. This includes flat structures, adjustable routines, divergent organisational job types and specialised skill sets if pursuant of radical innovation.

Bureaucratic configurations are not conducive to bringing breakthrough or radical innovations. This implies innovation requires suitable structures in order to yield the right innovation, and managers must have to reconfigure firm into do-able parts. They should provide a stable environment that motivates employees (Stringer, 2000:3; Shane, 2008:206). Therefore, organisations should try to avoid bureaucracy in their structure, or else they will only achieve incremental innovation.

Absorptive capacity of knowledge by the firm is important for radical innovation. With the right IT support that stores and distributes relevant information for every employee participating in the innovation to share, it allows for continuously renewal of past experience with new acquired knowledge (Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012). Therefore, firms should invest in a good organisational Information System (IS) that ensures the organisation is able to store, codify and retrieve its knowledge.

According to Klingebiel and Rammer (2013:18), strategic management of innovation by delineating resource allocation breadth as a predictor of innovation performance is available to firms. This can be achieved by increasing spread breadth to other kinds of commercial bets too, which increases the likelihood that at least some firm investment becoming successful. For this reason, it is recommended that organisation with slack or available resources invest in multiple innovation projects such that this increase the chance of gaining success or lessons from this initiatives.

Formal leadership is required for radical innovation. This is usually the entrepreneur, the key person with a central role to innovation processes and possesses significantly higher influence on the creation and diffusion of an innovation than other individuals (Ott, 2010; Fitcher, 2005). It is recommended that organisations rally behind the leader who show entrepreneurial skills, as this are critical to achieve radical innovation.

The role of transformational leaders on innovation, is according to Reid, Roberts and Moore (2014:4), what helps develop a view of the future. With inspiration and motivation, these visionary leaders raise performance expectations and improve

innovation within the organisational context. Thus, organisations with a leader with transformational leadership traits could sustain innovation.

This study found that innovation aids strategy by providing feedback mechanisms, allowing the firms to explore the other strategic possibilities available out there (Maidique & Hayes, 1984; Shane, 2008). Thus, organisations should formulate an innovation strategy, which is monitored, to ensure that feedback is added back into the plan to keep it up-to-date.

Černe, Jaklič and Škerlavaj (2013:1) state that:

“...higher innovation capabilities, closely linked to new value creation, is a social construct, dependent on collaboration and information sharing, as well as on combining diverse knowledge to come up with novel ideas that ultimately get implemented. The benefit to organisations is the ability to expand, disseminate, and exploit organisational knowledge internally, as well as to share, transfer, and receive knowledge.”

It is recommendation that organisations collaborate with other sources of knowledge, including alliances and universities, as these are sources of knowledge. This will assist the organisation in improving its ability to consume knowledge.

Brytenson (2010:76), is of the opinion that leadership facilitates the creation and execution of shared vision, correctly questioning and arguing that if innovation is not a vital part of a vision, then the rest of the organisation will not honour it as such. This argument is supported by this researcher in this study. Hoonsoon and Ruenrom (2012:7), proposed that vision influences the strategic planning of firms, such as determining products and services for the chosen market. Therefore, firms should formulate a vision for innovation, which is supported by a strategic objective and a transformational leadership team.

4.4. MANAGERIAL IMPLICATIONS

Damanpour and Wischnevsky (2006:10) asserts that:

“...established organisations can create an internal market for innovation, empower innovative units, and foster culture, structure, and management practices that are similar to those of the entrepreneurial organisation”.

Research suggest that entrepreneurs can acquire knowledge through activities such as experimentation, reading industry publications, interacting with universities and private research institutions, as well as through one’s social network.

This study established through literature that organisation embarking on radical innovations must encourage employees to try new things. The organisation must be configured with flat structures, adjustable routines, and divergent organisational job types and specialised skill sets.

According to Marvel (2012:2), in order to deal with knowledge deficiencies, entrepreneurs can try new things and collaborate with institutions of higher learning as well as published materials from research organisations. Other forms of collaboration for knowledge must include the relationships that one possesses.

Managers must strive for the correct leadership approach, one that is coupled with a policy that enables staff to enjoy an environment where they are able to support innovation initiatives in the organisation. Innovation is driven by uncertainties and ambiguities, these dynamics can only be navigated by employees who have the right management support. (Stock, Totzauer & Zacharias, 2013:11).

Troilo, De Luca and Atuahene-Gima (2013:2-16) warned that:

“...managers of analyser firms should carefully assess the endowment of discretionary slack of their organisations, because for these organisations radical innovation is strongly dependent on this endowment. With research results showing that this slack should not be directed only to distal search, because the path to radical innovation does not go directly through relative activities, the implication is that managers of analysers are better off directing discretionary slack to a recombination of exploration of new domains, with efficient exploitation of existing ones in order to balance incremental and radical innovation.”

4.5. FURTHER AREAS OF RESEARCH

The researcher accepts that enabling conditions do not have to occur simultaneously for radical innovation, let alone for innovation to occur. A further area for research could be to examine conditions that precipitate sparks of innovation, that then require sweeping conditions defining the ultimate innovation from which the firm derives the financial success. Piening and Salge (2014)'s antecedents and contingency view explored the effectiveness of implementing "*new production, supply chain, or administrative processes*". The researcher thus advocates for further research beyond a process view of the organisation. Capitec, in its framework, did not have all the observed conditions. Further research in that area could have highlighted a further recipe for success based on all conditions that enable innovation.

Ott (2010: 27-28), conceded that leadership traits required for radical innovation are individualistic, rather than as characteristics of groups in interactions. The researcher agrees and notes that this could be an important area for future research.

Qualitative Comparative Analysis (QCA) can be performed once there is a sizeable amount of case studies documented in a nature that reflects the Discovery case study (Porter, Kramer & Sesia, 2017). With such up-to-date case studies that have documented the successes of South African innovative companies over many years, using QCA makes it possible to examine many enablers that could be complex or ambiguous, involving multiple combinations of causal conditions capable of generating the same outcomes or recipes.

According to Paulson, O'Connor and Robeson (2007:2), a company's capacity to invest in potential breakthrough innovations can be limited in many ways. This includes potentially ruinous litigation proceedings, extraordinary cost overruns on another innovation, collapse of a principal market due to massive overcapacity resulting in potentially fatal financial difficulties, rapid acceptance of a new technological product which results in the dramatic decline of an incumbent product again resulting in severe financial difficulties, or the strategic decision to sell a profitable business unit a year or so into the future. Could these events impact any of the factors studied? The researcher believes a study in this direction can add to the literature and offer other avenues to organisations that need innovation to survive?

4.6. CONCLUSION

This research has shown that innovation is a strategic imperative for modern organisation. Radical innovation can only be achieved if organisations have made it a strategic imperative supported by the right leadership, value system and relationships.

Discovery has been able to enjoy success because its leadership team made innovation a strategic imperative and created a vision and value system to sustain its innovation. The leadership team exerts transformational leadership traits that keep the organisation motivated behind the team and maintain success. Discovery ensures that its ecosystem act as an additional enablers to elevate Vitality into the flagship products that has become a global success.

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